

Community Involvement in the Prevention of Bovine Tuberculosis among Nomadic Fulani and their Host Communities in Oyo State, Nigeria

ABOLAJI AZEEZ

B.Sc Sociology (Ilorin), M.Sc Sociology (Ibadan)

**A thesis in the Department of Sociology submitted to the Faculty of the Social Sciences
in partial fulfilment of the requirement for degree of Doctor of Philosophy of the
University of Ibadan**

March, 2021

ABSTRACT

Globally, Bovine Tuberculosis (BTB) is one of the strains of tuberculosis, which accounts for 1.5 million deaths annually. Nigeria is the fourth most affected country in the world and Oyo State is third in the country. Previous studies have focused largely on the prevalence and control of BTB through the use of drugs and not on how Community Involvement (CI) could help curtail BTB. This study was therefore designed to investigate the effects of BTB awareness, health-seeking behaviours, gatekeeping system and inter-ethnic relationship on community involvement in the prevention of BTB in Oyo State, Nigeria.

Social Network Theory and Health Belief Model were adopted as the framework. Exploratory and cross-sectional survey designs were employed. Multistage sampling was adopted. Oyo State was purposively selected, while cluster sampling was used to select six local government areas (LGAs) with nomadic camps. Iseyin, Saki West and Ibarapa East LGAs with high tuberculosis cases and Saki East, Itesiwaju and Ibarapa North LGAs with low cases were purposively selected. Communities with nomadic camps (with at least 100 residents) were purposively selected. Yamane's (1967) method was used to select 812 respondents comprising Iseyin (183), Itesiwaju (101), Saki West (122), Saki East (193), Ibarapa North (110) and Ibarapa East (103) LGAs. The 171-items questionnaire covered BTB awareness, consumption practices, health-seeking behaviour, gatekeeping, inter-ethnic relationship and CI (decision making, activities and accountability). Twelve in-depth interviews and nine key informant interviews were conducted among community/camp leaders and gatekeepers (community volunteers, and veterinarians) respectively. Quantitative data were analysed using descriptive and inferential (chi-square, binary and multinomial regressions) statistics at $p \leq 0.05$, while qualitative data were content analysed.

Respondents' age was 37 ± 22 years and 51.0% were male. About 44.5% had no formal education and 46.3% were Fulani. Fifty percent consumed unpasteurised milk, of which 84.0% were not aware of their tendency to contract BTB from its consumption. In general, the knowledge of respondents about consumption of unpasteurised milk ($\chi^2=8.11$), roasted meat ($\chi^2=13.30$) and milking cattle ($\chi^2=19.71$) was significantly related to the levels of tuberculosis prevalence in the LGAs. Also, there was a significant relationship ($\chi^2=17.02$) between perceived threat of contracting BTB and health-seeking behaviour in the LGAs. Ethnic group was significantly related to the adoption of sensitisation ($\chi^2=37.53$), avoidance of infected animal products ($\chi^2=8.61$) and BTB suspect referral ($\chi^2=9.33$) for BTB prevention. In the LGAs with high tuberculosis prevalence, respondents prevented BTB through avoidance of close contact with suspected BTB patients ($\beta=0.55$), supports for drug adherence ($\beta=1.51$) and mobilisation ($\beta=1.79$) of the community members. Also, inter-ethnic relationship (OR=1.51) was not a significant reason for involving in preventive activities geared toward BTB among the Fulani. The respondents were involved in decision-making (2.7%), activities (8.7%) and accountability (0.1%). Gatekeepers explained that their inability to prevent BTB adequately was due to limited manpower, while community leaders were not engaged in the BTB prevention.

Communities were less involved in the curtailment of bovine tuberculosis. Thus, sufficient bovine tuberculosis information should be made available to the public to engender high community involvement in the bovine tuberculosis prevention.

Keywords: Community Involvement, Pastoralist Fulani, Unpasteurised Milk, Bovine Tuberculosis in Oyo State.

Word count: 499

CERTIFICATION

This is to certify that this work was carried out by Abolaji **AZEEZ** of the Department of Sociology, University of Ibadan, Nigeria.

Kabiru K. Salami Ph.D.

(Supervisor)

B.Sc., M.Sc., PhD. Ibadan

Cert. Applied Gerontology (University of North Texas)

Department of Sociology

University of Ibadan, Nigeria

Date

DEDICATION

This work is dedicated to the Almighty God and Lord of Host, who decided to show me mercy,
brought me out of the clay and set my feet on the solid rock.

Acknowledgements

My Origin

God conceived me in eternity; the Author formed me in His own image.
Place me on a pedestal of greatness and righteousness.
Jesus Christ, source of the revelation (*Fulani boy in the bush*) and the funder of the degree,
You are worthy to all honours and adoration.
You deserve all the praises.
You have done so much for me I cannot tell it all.
Thank you Jesus Christ

My Mentor and Supervisor

My Oga, Kabirudeen Kunle Salami PhD, a ceaseless mentor, you show me the way to greatness. You gave me fish and taught me how to catch fish. Only you will understand! You taught me how to build empire of academic giants. You planted the seed of writer's confidence in me. You put me on a terrain of scholarship which I cannot forget. You are selfless in academic mentoring delivery. You are confident, poise and highly goal oriented. Your advice is always fatherly. You accepted all my weakness
Thank you
Sir!

Hall of mentors: Lecturers

Professors U. C. Abanhie (MS.c Supervisor), A. S. Jegede, O.O. Omololu, B. Owumi, A. A. Aderinto, E. E. Olutayo, R.A. Okunola, E. Nwochoka, E. Okafor and I.P. Onyeonoru, A. O. Olutayo,
Drs A. Adenugba, O. A. I. Onwuzurigbo, A. A. Obemeata, Omobowale, O. Akanle, O. Tade, U.A. Ojedokun, P. A. Taiwo, O. Adegoke, D. Busari, O. A. Fayahun, S. A. Omolawal, A. Ademuson
Words are forgotten but memories of your good mentors return.
Thanks for inputting in me a critical and independent mind. I celebrate your quality and excellent academic prowess.
All your doors are always opened to mentoring.
I am very grateful for passing through your tutelage.

Hall of Fame: Research Assistants

Time and space will not permit me to state how each of you did contribute to the success of the field work and the transcription of several interviews. You did all at a give-away price. On this note, I want to thank you, namely
Janet Adewumi, Funmilayo Shittu, Olawale Oniya
, Julius Salako, Samuel,
Yimika, Yinka Azeez, TBLS Saki west,
and other nurses.

Hall of Scholars: Colleagues

Drs Matthew Ayegboyin, Isaac Adedeji, ChidinmaDanjibo, Anthony Nwanze, Lukman Fasasi, Kudus Adebayo, Lara Ejiade, Julius, Adeoti, Victor Kolo, Chukwude, Sulieman Khadijat, Damilola

I cannot but appreciate all for every dimension of support to my success. Thanks you

Friends and Neighbours

My gratitude goes to friends who keep our friendship going, who keep investing into friendship who keep checking on me and my family. The friends and neighbours include Mr & Mrs Olayiwola, Mr & Mrs Segun Ajibike, Mr & Mrs Paulinus, Mr Samuel, Mr & Mrs OluwarantiAlo, Dr & Mrs Osayiwu, Mr & Mrs Kunle Oyewole, Bro. Gabriel Adetokunbo, Mr & Mrs James YashiyiNyphi, Mr Adeyemi Adeyinka and Mrs Ngozi Joshua-Adah

Burden lifters

While performing your official duties, you went of your ways to lift my burden most which I did not know. Thus, I recognise you today for your altruistic supports. The list is not limited to the following, Mr Seun Isedowo, Mrs F. Ogwumike, Mrs Bukola Ogunleye, Mrs Adeola.

Also, Mr Ilevbare Samson, I appreciate you today for all you did from my MSc days.

Spiritual Platform and Leaders

My profound gratitude goes to every member and unit of these Christian organisations especially the spiritual investment of the pioneers of these organisations. First, I celebrate the pastor in charge RCCG Jesus Shield, Pastor and Pastor (Mrs) Adewole Oladokun. Also, thanks to Pastor (Dr) and Pastor (Mrs) Gbenga Owotoki.

International and Local Bodies

I want to thank the following organisations for supporting my career development through training and other kinds of engagement directly and indirectly. These organisations include Institute of African Studies (IFRA), CODESRIA, UNDOC, Countdown Project (Sightsaver) Oyo State Ministry of Health Tuberculosis Unit, UK Public Health Rapid Support Team of London School of Hygiene and Tropical Medicine (UKPHRST), Social Science Academy of Nigeria, Hunger Relief Initiative, and the Way-Maker Mission Jalingo.

My Family of Orientation: Parents

My Dad: Your countless labour and love set me on this platform of greatness. I still remembered your investment in my MSc which heralded the 2013 CODESRIA award. This award helped kick start this academic adventure.

My Mum,

like my Dad, you deserved my pages of praise for (un)known countless affectionately sacrificial and financial supports. I appreciate your promptness in supporting me. To the duo, thank you for all I knew and your untold sacrifices.

My Family of Orientation: Siblings of life

Bro Wale, you answered my calls even at odd hours and responded to my needs. You have demonstrated selfless giving and you deserved more than a thank you. **Bro Dapo,** the missionary of the Way Maker Mission, Jalingo Taraba thank you. I appreciate your wife

and joint support in financial term
and words of encouragement.

Bro. Yomi (of blessed memory), you have written your names with a golden ink in my heart.
Thank you for what you did before your departure. I know you would have done more.

Yinka, (one of my research assistants in Sanisala, Saki West)
thank you for being there for me.

My Family of Affection: In-laws

Baba and Mama Shina: thank you for the silent and open prayers. I cannot thank you
enough for all your efforts. **Uncle Shina** himself: we never saw but
your presence is real in various dimensions
while Aunty **Bunmi and Busayo**'s supports are
quite overwhelming.

My Family of Procreation

Faith and Favour,

My Beautiful Damsels

You may not

know how much I cherished your
genuine innocent smiles that lightened my candle of
hope. Above all, my children are God-gifts.

Abike, My Fine Girl

My warmest gratitude goes to the finest girlfriend, my sweetheart, my helpmeet, diehard
supporter, and my prayer partner. Thanks for your consistent love in patience, endurance,
strength and kindness. I cannot forget how you stood by me at the critical
and difficult times. You built the home; I mean you made the
house the home. Thank you Azeez Olubukola Yetunde,

Fine girl

I love my wife (God-sent)

TABLE OF CONTENTS

Title page.....	i
Abstract.....	ii
Certification	iii
Acknowledgement.....	v
Table of contents.....	vii
List of Tables.....	xi
List of Figures	xii
CHAPTER ONE: INTRODUCTION	
1.0 Background to the Study.....	1
1.1 Statement of Problem	2
1.2 Research Questions.....	4
1.3 Objectives of the Study.....	4
1.4 Significance of the Study.....	4
1.5 Scope of the Study.....	5
1.6 Operationalisation of Concepts	6
CHAPTER TWO: LITERATURE REVIEW AND THEORETICAL FRAMEWORK	
2.1 The Nomadic Fulani and their Identity.....	8
2.2 Economic and Nutritional Importance of Nomadic Fulani’s Cattle to the Populace	9
2.3 Bovine Tuberculosis in Nigeria	11
2.4 Tuberculosis Prevention and Control Activities in Nigeria.....	17
2.5 Agency-Network in Tuberculosis Prevention: Abattoir Experience in Nigeria.....	18
2.6 Nomadic Fulani Access to Healthcare Services in Nigeria.....	21
2.7 Overview of Health-Related Studies among the Nomadic Fulani.....	23
2.8 Nomadic Fulani Conflict Relations and Equity in TB healthcare in South-western Nigeria.....	23
2.9 Community Participation in Health Perspectives	24
2.10 Community Involvement: an Offshoot of Community Participation in Tuberculosis Control and Prevention.....	25
2.11 Level of Community Involvement in Health Intervention	27
2.12 Importance of Community Involvement in TB Health Interventions.....	29
2.13 Community Participation in Health	30
2.14 Challenges of Community Participation in the Prevention and Control of Infectious Diseases	32
2.15 Herbal Remedy for the Management of Zoonotic Disease	35
2.16 National Tuberculosis Control Framework in Nigeria.....	35
2.17 The Qualification and Roles of Tuberculosis Treatment Supporters	38
2.18 Criteria for Selection of Communities for CTBC.....	39
2.19 Theoretical Framework	40
2.19.1 Health Belief Model (HBM).....	40
2.19.2 Social Network Theory	43
2.19.3 Synthesis of the Theories.....	45

CHAPTER THREE: RESEARCH METHODOLOGY

3.1	Research Design	48
3.2	Study Area.....	48
3.3	Study Population.....	50
3.4	Sample Size Determination.....	53
3.5	Sampling Procedure.....	56
3.6	Method of Data Collection.....	58
3.7	Research Instruments	58
3.7.1	Questionnaire	58
3.7.2	In-depth Interview (IDI)	59
3.7.3	Key Informant Interview (KII).....	59
3.8	Study Variables.....	63
3.9	Validity of Research Instrument.....	66
3.10	Reliability of Research Instrument	66
3.11	Field Assistant Recruitment and Training.....	66
3.12	Data Management.....	67
3.13	Method of Data Analysis.....	67
3.13.1	Quantitative Data Analysis.....	67
3.13.2	Qualitative Data Analysis.....	67
3.14	Ethical Consideration.....	68
3.15	Methodological Issues in Conducting this Research among Fulani: Research Assistants Report.....	68
3.15.1	Instrument Design and Method of Administration.....	68
3.15.2	Research Skill of the Researcher and Research Assistants	70
3.15.3	Community Entry among the Nomadic Fulani	72
3.15.4	Sampling Techniques in Nomadic Camps: Transect walk and social mapping...	74
3.15.5	Pilot Study among the nomadic Fulani.....	75
3.15.6	Salutation/greeting.....	76
3.15.7	Obtaining informed consent	76
3.15.8	Availability, Timing for Interview, and Interviewing	77
3.15.9	Effective communication	79
CHAPTER FOUR: DATA PRESENTATION AND DISCUSSION OF FINDINGS		
4.1	Socio-demographic Characteristics of Respondents	80
4.2	Beliefs about Tuberculosis and Bovine Tuberculosis	82
4.3	Perceived Susceptibility to Bovine Tuberculosis	84
4.3.1	Unpasteurised Milk Consumption Practices among Respondents	86
4.4	Examine health-seeking behaviour of nomadic Fulani and their host communities to TB	100
4.4.1	Tuberculosis Prevention Practices at Individual Level.....	100
4.5	The roles of the gatekeepers in preventing BTB among Fulani in Oyo State.....	119
4.5.1	Different Tuberculosis Control Services Available in the Six LGAs	125
4.5.2	Community-based health activities for TB care and prevention.....	135
4.6.	Description of Patterns of Relationship between Nomadic Fulani and their Host Communities	152
4.7	Determination of the Extent of Community Involvement in the Prevention of Bovine Tuberculosis among the Study Population.....	197
4.8	Finance and Tuberculosis prevention and control in six LGAs.....	205
4.9	Accountability in Tuberculosis Programme using Feedback.....	235
4.10	Discussion of Findings	258

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS	
5.1	Summary..... 267
5.2	Conclusion..... 268
5.3	Recommendations 271
5.4	Contribution to Knowledge 272
	Reference 274
	Appendix I: Questionnaire..... 286
	Appendix II: Key Informant Interview (KII) Guide..... 312
	Appendix III: In-depth Interview (IDI) Guide 314
	Appendix IV: Informed Consent Form 315
	Appendix V: Map of the Six Selected Local Government Areas in Oyo State..... 319

List of Tables

Table 2.2	Barriers to Community Participation	33
Table 3.1	Nomadic Fulani Population and TB Cases in Selected Local Government Areas of Oyo State.....	52
Table 3.2	Sample Size for Quantitative Data.....	55
Table 3.3	Multi-Stage Sampling Procedure.....	57
Table 3.4	Matrix of Research Objective and Instruments for Data Collection	60
Table 3.5	The Matrix of Sample Size and Instruments for Qualitative and Qualitative Methods	62
Table 3.6	Problems matrix – Measurement of Variables.....	64
Table 4.1	Distribution of Respondents by Socio-Demographic Characteristics.....	81
Table 4.2	Respondents’ Beliefs about Tuberculosis and Bovine Tuberculosis.....	83
Table 4.3	Cross Tabulation of Respondents’ Knowledge about Bovine Tuberculosis with ethnic group.....	85
Table 4.4	Statement of Action and respondents’ beliefs in Animal related products... ..	88
Table 4.5	Unpasteurised Milk Consumption Practices among Respondents	90
Table 4.6	Statement of Perception about Healthier Consumption Practices of the Respondents	94
Table 4.7	Statement of Perception about Mortality and Recurring BTB among Respondents.....	96
Table 4.8	Statement of Perception about Respondents’ perceived susceptibility to BTB.....	99
Table 4.9	Statement of Perception about whether Bovine Tuberculosis is Preventable and Curable or not	102
Table 4.10	Statement of Perception about Influence of Living Together in Contracting Bovine Tuberculosis.....	106
Table 4.11	Cross-tabulation of Social Support for People living with TB in the LGAs	109
Table 4.12	Cross-tabulation Between Ethnic Group and Sources of information about BTB Treatment Centre	111
Table 4.13	Methods of Tuberculosis Detection among nomadic Fulani and their host Community.....	113
Table 4.14	Statement of Perception about Financial Obligation during BTB Episode.....	115
Table 4.15	Test of Difference between Nomadic Fulani and their Host Community in Community involvement in BTB control.....	118
Table 4.16	Availability of Tuberculosis Control Services.....	127
Table 4.17	Statement of Perception about access to Information and Facilities	129
Table 4.18	Accessible Services in BTB Control and Prevention Programme among Respondents	131
Table 4.19	Availability of Community Drug Distributors for PLWTB.....	142
Table 4.20	Selectors and Reasons in becoming Community Drug Distributors in the LGAs.....	146
Table 4.21	Availability of BTB drug distribution system in the communities/camps... ..	148
Table 4.22	Test of Difference in the Extent of BTB Control activities by Ethnicity... ..	151
Table 4.23	Social Ties Management between Host Community and Nomadic Fulani... ..	153
Table 4.24	Multinomial Regression of Dispute Settlement Mechanism among the Respondents.....	155
Table 4.25	Multinomial regression Analysis of the forms of Relationship between the Host Community and Nomadic Fulani camp	157
Table 4.26	Social Relationship between the Yoruba and Nomadic Fulani in	

	six LGAs of Oyo State.....	161
Table 4.27	Statement of Perception on inter-communal relationship and BTB Prevention.....	164
Table 4.28	Cross-tabulation between Age and Reasons for Visiting host community/ Fulani camp.....	166
Table 4.29	Types of Business Transactions between Nomadic Fulani and Yoruba	172
Table 4.30	Pattern of Business Transaction according to Respondents' LGAs	174
Table 4.31	Multinomial Regression of Kinds business transacted among the Respondents	176
Table 4.32	Extent of Social Relationship between Nomadic and their Host Communities	182
Table 4.33	Cross-tabulation between Ethnic Group and Tendency to help Neighbouring Community/Camp	186
Table 4.34	Cross-tabulation of Respondents' Education and tendency to Help Neighbouring community/camp.....	188
Table 4.35	Binomial regression of factors affecting Social ties among respondents.....	190
Table 4.36	Cross-tabulation between influence of TB perception on communal involvement in TB Prevention	192
Table 4.37	Statement of Perception about Community Efforts in the prevention of BTB.....	194
Table 4.38	The Relationship between perceived BTB severity and communal health-seeking behaviour among Respondents	196
Table 4.39	Levels of community involvement in BTB prevention.....	214
Table 4.40	Respondents' involvement in BTB prevention and control.....	212
Table 4.41	Cross-tabulation of Community Contribution to the Prevention and Control of Bovine Tuberculosis among Ethnic Groups and their LGAs...	226
Table 4.42	Binomial Regression Analysis of community/camp contribution to BTB control	228
Table 4.43	Statement of Perception about Barrier to the Prevention of Bovine Tuberculosis.....	230
Table 4.44	Cross-Tabulation of Barriers to Bovine Tuberculosis Prevention and Respondents' Location and ethnic Affiliation.....	232
Table 4.45	Binomial Regression Analysis of Factors Hindering community/camp contribution to BTB control.....	234
Table 4.46	Extent of Feedback in BTB Prevention Programme	244
Table 4.47	Binomial Regression Analysis of Potential Areas of Community Engagement in BTB Control and Prevention.....	247
Table 4.48	Binomial Regression Analysis of Respondents Contribution to BTB Prevention.....	249
Table 4.49	Relationship between literacy level and the perceived reason for joining activities to prevent BTB.....	250
Table 4.50	Issues of major concerns in communities across selected LGA in Oyo state.....	250
Table 4.51	Binomial Regression Analysis of Advice for BTB prevention Programmers.....	252
Table 4.52	Socioeconomic Relationship and Community Health Activities among Respondents	254
Table 4.53	Study Objectives and Qualitative data Matrix	257

List of Figures

Figure 2.1	The Rungs of Community Participation	28
Figure 2.3	Conceptual Framework	47
Figure 4.1	Tuberculosis Control and Prevention Activities according to Ethnic groups.....	104
Figure 4.2	Available Activities of TB control Programme in Six LGAs.....	134
Figure 4.3	Availability of Community Organized Health Programme for BTB care ...	136
Figure 4.4	Community organized health programme for BTB care among respondents.....	138
Figure 4.5	Availability of community drugs distributors for PLWTB among Respondents communities/camps.....	140
Figure 4.6	Availability of Community Drugs Distributors for BTB in Respondents' LGAs	144
Figure 4.7	Communities/Camps Visitation among Fulani and their Host Communities	159
Figure 4.8	Interethnic Business Transactions among the Respondents	168
Figure 4.9	Interethnic Point of Social Ties among the Respondents.....	170
Figure 4.10	Willingness to stay in the Place of Residence.....	178
Figure 4.11	Fulani and Yoruba's Willingness to stay in their location	180
Figure 4.12	Descriptions of Social Ties between Host Community/Nomadic Fulani in LGAs.....	184
Figure 4.13	Bovine Tuberculosis Control Programme Initiation	198
Figure 4.14	Process in Initiating BTB programme in the community/camp.....	200
Figure 4.15	Initiation of BTB Control and Prevention Programme in the LGAs.....	202
Figure 4.16	Initiators of BTB Control Programme.....	204
Figure 4.17	Perceived Donors for Tuberculosis Control and Prevention Programme.....	203
Figure 4.18	Perceived Donors in BTB control and Prevention Programme according to Ethnic group.....	208
Figure 4.19	Perceived Donors in BTB control and Prevention Programme.....	210
Figure 4.20	Assessment of community Involvement in the Prevention of BTB	217
Figure 4.21	Pattern of involvement in decision making in BTB Programme by LGAs ...	220
Figure 4.22	Pattern of involvement in Activities in BTB Programme by LGA.....	222
Figure 4.23	Degree of involvement in Activities.....	224
Figure 4.24	Tuberculosis Control Programme Feedback among the respondents.....	236
Figure 4.25	Assessing BTB Control Programme Feedback by LGAs	238
Figure 4.26	Access to BTB programme feedback between ethnic groups.....	240
Figure 4.27	Frequency of BTB Programmer Feedback.....	242
Figure 5.1	END BTB 2030 Talking Drum.....	270

CHAPTER ONE

INTRODUCTION

1.0 Background to the Study

Tuberculosis is an airborne infectious disease brought about by *Mycobacterium tuberculosis* complex (MTBC). It affects fundamentally the lungs, and it is both preventable and treatable (Obasanya, Adam, Awe, Labaran, Nwosu, Oladapo, Onuaguluchi, Adamu, & Al-Rashid, 2013). *Mycobacterium tuberculosis* complex incorporates *Mycobacterium bovis*, *Mycobacterium africanum*, and *Mycobacterium tuberculosis* (Cadmus, Adesokan, Adepoju&Otesile, 2008). Tuberculosis (TB) is one of the world's deadliest transmittable sicknesses, and it is positioned as second leading cause of death from an infectious ailment around the world, after the Human Immunodeficiency Virus (HIV) (WHO, 2015a). About 33% of the world's population, around two billion individuals, were carrier of TB microorganisms. Above 9 million of these people are reportedly infected with active TB each year. These cases could infect others around them (United States Embassy in Nigeria {USEN}, 2012). In 2014 alone, about 9.6 million individuals came down with TB, and 1.5 million individuals died owing to TB infectious globally (WHO, 2015a). Be that as it may, the circulation of TB epidemic is continentally non-homogenous. The World Health Organization (WHO) pronounced TB, a global crisis in 1993, with a high prevalence in resource-poor settings, especially in Africa and Asia (USEN, 2012).

Nigeria was positioned tenth among the 22 high-burden TB nations on the planet (USEN, 2012; FMOH, WHO & CDC 2013). In 2015, WHO positioned Nigeria fourth among the 22 high-burden TB nations on the planet, with evaluated occurrence which ran between 300 – 499 new cases for every 100000 individuals (WHO, 2015b). The TB burden continues to rise. Tuberculosis remains a noteworthy public health worry in developing nations where work-related risks still expose individuals to the sickness (Saidu, Okolochqa, Gamawa, Babashani& Bakari, 2015). Similarly, work-related risks in animal husbandry involve milking cattle, post-mortem examinations, and ingestion of unpasteurized milk (Fada, 2013, Akogun, Gundiri, Badaki, Njobdi, Adesina & Ogundahunsi, 2012; Abubakar, Ameh, Abdulkadri, Salisu,

Okaiyeto&Kudi, 2011). Such risks could explain the expansion of TB concern in Nigeria since the public health system frequently neglected Fulani migrants who are always atrisk of contracting zoonotic tuberculosis (BTB) from their cattles (WHO, 2017; Brieger, 2011).

In Nigeria, studies in abattoirs have indicated that Bovine Tuberculosis is becoming endemic (Ejeh, Raji, Bello, Lawan, Francis, Kudi& Cadmus, 2014; Aliyu, Adamu&Bilyaminu, 2009). Beef remains the most popular sources of protein from cattle which could also be a source of zoonotic diseases in Nigeria (Shima, Mosugu&Apa, 2015; Udo & Akintola, 2003; Yakubu, Jibir&Zubairu, 2013). Basically, contact with animal produce, for example, milk and meat, represents a risk to contracting BTB in Nigeria (Hambolu, Freeman &Taddese, 2013). By appraisals, 5-7% of all the human TB cases were zoonotic tuberculosis (Anaelom, Ikechukwu, Sunday &Nnemeka, 2010).

Be that as it may, tuberculosis control is constrained because of feeble organisational cooperation and limited community participation (FMoH, 2010). Communities, family units, and people have been overlooked for long even though they are clearly the focal characters in their wellbeing (CORE Group, 2013). Community involvement has been recognized as a vital response to initiate and sustain TB prevention and control (WHO 2015b). The terms point to the accommodation and incorporation of individuals living with TB and their communities into public health programmes. This association and political will would set a platform for the all-inclusive access to basic healthcare (WHO, 2008). Historically, efforts to achieve holistic healthcare have concentrated predominantly on the formal health organisation and emergency clinics as well as biological perspectives. These are clearly critical, but, fall short of holisticpresentation of their wellbeing (CORE Group, 2013).

1.1 Statement of the Problem

Bovine Tuberculosis precludes individual work, and hampers efforts to achieve End TB Strategy objective of TB by 2030 (WHO, 2018). Scholars have focused more on tuberculosis prevalence, distribution, and mortality in Nigeria, without exploring likely preventable routes to contracting TB complex. Conceivably, such neglect can impede the achievement of Sustainable Development Goals (SDGs). Similarly, TB control programmes and international organizations keep on accomplishing fewer outcomes because of their inability to involve stakeholders to battle the ailment. Migrant Fulani's cattle remain a reservoir of Bovine Tuberculosis (Cosivi, Grange, Daborn, Raviglione, Fujikura, Cousins, Robinson, Huchzermeyer, de Kantor & Meslin, 1998), and herdsmen are not really covered by healthcare

systems owing to their way of life (Dao and Brieger, 1995). Thus, they have less access to essential human services. This uncovers the propensities of restricted inter-community contribution in TB control among the group while the degree of their association with their host communities remains to a great extent obscure.

Additionally, the contribution of Bovine Tuberculosis (BTB) to TB prevalence generally is obscure, particularly in Nigeria where monitoring of BTB cases and control exercises are frequently deficient or inaccessible (Cadmus, Astana, Oni & Akan, 2004). Correspondingly, people and animals share small-scale staying premises, especially in rural zones, combined with ingestion of unpasteurized dairy items. In this way, there is need to analyse the present dimension of knowledge among the itinerant Fulani about TB from the animal/human interface. Moreover, commonly profiting TB-gatekeeping stage which could intercept animal-human and human-human transmissions of TB does not really exist.

While it is recognized that community involvement is a powerful control and counteractive action of TB, interaction between health intervention conveners and Fulani nomads in battling TB remains a difficult undertaking. As of late, scholarly considerations have been centred on perpetual clashes between migrant Fulani and their host as well as itinerant Fulani's access to public health. However, different components to control TB enabled differential access to TB control exercises which are socially based. Previous studies about nomadic group remained plausible. Nevertheless, little has been done to explore examples of relationship that exist between migrant Fulani and their host networks, and how this relationship can impact TB control results among the individuals who are continually at risk of Bovine Tuberculosis. Subsequently, it is hard to submerge the weight of tuberculosis in Nigeria. Against this scenery, this investigation, therefore, seeks to bridge this gap in literature on nomadic Fulani and their host communities between common relationships in battling BTB, nay TB in Oyo State.

1.2 Research Questions

The study answered the following questions.

1. What are the views of itinerant Fulani and their host communities towards their vulnerability to BTB?
2. What are the current gatekeeping approaches in avoiding BTB among itinerant Fulani and their host?
3. What are the elements impacting the community-based control of BTB in the investigation populace in Oyo State?
4. What are the social relationships that exist between migrant Fulani and Yoruba communities?

1.3 Objectives of the Study

General goal: This study sought to comprehend the community involvement in prevention of Bovine Tuberculosis among migrant Fulani and communities in Oyo State.

The specific objectives were clearly stated. The particular objectives were to:

1. document the perceived risk of itinerant Fulani and their host population to BTB.
2. examine the health-seeking practice of itinerant Fulani and their host population to BTB.
3. explore the roles of the gatekeepers in preventing the BTB among Fulani in Oyo State.
4. describe pattern of connection among the nomads and their host communities.
5. examine the degree of community involvement in the prevention of Bovine Tuberculosis in the study population.

1.4 Significance of the Study

In southwest Nigeria, the Fulani and their host are at risk of TB attributable to their lifestyle. Additionally, little consideration has been given to animal/human course of transmitting TB. The study investigates respondents' awareness, belief and information of Bovine Tuberculosis. Likewise, intricacies of health-seeking practices of itinerant Fulani and their hosts, cum its effect on the health outcomes, are investigated. Similarly, the study explores examples of connection between vagrant Fulani and their hosts which could impact community commitment to TB control and counteractive action. Additionally, the study utilizes the possibilities of weak ties between nomadic Fulani and their hosts to recognize plausible roads for coordinated effort in fighting Bovine Tuberculosis. The study reinforces the requirement for community involvement in accomplishing global TB eradication target.

Aside from adding to existing literature with respect to study population on tuberculosis, the study creates a platform for health education and promotion among the study population,

which has general wellbeing advantages. Suggestions are made about TB case detection and prevention among the itinerant Fulani and their communities. Potentially, the suggestions are relevant to initiate holistic and effective prevention practices. The study presents important findings to create working techniques for meeting migrant Fulani's TB health needs. Besides, the discoveries of the study would be valuable for general wellbeing, parallel organisations, government ministries, non-governmental establishments, and stakeholders in charge of policy in tuning their exercises identified with TB control towards accomplishing one of the manageable advancement objectives (SDGs). In other words, this outcome of the research would influence National Tuberculosis Leprosy Control Programme and road map to end tuberculosis in Nigeria. Consequently, the study would initiate more commitments to TB programs for itinerant populace who are continually ignored by policymakers' oversights in Nigeria (Brieger, 2011).

This study would engender the emergence of active and high level of community involvement regardless of ethnic peculiarity and cultural background. Lastly, this study would open-up niches for further research on neglected high-risk and immunocompromised group.

1.5 Scope of the Study

This study concentrates on migrant Fulani camps and their host population to identify issues verging on the dimension of their inclusion in the prevention of Bovine Tuberculosis. The host population are the Yoruba since the study was conducted in Oyo State, Southwest Nigeria. The research was conducted in six Local Government Areas where Fulani camps were found, namely Iseyin, Itesiwaju, Ibarapa North, Ibarapa East, Saki West, and Saki East. It analysed the dimension of their consciousness of the illness and their involvement in TB prevention based on location. Also, it covered TB gatekeepers in the prevention of the ailment. The research recruited respondents between ages 15 – 64 years (WHO, 2015a).

1.6 Operationalisation of Concepts

The following concepts are defined as they were used in the study.

1. Gatekeeper: This is a person who partakes in medical and social prevention of tuberculosis either by formal appointment or informal engagement. This concept was used by Talcott Parson in his work *Social Systems* published in 1951

2. Community involvement: This entails all the activities which are geared towards BTB prevention and control. The activities, which could be conscious or unconscious, are identified as relevant to the prevention of BTB. It covers the holistic engagement of people in the study area. It represents higher level of community participation (Arnstein, 1969).

3. Bovine Tuberculosis: The bacterium responsible for Bovine Tuberculosis is *Mycobacterium bovis* which is a strain of *Mycobacterium TB* complex. Bovine Tuberculosis (BTB) is across the board yet ineffectively controlled in Nigeria. The term is used interchangeably with tuberculosis, especially where preventive and control activities are discussed. This is due to inadequate attention given to Bovine Tuberculosis at diagnostic and treatment centres. However, the term Bovine Tuberculosis is clearly differentiated from TB complex when discussing health risk behaviour, beliefs, causes, and transmission routes of the disease (Martinho et al, 2013).

4. Gaa/Sudu: This speaks to the temporary or perpetual living arrangement of itinerant Fulani, which is generally not far from the host communities. Gaa/Sudu was a prefix to the name of a host community to demonstrate physical closeness. However, as of late, migrant camps are named after the proprietor of the camp.

5. Abattoir system: This is related to the human relationships (both formal and casual) that exist in an identified abattoir, which are viable to impact the viability of abattoir administrations.

7. Nomadic pastoralism: this refers to a lifestyle involving possible residential mobility designed to gain access to sustainable resources such as pasture for domesticated animals and access to the market of the animals and their products (Muhammed-Baba & Amzat, 2012; Amzat & Razum, 2018)

8. Migrant/pastoralist Fulani: This covers all herdsmen and their families who are Fulani. Also, they must be living in one of the camps situated in the selected LGAs.

9. Health-seeking behaviour: These are exercises that are intentionally practised to avoid, keep up or promote wellbeing against, Bovine Tuberculosis and tuberculosis.

CHAPTER TWO

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1 The Nomadic Fulani and their Identity

This segment presents the identity of the migrant Fulani, history, characteristics, and size of the group, which have financial and nutritional advantages for the general public. It delves into the pervasiveness of Bovine Tuberculosis in abattoirs and the attendant burden of the disease in Nigeria. Also, attention is given to the implication of such burden and access to TB care. Similarly, the discussion covers nuances of the community involvement in the prevention of Tuberculosis in the country. Health Belief Model and Social Network Theory are reviewed to explain how intercommunity relationship could determine access to health resources, especially between the nomadic Fulani and their host communities.

Nomadism, as a concept, centred on the undertakings of a migrant population. As it were, pastoralism is more comprehensive and simply described the raising of livestock on natural pasture usually uncultivated by human efforts (Salzman, 2004; Amadi, 2015). About 60% of the world's migrant populace live in Africa (somewhere in the range of 30 – 60million individuals). Two of the most surely understood itinerant population in Africa are pastoralists: the Fulani who might be found from Chad to Senegal and the Massai who live essentially in Tanzania and Kenya (Otusanya, Brieger, Titiloye, Salami and Adesope, 2007). Concentrates so far led on the historical backdrop of nomads in Africa uncover that, except for Somalia, nomadic Fulani are in the minority wherever they may exist (Adamu and Kirk-Green, 1986).

Nigeria is not the main present-day state on the planet where this group exists. Aside from the Fulbe in Nigeria, there exist such populations as Keyam, the Arab, the Badwai, the Buddun, the Azbenawa and their dull Buzzu (Aminu, 1991). Without a doubt, the nomads have been found in all parts of the world like the Aborigines of Australia, the Massai, the Gypsies and Tinkers in Britain. In different zones, they could be discovered incorporate in Kenya, Uganda, and in all nations where they do not have settled populace (Amadi, 2015).

In Nigeria, where they spread out in the Savanna Region in their endeavour to survive, the entering of cattle into private ranches has incited collective conflicts (Amadi, 2015).

The itinerant Fulani's lifestyle and occupation are most occasioned indivisible. When any of the two is undermined, such an endeavour is not disregarded. To each herdsman, life is useless without his cows since his herd is his life. The philosophy of nomadic/pastoralist livelihood represented the concept of cattle complex. For example, HameSaidu, a pastoralist, (IRIN, 2009) asked logically: "What do you anticipate from us when our wellspring of presence is debilitated?" Thus, the challenge against grazing in unauthorized sites heralds warfare. Similarly, previously mentioned factors have increased the likelihood of community clashes in northern Nigeria (Fabusoro, 2007; Blench, 1994). Besides, nomadic Fulani have not had sustained access to ecological monetary and social factors. This substantiates the need for grazing reserve for the migrant Fulaniherdsmen.

Apart from that, the nomadic Fulani would require social relationship reciprocity since they pay tribute on the land they squat on. In the northern Nigeria, the Fulani were reportedly incorporated into the Hausa agricultural system since they immigrated into northern Nigeria from the Senegambia Valley a few centuries before now (Adebayo, 1995). In terms of literacy, the nomadic Fulani append little significance to literacy. The nomads also rely on their kids to jointly contribute to care of their domesticated animals and housework. Potentially, this impedes accomplishing the SDGs. Akighir (2013) attests that administration use on nomadic education has been enhanced considering current government spending. He maintains this is evident in a number of nomadic schools and current teachers for same purpose.

Noticeably, a wide gap exists between male and female enrolments in nomadic schools in Nigeria. More male than female children are enrolled in these schools owing to factors like early girl-marriage coupled with teenage pregnancies, social and religious inclinations, and financial issues. Additionally, it has been found that the aggregate increment in migrants' enrolment in nomadic schools in the nation is not proportionate with the expansion of government spending on nomadic schools. The issues of under-financing, inadequacy of instructors, consistent movement of nomadic Fulani, the inclusion of children in productivity and corruption, have brought about low school

enrolment among the nomads. Therefore, this situation of nomadic Fulani enrolment would make accomplishing the MDGs difficult in the Nigeria (Akighir, 2013).

2.2 Economic and Nutritional Importance of Nomadic Fulani's Cattle to the Populace

The nomadic Fulani is assumed to contribute immensely to the national economy. Amadi (2015) calls attention to the fact that the nomadic Fulani perform a critical role in GDP. They constitute a noteworthy provider of excrement compost, horn, animal hide, cow urine, mutton, skins, bones, and meat. Fulani women visit the close-by towns to offer "fura" and "nono." Although nomadic Fulani consume milk, meat alongside berries and leaves as they stroll around (Anosike, Nwoke, Onwuliri, Obiukwu, Duru, Nwachukwu, Ukaga, Uwaezuoke, Uduji, Amajuoyi & Nkem, 2004), they supply 95 % of the protein needs of the populace. They are unquestionably a crucial part in the Nigerian economy. Likewise, Amadi (2015) asserts that the nomadic Fulani should earn community's sympathy and enjoy adequate access to public good and amenities since the "janjali" was levied against them. However, often times they were denied.

Barker (2011) supports the view that nomadic Fulani are poor. However, Amadi (2015) opposes such view with a balanced explanation of the wealth of the nomadic Fulani. To him, they have rich herds that are convertible to money. In his mid-twenties, an average nomadic Fulani would have possessed an amount up to millions of naira compared with his counterparts in the universities. Aside from the sporadic outbreak of diseases, the nomads are monetarily enabled. A nomad would not hide from the fact. Hence, he is battle-ready for the survival of his business. The persistent accomplishment of this anyway lies on his level of awareness about potential risks. Barker might be correct since one pandemic pestilence could wipe out all that he has been working for.

Consequently, Amadi (2015) considers the idea of strengthening through sensitization which could uphold the economic strength of the nomadic Fulani. Hence, promoting that nomadic education is certainly not a misuse of national assets. Dissimilar to the useless migrants of different communities, Nigerian nomads are beneficial financially; they are not homeless people. All they require is to be shown the light. They can battle for themselves physically. Education will serve to expand their efficiency which is so essential to everyone. Considering the capacity of the nomadic Fulani, it is at times

expressed that support for improvement of human and domesticated animal assets of the Mambilla Plateau alone can produce the animal supply for meeting the protein need of the entire West and Central Africa.

2.3 Bovine Tuberculosis in Nigeria

In 2005, seven neglected zoonoses were identified to be endemic. They included: *Bacillus anthracis*, Bovine Tuberculosis, brucellosis, *T. Solium* cysticercosis/taeniosis, cystic echinococcosis/hydatidosis, dog and human rabies, and zoonotic human African trypanosomiasis. From that point forward, a global consciousness of these conditions has expanded, and a clearer idea of their features has developed. These infections are common among poorer populaces, but some are geographically confined while some of diseases are found in every one of the six WHO locales.

As confirmed at the African setting, the distribution of the zoonotic diseases is not even among African countries. Correspondingly, these zoonoses affect the destitute and immunocompromised individuals and domesticated animal owners in the rural enclaves that have to some degree been overlooked or dismissed as they have no specific preventive or control programme in the national healthcare services in Nigeria (Ehizibolo, Ehizibolo, Ehizibolo, Sugun, & Idachaba, 2011).

Tuberculosis and *Mycobacterium bovis*, individually, are firmly related phylogenetically and instigate numerous similar reactions in their hosts (Beals, 2008). Bovine TB (BTB) is a prolonged and infectious zoonotic sickness of animals and people (Radostits, Blood, Hinchey, & Gray, 2007). Additionally, mammalian species are usually hosts of the disease (O'Reilly & Daborn, 1995). It is described by the arrangement of granulomas in tissues, particularly in the lungs, kidney, digestive organs, liver, hubs, and lymph (WHO, 2010; Shitaye, Tsegaye & Pavlik, 2007). Bovine Tuberculosis (BTB) develops gradually in infected persons, and normal side effects incorporate shortcoming such as, anorexia, weight reduction, and wavering fever (Wilkins, Griffiths, Roberts & Green 1986). At the point when lungs are profoundly infected, the persons may build up an irregular hack (Martinhoet *al.*, 2013; Cosivi, Grange, Daborn, Raviglione, Fujikura, Cousins, Robinsin, Huchzermeyer, De Kantor & Meslin 1998).

Tuberculosis in cows remains a general public health problem because of the helplessness of people who come down with the infection (Davies, 2006). The disease occurs basically by drinking unpasteurised milk, and occurs in the additional aspiratory shape, in the cervical lymphadenitis frame specifically (Shitaye, *et al.*, 2007). Studies on abattoirs in Benue State, Nigeria, uncover that cattle, the source of pasteurised milk, has fundamentally ($p < 0.05$) less mean score in body condition than the male cows. Such mean score in body condition or leanness of cattle has been associated with Tuberculosis infection (Shima, Mosugu and Apaa 2015; Ejeh, *et al.*, 2014). In Ibadan, Cadmus *et al.*, (2008) report bacterium bovis, bacterium tuberculosis, and bacterium africanum as zoonotic hazard contractible from dairy animals' milk and meat to man. Similarly, Jenkins *et al.*, (2011) uphold that the infections are the principal pathogens in people and animals.

Basically, drinking of unpasteurized milk predisposes individuals to tuberculosis. WHO additionally attests that Fulani nomads constitute a repository of the illness since Fulani migrants have frequent and close contact with the cattle and they drink unpasteurised milk daily (Abubakar, *et al.*, 2011). In a BTB epidemiological investigation led in Jigawa State 2010, Ibrahim, Agada, Umoh, Ajogi, Farouk, and Cadmus found that 1.08% of the herds and 45.45% of the cattle were infected. Meanwhile, in 2013, Hambolu, Freeman, and Taddese pointed out that a quarter (28.1%) of meat handlers in the biggest abattoir in Lagos were aware that the consumption of infected cattle lungs (*FukuElegusi*) could potentiate individuals to contracting BTB. This level of awareness is low which could emanate from ignorance or denial. The denial could be used to protect their business. The authors did not state or explain that level of awareness. This shows a high risk of contracting the disease in such location while the proportion of BTB in TB remains to a great extent obscure.

In Nigeria, a few studies have explained the prevalence and connection between Bovine Tuberculosis and Tuberculosis in human beings. This becomes a public health problem, especially in the emerging culture of eating meat that is not properly cooked coupled with unpasteurized fresh milk (Shaler, Horvath, Jeyanathan, and Xing, 2013 and Shehu, 1988). There is an expanding proof that *M. bovis* diseases might be considerably more noteworthy than for the most part considered (Shitaye *et al.*, 2007). More so, current increased incidence of tuberculosis in people, especially in immunocompromised people, has renewed the relevance of the zoonotic tuberculosis

in the control of the Tuberculosis (Nwanta, Onunkwo, Ezema&Umeononigwe, 2010), particularly in developing nations (Radostits, Gay, Blood & Hincheliff, 2000).

The immediate significant connection between *M. bovis* disease in dairy cattle and tuberculosis in the human populace has been recorded in first world nations while limited and insufficient data is accessible in the third world nations (Cosiviet *al.*, 1995). Besides, Cadmus and Adesokan (2009) report a financial loss of N13.8million/annum owing to TB infection. Specially, 7.95% of infected cattle in a few abattoirs were condemned in Western Nigeria. The larger part of these happens in the third world countries (Saidu, Okolocha, Gamawa, Babashani& Bakari, 2015).

Bovine TB is caused by *Mycobacterium bovis* that is an individual from MTBC (Isioma, Chukwu, Yvonne, Olajide, Chika, Godwin, Benschak, & Solomon, 2013; Martin 2009). The etiological transmitters of mammalian TB in *Mycobacterium TB complex (MTBC)* include: *Mycobacterium TB*, *Mycobacterium bovis*, *Mycobacterium microti*, *Mycobacterium caprae*, *Mycobacterium africanum*, *Mycobacterium canettii*, and *Mycobacterium pinnipedii*. *Mycobacterium africanum* is peculiar to Africa. *Mycobacterium bovis*, also called the bovine tubercle bacillus, is responsible for BTB. The essential course of disease for the two organisms includes inward breath of microorganisms discharged by vaporization from another infected host (Saiduet *al.*, 2015; Russell, 2003).

In people, most of instances of tuberculosis are caused by *Mycobacterium tuberculosis* (CDC, 2011). Be that as it may, people might be infected by various tuberculosis (TB) microbes, of which *M. bovis*, causing Bovine Tuberculosis (BTB), is one amongst the most pervasive with vastest range of hosts than any of such bacterium. Tuberculosis caused by *M. bovis* frequently involves parts of the body other than the lungs (extra-pulmonary). However, much of the time, it is indistinct clinically from Tuberculosis disease. Bovine Tuberculosis (BTB) is controlled inadequately in Nigeria, consequently representing a general wellbeing risk. A report shows that BTB constitutes 21.4% of MTB complex. Presumably, this level of predominance means a potential hazard to general wellbeing (Okeke, Cadmus, Okeke, Muhammed, Awoloh, Dairo, Waziri, Olayinka, Nguku&Fawole, 2014). Be that as it may, patients infected with *M. bovis* much of the time defile first-line anti-tuberculosis drug, thus fatalities

result (WHO, 2010), particularly when BTB is active (CDC, 2011). This could account for Multi-Drug Resistance Tuberculosis (MDR-TB).

On the other hand, more costly medications are frequently expected to treat such patients. Hence, the burden of healthcare for TB has increased. Also, there is limited information on *M. bovis* epidemiology and its contribution to global tuberculosis plague since few cases are exposed in various African and Asian countries. In the United Republic of Tanzania, WHO (2010) reported that Bovine Tuberculosis prevalence could represent a considerable part of TB generally. Additionally, in the stratification of the risk of zoonosis, Swa, Schoonman, and Daborn in 2010 found that rural ranches were fundamentally at a higher hazard when contrasted with peri or urban farms in Tanzania. Most of their respondents apparently cooked cattle products before utilization or consumption to forestall TB transmission. However, there was a critical difference in the view of the hazard presented by contact with conceivably infected animals and their products among veterinarians and animal owners. The veterinarians were more informed than the livestock owners.

Bovine Tuberculosis gives off an impression of being expanding at a comparable rate to the aggregate number of instances of TB, with the goal that it partakes in the HIV/AIDS-connected pandemic. In domesticated animals, especially dairy cattle, the ailment causes reduced efficiency and demise; passing is only from time to time experienced, however. Like brucellosis, bovine TB has been to a great extent wiped out from groups in the created world by a test and winnow program (WHO, 2010; CDC 2011). This clarifies why Bovine Tuberculosis is delegated one of seven dismissed zoonotic infections (NZD).

In Nigeria, zoonoses are a significant reason for bleakness and mortality (Anosike, 2011). Nonetheless, they are frequently dismissed by essential medicinal services administrators and strategy producers. Truth be told, their control in Nigeria is about non-existent, and their effect on human wellbeing is to a great extent obscure (Ehizibolo *et al.*, 2011). Bovine Tuberculosis predominance is higher altogether in the wet season than dry season (Bakari, Umoh, Kabir, Otolorin, Ehizibolo, Jibril, & Yahaya, 2015). In a review examine, Nwanta, Umeononigwe, Abonyi, and Onunkwo (2011) assert that in Enugu, there is still pervasiveness of TB in both human and creature populace in the examination zone. Be that as it may, no connection is built up

amongst human and bovine TB since occupations of the populace are not distinguished in their examination.

Therefore, numerous open doors proliferate for the rise of bovine TB. In addition, it cannot be disregarded that an extent of TB in people has been caused by *M. bovis* (Shima, Mosugu and Apaa, 2015). Another examination in a similar state by Ogundejiet *al.* (2015), while testing milk from crowds, discovers high commonness which proves with Nwanta and associates' finding. Furthermore, Bala, Garba, and Yazah (2011) claim that tuberculosis cases in Maiduguri indicate high rate of incidence in cattle, and infer that tuberculosis among other zoonotic infections are endemic in the study area.

In the north focal investigation, Nafarnda, Obudu, Omeiza, and Enem, (2015) report the presence of *M. bovis* disease (Bovine Tuberculosis) in cattle in the study area while utilization of unpasteurised milk and close relationship with cattle have a risk of animal to man transmission of *M. Bovis*. Vital observation and control of tuberculosis, with specific thoughtfulness regarding *M. bovis* and open edification on threats of expending unpasteurized milk, is suggested (Nafamdaet *al.*, 2015). The examination researches the commonness of Bovine Tuberculosis among the migrant Fulani groups in the North Central zone of Nigeria, keeping in mind the end goal to give precise information of the predominance of BTB. This is fundamental for fitting intercession procedures. Abubakar, Brook, Abdullahi, Kudi, and Okaiyeto (2005) allegedly insist on high commonness of both bovine and human tuberculosis among herdsmen in Abuja, inferable from their collective way of life. The study guides consideration toward occupational risk of the Fulani whose lives spin continually around their cattle.

In North-west Nigeria, Ibrahim, Cadmus, Umoh, Ajogi, Farouk, Abubakar, and Kudi, (2012) attest that nomadic Fulani characteristics, for example, consumption of milk, living with domesticated animals in the same house, are responsible for more cases of Bovine TB. Be that as it may, Anisokeet *al.* (2004) claimed that work-related objectives, convictions, and general way of life are contributing variables to the pervasiveness of the parasitic diseases among the migrant Fulani of South-eastern Nigeria. Although, Ibrahim and partners' discoveries invalidate the investigation result of the last mentioned, the dissimilarity could be location-determined since occupations, beliefs, and general way of life add to BTB incidence.

Universally, tuberculosis targets set for 2015 have been accomplished in all areas with the exception of Africa. Regardless of all endeavours to battle tuberculosis, Nigeria is among six nations that emerge as having the biggest number of occurrence cases in 2014. Also, Nigeria has not met TB global targets (decrease in TB predominance, frequency, and mortality) (FHoM, WHO & CDC, 2013). For example, India and Nigeria represent around 33% of global TB cases (both including and barring those among HIV constructive individuals). Nevertheless, the most reduced Case Detection Rates (CDRs), with best outcomes of half or less, are in the United Republic of Tanzania, the Democratic Nigeria, Republic of the Congo, Mozambique, and Indonesia (WHO, 2015a).

Two components have been recognized to be in charge of the previously mentioned condition. Initially, information about new cases is under-reported by private healthcare segment. Besides, under-diagnosis of individuals with TB is common. The factors responsible for the latter include poor access to healthcare, inability to perceive TB signs and side effects; and test for TB when individuals do present to medicinal services outlets. In Nigeria, the 2012 national TB prevalence study recommends that this is a significant reason behind the low CDR (WHO, 2014). In particular, the itinerant Fulani, a high hazard populace, have poor access to social insurance administrations and they some of the time patronise private medication sellers (Ogundairo, 2015; Akogun, *et al.*, 2012; Brieger, 2011; Sheik-Mohamed & Velema, 1999). In this way, individuals from Fulbe tribe may not present themselves for analysis in general healthcare outfits.

National Tuberculosis and Leprosy Control Program (NTBLCP) as of late detailed the TB warning rate of various states in Nigeria. In 2014, the South-West and North-Central zones had the most noteworthy number of TB cases in the nation. The case warning rates per 100,000 populaces likewise uncovered that the most elevated CNR was in Benue, FCT, Nasarawa, Sokoto and Oyo. All the 5 states recorded CNR > 100/100,000pop. TB most astounding predominance was recorded in Nassarawa taken after by Oyo state, Benue, Sokoto, Adamawa, Taraba and Plateau.

Considering the TB situational report in Nigeria, in any case, it will be less demanding to reason that much has not been done to get the chance to accomplish the TB global targets. In the event that, at this time of End TB Strategy in SDGs, Nigeria is

developing to the best rank in 22 High Burden Countries (HBCs), at that point public health practitioner should investigate zoonotic reservoir of contracting TB (Sandhu, 2011) especially marginalised itinerant Fulani (Habib, 2011).

2.4 Tuberculosis Prevention and Control Activities in Nigeria

As Millennium Development Goals (MDGs) are supplanted with an arrangement of post 2015 Sustainable Development Goals (SDGs) for the period 2016 – 2030, and the Stop TB Strategy 2006 – 2015 supplanted with the End TB Strategy 2016 – 2035, the control exercises ought to be surveyed (WHO, 2015d). Straightforwardly Observed Therapy Short-course (DOTS) extension and improvement stays one of the essential methodologies of the NTBLCP to guarantee advance towards the accomplishment of a widespread access to TB healthcare in Nigeria. The vital DOTS extension plan which was created in 2013 to manage the development and upgrade of DOTS benefits in Nigeria was actualized. With the help from the Federal Government of Nigeria, Global Fund for AIDS, Tuberculosis, and Malaria (GFATM), and WHO (through USAID subsidizing), an aggregate of 339 new DOTS centres and 163 new Microscopy focuses were set up in 2014, putting the aggregate DOTS and microscope scope at 5,728 DOTS and 1,765 microscopy locales individually as at December 2014 (NTBLCP, 2014).

As a feature of the fixings required for the DOTS and Microscopy development in 2014, and keeping in mind the end goal to guarantee that quality TB care are given to patients constantly, the NTBLCP in 2014 reportedly had 219 medical doctors and 1,283 general healthcare workers (GHCWs) through different sorts and levels of institutionalization. They were prepared through the specialized endeavours of the NTBLCP, WHO, and International Federation of Anti-Leprosy Associations (ILEP accomplices). The Global Fund (GF), USAID provided funds through WHO and partners. Also, the dominant part of these GHCWs was from new DOTS offices. Apart from that, the GHCWs already settled DOTS offices were likewise prepared to guarantee services with benefit arrangement at these locations (NTBLCP, 2014).

Aside from the various DOTS offices set up in the private healthcare segment through GF underpins in 2014, the NTBLCP through the help of USAID/WHO could build up DOTS benefits in 120 private healthcare outlets in 10 locations: Lagos, Imo, Anambra, Benue, Nasarawa, Katsina, Rivers, Adamawa, Bauchi and Kaduna. In every one of

these states, one medical doctor and one attendant were trained on quality DOTS usage. An aggregate number of 240 faculties were trained (NTBLCP, 2014).

2.5 Agency-Network in Tuberculosis Prevention: Abattoir Experience in Nigeria

What we eat contributes immensely to our longevity. Meat, as one of the basic sources of vitality and protein, in some cases fills in as a gateway for disease to man. In developing countries, for example, Nigeria, meat handling and examination are scarcely done as per the standard meat cleanliness prerequisites, hence the situation exposed a hazard to the population health (Shima, Mosugu&Apa, 2015). Bakari, *et al.*, (2015) keep up that in Nigeria, the poor condition of abattoirs, ineffective meat review administrations, unhygienic and unwholesome practices are troubling. These increase the risk of offering meat from ill animals, defiled meat and other animal products to the general population. This circumstance turns out to be more awful when abattoirs are exclusive. For example, Oyo State abattoirs are tormented by absence of, for example, water supporting facilities for example, water supply, clean environment, since they are exclusive (Abiola, 1995). In an ongoing report in Bodija Municipal Abattoir, Ibadan, Bwala, McCrindle, Fasina, and Ijagbone (2015) report that no security measure is set up for abattoir workers, and pre-butcher checking for healthy cattle is inadequate. These expose the need for a wary procedure in meat investigation to secure the majority from zoonotic ailments, for example, Bovine Tuberculosis (Saiduet *al*, 2015), to accomplish global End TB battle.

The motivation behind an abattoir is to deliver cleanly arranged meat through sympathetic treatment of animals utilizing sterile procedures for butchering and dressing (Bakari *et al.*, 2015; Food and Agricultural Organization [FAO], 1992). Abattoirs, if used adequately, assume essential parts in malady reconnaissance, examination of cattle and meat. These could shield man from most zoonotic contaminations which possibly may happen following the utilization of unhygienic, dangerous, and unwholesome animal substance (Shima, Mosugu&Apa, 2015).

In most developed countries, abattoirs have supported the identification and annihilation of a few ailments other than their principle motivation behind meat investigation (Cousins, 2001; Kaneene, Miller, & Meyer, 2006). In emerging economies like Nigeria, abattoirs are not maximally used, and even the meat offered

for human consumption in numerous occasions is not satisfactorily checked (Shima, Mosugu&Apa, 2015). Bwala and associates (2015) concurred that around 25% of butchered dairy cattle are not handled in government abattoirs. This inadequacy makes observation insufficient. Essentially, ailment recording in most Nigerian abattoirs is lacking or missing while effective illness distinguishing proof and record keeping may add to the comprehension of ailment and the study of disease transmission (Bakari *et al.*, 2015). Report, in any case, demonstrates that some African nations presently give off an impression of utilizing abattoir investigation benefits as a control measure against tuberculosis (African Union-Interafrican Bureau for Animal Resources [AU-IBAR], 2013).

To shield man from most foodborne zoonoses requires strict adherence to set down standard operational abattoir strategies. In any case, in Nigerian abattoirs, basic control techniques as per the "Meat Edit Regulations" and least meat clean prerequisites recommended by joint Food and Agricultural Organization/World Health Organization/Codex Alimentarius Commission (FAO/WHO/CAC, 1993) are once in a while watched. Risk mortem assessment, one of the imperative operational systems, is terribly dismissed as a rule. Risk mortem examination takes into awareness body condition assessment initially to give a gross photo of the wellbeing status of animals (Shima, Mosugu&Apa, 2015). Issues identifying with suspected animals, weakening, nature of meat, and deft irresistiblesicknesses—for example, tuberculosis—amidst others have been talked about (FAO 1994; Ikeme, 1990), keeping in mind the end goal to shorten zoonoses.

An ongoing report in Benue demonstrates that cattle, for public health concern, are butchered in the abattoirs, and that weakening happens more ordinarily in cows than in goats. All the abattoirs surveyed has comparable probability of butchering profoundly gaunt animal for public consumption. This depicts poor animal husbandry and administration, absence of stringent meat review approaches, and poor information about zoonoses (Bakari *et al.*, 2015). The domesticated animals' merchants/butchers through the buying of clearly debilitated or ill animals for human consumption predispose the public to zoonotic disease. They recommend that corpses of "suspected" withered animals likewise are perhaps passed uninhibitedly for utilization over the contemplated abattoirs without examination to determine the basic causes of the disease. This forecasts a critical zoonotic risk to the customers. It is most likely that

these insufficiencies are halfway in charge of the high frequencies of tuberculosis revealed in Nigerian populace (Shima, Mosugu&Apa, 2015).

Since the practices in abattoirs have missed the mark regarding the standard practices, there is requirement for legitimate administration at the abattoir to guarantee that its activity agrees to global benchmarks (Saiduet *al.*, 2015 and Bakari *et al*, 2015). Similarly, keeping in mind the end goal to advance safe milk culture, the butchers and domesticated animals' merchants ought to be urged to look for veterinary help for their wiped-out ill animals. They ought to be health-educated on health information related with securing the public and butcher of infected animals for consumption (Shima, Mosugu&Apa, 2015) while the majority ought to be sharpened to maintain a strategic distance from the utilization of fresh and undercooked meat. Animal husbandry framework ought to be enhanced, and natural pollution lessened. These joint endeavours could lessen disease rate in people and animals (Emiru, Tadesse, Kifleyohannes, Sori & Hagos, 2015).

Studies have showed that abattoir practices are sufficient to curtail infectious disease. Similarly, effective post-mortem inspection in abattoirs remains highly relevant to epidemiological surveillance of bTB (Abbate, et al, 2020). The study of two abattoirs in Karachi, which examined the level of knowledge and practices for prevention of Bovine Tuberculosis amongst workers, level of education influenced the tendency of abattoir workers to contract bovine tuberculosis. However, awareness about bovine tuberculosis did not automatically translate into the adoption of healthier practices among the abattoir workers (Rahman, et al, 2020). For instance, meat handlers who were not aware of their occupational risk associated with cattle handling were 2 times at risk than their counterparts with knowledge of their susceptibility (Agbalaya, et al, 2020). Also, the authors conducted a postmortem examination of 187 slaughtered cattle with serum samples slaughter and lesion suggestive of bTB in Oko-Oba Abattoir, Agege, Lagos State. The study was carried out to understand the current prevalence of bTB in slaughtered cattle and identifying factors associated with the risk of disease transmission among cattle handlers toward making informed control measures to curtail human-animal interface disease transmission. Agbalaya, et al, (2020) concluded that the handling process of abattoir was sufficient to predispose individual to bTB.

However, there was lack of bTB control measures in Nigeria, which help facilitate the transmission of zoonotic infection (Adesokan, et al, 2019). Similarly, Lawan et al, (2020), through the postmortem of about 664 slaughtered cattle, exposed the prevalence of bTB in cattle slaughter at the central abattoir Maiduguri, Nigeria. For Agbalaya, et al, (2020), reported that individuals who are occupationally exposed to zoonoses were reportedly unaware of their health status, which heralded delayed health seeking behaviour, while long duration in handling cattle without careful attention TB lesions in abattoir was associated with possibility of contracting bTB among meat handlers. In Rivers State, Oruene, (2020) assessed working conditions of the five major slaughter slabs and inspection for bovine tuberculosis the between March and July 2019. These abattoirs namely: Mile 3, Trans-Amadi, Aluu, Choba, Rumuokoro and Trans-Amadi. Only the later had meat inspection system with professional meat inspectors. However, the meat inspectors were unable to condemn obviously infected slaughtered animals. Similarly, the slabs were in deplorable condition and the workers poorly dressed. Based on their findings, the public bought from meat sellers ignorantly. The situational analysis of the activities in abattoir showed that there is a need for adequate monitoring.

The test of strain of tuberculosis is difficult to access in Nigeria (Tianau, et al, 2020). Such information would be helpful in knowing the epidemiological contribution of bTB to tuberculosis. In a retrospective study, the prevalence of bTB infection in cattle was 12%, Jos slaughterhouse in the Plateau State, Nigeria (Okeke et al., 2016). Similarly, 18.2% of why animal kidneys were condemned regardless of economic implication was due to tuberculosis infectious (Emikpe, et al 2020). The likely effect of the prevalence is largely unknown. Against this backdrop, Lawan et al, (2020) recommended one health strategies to intercept the animal-human transmission of the disease and prevent economic losses among butchers and farmers

2.6 Nomadic Fulani's Access to Healthcare Services in Nigeria

In Peru, resource-poor communities and families who required free TB care most did not get a simple access to it. However, a multi-disciplinary synergetic approach conquered these disparities, enhancing access and expanding the value of access to TB care (Iberico, 2013). Migrant Fulani may feel estranged from the public healthcare administrations and accessibility in the locale where they eat their dairy cattle (Brieger, 2011; Habib, 2011). This is not new. However, Brieger *et al.*, (1997) call attention to

the fact that those Fulani nomads in Western Nigeria go along more with standard treatment than their Yoruba partners. Their adequacy of present-day human services depends on being guaranteed that such would not be an instrument to overwhelm and control them (Okeibunor, Onyeneho, Nwaorgu, I'Aronu, Okoye, Iremeka& Sommerfeld, 2013). Correspondingly, a review in South-western Nigeria demonstrates that the itinerant Fulani would like to visit a private facility when they are incapacitated, while they settle (Otusanya *et al*, 2007). The Yoruba would probably utilize the public healthcare facility. This demonstrates that the migrant Fulani group is not favourably disposed towards the essential human services framework. Also, this condition aggravates as some of their characteristics (level of education, culture, living condition and environment) could expose them to TB (Habib, 2011; Barker, 2011).

With an end goal to increment migrant Fulani's access to social insurance, the National Commission for Nomadic Education has joined a HIV/AIDS work area that spotlights on preparation and mindfulness battles with TB-HIV services, including education on risk-reduction methods, counselling and screening, medication, adherence counselling, access to laboratory tests and monitoring. Habib (2011) recommends that these administrations ought to be taken to itinerant communities, utilizing novel efforts and methodologies-versatile medical units, treatment administrations, case administration, DOTs, treatment supporters, and sensitisation. More grounded coordinated efforts are suggested between programs for migrants and TB-HIV administrations, and furthermore amongst veterinary and public healthcare administrations.

As of late, Akogun has shown that the mix of correspondence innovation, fast symptomatic apparatuses, anti-infection and antimalarial solutions among Fulani health volunteer can build access to intestinal sickness diagnosis, diminish mortality, and moderate the advancement of protection from drugs (Akogun, 2011). His position calls for health programmers to instruct the Fulani volunteers on the most proficient method to utilize the proposed framework. Healthcare advancement, as indicated by Ottawa Charter, is the approach toward investing in individuals to develop the control over, and to improve their wellbeing. To accomplish a condition of complete physical, mental, and social wellbeing, an individual or group must have the capacity to distinguish and recognise desires, fulfil needs, and acclimatise to nature. Health is, along these lines, perceived as a quality for consistent daily existence, not the target of living. It goes past sound ways of life to prosperity (World Health Organization 1986).

It is a constructive idea accentuating social and individual assets, and additionally physical limits. In this manner, wellbeing advancement is not only the obligation of the environment, but also a necessary obligation for each human.

2.7 Overview of Health-Related Studies among the Nomadic Fulani

Previous studies among the migrant Fulani have sampled with various sample sizes. As of late, Ogundairo (2015) directed a quantitative research among 300 nomadic Fulani ladies of bearing age, through purposive testing and snowballing strategies in ten settlements of Ibarapa zone of Oyo State. In 2014, Manu and associates utilized a sample of 297 pastoralists proportionately disseminated by number of pastoralists in every division. 147 Fulani, 147 Non-Fulani, and 3 others were talked with, utilizing copies of a semi-structured questionnaire. In a qualitative report, Okeibunor (2013) and associates, while examining network coordinate intercession in conveying health information among migrants in Enugu Nigeria, utilized 40 centre gathering discourses, 14 key informants, and 30 in-depth interviews to elicit data from the itinerant and their host communities.

Likewise, in little scale qualitative study, Akogun (2008) utilized 18 centres gathering discourses among nomadic mothers and guardians of under-five kids while, in 2007, Abubakar *et al.*, purposively enlisted 100 Fulani respondents for their investigation. In 2006, Oladeji, Olujide, and Oyesola led an investigation on wage producing exercises among 120 Fulani ladies in IseyinLocal Government. Dao and Brieger (1995) inspected vaccination for the vagrant Fulani and enlisted 486 respondents for the investigation. This pattern demonstrates that past investigations have utilized both quantitative and qualitative methods. In the greater part of the investigations, inspecting strategy was purposive while more consideration was set on females. For example, Ogundairo enlisted 300 women respondents as an example for her study.

2.8 Nomadic Fulani Conflict Relations and Equity in TB social insurance in South-western Nigeria

In Nigeria, lethal clashes amongst agriculturists and pastoralists are accounted for on regular routine in the daily papers, without effective effort by government or peacefulassociations—for example, Miyetti Allah—to dissect or proffer an enduring solution to these contentions attributable to the way that the nomadic Fulani are actually, generally scattered (Audu, 2014; Abbah, 2013; Blench, 2010). It is enticing to

decrease these relations to environmental determinism. Olabode and Olajide (2010) and Audu (2014) have distinguished different components that account for struggle: incorporate water shortage, control over rare assets, contradictory qualities, nearness to stock courses.

A few works have been done on the pervasiveness and political nature of contentions in Nigeria (Okolie and Ugwu, 2011; Abbas, 2012; Nchi, 2013, Adogi, 2013; Okoli and Atelhe, 2014). Be that as it may, different researchers focus on migrant's wellbeing, for example, jungle fever and febrile disease (Akogunet *al.*, 2012, Akogun, 2011), hunger (Eco *et al.* 2008), wellbeing looking for conduct (Otusanyaet *al.*, 2007), and so forth. These works stay conceivable in their own benefits towards reasonable societal advancement, nay national security in Nigeria. However, none of them can demonstrate how this contention blocks the Fulani's access to social insurance assets, particularly despite Bovine Tuberculosis with strengthened impacts on the general population.

2.9 Community Participation in Health Perspectives

Community participation (CP) is not a new concept. It has been characterized and rehearsed in various routes for a long time in health-related issues as well as in different everyday issues (Assay and Oakley, 1999; WHO, 2002). These permit public stakeholders such as government, global contributors, non-governmental organisations, medical practitioners, and so on, to utilize the term to suit their motivations. Basically, stakeholders utilize the expression to project clashing objectives, absolutely since it implies diverse meanings to various individuals. A few investigations have utilized the term CP in different works; the importance is frequently hazy however.

For a reasonable comprehension of the CP, it is essential to take a gander at the two words independently. The term 'community' is ordinarily used to allude to individuals' assembled based on topography, potentially basic intrigue, character, or communication (WHO, 2002, Smithies & Webster 1998, Walter, 1998, Swanepoel & De Beer, 2006). 'Participation,' as indicated by Morgan (2001), distinguishes two models to conceptualize cooperation – the utilitarian and strengthening models.

From the utilitarian point of view, participation is viewed as a 'signifies' to achieve the points of a venture all the more proficiently, adequately or economically, and a

cooperation in which individuals concur, wilfully or a consequence of some influence or motivation, to work together with a remotely decided advancement venture, regularly by contributing their work and different assets as a by-product of some normal advantage. The strengthening model characterizes investment as an 'end' where the community sets up a procedure to control its own improvement. The two definitions portray participatory approach i.e. the top-down (utilitarian model) and down-top (strengthening model).

Subsequent to exploring key review in 2002, a WHO definition of community gave a thorough meaning of support as a procedure by which individuals are empowered to end up effectively and truly associated with characterizing the issue of worry to them, in settling on choices about variables that influence their lives, in defining and executing approaches, in arranging, creating and conveying administrations, and in making a move to accomplish change. This definition has the components of the two methodologies. In perspective of this, before interest can be guaranteed, there are two conditions to be satisfied – individuals must be engaged and turn out to be proactive.

Theron (2005) sees community participation (CP) as a procedure of giving community a chance to decide their own goal concerning their needs and assets. Endeavours to expand association of natives in their communities are currently far reaching (Stukas & Dunlap, 2002). This is on account of CP a basic segment of good programming since it guarantees that help is better acclimated to the aptitudes and necessities the recipients themselves organize. It gives community a feeling of responsibility for the programme, draws in individuals in abilities advancement, agreement building, and requests specialists' responsibility (Home Sweet Home, 2002; Reid, 2000).

Also, CP draws on the vitality or energy that exists inside community to accomplish what that network of people needs to do and how it needs to work (WHO, 2002). Nampila (2005) alludes to CP as a technique whereby the residents of a community are given a voice and decision to take an interest in issues influencing their lives. Theron (2005) attests that if the procedure is very much dealt with, the individuals are probably going to take responsibility for ventures that are to be executed.

2.10 Community Involvement: Offshoot of Community Cooperation in Tuberculosis Control and Prevention

The health changes of the 1990s have given less regard for CP and social qualities, concentrating more on specialized, financial, and administration factors in wellbeing frameworks (WHO, 2010). Obviously, there is far reaching support for community involvement (CI) over the ideological continuum – by and large terms (Stukas and Dunlap, 2002). A large portion of the examinations have concentrated on why individuals get included and how to motivate them to do as such at higher rates, for longer periods, and with more noteworthy solace (Dunlap, 2000; Stukas, Clary & Snyder, 1999; Zlotkowski, 1998). Activities taken up by common society to address the HIV have been a striking special case to this circumstance (WHO, 2010).

Effective methods for encouraging this community involvement must be based on a solid comprehension of the structure, textures, and elements of the survival instruments of the people and their interconnectedness. Practical methods for running community participatory undertakings start with building up closeness, trust, and a profound comprehension of the lifestyle of the community and land setting. Accordingly, minor presence of TB care benefits in a specific managerial region does not demonstrate that they are utilized or utilized accurately. Administrations must be available to be utilized. This infers that health-seeking is topographically, monetarily, and socially open (WHO, 2010).

Thus, Nampila (2005) insists that considering rural development, CP has been influenced adversely. In 2011, Booth contended that for Sub-Saharan Africa, the example is that public approaches are driven generally by short-run political orientations, and these more often than not direct a client method of political legitimation, not one in view of execution in the conveyance of the general population wellbeing required for financial and social change since governments and common society associations may just speak to halfway the interests of a definitive target group. Similarly, there is a potential pressure between proprietorship by governments and possession by the individuals who are considered the targeted recipients of the aid.

Specifically, Kvalvaag (2013) asserts that there is a worry that when recipients do not feel that they have responsibility for intercession, their subsequent absence of support may undermine the adequacy of help programs. Brolanet *al.* (2014) advocate for a talk

to rise not just basically analysing how and whose voices are important at the community level to illuminate the post-2015 wellbeing and improvement objective motivation, but in addition how these voices are being made an interpretation of and incorporated into post-2015 basic leadership at national and global levels.

Community participation suggests hearing opinion from and working with, and not for individuals. Individuals will take an interest and contribute seriously to something they feel is a piece of, can recognize, and connect with their endeavours. In actuality, community involvement is fundamental for diminishing vulnerability to tuberculosis, for encouraging recuperation after the infection has struck, and for empowering formal community association which is the reason for a practical healthy community.

2.11 Level of Community Involvement (CI) in Health Intervention

Community involvement has been ordered into three classifications – non-participation, citizen power, and tokenism. Meanings of CI run from individuals latently getting proceeds from health programme to individuals currently settling on choices about the programme arrangements and exercises. Utilizing what Sherry R. Arnstein calls "A Ladder of Citizen Participation," which she initially presented in an article distributed in the *Journal of the American Planning Association* (1969), her characterization uncovered the control of individuals in the name of community participation extended by experts and policyholders. The step has eight rungs, each comparing to an alternate level of involvement, which are simply put as control, treatment, advising, meeting, assuagement, organization, appointed power, and resident control as demonstrated below. The rungs at the base of the stepping stool are the ones with slightest native investment or non-cooperation, and the base incorporates control (Manipulation) and treatment (Therapy):

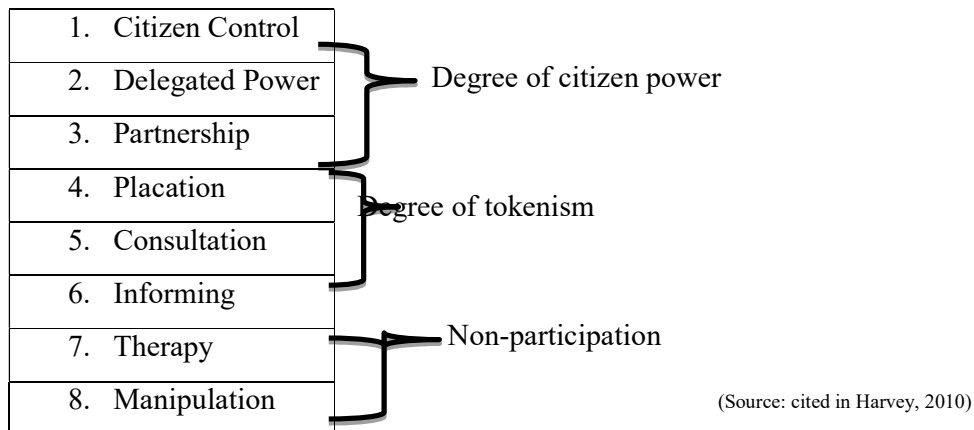


Figure 1: The Rungs of Community Participation

Illuminating (Informing), discussion (Consultation), and appeasement (Placation) involve the centre rungs of the stepping stool, and the centre is named "tokenism" where the general population are permitted to take part just to the degree of communicating their perspectives but have no genuine say on the issue. The last three rungs: association (Partnership), assigned power (Delegated Power) and subject control (Citizen Control) at the highest point of the step, are influenced identical to "native to power," and this highest point is the place where genuine and significant support happens. These classes of individuals' contribution are to a great degree pivotal in elucidating the disarray between "non-participation" and genuine "popular power" as well as recognizing the genuine intentions behind participatory activities, which are frequently utilized by faultfinders as weaknesses of the idea of community participation (CP) (Moatasim, 2005). Additionally, the three degrees in the rungs of CP speak to the level of network inclusion or involvement.

In wellbeing programme discussion, there is the therapeutic approach whereby wellbeing is characterized as the absence of ailment, and CI is viewed as doing 'what the medical practitioner orders.' The second approach is a wellbeing arranging approach where wellbeing is characterized by the World Health Organization as "not simply the absence of infection, but rather likewise the physical, social, and mental wellbeing of the person". In this specific situation, CI is commitment to the conveyance of a public healthcare by contributing cash, human, and material resources. For example, in Nigeria, 56% of TB patients (all kinds) purportedly got treatment by the help given from the community while information on add up to TB

warnings (all kinds) from community referrals in 2014 was not accessible. This demonstrates there is a level of community inclusion in fighting TB in the nation. From the third approach, CI characterizes health as a human condition and community active support as a dynamic inclusion in basic leadership and assuming responsibility for programmes. These three perspectives relate with systems drawn from those associated with rural advancement activities.

2.12 Importance of Community Involvement in TB Health Interventions

Community involvement (CI) has been a steady topic in formative discourse for as far 1920s. In the 1970s, it became fundamental to formative undertakings to look for manageability and value, especially for poor people. It turned into a focal board for health advancement strategies by the World Health Organization in its conference in Alma Ata (WHO/UNICEF, 1978). In tolerating Primary Health Care as an administrative arrangement, all member countries or nations from WHO perceived the significance of including, in their outline and usage, planning recipients of administrations and projects.

Curry (2006) declares that Patients' Charter for Tuberculosis Care hones the standard of more noteworthy inclusion of individuals with tuberculosis (GIPT). This avows that the strengthening of individuals with the illness is the impetus for viable cooperation with healthcare providers, suppliers, and experts. This is a basic avenue to stop tuberculosis. However, Zhang, Ehiri, Yang, Tang, and Li (2016) have proposed additionally ponders on systems for usage of patient-focused, community-focused, and community-based DOT to improve CI in the treatment of tuberculosis.

The accompanying explanations behind this acknowledgment are advanced:

1. The health administrations contention: The services available are underutilized and abused, on the grounds that the general population for whom they are outlined are not engaged in the programme setup. Olusola-Falae, Obeagu, Odo, Ochei, Solanke, and Idaboh (2016) advocate that compelling commitment of pharmacists, patent medication merchants, community volunteers with productive referral frameworks and other community preparation endeavours, and TB data-sharing exercises could contribute considerably to enhance TB case discovery and notice.

2. The monetary contention: There exists in all communities, budgetary, human, and material resources that could and ought to be prepared to enhance grassroots wellbeing and physical conditions. Thomas and Thomas (2001) contend that it is hard to share the little assets, especially in locations where neediness is uncontrolled, where there are such a significant number of neglected needs. Likewise, TB patients' duties do not include instalment for treatment (Curry, 2006).

3. The wellbeing advancement contention: The best change in groups' wellbeing is an aftereffect of what they do to and for themselves; it is not the consequence of therapeutic programmes. Similarly, Tuberculosis Patient Charter expects patients to add to the prosperity of their locale wellbeing (Curry, 2006).

4. The social equity contention: All individuals, particularly poor people and distraught, have both the privilege and obligation to contribute to choices that influence their daily lives (Rifkin, 1990).

2.13 Community Participation in Health

Involvement in community wellbeing programmes in the country settlements of emerging economies can be very troubling. Despite the fact that it is viewed as an attractive motion in most conventional social orders, as a result of their age-long custom and confidence in collective exertion, their exceptional socio-cultural setting, if not taken into due thought, can be a hindrance against such motions (Metiboba, 2012).

Thus, CP can be characterized accurately as dynamic inclusion in exercises that are naturally social, and either happen outside of home or are a piece of non-residential part, for example, work social (outside of the family unit) and roles within community (Chang, Coster and Helfrich 2013). Also, CP can be characterized as a strengthening apparatus through which nearby networks assume liability for diagnosing and attempting to explain their own particular wellbeing and improvement issues. Lay CP is major for successful and sustainable public health programmes and changing paternalist works ongoing with 'top-down' formative methodologies. It is additionally a fundamental component of the privilege to wellbeing (Brolanet *al.*, 2014, Gosling & Edwards 2003, UNDP, 1997).

In 1976, the final statements of the verifiable "Universal Conference on Primary Health Care" in Alma-Ata accentuated "the significance of full and sorted out CP and

self-confidence in people, families, and the public accepting greater accountability for their own particular wellbeing". To be sure, the Declaration of Alma-Ata is exceptionally express. Individuals have the privilege and obligation to take an interest exclusively and all in all in the arranging and execution of their wellbeing system. In that Declaration, the idea of essential medicinal services as the way attaining wellbeing for all and, in this manner, encouraging societal improvement is connected everlastingly to that of social equity. Notwithstanding, these visionary proclamations very little had been done in accessing TB care and control with respect to public commitment in 1988 (WHO, 2008).

Encouraging people group interest as an unequivocal segment of the End TB Strategy and a "solid alliance with common society associations and the public" is one of the four standards supporting the post-2015 global TB technique. The new End TB Strategy incorporates 2025 accomplishments for a 75% decrease in TB casualties and a half decrease in the TB rate, contrasted with 2015 TB pattern. To accomplish this, community commitment must be organized to expand TB case discovery and notices and furthermore help to enhance treatment results. Likewise, exact checking of the commitments of the public to TB notices and treatment bolster requires standard pointers and institutionalized frameworks for recording and detailing information (WHO, 2014; WHO, 2015a; WHO, 2015c). Indeed, even from a financial perspective, public cooperation is evaluated as exceptionally savvy, with significant investment funds in hospitalization costs and with astounding advantages to patients and population affected (WHO, 2008).

In any case, in the mainstream discussion on CP in wellbeing, Susan Rifkin contends that support programs have regularly neglected to meet desires absolutely. This is since they are considered in a worldview which sees CP as an enchantment projectile to tackle issues established both in health and political power. This end exudes from power point of view which portrays top-down approach in wellbeing intercessions. More so, Metiboba (2012) mentions that in wellbeing participatory undertaking in Nigeria, there is dependably the risk of not imparting the correct message crosswise over to the general population during the time spent getting sorted out individuals' activity in a system to take care of a recognized issue.

In this manner, for powerful CP, Harvey (2010) has distinguished important components of investment as follows:

- Trust and Understanding
- Access and Information
- Voice and Values
- Negotiation and Mediation
- Resources – time and specialized

These components are applicable, if completely engaged, to augmenting the advantages of community involvement in End TB system. For example, a large portion of the commitments to TB case notices in Malawi are referrals of individuals with TB signs and manifestations to the public by the frontline, community-based, private medicinal services suppliers. These regularly incorporate clinical officers, medical caretakers, and customary healers. Connecting such frontline mind suppliers and including drug shops and drug stores encourage early case location. The Malawi illustration should incite different nations that have not considered beforehand Public-Private Mix (PPM) to be of significance to return to their procedures. In all settings, PPM intercessions ought to likewise be intended to help the identification of TB cases as well as early recognition of TB at PHC (WHO, 2015a).

In Nigeria, Habib (2011) argues that public participation and initiative should be encouraged to guarantee the maintainability of TB-HIV care conveyance since there is disparity, insufficiency, and detachment of TB-HIV administrations among itinerant populaces, and coordinated endeavours ought to be made for development. This position needs to be stretched out to the TB cases in the nation.

2.14 Challenges of Community Participation in the Prevention and Control of Infectious Diseases

Public participation must be upgraded by removing the hindrances to cooperation, though finding a way to advance the standards of reasonable investment (Sibiya, 2010). Nunzi (1996) observes that endeavours to conquer the disease by the utilization of volunteers have transformed the circumstance into a tricky one. The difficulties can be separated comprehensively into social and cultural difficulties. Moatasim (2005) orders the difficulties into social and cultural in the table 2.2.

The social and cultural obstructions could block viable and productive public participation. The cultural angle depicts the identity of the affected community and their reality while the social perspective focuses on the affected community's association with the out-group. Social and cultural boundaries restrict the possibilities of the public commitment. Clearly, migrant Fulani's way of life keeps them from useful training, and they do not confide in government wellbeing programme. Socially, itinerant Fulani are isolated and underestimated with low social capital. Subsequently, they are socially hindered, particularly in getting chances to use public health services (Brieger, 2011). Ajayi, Jegede, Falade, and Sommerfeld (2013) opine that numerous basic moderate and powerful infection-control measures have had constrained effect because of the poor access, particularly by the poorer populaces (urban and rural), and deficient public support.

Table 2.2 Barriers to Community Participation

Cultural	Social
Lack of education	Social isolation
Lack of fitting skills	Alienation from government
Lack of confidence	Low social capital
Absence of auxiliary ties with existing organisations	Marginalisation
Lack of interest	Lack of time and cash
Lack of trust	Lack of access to the web
Absence of involvement in arranging	

2.15 Herbal Remedy for the Management of Zoonotic Disease

As of late, plant produce has a demonstrated global history of treating sicknesses and illnesses (Ibekwe&Aneh, 2014). Home grown prescriptions have turned out to be crucial and are framing a basic piece of the essential medicinal services arrangement of numerous countries (Fajimi& Taiwo, 2005). In Nigeria, Fulani herders and other people who keep herd as an important part of life have been engaged with the treatment of animal ailments before the beginning of present-day pharmaceutical (Nwude, 1986). The cures against parasitism represent the most astounding methods for intervention (Ibrahim, Nwude, Ogunsusi&Aliu,1984). These local medicines keep on gaining more support since orthodox treatments are costly (Chemaet *al.*, 1990) and dangerous (Murray, Wiseman, Dawlings, Morgan and Houseman, 1992), and because of the development of drug-resistance parasites (Ibekwe&Aneh, 2014 and Nvau, Oladosu, Orishadipe, 2011).

In any case, Fajimi and Taiwo, in 2005, announced that local treatments are natural items, naturally well-disposed and less costly. Similarly, in 2007, Okoli, Aigbe, Ohaju-Obodo, and Mensah distinguished different herbs for treating tuberculosis. A while later, Nvauet *al.*, (2011) substantiated the utilization of assessed plant materials for the treatment of tuberculosis by customary healers. Nigeria, and to be sure Africa, needs to look inwards to explain the weight of tuberculosis by tapping on its rich biodiversity which the mainland is endowed with (Ibekwe&Aneh, 2014).

2.16 National Tuberculosis Control Framework in Nigeria

National TB and Leprosy Control Program (NTBLCP) is the Federal Government organization in charge of the administration of TB and Leprosy control exercises in Nigeria. This body works as semi-independent unit under the Department of Public Health of the Federal Ministry of Health (FMoH). NTBLCP is organized along the three levels of government – Federal, State, and Local Government Area. The general objective of NTBLCP is to diminish altogether the public pressure, financial effect, and transmission of TB and Leprosy in Nigeria (FMoH, 2010).

NTBLCP, otherwise called focal unit, is in charge of encouraging arrangement plan, improvement and usage with respect to TB control, bolster arrangement of tertiary care, management of available resources both locally and globally, programme assessment and research, human resources advancement, and specialized help to State

programmes. The overall head of NTBLCP is viewed as the National Coordinator of the whole TB Program in the nation.

The National program has a human empowerment and training centre situated in Zaria. The centre is frequently alluded to as the National TB and Leprosy Training Centre (NTBLTC) for recognizing different HR requirements for programmes execution and empowerment for different classes of healthcare staff to actualize quality TBL administrations at Federal, State, and LGA levels. The central office likewise fills in as a referral health facility with around 140 bed spaces meant for TB and leprosy cases.

In many States in Nigeria, TB control programs are under the director for the Department of Disease Control. Different States have self-sufficient organizations saddled with the obligations regarding TB and HIV control exercises. TB control, administration, programmes execution and supervision are completed. The State Tuberculosis and Leprosy (TBL) Control Officer(s) are coordinated by the State TBL Supervisors. The State TBL officers equally facilitate TB exercises in the separate States; they give secondary care and specialized care to the LGAs. The Local Government Area is the operational level of the program in light of the Primary Healthcare (PHC) standard. At the LGA level, the TBL Control exercises are the obligation of the Local Government TBL Supervisors. At this level, PHC specialists are associated with doing TBL exercises in a joint effort with the particular networks and people occupied with TB control endeavours.

The National TB Program works in association with a few indigenous and transnational accomplices in the arranging, execution, and asset activation for TBL control. Key among these are ILEP Organizations, UK Partnership for Transforming Health Systems (PATHS), CIDA, US Agency for International Development (USAID), CDC, PEPFAR Partners, WHO, and Civil Society Organization (CSO). This method of arranging and execution does not include the majority. As a result, it demonstrates this system is drawing in Top-Down method to deal with Stop TB in Nigeria.

Effective TB control methodologies depend on working health frameworks and general wellbeing awareness, particularly when zoonotic sickness – Bovine Tuberculosis – is included. Thinking about the last mentioned, in an Ethiopian investigation, Emiruet *al.* (2015) affirm that the presence of higher populace

concentration, feeding on uncooked animal products, low limited awareness, poor cleanliness, and limited infrastructural facilities may encourage transmission of the infection amongst cattle and people. Nigerian health framework is bedevilled with many difficulties such as deficiencies in health workforce, persistent low levels of public health financing (FMoH, 2014), frail government stewardship capacities, feeble information administration framework for evidence based arranging, ineffective infrastructural amenities, broken wellbeing administration systems, scope (Bello, 2010) and ill-advised coordination of TB control exercises from National to LGA levels. As a result, Nigeria has not met the 2015 global TB wellbeing targets in view of these pointers (WHO, 2015b).

It is generally perceived that DOTS extension itself is one feature of public health advancement. All things considered, investing resources in DOTS implies putting resources to enhance public health system. In any case, DOTS extension without fortifying the general public health administrations is not maintainable. The Nigeria Stop TB association should accordingly perceive the need to unite with different partners in public health to discover approaches to reinforce human resources financing as well as enhance public health administration (FMoH, 2010).

Keeping in mind the end goal to battle tuberculosis, community involvement (CI) was fused in accordance with the suggestion given by WHO. In this way, Community TB Care (CTBC) was composed by individuals who could conceivably be health worker, and executed inside the setting of the National Program. The significant point of CTBC is to reinforce TB case finding and case holding in close association with the public through CI that will energize possession and maintainability of TB control exercises at the community level (FMoH, 2010).

As indicated by the Federal Ministry of Health in Nigeria, the techniques of CTBC include:

1. effective public commitment through circumstance appraisal, support, correspondence, and social mobilisation.
2. capacity improvement through preparing of community volunteers/treatment supporters for TB care.
3. patient strengthening and mobilisation for TB healthcare in the location.
4. adopt a patient-focused way to deal with TB care.

5. programme reinforcing through foundation and fortifying of the documentation, supervision, monitoring, and assessment.

Likewise, the means for usage of CTBC are obviously expressed in the health workers' manual (FMoH, 2010). This covers:

1. conduct present situational analysis to distinguish community structure and public health issues.
2. carry out health promotion and community attention to the distinguished geographical areas.
3. identify Civil Society Organization (CSO) in geographical areas.
4. selection of community volunteers through dynamic CI.
5. organise and empower the chosen network volunteers in a joint effort with CSO.
6. establish linkages with the TB programme, utilizing proper documentation designs.
7. establish successful medication and logistic administration framework.
8. ensure consistent supervision.

They are the parts of key implementers of CTBC by Federal Ministry of Health standard.

2.17 Qualification and Roles of Tuberculosis Treatment Supporters

A TB treatment supporter is a persuaded individual fit and willing to help a TB patient to start and finish his/her treatment of TB and follow-up sputum examination. The treatment supporter could be related or living close to the patient's home, and might be taught the most proficient method to offer help to the patient while on treatment. Such a supporter should:

- be worthy to the patient.
- preferably live near the patient.
- be obliging and circumspect of the patient's needs at each contact.
- be kind to the patient and be occupied with the patient's welfare.
- respect the patient's secret.
- be taught by the public health administrator to carry out the duties of a TB treatment supporter.
- be a mindful and meticulous individual.

The treatment supporter will be required to play out the accompanying assignments:

1. distinguishing proof of individuals who have been coughing for three weeks or beyond, referring them to the DOTS office for sputum examination, and monitoring the case. He/She would keep the patients' drug and observe the use of the drug by patients
2. authority of patient's medications and Direct Observation of Treatment.
3. ticking or marking the medical card after patients take the drug.
4. observe the reactions and refer the patients to the DOTS focus.
5. following of patients when they boycott treatment and tracking of contacts of TB patients.
6. provide help and care to the patients.

2.18 Criteria for Selection of Communities for CTBC

Government Ministry of Health has set guideline to choose communities that will participate in the programme. Such people must:

1. have a linkage to TB indicative and treatment centre.
2. express readiness and political pledge to be an accomplice of CTBC.
3. identify willing and community volunteers (CV) and pioneers for CTBC.
4. support the working of CV in accordance with concurred rules.

The guideline specifies some preferences as follows:

5. More attention should be given to the communities with poor treatment result as well as high defaulter rate.
6. More attention should be given to the communities with high predominance of TB and HIV/AIDS.
7. More attention should be given to the communities that have troublesome topographical access.
8. More attention should be given to the communities with existing CBOs and CDC.

By inference, before a community is picked for consideration for CTBC, numerous conditions must be satisfied. This could also clarify why migrant Fulani would have limited access to healthcare. However, the Fulani are hard-to-reach population. In any

case, it is expected that CV would get report cases from areas where they are allotted. In 2014, the extent of hypothetical TB cases referred by the CVs rose from 11% in 2013 to 23% while the extent of TB cases on treatment that were bolstered by a treatment supporter all through their TB treatment expanded from 56% in 2013 to 65% in 2014. Additionally, the programme has kept on drawing in the NGOs for social engagement with the point of making public awareness of DOTS, commitment of treatment supporters to regulate DOTS at home to patients, and the evaluation of exercises done by Community Volunteers, Patent Medicine Vendors (PMVs), and community pharmacists (NTBLCP, 2014).

2.19 Theoretical Framework

The theoretical framework presented here draws from both sociological and psychological perspectives. Sociology, adopting social network theory, can contribute a great deal to the conceptualisation of the interplay of weak ties existing between the nomadic Fulani and the sedentary population. Although, prior sociological perspectives focused more on strong ties, yet network theory explain the nuances of weak ties which will capture the barriers to strong relationship, and benefits of the weak ties. The network theory did not explain the interplay between social ties and dynamics of access to community prevention of tuberculosis. Thus, this reality of limitedness of network theory heralded the use of Health Belief Model to further explain the phenomenon under scientific interrogation. The model is a medical psychology model which explains of individual wellbeing. The model gives content to the discussion of the weak ties. This relates the influence of weak ties on community involvement in TB health interventions. Specifically, the weak ties will affect the level of awareness and perceived susceptibility to bovine tuberculosis of nomadic Fulani and their host communities alongside with health outcomes.

2.19.1 Health Belief Model (HBM)

Health Belief Model emerges to clarify why a health programme was unsuccessful (Rosenstock, 1974). The supporters of the model—Rosenstock, Strecher, and Becker—clarify the impact of individual beliefs on wellbeing conduct. They recognize four noteworthy factors: perceived seriousness, perceived susceptibility, perceived barriers, and perceived benefits. More constructs were later developed to further explain social phenomena. These include cue to action, self-efficacy, and modifying

factors. The connections between these constructs offer a driving force to the acceptance of health and medical suggestions (Janz& Becker, 1984).

Perceived risk or susceptibility

Individuals' perception of their risk to contract is more powerful to influence the adoption of healthier behaviour. It is proposed that the more remarkable the obvious risk, the more significant the probability of taking part in practices to decrease the vulnerability. It is intelligent that when individuals believed they were at risk of contracting an infection, they would be more serious in adopting actions to keep it from happening. The disposition changes when a hazard is impending. At the instance when individuals believe they are not susceptible, unhealthy practices would result. From ethnic group viewpoint, their beliefs differ in accepting their risks to BTB. As people (Fulani nomads, abattoir specialists, and host population) perceive they are susceptible to contract BTB based on their exposure to hazard factors, they have a tendency to embrace more beneficial (healthier) behaviour. (These risk factors incorporate are consumption of unpasteurized milk, contact with TB infected individual body liquid, taking care of cattle digestion tracts and airborne, and so on. The impression that people could contract the disease is connected to more advantageous practices and diminished helplessness to unfortunate practices. Subsequently, people would dodge exercises that can expose them to tuberculosis.

Perceived Seriousness

Perceived severity indicates a person's conviction about the weightiness of a disease. While the view of reality is regularly in light of medical information, it might likewise originate from convictions a man has about the challenges a disease would result to or the impacts it would have on his or her life (McCormick-Brown, 1990). This involves emotions and convictions concerning the seriousness of the impacts of getting a disease or of abandoning it untreated. This includes assessments of both medicinal outcomes and conceivable social outcomes (Janz& Becker, 1984). The Fulani is probably going to embrace CI to curtail the illness, in the event that they comprehend that tuberculosis is the second driving infectious disease causing demise and financial misfortune (WHO 2014; Ejeh, Raji, Bello, Lawan, Francis, Kudi, & Cadmus, 2014).

Perceived Benefits

This is a person's assessment of the importance of adopting new behavioural practices in diminishing the risk of coming down with a sickness. Individuals have a tendency to adopt more advantageous practices when they believe that the new conduct will diminish their risk of coming down with a disease. Everyone needs to be sound, but reality demonstrates something else (Iyalomhe&Iyahomhe, 2012). In this way, itinerant Fulani will need to engage more beneficial practices. At last, individuals would adopt such practices when they see them to be helpful (Rosenstock, 1984). This construct assumes an essential part in the selection of secondary preventive behaviour and practices. The migrant Fulani and their host will have to halt from some unhealthy practices like the consumption of unpasteurized milk, uncooked meat, and exposure to contaminated animal fluid. The evasion of such practices fills in as a preventive conduct with a specific end goal to remain healthy.

Perceived Barriers

This construct explains the issue of perceived impediment to behavioural change. It is a person's own particular assessment of the obstructions in the method for him or her adopting a conduct. Of the considerable number of constructs, perceived hindrances are the most noteworthy in deciding conduct change (Janz and Becker, 1984). Keeping in mind the end goal to adopt another conduct, a man needs to trust the advantages of the new conduct (Centers for Disease Control and Prevention, 2004). This empowers obstructions to be overcome and the new conduct to be ensued.

The construct exposes the obstacles to undertaking the prescribed more beneficial conduct. A cost/advantage evaluation is ensued to play. Fulani nomads regularly see health programme as an intent to control them (Okeibunoret *al.*, 2013) while their nomadic way of life will preclude them from being fused into wellbeing intercessions. Individual experience amid TB episode, health information looked for or given by significant others will go far in deciding the reception of community cooperation as an apparatus to battle BTB among the populace. Socially, individuals take after methodology utilized by others or adhere to their own particular encounters.

Modifying factors or variables

These are qualities that impact the individual discernments. They incorporate culture, level of literacy, past experience, aptitude, and inspiration. These factors could impact

people contrarily or emphatically. For instance, the Fulani's way of life, level of education, and occupation in some ways impact their disposition towards their wellbeing. These factors have engendered some unhealthy practices such as consumption of unpasteurized milk and uncooked meat, which expose them to tuberculosis. Then again, host communities have access to education which influences their way of life and keeps them from unwholesome health hazard conduct unlike their Fulani partners. Be that as it may, the consumption of contaminated roasted meat (suya) by host population can predispose them to the disease.

Cues to Action

The HBM recommends that individual's conduct is additionally affected by prompts to activity. Prompts to activity are occasions, individuals or things, that move individuals to change their conduct. They include disease of a family, media reports (Graham, 2002), mass media advocacy, guidance from others, update postcards from services provider (Ali, 2002) or health cautioning labels on an item. The Fulani migrants get the signal to action as they relate with the host communities. Specifically Observed Therapy short-course (DOTs) for tuberculosis is generally situated in the essential medical services centre in the host communities. Additionally, community medicine stores are arranged in the same area. In this manner, the Fulani relationship with host communities potentiates access to understand their hygienic conduct and health support. The Fulani are observed to prefer or utilize the private drug stores than patronising public healthcare (WHO, 2015).

Self-efficacy Bandura (1977) characterizes self-efficacy as the confidence in one's capacity to accomplish something. Individuals do not endeavour to experiment such activity except they know they could do it effectively. Also, when somebody is certain that a conduct is valuable (perceived advantage) and does not think he or she can do it (perceived obstruction), such individual is not probably going to attempt the conduct. Until the Fulani and the host communities have faith in their capacities to maintain a strategic distance from social practices that will expose them to TB, there may not be much change.

2.19.2. Network Theory

Network theory is a theoretical stance that endeavours to clarify social connections of individuals inside a system of social connections. These connections or ties constitute

the core of what interest social researchers. For what reason do people associate, how would they cooperate, and what is the level of closeness/connectedness among individuals?

In the perspective of network proponents, normative school centres on culture and the socialization method through which values and norms are absorbed in a social group. In this view, what bring people together are units of shared idea. The proponents are interested in the regularities in beliefs and how people should behave (Wellman, 1983). Thus, the proponents attempt to evade standard practice of social conduct. They reject as unstructured, any assumption that regards social process as the aggregate of individual attitudes and absorbed standards (Wellman, 1983).

As indicated by its proponents, the most direct approach to appreciate social structure is to break down the example of ties connecting its individuals. Also, network theorists are interested in social structures, consistent networking underneath the regularly complex surface of social system. Actors and their practices are viewed as voluntaristic characters, however, on structure limitation (Wellman, 1983). It focuses on an extensive variety of micro to macro structures. In this manner, actors might be individuals (Wellman and Wortley, 1990); however, they may likewise be a group, for example, itinerant Fulani with their host communities and associates (Baker, 1990; Clawson, Neustadt & Bearden, 1986; Mizuchi & Koenig, 1986). The social connections occur at the structural level and more minute levels. More so, various levels of social connections exist among traveling camps and host networks.

Granovetter portrays such miniaturized scale level connections as activity 'implanted' in the concrete individual relations and structures (or systems) of such relations. Fundamental to any of these connections is the possibility that any 'actor' (individual or group) may have differential access to esteemed assets (riches, influence, and information). The outcome is that structural systems tend to be stratified, with a few segments reliant on others. For instance, host communities have better access to TB information, projects, DOTs, and medical services by and large than the itinerant Fulani.

Social network analysis tends to move sociologists away from the study of social groups and social categories and towards the study of ties among and between actors that are not sufficiently bounded and densely knit to be termed groups (Wellman,

1983). Thus, the inter-group social connections that exist between migrant Fulani and their host communities could be positive or negative feeble. The articles of the positive feeble ties incorporate business exercises, access to public healthcare, veterinary services, nomadic education, abattoir framework, and so forth while the negative frail ties are sociocultural differences. These include different dialect, farm infringement, and inter-community conflicts.

Sociologists view solid ties as important in social investigation; frail ties have been of sociological significance. Granovetter affirms that feeble ties can be vital, and this is not to absolutely disregard the essential concrete ties. For instance, weak ties between two actors can fill in as a scaffold between the two groups with strong ties. Without such a frail tie, the two groups might be completely disengaged. The seclusion, thus, could prompt a more divided social framework. A person without feeble ties would get himself/herself confined in a group that needs data about what is happening in different groups and in the larger communities. Feeble ties in this manner anticipate confinement and enable people to be better incorporated into the larger community. These feeble binds have possibilities to join the itinerant Fulani and host communities to anticipate and battle tuberculosis. The thought of powerless ties is novel in sociological viewpoints (Ritzer, 2008).

2.19.3 Synthesis of the Theories

The union of the hypotheses of Network and Health Belief Model conceptualizes the intensity of shared relationship in curtailing Bovine Tuberculosis/tuberculosis in Oyo State. Network hypothesis clarifies the strong ties and weak ties. Solid ties explain a strong cohesion that exists with an ethnic group. Such strong ties are evident among the migrant Fulani on the one hand and Yoruba people on the other hand. The factors of the Fulani strong social ties are incorporated in the Fulani's camp, way of life, religion, cattle farming, health needs, human services difficulties, milk, and meat consumption, amongst others. These bonds enable them to keep up their social practices inside the ethnic group. Additionally, the host communities i.e. the Yoruba, have distinctive social solid ties that bring them together. Their strong ties are noticeable in their way of life, dialect, education, access to information, power, assets, and healthcare (IPRH). Similarly, network hypothesis exposes that one of the groups

has access to power, assets, and information than the other ethnic group. In this sense, host communities are advantaged than the nomadic Fulani.

Network hypothesis concentrates more on frail ties which exist on the contact platform between the Fulani and their host populace. The frailties enable the two ethnic groups to identify with some degree relationships. Considering the sorts of frail ties that exist between them, they have been recognized to be negative and positive ties. On the one hand, the negative feeble ties are common conflicts and farmland infringement. This further weakens the relationship between itinerant Fulani and sedentary populace. The positive weak ties cover business activities, access to health care, veterinary services, nomadic education, abattoir system, etc.

These positive frail ties are a stage of culture contact whereby migrant Fulani learn better approaches for getting things done. The frail ties expose the itinerant Fulani to business exercises such as the offer of cattle as a whole or in parts, access to healthcare, veterinary care, school for nomads, abattoir exercises, and information. Along these lines, the positive frail ties move toward becoming modifying variables of how the itinerant Fulani would explain their risk to tuberculosis, seriousness, obstructions, and the advantages. Additionally, positive frail ties serve as basis for sign to activity or cue to action. This needs to do with how and where the itinerant Fulani get information about Bovine Tuberculosis causes, animal/human interface, and how to control the sickness. Self-viability or efficacy identifies with the conviction of adopting the more beneficial conduct proficiently, that is, ability to pasteurise raw milk before consumption take place, cooked meat, and dynamic CI in the avoidance of tuberculosis. Effective community involvement would curtail the Bovine Tuberculosis.

CONCEPTUAL FRAMEWORK

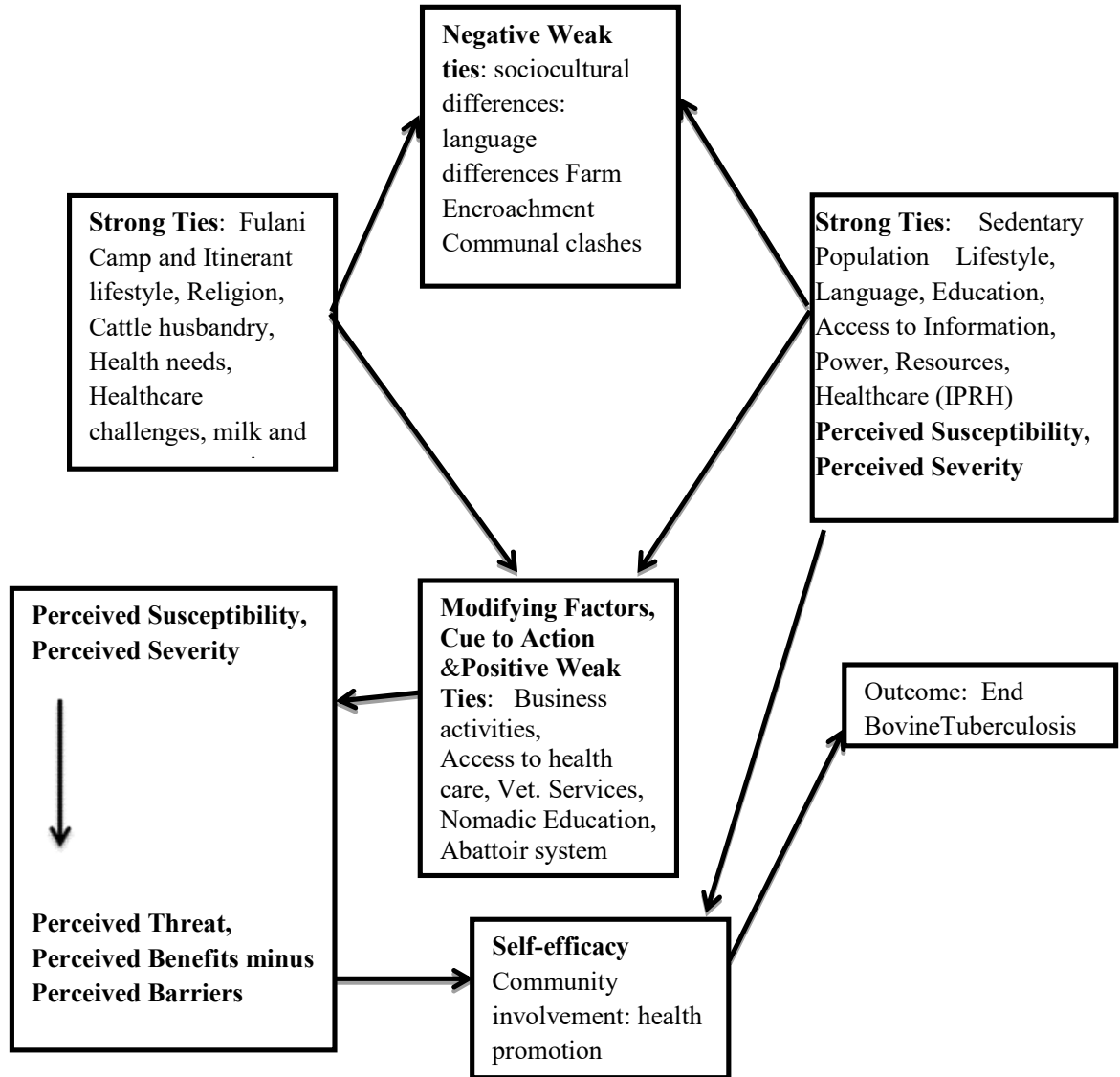


Figure 2.3: Showing the Relationship that Exist between Social Network Theory and Health Belief Model to Explain the Phenomenon

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Research Design

The study is an exploratory and cross-sectional survey. The approaches are proper on the grounds that the study was conducted at a single period to comprehend community contribution in the control of tuberculosis among Fulani nomads and their hosts. Thus, an exploratory study is proper for more persistent social phenomenon (Babbie, 2010). Similarly, most recent tuberculosis reports in Nigeria request a unique way to deal with the illness adequately. To accomplish this, information was gotten from respondents with two diverse cultural and ethnic backgrounds geared towards nomadic Fulani and the host communities.

Both qualitative and quantitative techniques were used in data gathering. For the quantitative approach, copies of a standardised questionnaire were utilized while for the qualitative technique, in-depth interview and key informant interview guides were adopted. The triangulation of these techniques supports thorough comprehension of the phenomenon under study.

3.2 Study Area

The study was conducted in Oyo state, Nigeria. Oyo State is cosmopolitan and contains four unmistakable persuasive subgroups in particular: Ibadan, Ogbomosho, Oyo, and Okeogun, all having a place with the Yoruba-dialect region of Nigeria. Ibadan, the capital city of Oyo state, has a projected population of around 7.8 million people (NPC, 2016). The state has three senatorial regions and thirty-three local government areas (LGAs).

Oyo State covers around a region of 28, 454 square kilometres and 1,219 metre over the ocean level, with a relatively high humidity. The dry season keeps going from November to March while the wet season begins from April and terminates in October

of the year. Normal everyday temperature goes between 25° C (77.0°F) and 35°C (95.0°F).

Oyo State mainly comprises indigenous homogenous individuals, until recently when there is a noticeable form of heterogeneous individuals due to population expansion. The indigenes principally include the Oyo, the Oke-Ogun, the Ibadan, and the Ibarapa individuals. Notably, different clans are presently settling in the state. Agribusiness is the primary occupation of the indigenous population of Oyo State. Since the atmosphere favours agricultural development, crops like maize, yam, cassava, millet, rice, plantain, cocoa, and palm trees are cultivated. Government-owned settlements are in locations like Lalupon, Akufo, Ijaiye, Ogbomoso, Iresaadu, Eruwa, Ilorra, and Ipapo. There are likewise government-owned animal farms at Saki, Fasola, and Ibadan. Also, international and federal agricultural research institutions are located in the state, of which International Institute of Tropical Agriculture (IITA), Ibadan is an example. Lastly, the vegetation is perhaps one of the major reasons which encourage Fulani migrants to move into the state.

This study was carried out in the Fulani camps and host communities in local government areas (LGAs) of Iseyin, Itesiwaju, Saki West, Saki East, Ibarapa North, and Ibarapa East. These LGAs have nomadic Fulani camps (*Gaas* i.e. *demonstrating close settlements of itinerant Fulani to their host communities. However, the camps now bear the names of the owners of the camps*). Three of these LGAs are reportedly having high prevalence of new tuberculosis cases in their zones while the other three LGAs have least number of new tuberculosis cases revealed in the same zones. In particular, in Oke-Ogun 1, Iseyin and Itesiwaju have highest and lowest new TB cases respectively. Similarly, in Oke Ogun 2, Saki West has the highest new TB cases while Saki East has the lowest. In Ibarapa zone, Ibarapa East and Ibarapa North have highest and lowest new TB cases respectively (MOH, TB unit, 2017). Likewise, Iseyin, Saki West, and Saki East LGAs have 11 political wards each while Itesiwaju, Ibarapa East, and Ibarapa North have 10 political wards (NPC, 2006). There are nomadic camps; (*Gaas*) are found in some of these political wards.

A classic itinerant Fulani family unit comprises an arrangement of concentric tents (built with reed, millet or corn stalk) in a semicircle where livestock are fastened. Each unit is made up of a headman, his spouse(s), youngsters, first cousins, and different

wards (Imperato, 1974). A family is a unit of financial endeavour headed by a male spouse (*Jomwuro*) while the essential settlement of the Fulani is *Wuro* (camp) that is made up of 12-20 house units and headed by *Jauro* or *Bulama*. A cluster of *Wuros* in a location are usually from the same clan, and they are known as the *Gure*. The oldest among siblings is the *Ardo* or group pioneer in *Gure*. Culturally, the *Ardo* exercises great control over nomadic Fulani leadership system. The *Ardo* has a duty regarding planning developments, interceding question inside the family (Akogunet *al*, 2012).

The major health concerns, which the migrant Fulani viewed as latent, likely to be triggered include *doiru* (tuberculosis), *peewol* (stiffness), *sadaure* (dermatitis), *djonte* and *pabboje* (a kind of fever). Itinerant Fulani's reliance on herbal remedies and engaging the service of private therapeutic clinics are all around recorded (Akogunet *al*, 2012).

3.3 Study Population

Babbie (2011) maintains that populace for a study is that group (more often than not of individuals) about whom we need to make inferences. The population in this study principally are the migrant Fulani and their hosts. The investigation, enlisted four categories of respondents:

- ✓ Nomadic Fulani;
- ✓ Sedentary people group;
- ✓ Gatekeepers (G): Community wellbeing specialists at DOTs (G1), TB control Supervisors (G2); Treatment Supporters (G3) Volunteers (G4); Veterinary specialists.
- ✓ Significant others: (the leaders host communities and nomadic Fulani).

Selection Criteria

The selection of participants into the study depended mainly on the objectives of the study. The condition was upheld to gain comprehensive understanding of dynamics of community ties in the prevention of bovine tuberculosis. In this way, data was acquired from respondents who fulfill the conditions beneath: The respondents were as follows:

- The Fulani withherdsmen.

- Individuals dwelling in the host communities/camps.
- Individuals within the age bracket of 15-64 years, since tuberculosis influences the general population in their productive age. This age section constitutes 97% of the aggregate TB patients (WHO, 2011; and NTBLCP, 2014).
- A gatekeeper, ranging from G1 to G5.
 - The understanding of G1-G5 is: Health specialists at DOTs (G1), Local government TB Supervisors (G2), Treatment Supporters (G3), Volunteers (G4), and Meat Inspectors (G5)
- For Key Informants Interview
 - Significant others should be community/camp leader.

Table 3.1 presents the LGAs that were chosen, and the accompanying conditions were utilized in the choice.

1. Presence of Nomadic Fulani camps.
2. One LGA with most noteworthy new TB cases in every one of the three zones where camps were found.
3. One LGA with most minimal new TB cases in every one of the three zones where camps were found.
4. All cases must be dealt with in the light of report.

In Table 3.1, LGAs that meet condition 1 are checked (√) while LGAs that meet condition 2-4 are in intense and stamped (S). Two LGAs were chosen from every one of the three zones.

Table 3.1 Nomadic Fulani Population and Tb Cases in Selected Local Government Areas of Oyo State

Zones	LGAs	TB cases(all forms) notified	TB case successfully treated	Suspects screened for TB	Nomadic Fulani Camps
Ibarapa	Ibarapa Central	212	212	690	√
	Ibarapa East	232	232	378	√ (S)
	Ibarapa North	102	102	299	√ (S)
Oke-Ogun 1	Iseyin	187	187	495	√ (S)
	Itesiwaju	33	33	76	√ (S)
	Kajola	128	128	327	√
	Iwajowa	38	38	161	√
Oke-Ogun 2	Saki West	166	166	913	√ (S)
	Saki East	30	30	92	√ (S)
	Atisbo	41	41	156	√
	Orelope	52	52	229	√
	Olorunsogo	68	68	174	√
	Irepo	57	57	134	√

Oyo State Ministry of Health, in collaboration with state TB and Leprosy control (2015)

3.4 Sample Size Determination

Atoyebi and Gbadegeshin (2005) affirm that a sample is a part of the populace chosen. The utilization of an endorsed method would help obtain useful data about the populace. This allows generalisation. In other words, the significance of quantitative techniques is their capacity to utilize smaller but representative sample to make conclusions about a larger population that would be restrictively costly to examine. Notwithstanding, the larger the sample used the lesser the potential and eventual statistical error and vice versa (Atoyebi and Gbadegeshin, 2005).

For the quantitative category, two sample size formulas are used: one for the known sedentary population and the unknown population (nomadic Fulani).

For known population, Yemane (1973) formula was used.

$$n = \frac{N}{1+N(e)^2} \dots\dots\dots(\text{formula 1})$$

Where

n= least sample size required

N= population of the six selected LGAs = 1,028,328 (NPC, 2006)

e= the precision i.e. the level of accuracy desired is 0.05

Non-response rate is 10%

$$n = \frac{1,028,328}{(1-1,028,328) (0.05)^2}$$

$$n = 400 + 40 = 440.$$

440.

While for the unknown itinerant Fulani population, Cochran (1977) formula were used

$$n = \frac{z^2 pq}{e^2} \dots\dots\dots(\text{formula 2})$$

ME= the desired margin of error (0.05)

$$q = 1 - p$$

Z= Z statistics for level of confidence at two-sided test is 1.96;

P= assumed proportion of population (0.5)

n= sample required

Non-response rate is 10%

$$n = \frac{\{0.5(1-0.5)(1.96)^2\}}{0.05^2} = 384$$

$$n = 384 + 38 = 422$$

Total sample size = 440+422 = 862 respondents

For the host communities, all the chosen LGAs were not uniform in terms of population estimate. The probability proportional to size (PPS) and weighing average was used in deciding the size of respondents in every one of the chosen LGAs to guarantee a sample proportion that represented the population. This was done through the following calculation.

$$\frac{\text{Number of questionnaire (Q) population of location (P)}}{\text{Subtotal (S)}}$$

For unknown population (nomadic Fulani), average proportion was used to determine the sample size in each of the selected locations.

i.e.
$$\frac{\text{Number of the questionnaire (Q)}}{\text{Numbers Locations (L)}}$$

$$\frac{422}{6} = 70.333$$

Approximately = 71 nomadic Fulani respondents were selected in each of the LGAs. Thus, a total of 866 respondents (community people and nomadic Fulani within age range 15-64years) were selected across six LGAs.

The table 3.2 below details a comprehensive summary of the sample size for both quantitative and qualitative data as collected on the field.

Table 3.2 Sampled Size for Quantitative and Qualitative Data Collection

s/n	Local Government Areas	Quantitative sample size		Qualitative Sample size	
		Host communities	Nomadic Fulani	IDI	KII
				Leaders	G1-6
1	Ibarapa East	51	52	3	4
2	Ibarapa North	45	65		
3	Iseyin	112	71	3	4
4	Itesiwaju	55	46		
5	Saki West	51	71	3	4
6	Saki East	122	71		
Total		436	376	9	12

Key = IDI- In-depth Interview; KII- Key Informant Interview; G- TB gatekeepers' category

3.5 Sampling Procedure

This segment presents the techniques of enlisting respondents for the study from the population. Table 3.3 presents multistage sampling methods. The method was used during the data collection process. This gave comprehensive explanation of how the researcher and the research team got to the respondents. In the first stage, Oyo State was purposively chosen since the state was positioned third among high TB prevalence states in Nigeria (NTBLCP, 2014). Also, Oyo State is characterised with a conducive environment for cattle rearing and itinerant Fulani camps in some of the local government areas (LGAs). Furthermore, of the 33 LGAs in the state, six (6) LGAs were purposively selected. Apart from the fact that all the six LGAs have nomadic camps, three of the LGAs recorded high new TB cases while the remaining three had low new TB cases.

Thirdly, the populace was clustered into two ethnic subgroups, namely the nomadic Fulani and the Yoruba communities. In the fourth stage, using the Fulani camp sample frame, 33% of the camps located at proximity to the Yoruba communities was randomly chosen in each LGA. As for the fifth stage, tents/family units were chosen through systematic procedure while balloting was utilized to pick first number. In the sixth stage, preferences were given to house-heads (who decide for the family) while other family members were recruited into the study based on inclusion criteria.

Table 3.3 Multi-stage Sampling Procedure

Stages	Sampling Techniques
1 st	Purposive sampling of Oyo State
2 nd	Purposive selection of six LGAs with Highest TB notified cases and lowest notified TB cases in each zone.
3 rd	Cluster of LGAs into two categories: LGAs with Nomadic camps and Without
4 th	Simple random selection of nomadic camps from the sample frame and their host communities.
5 th	Systematic selection of household/tents
6 th	Purposive selection of house head and any other member of the household

Procedure for qualitative data collecting centred on the following. Two general classifications were identified. These were TB gatekeepers (G) and significant others. The community/camp leaders were the significant others. Meanwhile, Tuberculosis gatekeepers were community health specialists at DOTs (G1), TB control Supervisors (G2), Treatment Supporters (G3), TB volunteers (G4), and Veterinary specialists or meat overseers (G5).

Twelve interview sessions were conducted in the study; four individuals were selected in each zone i.e. Okeogun 1, Okeogun 2, and Ibarapa zones. In each of the (12), Key Informant Interviews (KIIs) for TB guards were directed. Six sessions were conducted for TB control supervisors in each LGA. One interview session for community volunteer (CV) in Saki West. The study could not interview more community volunteers since the Oyo State government had relieved CVs of their duties through non-payment of their stipends. Two sessions were conducted for veterinary doctors/meat inspectors. This was so because there was no abattoir in some of the LGAs. Two (2) TB control administrators were met per zone.

3.6 Method of Data Collection

Data for the survey were collected from primary and secondary sources. In the quantitative data collection, copies of questionnaire were dispensed to respondents who met the selection criteria. However, in the qualitative method of data collection, In-depth Interview guide (IDI) and Key Informant Interview guide (KII) were used.

3.7 Research Instruments

3.7.1 Questionnaire

The quantitative instrument was a semi-structured questionnaire which was administered to respondents—Fulani nomads and the residents in host communities. The questionnaire was used to elicit information on socio-demographic characteristics of the respondents, their perceived susceptibility to TB. Also, it attempted to inquire about health-seeking behaviour, pattern of social interaction, communal-based TB preventive practices, and level of involvement in the prevention of the disease.

3.7.2 In-depth Interview (IDI)

In-depth interview sessions were led with the gatekeepers. These interviews elicited information on challenges of preventing the disease, relationship, pathways to TB health care, and patterns of community involvement among the population in preventing the disease. The qualitative responses gave further and deeper information from respondents' perspectives about communal nuances that interplay in TB control and prevention.

Specifically, TB gatekeepers included health workers at DOTs (G1), Supervisors (G2), Treatment Supporters & volunteers (G3), Meat Inspectors (G4) in each category. In all, 12 IDIs were conducted. The qualitative instrument involved interview guides.

3.7.3 Key Informant Interview (KII)

Interview sessions were conducted for the selected key personalities who were community/camp leaders among study population in Oyo State. They were provided key information on community awareness of Bovine Tuberculosis. They described patterns of relationship as these influence community engagement in the prevention of the disease. Besides, they explained the pathway to health of their communities/camps. In all, nine (9) KIIs were conducted for this study.

Steps in Designing the Instruments

- The researcher designed the questionnaires and interview guides in English language. The questions were constructed in line with the indicators of variables according to what exist in literature for validity purposes.
- The researcher consulted experts in the field of community health intervention to examine and validate the instruments.
- The researcher and field assistants conducted a pilot study to discover the likely problem that might occur in the field. All required adjustments were made on the instruments.

Table 3.4 presents the instruments that were used to elicit information on various objectives of the study. The instruments were questionnaire, key informant interview guide, and in-depth interviewguide.

Table 3.4 Matrix of Research Objective and Instruments for Data Collection

s/n	Research objectives	Questionnaire	KII	IDI
1	To determine the perceived susceptibility of nomadic Fulani to TB.	X		X
2	To examine health-seeking behaviour of nomadic Fulani and their Yoruba host communities to TB	X	X	X
3	To examine the roles of the gatekeepers in preventing the disease among Fulani in Oyo state.	X	X	X
4	To assess the extent of community participation in the prevention of Bovine Tuberculosis among study population.	X	X	X
5	To describe patterns of relationship between nomadic and their Yoruba host communities.	X	X	X

The Table 3.5 provides the summary of the triangulated research methods, the instruments coupled with categories, and summation of respondents involved in the study.

Table 3.5 The Matrix of Sample Size and Instruments for Quantitative and Qualitative Methods

Method	Instrument	Respondents	Total number
Quantitative	Questionnaire	Fulani nomads and sedentary population	812 respondents
Qualitative	IDIs	Health workers at DOTs (G1), Supervisors (G2); Treatment Supporters & volunteers (G3); Meat inspector (G4)	12 IDIs
	KIIs	Significant others: sedentary and Fulani community leaders	9 KIIs

3.8 Study Variables

The independent variable of the study is the community involvement. It is vital to initiate preventive tool for combating tuberculosis in the community. Thus, variable remains germane in the engagement of the high risk and neglected nomadic Fulani in the End TB strategy. Table 3.6 presents the objectives of the study, variables and their indicators, and the analysis plan.

Table 3.6 Problems matrix – Measurement of Variables

s/n	Objective	Variables /Indicators	Analysis plan
1	The perceived susceptibility of nomadic Fulani and host communities to BTB	Awareness: Time, sources, cattle diseases, symptoms Knowledge: Transmission: animal/human interface, Unpasteurized milk, Aerosol, Working on intestine, Seriousness of TB Practices and Exposure: Consumption practices, benefit and risk in such practices, Perceived predisposing factors	(IBM SPSS v. 21) Descriptive Statistics: frequency percentages, charts Inferential statistics: Comparison of perceived susceptibility of Fulani and sedentary population. Chi square: relationship between knowledge TB and practices; correlation to test strength of that relationship. Student T-test to unveil health practices based on Content analysis and thematic interpretation of IDIs and KIIs through Atlas,ti 7
2	To examine health-seeking behaviour of nomadic Fulani and their host communities to BTB	Preventive behaviour Primary: knowledge, consumption practices, Practices to avoid BTB Health Activities, Known health behaviour, Personal health behaviour, Secondary: (Health Maintenance)Screening and detection, seeking experts, Prompt treatment and limitation of disability Tertiary: Pathways to Health: Treatment Choices, Challenges in accessing BTB healthcare;	Inferential Statistics: Chi square will check the relationship between known health behaviour and personal health behaviour with practice to avoid BTB, choice of treatment, income, culture, and regression analysis effects of treatment duration and choice of treatments; personal health behaviour and consumption practices. Student T-test will test for differences between location and pathway to health, personal health behaviour, Difference in culture and preferred treatment choice. Content analysis through Atlas,ti 7 for IDIs and KIIs will give information on cultural health choices and geographical factors influencing their preferred pathways to health
3	Investigate the roles of the gatekeepers in preventing BTB among study population in Oyo state.	Identity of BTB gatekeepers Community Awareness of gatekeepers. Role Identification Role expected, Actual role Challenges: Available services, (accessibility, affordability) Usage of Services: Encourage and discourage factors; TB referral system; Cultural barrier Funds, Self-role appraisal	Simple Descriptive Statistics (IBM SPSS v. 21) respondents' view of gatekeepers (histogram, bar chart etc) Content analysisand thematic interpretations IDIs will expose the experience of the gatekeepers on field and appraise themselves. KIIs will unveil the response of study population with their cultural undertones Comparison of views
4	Assess the extent of community involvement in the prevention of Bovine Tuberculosis among study population.	Decision making : Individual and Community level Activities: Available TB health interventions, Initiators, Initiation Process, Operation, Previous commitments Resources support Accountability: Feedback from the community, Effects of community's influence Programme adjustment	Inferential Statistics: (IBM SPSS v. 21) Chi square to test the relationship between respondents' demographic profile and level of community involvement. Regression analysis to test the effect of demographic profile on level of community participation among respondents. Student T-test to test differential location and level of community involvement. Content Analysis: (Atlas ti 6) for IDIs will provide information on the level of programme acceptance and communal commitment and KIIs will give chronological explanation of initiation processes
5	To describe patterns of relationship	Sources of relationship Health, information, economic, religious, political,	Simple Descriptive Statistics (IBM SPSS v. 21) respondents' view of gatekeepers (histogram, bar chart etc) Inferential Statistics: (IBM SPSS v. 21)

	<p>between nomadic and their host communities.</p>	<p>Channel of relationship Formal and informal</p> <p>Types of relationship Social, Health, Economic, Religious, Educational</p> <p>Challenges of relationship Conflict and its management Resources, information and power</p>	<p>Chi square to test the relationship between sources and channel of relationship. Regression analysis to test the effect of sources, channel and types of relationships on challenges of relationship among respondents. Student T-test to test differences in perceived challenges to relationship based on the demographic profile and locations. Content Analysis: (Atlas ti 6) for IDIs will provide information on the level of programme acceptance and communal commitment and KIIs will give chronological explanation of initiation processes</p>
--	--	--	--

3.9 Validity of Research Instrument

Validity refers to the degree to which a research instrument measures what it is supposed to measure. In this study, indicators of variables on objective problem matrix were used to develop content and face valid questions. The instruments were given to experts in the field of medical sociology, health promotion, to validate the instruments. The study was conducted in the selected nomadic camps and host communities to ensure ecological validity.

3.10 Reliability of Research Instrument

The instruments were tested for consistency to ensure reliability of the research outcome. As a result, a pre-test of instrument on 50 respondents with replica characteristics of the study population were conducted. This helped the researcher gather feedback on respondents' understanding of and reaction towards the questionnaire. This would aid the adjustment of the eventual questionnaire, hence measure objectives adequately.

3.11 Recruitment and Training of Field Assistants

Members of the research team were recruited into the study. Earlier experience in community interactive research was considered in selecting the field assistants. The assistants had master in public health and were fluent in Yoruba. Also, Fulani translators were engaged. This was to ensure effective communication with nomadic Fulani. The research team members were oriented about Fulani culture. Team members were trained on note-taking techniques to ensure quality report. Smartphone recorders were not used at the inception of the interviews to avoid suspicion and misunderstanding that may occur during the first interactive session. After the community leaders gave informed consents, smartphone recorders were used. Field notes were jointly reviewed by all the team members that were present in the sessions.

3.12 Data Management

As a quantitative data instrument, copies of questionnaire were numbered serially and face administered. The copies of the questionnaire were tracked carefully for easy retrieval from the field. Retrieved questionnaires were cleaned, to avoid inconsistency,

and stored in a secured place daily. On return from the field, the coded questionnaire was imputed into the statistical package data bank for analysis. Recorded interview sessions were transcribed depending on the language in which the sessions were conducted. Folders and files were labelled properly to allow easy identification and retrieval of files. All instruments were kept safely, and there was a backup for all files electronically on Google drive.

3.13 Method of Data Analysis

This section explains the process of data analysis after the field work. This gives the background to all activities carried out in the process of cleaning and eventual data analysis.

3.13.1 Quantitative Data Analysis

Questionnaires were analysed using the Statistical Packages for Social Scientists (SPSS) Version 21. Analysis was done at both bivariate and multivariate levels to measure relationships between variables of the objectives of the study. At univariate analysis level, data on socio-demographic and socio-economic characteristics of the respondents were computed using descriptive statistics of frequency distribution tables. Graphs and charts were used to make vivid description of variables. For bivariate analysis, binomial regression, Chi-square, and student T-test were used to show influence, association, and differentiation respectively among variables. At multivariate level, multinomial regression analyses were also used to reveal the strength of relationship between variables. Table 3.6 captures the analysis plan of the study.

3.13.2 Qualitative Data analysis

Qualitative data were transcribed verbatim and translated as case applied. The sentences were edited without losing the original information. With the aid of Atlas.ti version 6 software, data were thematically analysed according to research objectives while content analysis, sequential thoughts, and logic guided the interpretation of respondents' thoughts and discussions.

3.14 Ethical Consideration

On the field, all codes of ethics were duly observed since this study involved human subjects. In this way, world best practices were embraced. The four cardinal standards, as per the International Mandate of 1974, are non-maleficence, regard for people, equity, and beneficence. These standards were entirely clung to in completing this investigation. The standards are clarified below.

1. Non-maleficence: The likelihood of physical damages is impossible. In any case, at any slight incitement, respondents could quit.
2. Respect for the individual: Respondents' cooperation in the investigation was deliberate. Respondents were appropriately educated about the investigation, and informed assent was ascertained through a letter of goal. Respondents were permitted to pull out of the study anytime. Data about each respondent were coded to secure their characters. TB patients, who were included, were not seen or treated as a case but rather kindred persons. This was done based on the consciousness that it could be disparaging to treat them as 'cases'.
3. Beneficence: This investigation assisted the Fulani nomads with knowing more about bovine TB and furthermore enabled them to use all open doors available to them to reach medicinal services offices and successfully take an interest in their wellbeing business.
4. Justice: Incorporation/avoidance criteria were plainly expressed. Along these lines, this exploration genuinely chose the examination members keeping in mind the end goal to speak to their perspectives.

Finally, the examination was endorsed by University of Ibadan Social Science and Institution Ethics Committee (UI/SSHEC/2017/0005).

3.15 Methodological Issues in conducting this Research among Fulani: Lesson Learnt

3.15.1 Instrument Design and Method of Administration

The result showed that the research assistants (RAs) were aware that designing instrument is a rigorous exercise since the development of the instrument depends on the type of study design. Generally, in the quantitative method, the questionnaire should be explicitly clear (Babbie, 2011). They reportedly asserted that clarity and

simplicity were germane to developing a good questionnaire. To them, presentations of thought need to be simple for easy comprehension. There is no need for ambiguous vocabulary which could preclude a better understanding of the subject matter. Proper use and management of words in the construction of the questionnaire are required for successful data collection process, especially among nomadic Fulani who might not have formal education. Based on their challenges, translation is necessary.

For example, it was expected that the questionnaire (EQ1) would be constructed in the English language, after which there should be a back-to-back translation of the questionnaire. This process requires that the researcher consult a Fulbe linguist to translate the EQ1 to Fulbe language (FQ1). Afterwards, the FQ1 should be given to another Fulbe linguist to translate the instrument (EQ2) to the English language. Then the researcher is expected to compare EQ1 and EQ2. This would help the researcher identify where original thoughts are distorted. The discrepancies should be reconciled. Apart from that, the RAs alluded that the skipping patterns of the questionnaire help in the facilitation of the session. This process would make the administration of the questionnaire easier for the researchers.

Considering the structure of the questionnaire, the researcher should design the question in such a way that the Fulani would not disbelieve the intent of the study. During the study, field diary exposed that the nomadic Fulani would suspect questioning pertaining to their physical numbers, wealth, cattle, the extent of their camp, pandemic and endemic episodes. These questions make them feel security-threatened. This could lead to insincere responses or outright refusal to continue in the study. Such occasion of refusal would affect other selected would-be respondents in that location. Another study has established that the nomadic Fulani were sceptic about government health interventions (Brieger, 2011). Thus, it is advised that socio-demographic data be situated at the last session of the questionnaire.

The questionnaire would start with a brief introduction of the study—this should be done painstakingly—followed by section B of the questionnaire. Before the interview session gets midway, the researcher is expected to establish a level of trust because the nomadic Fulani would have gained a better insight into the questionnaire. Then the researcher could ask the sensitive questions. Similarly, in the qualitative research among the population, the researcher should follow the same process and structure,

especially when the researcher is not a Fulbe native speaker. The following excerpt vividly captures their position about instrument design. The research assistants exposed the need for a separate questionnaire for the nomadic Fulani since some questions are peculiar to the nomadic Fulani, especially when such animal husbandry practices are involved. Again, the researcher skilfully engages skip instructions to navigate around relevant questions to meeting research query in a particular group. Above all, the RAs maintained that the content of the questionnaire were in tandem with the objectives of the study.

3.15.2 Research Skill of the Researcher and Research Assistants

The RAs believe that a researcher working among the nomadic Fulani should be adept in research methodology and be versatile in field research. In-depth understanding of the theoretical orientation and appropriate methods for the conduct of the research are needful. Similarly, the researcher must be able to recruit qualified and skilled research assistants (RAs) into the study. Ultimately, Fulbe native speaker with social research skill should be engaged, especially when such individuals are available. One of the research assistants demonstrated and identified that skill was required to stimulate respondents in order to elicit reliable data. The following quotations vividly capture his thought. At the start, the RAs were required to make the respondents ready to answer the questionnaire. The RAs were allowed to use their skill in this area. For instance, one of the RAs would not ask about them the questions as presented in the questionnaire. This style was adopted in order to get familiarised with the respondents.

For example, questions like “For how long have been living here?” and “Are you thinking of leaving this land?” were asked. These kinds of questions easily arouse the attention of the respondents. The usual responses included “No” and “It is our fathers' land.” The respondents would have laughed and maintained that God forbid them if they leave the land. Through that introductory dialogue, about four questions in the questionnaire were already asked. This brief discussion would set the researcher and the respondents on the same platform for the main questioning or interviewing. Thus, a research assistant would need to find a way to stimulate their respondents into the questioning.

The case exposed that there was a need to recruit native speakers of Fulbe language since the RAs required the service of interpreters on the field. For the researcher, such native speakers must be graduates in related fields, and they must have developed expertise in fieldwork among the study population or study areas. However, when such native speaker RAs are not available, the researcher can engage interpreters among nomadic Fulani who understand their host community language or individuals from host communities that understand Fulbe. The field note showed, generally, that research assistants with required academic qualification and experience should be supported by the interpreters to work on the field effectively.

The ratio of interpreter per RA depends on other variables, possibly time available to conduct the research, available fund, cum required fund. Field note showed that the researcher should be sensitive to culture, season, religion, and gender all of which could influence access to the nomadic Fulani. For example, the majority of the nomadic Fulani are herdsmen and Moslem with the respect for daily five-time prayer hours. This peculiarity influences their dressing. In setting selection criteria, the researcher should consider culture, gender, and religion. The researcher should recruit male and female RAs if would-be research respondents are males and females.

Through observation, it was discovered that a camp usually consists of several huts (some huts are still circular) in a concentric model, with the community leader's hut at the centre. Sometimes, Fulani camps are built to show that all mature males in a camp are not allowed to have free access to married huts. There are walls covering the frontage of the women lodge to prevent unscrupulous male visitors from their abode. This follows the popular slogan among the group, "*Baa shiga*" (don't enter). In such camps, male researchers would not be allowed to administer a questionnaire to the female respondents. This necessitates that the researcher should engage female research assistants. This was evidenced in Ogundairo (2015)'s research among 300 Fulani women. Thus, the researcher should recruit the appropriate and required number of RAs.

The RAs who shared their experiences exposed that within the nomadic Fulani camp women were relaxed in their dressing. In describing a typical scene in the camp, RAs bumped into nomadic camps where women tied wrapper to cover their waist while leaving cleavage area uncovered. Some of the RAs experienced culture shock in

camp, especially where *Baa shigawere* not upheld. In another camp, RAs were asked to hold on outside the camp initially. After some minutes, the RAs were allowed to come into the camp for the research activities. While the RAs were waiting outside the camp, the inhabitants were told to prepare for visitors. The camp preparation entailed conscious efforts of the women to cover their bodies. The RAs noticed that uncovering of the body was common among the married and older women. Ladies and young girls covered their bodies.

After the recruitment process, training of RAs constitutes an important aspect of a would-be successful research work, especially among the nomadic Fulani. There should be a set time for the training. The duration of the training depends on the capacity of the research work. This could be in terms of the volume of the instrument and how the instrument is to be administered. Specific areas of the study should be covered during training. Training discussion should include general introduction to the study, instrument, study population, in-depth overview of the nomads' cultural beliefs, their food, religion, occupation, household structure (both physically and socially), and their physical environment.

Also, role play should be staged during the training to ascertain that the RAs have internalised the culture and questionnaire content simultaneously. Every RA should be allowed to administer the copies of the questionnaire. Also, the RAs should switch role as respondents to fully appreciate the imagery of the fieldwork. Apart from RA to RA, few nomadic Fulani who are bilingual (Yoruba and Fulbe) should be invited into this session. The RAs should administer the questionnaire to the invitees. Afterwards, the research team should discuss the role play section. Pragmatic experience in the use of the questionnaire would help know the likely duration to conduct each interview as well as identify areas that need adjustment.

3.15.3 Community Entry among the Nomadic Fulani

The nomadic Fulani is literally a closed group, which makes interaction with another tribe an issue of concern. Gaining access to Fulani communities requires appropriate community entry process. It would be difficult to elicit information from nomadic Fulani without consulting their group prior to the fieldwork. Specifically, the researcher would consult the highest authority in the camp i.e. the leader (Sokoh,

2018), usually an adult male, who could be wealthier than all members of those communities as evidenced in our research sites (6 Local Government Areas) in Oyo State. Two methods of community entries were used, namely direct and indirect community entries. Direct community entry involves meeting the nomadic community heads without any intermediary to explain the purpose of the research. This is usually done when the researcher has understudied the group to identify its uniqueness and power dynamics. Similarly, meeting the central authority among the nomadic Fulani to gain other camp members is necessary since the group's political system largely depends on centralism. Evidence from the field note showed that the nomadic Fulani must be convinced of the benefits of the study before they would agree to participate in the study. These benefits could be immediate or differed.

Appropriate community entry method would aid availability of the nomads and effective use of resources allocated for the study. For instance, the research team had more nomadic Fulani who were willing to participate in the research than in camps where the team did not visit the camp prior to the actual fieldwork. Of course, it is quite important to engage necessary stakeholders for the research activities to gain acceptance.

Also, the researcher asserts that researchers should explain how the study would observe ethical considerations, namely beneficence, non-maleficence, respect for person, and confidentiality of the nomadic Fulani in the study they are about to participate. As the central authority accepts the proposed study, the information would be disseminated to other members of the camps. From the field experience, the nomads revere and believe in their leaders. The obedience is based on mutual trust in their leadership (Kwaghga, Tion, & Terwase, 2018; Dougall, Lewis & Ross, 2018). Indirect community entry relies on the use of an intermediary to connect the research team with the nomads. The researcher team would use the existing social relations between the nomadic Fulani leader and the intermediary to gain access to their camps.

Mostly, leaders of the host communities are usually found in the intermediary category. For this study, the host community leaders were consulted in Sani-sala in Saki West LGA. The leaders called for the inter-ethnic community meeting which lasted for 50 minutes. Most of the nomadic leaders and other camp representatives converged at the palace. It was a bilingual meeting. The king communicated in the

Yoruba language which was interpreted by a standby translator. The research team members and the intention were introduced to the nomadic Fulani. Also, the king presented the benefits of the proposed study, and the nomadic Fulani groups gave their consent to the study. Comparatively, in all the research sites for this study, the research team enjoyed easiest community entry in Saki West owing to the indirect community entry and leveraging on the existing community relationship between nomadic Fulani and their host communities.

Each type of community entry was used as a situation demanded. Conversely, there were occasions that required both methods of community entries. The field note showed that this occurred when the Fulani representative did not fully understand the intent of the research as disseminated to them through the host community leader in the inter-community/ethnic meetings. Then they would require that the research team duly and fully inform the nomadic leader. Having understood the purpose of the study, the nomadic leader would notify all tent heads to be available for the study.

The nomadic Fulani would inform the research team of the date and time which would be convenient for the nomads. In all, the conclusion of nomadic Fulani leader about the study influences the possibility of successful conduct of research among nomadic Fulani. The tent heads would inform their household members why it is necessary to participate in the survey based on the trust in their leader. In the absence of household head, other immediate family members would not participate since the male head has not ordered to do so. In such case, the research team is expected to move to the next available and willing household for the survey. However, when such concession is not available, then the research team would reschedule their visit to conduct the research for the household/tent.

3.15.4 Sampling Techniques in Nomadic Camps: Transect Walk and Social Mapping

The researcher highlights the importance of transect walk and social mapping in sampling technique. To him, the sampling procedure could be tasking, especially when the research team does not have prior knowledge of the camps in the study area. Fulani camps are not usually built in a systematic way to be accessed. Regardless of the community entry model engaged, the researcher suggests the need for the research team to request from the nomads to conduct transect walk and social mapping in the camps. In the study, transect walk helped the research team gain crucial information

about the immediate camps and the neighbouring camps where the research team proposed to survey. This includes where people meet and interact with one another. The exercise could help identify bilingual interpreters who could support the survey. Camp stakeholders should be actively involved since the purpose of the transect walk is clearly and repeatedly stated. The stakeholders who would participate in the transect walk and social mapping could be asked to give more information about other hidden camps. In the process, the research team is to ask questions about hut/tent, people, places, social and religious activities, and routes. This information should be recorded graphically for a reminder. More so, the research team should engage in social mapping alongside the hut numbering. A better understanding of the camp social interaction would engender understanding of power dynamism in the camp settings. This would guide the proposed survey. The research team should request for numbering of the hut. This could allow the research team to have household sample frame in the study area. At this level, other sampling techniques could be used. Also, the research team could use snowballing techniques when they could not get the required sample size for their study. These exercises when carefully done would aid effective sampling.

3.15.5 Pilot Study among the nomadic Fulani

The researcher emphasizes that a pilot study would help develop a good research instrument. The research instruments should be administered among a replica population. The recruitment of such population with a similar culture and orientation remains germane. The exercise provides information to test the reliability and validity of the research instrument. The pilot study would aid researchers to test in realism how likely the research procedure is to work to help them adopt how best to conduct the final research study (Ismail, Kinchin & Edwards, 2018). The researcher asserts that the research team could use the evaluation of the trial study set or adjust the work plan and the budget for the study. For example, the average time to fill a copy of questionnaire would determine the copies of the questionnaire a research assistant would complete in a day.

The viability of such a conclusion is based on whether it was properly done. In our case, Akinyele municipal was selected for our pilot study. This pilot study helped identify areas that needed adjustment, average duration (Crossman, 2007), levels of nomads' tolerance, and tendency to location of the respondents. For instance, repeated questions were deleted while questions that were not explicit were reconstructed.

Research assistants experienced a replica of field experience. Some of the RAs observed that the nomadic Fulani were used to spitting. This prepared their minds towards the imminent fieldwork. Arguably, pilot study may not be required in the qualitative study since interviewer could probe to suit the purpose of the study (Ismail, Kinchin, Edwards, 2018) except for young researchers (Janghorban, *et al.* 2014).

3.15.6 Salutation/Greeting

Greeting is one of the factors that help gain entrance to most communities, especially among the itinerant population. The research team should understand the greeting dynamics of the study population. This includes words and art. The words of greeting cover knowing the right word for each time. For example, in Fulbe language, *Ibalehnja* means ‘Good morning’ in the English language. The research team should understand the first call in greeting and the required response. In the art of or during the greeting, individuals are required to stoop when greeting one another. The researcher mentions that, in our case, a nurse led us to meet the camp leader. As we got there, the leader was seated in his hut, and the nurse with the research team stooped to greet.. After a few minutes, we were told to sit on a mat, which we did. Notably, the combination of the words and arts of greeting brings joy to the nomads and symbolised respect for their cultural value. The nomadic Fulani appreciate foreign speakers of Fulbe language. Regardless of the level of expertise by the individual in Fulbe language, the nomads would relate easily with someone who is eager to speak their language. Most of the time, they were willing to teach beginners the basic Fulbe language. Potentially, such an atmosphere would encourage nomads’ openness in the discussion.

3.15.7 Obtaining informed consent

This section explains the content of informed consent and how researchers could obtain informed consent among nomadic Fulani. The research team explained the purpose and study objectives to participants alongside necessary information. The information included details of partners, focus, duration, and respect for persons, beneficence, confidentiality, and maleficence of the survey. Also, the researcher identified two types of informed consent, namely community and individual informed consents. In the case, community informed consent preceded individual informed consent since at the community entry the research team would inform the nomadic community leaders or representatives who were gatekeeping for their camps. The leaders are to be well informed of the study before researchers are given opportunities

to meet the camp members. Culturally, no camp member would attend to questionnaire or interview until he/she was told to do so. For example, the researcher observed that if the researcher met them individually for research purpose, such individual nomad would ask whether the research team had seen their camp leader. In fact, after community informed consent, some families would still confirm from the camp leader whether the research exercise was permitted. After such confirmation, the research team would be allowed to share the purpose of the study, and the nomads give their consent. The nomadic Fulani do not perceive themselves as individuals but a group with strong social cohesion and ties. The RAs identified that the nomadic Fulani respondents largely relied on communal consent. In the process of gaining entrance into the community, the nomadic Fulani would want to hear the leader's consent about the survey. The leader's consent heralds the consent of the nomads.

3.15.8 Availability, Timing for Interview, and Interviewing

From the field note, the nomadic Fulani have daily routine activities which research team must fit into for the nomad to attend to a survey or interview session. The activities range from early morning milking by women, tending the herd for grazing, to marketing. Milking activity starts around 5 am to 9 am before the teenager cum young adults tend the herd for grazing. The grazing activity commences around 10 am, and the young herdsman are usually rotated according to each family's schedule. Some of the women would go to nearby markets to sell *nunu* (unpasteurised milk) and cheese. Depending on the volume of the milk, some of the women supply the milk to dairy farms. Also, nomadic Fulani transact business during the market days¹. This does not mean that nomadic Fulani are not always available on other days of the week. However, the research team needs to take into cognizance these activities before setting out to the research sites. To this effect, the research team would request for a convenient date and time from the camp leader. The camp leader could set a date that there would be limited activities or inform the camp members of the imminent survey and the benefits, then advise that every camp member should wait for the research team in their homesteads. Only a few of the nomads would do contrary to such order, which is usually due to unforeseen circumstances.

¹ The market opens every five days. Buyers and sellers consciously converge to transact business. Traders cover long distance and offer their products for sale. Products on such market days are sophisticated.

The research team would remind the camp leader of the proposed date for the research. This allows the research team leader to know if there are changes in the prior plan. Potentially, this would prevent the waste of resources. Also, the research team should not miss their appointment to conduct the survey. This may reduce the level of confidence the nomads entrusted in the research team and the proposed survey. The availability of nomadic Fulani for the survey would be guaranteed when the procedure is done properly and appropriately.

Apart from the availability of the nomadic Fulani, the field notes showed that the nomadic Fulani are usually concerned about the amount of time to be invested, especially when immediate gratification is not visible. Each section of administering questionnaire should not be more than twenty minutes at a session, except the nomadic Fulani are really interested in the subject under study. The research team could prepare little physical incentives² for nomadic Fulani participants regardless of the eventual benefits to their camps. The incentive should not be bait; this could preclude the science of the research.

Interviewing the nomadic Fulani requires skilled research team to do. The team members would request for an environment conducive for such activities. The suitable place should have seats sufficient for every participant of the research activity. On the field, the RAs exposed that the nomadic Fulani like a circular sitting arrangement. This is common where there is a community square meant for relaxation. In such a sphere, they eat together in a bowl of maize staple food(*Tuwo*). For instance, the nomadic Fulani, seated in circular form, were passing two calabashes of *Fura and nunu* with two wooden spoons. Each person in the circle would scoop from each of the calabashes and pass it to the next person. The calabashes go in a circle until the nomadic Fulani are done with the content. The nomadic Fulani would prefer to have the survey done in such a relaxed environment. Team members should request that such respondents be excused from the group. However, the researcher maintains that some of the Fulani would insist that such a survey is conducted in a group setting. If the request emanated from the opinion leader, other members of the group might align with such a position. The researcher should explain the implications of conducting the survey in a group setting such as interference and influencing other respondents' opinion. Proper

² Researchers are expected to give moderate incentive which would not impede other researchers who might not be able to provide incentive for the same population.

enlightenment of the nomadic Fulani would help them understand. Also, the RAs explained that in a situation where the nomadic Fulani insisted, the research team would assign a research assistant to each nomad in the group, and there was a moderator who was reading the questions to them. Each of the respondents would indicate his or her view, which would be recorded simultaneously.

3.15.9 Effective Communication

This aspect is necessary for a social survey. It involves the ability of the researcher/RAs and interpreters to ask the question correctly to mean what the question was meant to elicit from the respondents. The aspect depends on the simplicity of the questionnaire, quality training, pilot study appraisal, and interpretation. The words and sentences of the questionnaire should be explicit to avoid ambiguity (Babbie, 2011). The researcher must operationalise the necessary concepts and terms during the training so that the research team would be aware. The training should incorporate interpreters. The researcher maintains that during the interview session, the research team members should ask the interpreter to repeat what he/she just interpreted to the nomadic Fulani to ensure effective communication. One of the RAs used this reversal questioning method and discovered that the interpreter lost track of the question that was asked initially. Afterwards, he was using the method to ensure effective communication.

CHAPTER FOUR

DATA PRESENTATION AND DISCUSSION OF FINDINGS

4.1 Socio-demographic Characteristics of Respondents

Table 4.1 presents the socio-demographic factors of the respondents, including religion, age, ethnicity, sex, level of literacy, income, and occupation. The respondents' mean age was 35 years. While 22% were 15-24 years, 30% were within 25-34 years. This demonstrates that larger parts of the respondents were beneath 35 years of age. Above half (51.7%) of the respondents were males while 77.3% had wedded before this investigation. Fulani and Yoruba respondents were 46.3% and 53.7% respectively since the research was sited in Oyo State where the predominant language is Yoruba. A larger majority (76.4%) were Moslems. Inferably, this is possible since the Fulani are significantly Moslems. The respondents (33.3%) were not educated, 16.6% received elementary training, and 28.7% completed pre-secondary education

Respondents (2%) were prepared in professional vocations while 8.6% studied Quran. In word related dispersion, about half (48.2%) of the respondents traded in goods and services, 17.5% tended herds, and not much respondents (8.9%) farmed. Around 5% were housewives. The nomadic Fulani housewives did not believe that milking and selling dairy products is an occupation but a daily routine. Additionally, the respondents (7.9%) did not receive personal income. On monthly basis, a large percentage (45.9%) of the respondents received 1-10000 naira, and 20.3% got 10001 to 20000 naira. Along these lines, a larger portion (66%) of respondents received less than 20000 naira month.

Table 4.1 Socio-demographic Characteristics of Respondents

Demographic Characteristics	Frequency(n=812)	Percentage
Age (Mean age= 37)		
15-24 years	180	22.2
25-34 years	249	30.7
35-44 years	176	21.7
45-54 years	120	14.8
55 years and above	87	10.7
Sex		
Male	420	51.7
Female	392	48.3
Marital Status		
Married	628	77.3
Single	173	21.3
Widowed	7	0.9
Separated	4	0.5
Ethnic Origin		
Yoruba	436	53.7
Fulani	376	46.3
Religion		
Islam	620	76.4
Christianity	184	22.7
Traditional	8	1.0
Educational Qualification		
No formal education	275	33.9
Secondary	233	28.7
Primary	135	16.6
Higher/Tertiary	83	10.2
Quranic school	70	8.6
Vocational	16	2.0
Occupation		
Business/Trading	391	48.2
Herdsman	142	17.5
Farming	72	8.9
Student	62	7.6
Housewife	42	5.2
Driving	39	4.8
Civil/public servant	36	4.4
Unemployed	12	1.5
Clergy	12	1.5
Retiree	4	0.5
Income (naira/month)		
no income	64	7.9
1-10000	373	45.9
10001-20000	165	20.3
20001-30000	66	8.1
40001-50000	55	6.8
30001-40000	40	4.9
50001-60000	9	1.1
60001-70000	7	.9
70001 and above	33	4.1

Source: Fieldwork, 2017

4.2 Beliefs about Tuberculosis and Bovine Tuberculosis

Table 4.2 presents respondents' beliefs about tuberculosis and Bovine Tuberculosis, using the mean scores of the perceptions to decide their positions. The mean score was calculated as follows: Strongly Agree (SA) = 5; Agree (A) = 4; Undecided (UN) =3; Disagree (D) =2 and Strongly Disagree (SD) =1. To get the mean, $5+4+3+2+1=15/3 = 5$. The mean score greater or equal to 3, shows that the respondents are knowledgeable or agree with the notion and vice versa. Close to half (41%) of the male respondents believed that TB was a health condition from birth, and 30.6% of female respondents had similar belief. The mean scores of male (3.3) and female (3.7) showed that the belief was much common among female compared to male. Considering the mean scores, the belief was similar among Yoruba (3.4) and nomadic Fulani (3.4). In the LGAs, Iseyin, Itesiwaju, Saki West and Saki East recorded 3.2 mean score while the mean score was higher in Ibarapa East (3.6) and Ibarapa North (4.0). This showed that the notion that TB was a disease from birth was pervasive among the respondents.

More than half (58%) of male respondents reportedly agreed that staying healthy could prevent TB while 46% of female respondents aligned with this belief. Yoruba respondents recorded a higher mean score of 3.4 compared with Fulani (3.0). Across the LGAs, Saki West had the least mean score of 2.6, which showed that respondents in that LGA were not likely to consider sound health as a way to fight against tuberculosis. Also, the perception that TB incidence is age-related was common among the respondents. This belief was common among female (3.6) than male (3.4) respondents, and more among Fulani (3.6) than among Yoruba (3.5). The least mean score was recorded in Ibarapa North (2.1) while the highest mean score was found in Saki West (3.7). This shows that Ibarapa North did not have sufficient information about the disease.

Table 4.2 Respondents' Beliefs about Tuberculosis and Bovine Tuberculosis

Statement of Perception	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree	Mean Score
TB is a condition that someone is born with						
Gender						
Male	41 (9.8%)	131 (31.2%)	27 (6.4%)	92 (21.9%)	129 (30.7%)	3.3
Female	24 (6.1%)	96 (24.5%)	46 (11.7%)	99 (25.3%)	127 (32.4%)	3.7
Ethnic group						
Fulani	38 (10.1%)	104 (27.7%)	30 (8.0%)	71 (18.9%)	133 (35.4%)	3.4
Yoruba	27 (6.2%)	123 (28.2%)	43 (9.9%)	120 (27.5%)	123 (28.2%)	3.4
LGAs						
Iseyin	14 (7.5%)	62 (33.2%)	25 (13.4%)	46 (24.6%)	40 (21.4%)	3.2
Itesiwaju	5 (5.0%)	36 (35.6%)	10 (9.9%)	39 (38.6%)	11 (10.9%)	3.2
Saki west	28 (23.0%)	25 (20.5%)	6 (4.9%)	24 (19.7%)	39 (32.0%)	3.2
Saki east	9 (4.7%)	60 (31.4%)	16 (8.4%)	35 (18.3%)	71 (37.2%)	3.5
Ibarapa east	4 (4.0%)	25 (25.0%)	9 (9.0%)	28 (28.0%)	34 (34.0%)	3.6
Ibarapa north	5 (4.5%)	18 (16.4%)	7 (6.4%)	19 (17.3%)	61 (55.5%)	4
You are very healthy, so your body can fight off TB						
Gender						
Male	67 (16.0%)	108 (42.9%)	39 (9.3%)	52 (12.4%)	82 (19.5%)	3.1
Female	37 (9.4%)	145 (37.0%)	93 (23.7%)	59 (15.1%)	58 (14.8%)	3.1
Ethnic group						
Fulani	47 (12.5%)	124 (33.0%)	58 (15.4%)	58 (15.4%)	89 (23.7%)	3
Yoruba	57 (13.1%)	201 (46.1%)	74 (17.0%)	53 (12.2%)	51 (11.7%)	3.4
LGAs						
Iseyin	29 (15.5%)	96 (51.3%)	30 (16.0%)	14 (7.5%)	18 (9.6%)	3.6
Itesiwaju	13 (12.9%)	50 (49.5%)	12 (11.9%)	16 (15.8%)	10 (9.9%)	3.5
Saki west	16 (13.1%)	24 (19.7%)	13 (10.7%)	29 (23.8%)	40 (32.8%)	2.6
Saki east	30 (15.7%)	77 (40.3%)	47 (24.6%)	14 (7.3%)	23 (12.0%)	3.4
Ibarapa east	5 (5.0%)	46 (46.0%)	18 (18.0%)	14 (14.0%)	17 (17.0%)	3.1
Ibarapa north	11 (10.0%)	31 (28.2%)	12 (10.9%)	24 (21.8%)	32 (29.1%)	2.7
You are too young or too old to have TB						
Gender						
Male	28 (6.7%)	120 (28.6%)	50 (11.9%)	87 (20.7%)	135 (32.1%)	3.4
Female	16 (6.7%)	80 (20.4%)	64 (16.3%)	102 (26.0%)	130 (33.2%)	3.6
Ethnic group						
Fulani	16 (4.3%)	95 (25.3%)	58 (15.4%)	80 (21.3%)	127 (33.8%)	3.6
Yoruba	28 (6.4%)	105 (24.1%)	56 (12.8%)	109 (25.0%)	138 (31.7%)	3.5
LGAs						
Iseyin	14 (7.5%)	47 (25.1%)	25 (13.4%)	43 (23.0%)	58 (31.0%)	3.5
Itesiwaju	5 (5.0%)	23(22.8%)	10 (9.9%)	37 (36.6%)	26 (25.7%)	3.5
Saki west	13 (10.7%)	19 (15.6%)	13 (10.7%)	28 (23.0%)	49 (40.2%)	3.7
Saki east	6 (3.1%)	70 (36.6%)	44 (23.0%)	19 (9.9%)	52 (27.2%)	3.2
Ibarapa east	3 (3.0%)	18 (18.0%)	15 (15.0%)	38 (38.0%)	26 (26.0%)	3.7
Ibarapa north	3 (2.7%)	23 (20.4%)	7 (6.4%)	23 (20.9%)	54 (49.1%)	2.1

Source: Fieldwork, 2017

4.3 Perceived Susceptibility to Bovine Tuberculosis

Table 4.3 shows the relationships between the respondents' ethnic affiliations and some variables. From the table, the nomadic Fulani (17.3%) and the Yoruba respondents (9.4%) could not remember the information they received about tuberculosis. Accordingly, significant relationship (p-value: <0.05) was found between BTB information received and ethnicity. Above large number of Fulani respondents (79%) were unaware of strains of TB. Similarly, Yoruba respondents (75%) were not. However, few respondents were aware of tuberculosis causative agents. Consequently, no significant relationship (p-value >0.05) was found between ethnicity and knowledge of causative agents.

Again, Table 4.3 shows a significant relationship (p-value: <0.05) between ethnicity and the risk of respondents to contract Bovine TB while handling a disease-ridden intestine. For example, close to half (44%) of Fulani respondents disagreed with the possibility to contract infections when handling an infected intestine, and 23% of the Yoruba respondents aligned with such belief. Equally, less than half (46.2%) of Fulani respondents rejected the risk of contracting Bovine TB irrespective of their profession. The belief was also significantly related to ethnic affiliations.

Table 4.3 Cross Tabulation of Respondents' Knowledge about Bovine Tuberculosis with Ethnic Group

TB Information Received	Ethnic Group (n=812)		Result/Significance	
	Fulani	Yoruba		
Cannot remember	65 (17.3%)	41 (9.4%)	Chi-square Value: 48.229 df: 12; p-value: 0.000	
Could kill	144 (38.3%)	162 (37.2%)		
Severe Elongated Cough	49 (13.0%)	64 (14.7%)		
Treatable	62 (16.5%)	58 (13.3%)		
Cold/gestation/child	8 (2.1%)	11 (2.5%)		
Pollution/smoking/wind	7 (9.1%)	31 (7.1%)		
Contractible	17 (4.5%)	32 (7.3%)		
Body weakness/	1 (0.0%)	0 (0.0%)		
Upper body pain/weight loss/breath Problematic	15 (4.0%)	14 (3.2%)		
Monetary loss	5 (1.3%)	0 (0.0%)		
Avoidable	1 (0.3%)	20 (4.6%)		
One time/supernatural/ cat hair	1 (0.3%)	2 (0.5%)		
Cattle	1 (0.3%)	1 (0.2%)		
Awareness about Types of TB (Cause agents)				
Not Aware	297 (79.0%)	331 (75.9%)		Chi-sq. Value: 1.087 df: 1; p-value: 0.314
Aware	79 (21.0%)	105 (24.1%)		
Tendency to Contract BTB while Working on Infected Intestine				
Possible	132 (35.1%)	167 (38.3%)	Chi-square Value: 59.345; df: 2; p-value: 0.000	
Not Possible	168 (44.7%)	103 (23.6%)		
Can't Say	76 (20.2%)	166 (38.1%)		
Tendency to Contract BTB Based on Job				
Possible	153 (40.7%)	165 (37.9%)	Chi-square Value: 11.281; df: 2; p-value: 0.024	
Not Possible	174 (46.2%)	190 (43.4%)		
Can't Say	49 (13.0%)	166 (38.1%)		

Source: *Fieldwork, 2017*

One of the TBLS, a male who had worked in different DOTs, believed that people's level of awareness has increased appreciably unlike before, especially among the Yoruba. Their awareness was rated high, compared with the Fulani. The TBLS estimated that the Yoruba (65%) were better informed than the Fulani (30%). Buttrussing that conclusion, the host community members were aware about Tuberculosis, its treatment and the drugs to use. However, few of the hard-to-reach population were aware about free diagnosis and treatment. Possibly, this could be due to some cases of PLWTB among the Fulani. In fact, the TBLS had visited them before and subsequently enjoyed referral of suspected TB cases from the nomadic Fulani. The TBLS mentioned that PLWTB got their treatments freely, easily, and they escaped preventable death.

The opinion was based on the location where the nomadic Fulani who had TB cases were found. This awareness did not necessarily translate to preventive behaviour. In Ibarapa North, a Tuberculosis and Leprosy Control Supervisor identified lower level of awareness among the nomadic Fulani. Consequently, some of the nomadic Fulani contracted TB. He highlighted nomadic Fulani's life around cattle as a potent route to contract TB, but also noted that majority of the nomadic Fulani would not believe their susceptibility. Also, he exposed that the nomadic Fulani suffer social neglect from their proprietors whenever Fulani come down with active TB. The following excerpt captures the views and recommendation of the TBLS in Ibarapa North.

Many of their herdsmen get infected because they are always very close to their animals. Cows do have tuberculosis which could be contacted by the herdsmen. And when these herdsmen die, the owner of the cows donot show any concern. We have explained to them severally but they are yet to understand till now because most of them don't believe. If we can organize a counselling programme for them at least once or three times in a month and involve some of their people in the campaign to do the go around from settlement to settlement, that should help (TBLS/Male/38 years/Christian/5years experience/ Ibarapa North).

Furthermore, nomadic camp leaders confirmed the possibility of Bovine Tuberculosis among herds. They identified goats, cows, and sheep as the animals that showed the symptoms of Bovine Tuberculosis through coughing that lasted for a long time. Although they were not aware of the English name of the disease, they have developed

a local name for it which is called *Heren*. In Ibarapa East, *the camp leader* gave a description of how the disease affects its victims. To him, the *mycobacterium bovis* would infect lungs (*it would stand in the chest*), which is symptomatic. The symptoms of the disease include cough, paleness, and retarded growth in offspring. One of the Fulani leaders attempted to explain the causes of the zoonotic disease. The leader mentioned cold, drinking from the streams, and open living arrangement for herds.

Table 4.4 presents the statement of action and respondents' beliefs in animal related products through the mean scores of their perceptions. Less than tenth (9.8%) of the male and slightly above tenth (12%) of female respondents would not consume milk, cheese, and meat. However, the mean score was 4.1 for the male and female respondents. This shows that majority of the respondents still depend on animal products for protein. Expectedly and using mean score, nomadic Fulani (4.3) would consume such animal products more than their host communities (3.9). Iseyin, Itesiwaju, Ibarapa North would depend on the animal products at a similar rate (4.1) while Saki West and Ibarapa East had similar mean score of 4 points. More specifically, more male (2.8) than female (2.5) respondents would consume local medicine made with cattle excreted. This opens up another route to contracting bovine tuberculosis.

Similarly, nomadic Fulani (3) had more tendency to consume animal excrete than their Yoruba (2.4) counterparts. Thus, the Yoruba respondents disapproved such act. Also, only respondents from Saki West (3) and Ibarapa North (3.1) approved the act. Considering sucking directly from the cattle to quench thirst or have fun, high mean score connotes disapproval of the act. For instance, both males (3.5) and females (3.9) would not practise such act vice versa. Large majority (85.9%) of Yoruba respondents disapproved sucking milk from cattle breasts compared with less than half (45.5%) of the nomadic Fulani that had similar reservation for such act. However, in Saki East, about three quarters (75.5%) of the respondents reportedly approved sucking milk from cattle directly.

Table 4.4 Statement of Action and Respondents' Beliefs in Animal related Products

Statement of Perception	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree	Mean Score
You consume animal products such as milk, cheese and meat						
Gender						
Male	162 (38.6%)	206 (49.0%)	14 (3.3%)	26 (6.2%)	12 (2.9%)	4.1
Female	154 (39.3%)	174 (44.4%)	17 (4.3%)	29 (7.4%)	18 (4.6%)	4.1
Ethnic group						
Fulani	193 (51.3%)	137 (36.4%)	19 (5.1%)	20 (5.3%)	7 (26.3%)	4.3
Yoruba	123 (28.2%)	243 (55.7%)	12 (2.8%)	35 (8.0%)	23 (5.3%)	3.9
LGAs						
Iseyin	56 (29.9%)	107 (57.2%)	9 (4.8%)	12 (6.4%)	3 (1.6%)	4.1
Itesiwaju	25 (24.8%)	67 (66.3%)	5 (5.0%)	3 (3.0%)	1 (1.0%)	4.1
Saki west	56 (45.9%)	40 (32.8%)	7 (5.7%)	11 (9.0%)	8 (6.6%)	4
Saki east	91 (47.6%)	81 (42.4%)	3 (1.6%)	11 (5.8%)	5 (2.6%)	4.3
Ibarapa east	37 (37.0%)	45 (45.0%)	4 (4.0%)	7 (7.0%)	7 (7.0%)	4
Ibarapa north	51 (46.4)	39 (35.5%)	3 (2.7%)	11 (10.0%)	6 (5.5%)	4.1
You can consume medicine done with excrete such as urine and cattle dung						
Gender						
Male	74 (17.6%)	87 (20.7%)	19 (4.5%)	144 (34.3%)	96 (22.3%)	2.8
Female	50 (12.8%)	68 (17.3%)	19 (4.8%)	138 (35.2%)	117 (29.8%)	2.5
Ethnic group						
Fulani	88 (23.4%)	75 (19.9%)	19 (5.1%)	117 (31.1%)	77 (26.3%)	3
Yoruba	36 (8.3%)	80 (18.3%)	19 (4.4%)	165 (8.0%)	136 (31.2%)	2.4
LGAs						
Iseyin	21 (11.2%)	33 (17.6%)	8 (4.3%)	80 (42.8%)	45 (24.1%)	2.5
Itesiwaju	11 (10.9%)	30 (29.7%)	7 (6.9%)	43 (42.6%)	10 (9.9%)	2.9
Saki west	28 (23.0%)	23 (18.9%)	11 (9.0%)	40 (32.8%)	20 (16.4%)	3
Saki east	13 (6.8%)	40 (20.9%)	7 (3.7%)	56 (29.3%)	75 (39.3%)	2.3
Ibarapa east	14 (14.0%)	14 (14.0%)	2 (2.0%)	34 (34.0%)	36 (36.0%)	2.4
Ibarapa north	37 (33.6)	15 (13.6%)	3 (2.7%)	28 (25.5%)	27 (24.5%)	3.1
You can suck from cattle directly for any reason (for thirst and fun) (Reversed scoring)						
Gender						
Male	73 (17.4%)	75 (17.9%)	14 (3.3%)	135 (32.1%)	123 (29.3%)	3.5
Female	48 (12.2%)	42 (10.7%)	19 (4.8%)	162 (41.3%)	123 (29.3%)	3.9
Ethnic group						
Fulani	102 (27.1%)	87 (23.1%)	16 (4.3%)	124 (33.0%)	47 (12.5%)	2.8
Yoruba	19 (4.4%)	30 (6.9%)	17 (3.9%)	173 (39.7%)	197 (45.2%)	4.2
LGAs						
Iseyin	19 (10.2%)	27 (14.4%)	9 (4.8%)	76 (40.6%)	56 (29.9%)	3.7
Itesiwaju	8 (7.8%)	18 (17.8%)	5 (5.0%)	55 (54.5%)	15 (14.9%)	3.5
Saki west	38 (31.1%)	13 (10.7%)	8 (6.6%)	37 (30.3%)	26 (21.3%)	3
Saki east	18 (9.4%)	24 (12.6%)	4 (2.1%)	60 (31.4%)	85 (44.5%)	1.7
Ibarapa east	11 (11.0%)	25 (25.0%)	3 (3.0%)	31 (31.0%)	30 (30.0%)	3.4
Ibarapa north	27 (24.5)	10 (9.1%)	4 (3.6%)	37 (33.6%)	32 (29.1%)	3.3

Source: Fieldwork, 2017

4.3.1 Unpasteurised Milk Consumption Practices among Respondents

Table 4.5 shows the ingestion of raw milk within respondents' socio-demographic qualities. About 52% of the respondents ingested raw milk, of which two in every ten respondents ingested it once weekly, equated with 48.9% that ingested the unpasteurised milk at least 7 times weekly. Largely, about one quarter (24.9%) of the respondents declined the consumption of raw milk because of attendant irritation while one in every twenty respondents considered the risk of getting infected. However, 18.3% of the respondents were consuming the raw milk to stay healthy, less than tenth (7.3%) enjoyed it, and 5.8% and 6.7% affirmed that the unpasteurised milk was a cultural food and nourishment respectively. In view of the seeming risk in the ingestion of unpasteurised milk, many respondents (84.4%) asserted that there was no identified risk. Meanwhile, 11.1% believed in the likelihood to contract diseases from the ingestion of unpasteurised milk.

Table 4.5 Unpasteurised Milk Consumption Practices among Respondents

Unpasteurized Milk (n=812)	Frequency	Percentage	Sex P-value	Marital Status P-value	Religion P-value	Education P-value	Ethnic Group P-value	Income P-value	Age P-value	Information Received	Types of TB	Infected
Consumed	421	51.8	0.846	0.088	0.000	0.000	0.000	0.414	0.005	0.018	0.17	0.009
Not Consumed	391	48.2										
Consumption per week n=421)												
1 times	88	20.9	0.036	0.222	0.000	0.000	0.000	0.000	0.501	0.000	0.334	0.071
2 times	35	8.3										
3 times	31	7.4										
4 times	25	5.9										
5 times	22	5.2										
6 times	14	3.3										
7 times	206	48.9										
Reasons (N=812)												
Liked it	59	7.3	0.026	0.098	0.000	0.000	0.000	0.007	0.106	0.000	0.01	0.001
Strength Available	24	3.0										
Health	36	4.4										
Cultural food	149	18.3										
Refreshment	47	5.8										
Irritation	54	6.7										
Hygiene/ Infection	202	24.9										
Money	41	5.0										
No reason	6	0.7										
	194	23.9										
Perceived Risk (N=812)												
No Known Disease	685	84.4	0.047	0.97	0.028	0.000	0.000	0.548	0.008	0.079	0.001	0.656
Not at all	9	1.1										
Don't Know	28	3.4										
Disease	90	11.1										

Source: Fieldwork, 2017

Furthermore, Table 4.5 displays the association between raw milk ingestion practices with some variables. The knowledge about BTB cause agents was not associated significantly with respondents' income, marital status, and gender. However, the knowledge was significantly associated with BTB status information received, ethnicity, religious affiliation, and education. This exposes the relevance of ethnic group, religion, and education in the development of habitual consumption of unpasteurised milk. Also, the consumption of unpasteurised milk was significantly related to contracting BTB. Nonetheless, contracting BTB was not associated with frequency of consuming unpasteurised milk ($P=0.071$). Similarly, contracting BTB and other variables such as reasons for consumption, knowledge of BTB types, information received, income, ethnicity, education, religious affiliation, sex, except age, ($P = 0.106$) were significantly related. In terms of the seeming sternness of BTB after, the ingestion of unprocessed milk was significantly associated with age, ethnicity, education, and religious affiliation.

Table 4.6 presents statement of perception about healthier consumption practices of the respondents through the mean scores. Large majority of the female respondents (91.8%) and male respondents (92.9%) reportedly agreed that they consumed fruits daily. Similarly, nomadic Fulani (4.3) had a higher mean score than the Yoruba (4.2). Also, Saki West, Saki East, Ibarapa North, and Ibarapa East recorded mean score of 4.3 points each. In Iseyin, about 95% of the respondents claimed that they consumed fruits daily. For daily vegetable consumption, the females recorded higher mean score of 4.3 which showed that they would consume vegetable more than their male counterparts. Similarly, nomadic Fulani (4.3) recorded higher mean score in the consumption of vegetables than their host communities (3.7). This could be explained as a function of access to and availability of vegetation in their terrain. At the LGA level, 3.7 mean score was recorded in Saki West.

In response to whether the respondents considered their health before consumption of food, the male respondents had 4.0 mean score, and the Fulani recorded 3.8 compared with their host communities with 4.0. This shows higher consideration given to the choice of what to eat among the Yoruba than among the nomads. Only Itesiwaju recorded the least mean score (3.5) among the six LGAs when it comes to considering one's health before food consumption. Obviously, respondents are becoming conscious about their choice of meal.

In Ibarapa North, the camp leader demonstrated his unwillingness to take a position about the risk of contracting tuberculosis from the infected animals. The leader denied the occurrence of animal/human transmission of Bovine Tuberculosis on the camp. However, he made concession for uncooked animal product as a possible source of disease transmission. He justified his belief by their level of education which precluded them from meeting their health information needs, especially about zoonotic tuberculosis. However, he identified that female cattle displayed more risk of contracting the disease than male cattle. He was conscious of the symptoms that could occur in animals and human beings. He mentioned loss of appetites, coughing, and slimming. In his conclusion, he maintained that the disease was not common among them in that location. Also, the camp leader in Itesiwaju recognised that Bovine Tuberculosis was communicable from animal to animal but not to human beings, especially when such animal was not treated on time. His example shows a parallel relationship between zoonotic tuberculosis and tuberculosis complex. To him, there is tuberculosis for animal world and another TB for human beings.

Similarly, some of the camp leaders could not establish a link between Bovine Tuberculosis and tuberculosis complex, considering his explanations. One of the camp leaders reportedly lost a child to tuberculosis infection. Based on his account of the incidence, reasons for the child's death included ignorance about tuberculosis, delayed treatment, and failure to adopt preventive measures. According to him, "He would cough until he vomited blood and later died when he was not treated. We did not know that another child has been infected too" (*IDI/Leader/77years/leading 700 nomads/Saki East*). Other wards that developed the symptoms were taken to hospital in Ogbomosho for care. Afterwards, he related how deadly Bovine Tuberculosis had been in the last two years in their camp. Eventually, he concluded that Bovine Tuberculosis was responsible for the mortality recorded in his herds. He further exposed the difficulty in treating Bovine Tuberculosis and attributed the source of the infection to their contact with cross-border cattleherdsmen. The belief about the disease and other experience are exemplified in the following excerpt.

The cattle will start coughing once the coughing is taking too long and does not go. We will know it is that cough. They will be losing weight normally cows do not cough but once they started coughing it might be TB and it will kill them human being usually cough but they don't. We inject the cattle but there was no cure. No, because human being cannot contract this disease we would have been infected and died you won't have met us here (IDI/Leader/77 years/leading 700 nomads/ Saki East).

The camp leader in Saki East maintained that humans cannot contract the disease from cattle, considering his herd that come down with the said Bovine Tuberculosis before. He maintained that if the animal-human transmission was possible, then many of his children would have had that infectious disease.

Table 4.6 Statement of Perception about Healthier Consumption Practices of the Respondents

Statement of Perception	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree	Mean Score
You eat fruit everyday						
Gender						
Male	149 (35.5%)	241 (57.4%)	10 (2.4%)	16 (3.8%)	4 (1.0%)	4.2
Female	147 (37.5%)	213 (54.3%)	18 (4.6%)	11 (2.8%)	3 (0.8%)	4.3
Ethnic group						
Fulani	164 (43.6%)	177 (47.1%)	17 (4.5%)	15 (4.0%)	03 (0.8%)	4.3
Yoruba	132 (30.3%)	277 (63.5%)	11 (2.5%)	12 (2.8%)	4 (0.9%)	4.2
LGAs						
Iseyin	51 (27.3%)	125 (66.8%)	5 (2.7%)	5 (2.7%)	1(0.5%)	4.2
Itesiwaju	20 (19.8%)	74 (73.3%)	3 (3.0%)	4 (4.0%)	0 (0.0%)	4.1
Saki west	60 (49.2%)	46 (37.7%)	7 (5.7%)	6 (4.9%)	3 (2.5%)	4.3
Saki east	84 (44.0%)	93 (48.7%)	4 (2.1%)	8 (4.2%)	2 (1.0%)	4.3
Ibarapa east	37 (36.0%)	59 (59.0%)	2 (2.0%)	2 (2.0%)	1 (1.0%)	4.3
Ibarapa north	44 (46.4%)	57 (51.8%)	7 (6.4%)	2 (1.8%)	0 (0.0%)	4.3
You eat vegetable everyday						
Gender						
Male	155 (39.5%)	238 (56.7%)	11 (2.6%)	15 (3.6%)	1(0.2%)	4.2
Female	155 (39.5%)	208 (53.1%)	13 (3.3%)	14 (3.4%)	2 (0.5%)	4.3
Ethnic group						
Fulani	166 (44.1%)	183 (48.7%)	13 (3.5%)	13 (3.5%)	1 (0.3%)	4.3
Yoruba	144 (33.0%)	263 (60.3%)	11 (2.5%)	16 (3.7%)	2 (0.5%)	3.7
LGAs						
Iseyin	51 (28.6%)	106 (58.2%)	16 (8.8%)	6 (3.3%)	2 (1.1%)	4.2
Itesiwaju	30 (31.3%)	55 (57.3%)	2 (2.1%)	8 (8.3%)	1 (1.0%)	3.9
Saki west	40 (34.2%)	37 (31.6%)	4 (3.4%)	31 (26.5%)	5 (4.3%)	3.7
Saki east	59 (31.1%)	106 (55.8%)	17 (8.9%)	6 (3.2%)	2 (1.1%)	4.1
Ibarapa east	30 (30.0%)	47 (47.5%)	7 (7.1%)	15 (15.2%)	0 (0.0%)	3.9
Ibarapa north	35 (32.1%)	47 (43.1%)	17 (15.6%)	5 (4.6%)	5 (4.6%)	3.9
You consider your health in the choice of meal everyday						
Gender						
Male	145 (35.4%)	210 (51.2%)	27 (6.6%)	22 (5.4%)	6 (1.5%)	4
Female	102 (26.6%)	188 (49.0%)	36 (9.4%)	49 (12.8%)	9 (2.3%)	3.8
Ethnic group						
Fulani	124 (34.3%)	159 (43.8%)	20 (5.5%)	51(14.0%)	9 (2.5%)	3.8
Yoruba	123 (28.5%)	239 (55.5%)	43 (10.0%)	20 (4.6%)	6 (1.4%)	4
LGAs						
Iseyin	51 (28.6%)	106 (58.2%)	16 (8.8%)	6 (3.3%)	2 (1.1%)	4
Itesiwaju	30 (31.3%)	55 (57.3%)	2 (2.1%)	8 (8.3%)	1 (1.0%)	3.9
Saki west	40 (34.2%)	37 (31.6%)	4 (3.4%)	31 (26.5%)	5 (4.3%)	3.5
Saki east	59 (31.1%)	106 (55.8%)	17 (8.9%)	6 (3.2%)	2 (1.1%)	4.1
Ibarapa east	30 (30.0%)	47 (47.5%)	7 (7.1%)	15 (15.2%)	0 (0.0%)	3.9
Ibarapa north	35 (32.1%)	47 (43.1%)	17 (15.6%)	5 (4.6%)	5 (4.6%)	3.9

Source: Fieldwork, 2017

Table 4.7 presents the statement of perception about recurring of and mortality risk owing to tuberculosis infection among the respondents. The knowledge about the tendency of TB infection to result into mortality was high. More than three-quarter (88.6%) of the male respondents affirmed that TB was deadly while less than tenth (6.6%) of the female respondents disconfirmed the assertion. The mean score (4.2) for the two categories was high, which showed respondents' level of perceived severity. Considering the mean score, Fulani (4) demonstrated lower level of TB perceived severity compared with their Yoruba counterparts (4.3). Also, all the LGAs scored high in perceived severity of TB. Specifically, only Itesiwaju recorded least mean score of 4.0.

However, more than half (58.1%) of the male respondents believed that TB recurrence is not possible, especially after an individual has first TB experience while close to half (48.4%) of the female respondents had similar thought. The mean scores for the males (2.6) and the females (2.6) demonstrated a low level of knowledge about recurrence of TB among the respondents. Similarly, the Yoruba (2.7) and the Fulani (2.7) had low level knowledge about the recurrence of the disease. In the LGAs, only Ibarapa North scored highest (3) while Iseyin had least mean score (2.1) which showed the need for sensitisation about the reoccurrence of the disease among the respondents.

Table 4.7 Statement of Perception about Mortality and Recurring BTB among Respondents

Statement of Perception	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree	Mean Score
BTB is a deadly disease						
Gender						
Male	196 (46.7%)	176 (41.9%)	18 (4.2%)	12 (2.9%)	18 (4.3%)	4.2
Female	170 (43.4%)	165 (7.9%)	31 (7.9%)	15 (3.8%)	11 (2.8%)	4.2
Ethnic group						
Fulani	147 (39.1%)	157 (41.8%)	31 (8.2%)	15 (4.0%)	26 (6.9%)	4
Yoruba	219 (50.2%)	184 (42.2%)	18 (4.1%)	12 (2.8%)	3 (0.7%)	4.3
LGAs						
Iseyin	80 (42.8%)	87 (46.5%)	8 (4.3%)	5 (2.7%)	7 (3.7%)	4.2
Itesiwaju	46 (45.5%)	50 (49.5%)	2 (2.0%)	3 (3.0%)	0 (0.0%)	4.4
Saki west	72 (59.0%)	38 (31.1%)	6 (4.9%)	6 (4.9%)	0 (12.3%)	4.4
Saki east	82 (42.9%)	79 (41.4%)	16 (8.4%)	6 (3.1%)	8 (4.2%)	4.2
Ibarapa east	28 (28.0%)	53 (53.0%)	9 (9.0%)	6 (6.0%)	4 (4.0%)	4
Ibarapa north	58 (52.7%)	33 (30.0%)	8 (7.3%)	1 (0.9%)	10 (9.1%)	4.2
If you had BTB and got treated, you will not contract it again						
Gender						
Male	106 (25.2%)	138 (32.9%)	51 (12.1%)	64 (15.2%)	61 (14.5%)	2.6
Female	76 (19.4%)	114 (29.1%)	83 (21.2%)	77 (19.6%)	42 (10.7%)	2.7
Ethnic group						
Fulani	85 (22.6%)	114 (30.3%)	63 (16.8%)	59 (15.7%)	55 (14.6%)	2.7
Yoruba	97 (22.2%)	138 (31.7%)	71 (16.3%)	82 (18.8%)	48 (11.0%)	2.7
LGAs						
Iseyin	49 (26.2%)	62 (33.2%)	28 (15.0%)	34 (18.2%)	14 (7.5%)	2.1
Itesiwaju	22 (21.8%)	36 (35.6%)	6 (5.9%)	26 (25.7%)	11 (10.9%)	2.7
Saki west	22 (20.5%)	40 (32.8%)	17 (13.9%)	22 (18.0%)	18 (14.8%)	2.8
Saki east	48 (25.1%)	57 (29.8%)	31 (16.2%)	30 (15.7%)	25 (4.2%)	2.6
Ibarapa east	21 (21.0%)	30 (30.0%)	32 (32.0%)	10 (10.0%)	7 (7.0%)	2.2
Ibarapa north	16 (14.5%)	27 (24.5%)	20 (18.2%)	19 (17.3%)	28 (25.5%)	3

Source: Fieldwork, 2017

TB gatekeepers, specifically TBLs, were aware of Bovine Tuberculosis which is the type of tuberculosis that affects cows. They knew that herdsmen commonly contracted BTB through eating of cow meat and intake of cow unpasteurised milk. Such infection is not limited to herdsmen; sedentary individuals also with similar aforementioned dairy consumption practices are at the risk of BTB. One of the TBLs believed that dairy consumption practice was not a common cause of BTB transmission since the milk has undergone some processes. However, this depicts that the TBL was not aware of the sales and the consumption of the unpasteurised milk. Such assumption might have reduced TB control intervention attention given to the nomadic Fulani. Similarly, another gatekeeper explained that majority of the people were not aware of the problem:

many of the Yoruba people don't understand that it could be contacted from cows because what you don't know, you don't know and that is why many people take cow milk without first boiling it (TBL/Male/38 years/Christian/5years experience/Ibarapa North).

Also, one of the veterinarians maintained that few people knew about Bovine Tuberculosis. To him, some people have not even heard about BTB before. Consequently, government health promotion was recommended. This reality projects the need to engender an enlightenment campaign for farmer, the Fulani, community members, and butchers. Potentially, there would be an increase in the level of awareness and knowledge of Bovine Tuberculosis among the study population. He maintained that the host communities had more knowledge than the Fulani in Eruwa since there was a DOTs centre in that environment. He mentioned different TB control and prevention activities available in their community to validate his position. Their activities took place some years ago. Their community leader wrote to churches and mosques about tuberculosis and encouraged them to refer suspected TB cases to special clinic for people with TB. Above all, he said: "There is still room for more awareness about the disease" (KII/Veterinarian/Meat Inspector/Male/ 45 years/10 years of experience/Eruwa). As at the time of this study, there were no specific official control activities targeted towards BTB in Eruwa. This was similar in other LGAs.

Also, a Fulani camp leader declared that BTB was more prevalent in female cattle. For signs, the leader stated coughing alongside paleness, becoming slimmer, and pulling out from herds. These would bring about retardation in growth in cattle. Based on his

evaluation, nomadic Fulani are scarcely conscious of this fact. Moreover, the Fulani were reportedly treating their herds themselves without consult veterinarians for proper and adequate treatment whenever they noticed the symptoms of Bovine Tuberculosis. In fact, some of the Fulani were handling injectable medicine. He admitted the propensity for animal-human transmission of Bovine TB. However, he maintained that such transmission had not occurred in his camp before. The extract below described his belief about the disease:

In this camp, I have not heard or seen of such before but it is possible because whenever cattle come down with the infection and the beef is consumed without proper cooking, the infection could be contracted by consumers (IDI/leader/75years /30years of residence/ leading 500 nomads/ Ibarapa north).

The host community leaders expressed the possibility for human to contract the BTB from the cattle.

Table 4.8 displays the statement of perception about perceived susceptibility to Bovine Tuberculosis among the respondents. Respondents' perception of the risk in consumption of unpasteurised or partially cooked cattle products was low. Specifically, male respondents (2.7) and female respondents (2.8) had demonstrated low perceived risk of the disease owing to consumption of dairy product, especially when products were not well processed. The Yoruba (3) scored higher than the nomadic Fulani (2.7) in the consumption of animal products. Slightly above three-quarter (35%) of the Yoruba and 24.8% of the Fulani respondents agreed that consumption of unpasteurised milk/ partially cooked meat could result into Bovine Tuberculosis. Also, Saki East (2.5) recorded lowest mean score followed by Iseyin (2.9) and Saki West (2.9) which demonstrated that such LGA had limited information about Bovine Tuberculosis. Ibarapa North, with the highest mean score of 3.5, had one third (33.6%) of the respondents who reportedly confirmed the risk in such consumption.

Table 4.8 Statement of Perception about Respondents' perceived Susceptibility to BTB

Statement of Perception	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree	Mean score
You are at risk of BTB based on your unpasteurised milk/ partially cooked meat consumption						
Gender						
Male	39 (9.3%)	108 (25.7%)	72 (17.1%)	108 (25.7%)	93 (22.1%)	2.7
Female	31 (7.9%)	87 (22.2%)	104 (24.5%)	94 (24.0%)	76 (19.4%)	2.8
Ethnic group						
Fulani	27 (7.2%)	66 (17.6%)	62 (16.5%)	107 (28.5%)	113 (32.2%)	2.7
Yoruba	43 (9.9%)	114 (26.1%)	114 (26.1%)	94 (21.6%)	56 (12.8%)	3
LGAs						
Iseyin	17 (9.1%)	50 (26.7%)	49 (26.2%)	33 (17.6%)	38 (20.3%)	2.9
Itesiwaju	6 (5.9%)	35 (34.7%)	27 (26.7%)	27 (26.7%)	6 (5.9%)	3.1
Saki west	20 (16.4%)	21 (17.2%)	22 (18.0%)	41 (33.6%)	18 (14.8%)	2.9
Saki east	5 (2.6%)	33 (17.3%)	41 (21.5%)	58 (30.4%)	54 (28.3%)	2.5
Ibarapa east	9 (9.0%)	31 (31.0%)	27 (27.0%)	20 (20.0%)	13 (13.0%)	3.1
Ibarapa north	13 (11.8%)	24 (21.8%)	10 (9.1%)	23 (20.9%)	40 (36.4%)	3.5

Source: Fieldwork, 2017

4.4 Examine Health-Seeking Behaviour of Nomadic Fulani and their Host

Communities to BTB

In Ibarapa North, a TBLS upheld that many people believe in local treatments. He mentioned that some people with active BTB seek alternative medicine. He did not state why such people opt for the alternative treatment even with available free modern treatment at the DOTs centre. Apart from mortality tendencies, owing to BTB infection, this could be detrimental to the community since persons with active BTB could infect 10-15 persons around them. The TBLS's comment shows that family members contribute largely to the health-seeking behaviour of the PLWTB. Also, traditional and herbal medicine vendors should be sensitised about the BTB. This conviction is shown in the following picturesque expression.

We've treated one PLWTB for a month. Suddenly, the person disappeared, and we tried to find him. No one was ready to tell us where to find the person and we couldn't find the person. But later after some time we heard that the person was in an herbalist shrine. We took a sample from him again and he tested positive. Then we went back but couldn't find the patient at the shrine again. The family had moved him to another location before we came. Eventually, they later brought the patient who died two day after. Also, the herbalist was infected and he commenced treatment immediately (TBLS/Male/38 years/Christian/5years experience/Ibarapa North).

Evidently, the death of the PLWTB demonstrates the likelihood to die of TB infection. The incidence encouraged the traditional healer to seek modern healthcare which was actually free. Possibly, the family members would realise their wrong health decision. They might express betrayal of trust placed on the traditional healer who promised them cure for the TB infection but later engaged modern medicine for his own case. This incidence would be a good media content in health promotion/campaign, especially in locations where community members rely solely on herbal or traditional care.

4.4.1 Bovine Tuberculosis Prevention Practices at Individual Level

Table 4.9 shows the statement of perception about whether tuberculosis is preventable and curable among the respondents. A large majority (89%) of male and (83%) of female respondents asserted that tuberculosis was both curable and preventable. Across ethnic affinities, a majority of Fulani (86.4%) and Yoruba (86%) respondents reportedly affirmed that the disease was curable and preventable. The mean scores (4.2

for Fulani and 4.1 for Yoruba) showed that the respondents were aware of the nature of the disease. In the study area, only Saki West recorded least mean score of 3.9 points which also demonstrated the level of TB awareness, its preventability, and curability in the LGAs.

Table 4.9 Statement of Perception about whether or not Bovine Tuberculosis is Preventable and Curable

Statement of Perception	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree	Mean Score
BTB is curable and preventable						
Gender						
Male	163 (38.8%)	203 (49.5%)	15 (3.6%)	24 (5.7%)	10 (2.4%)	4.1
Female	156 (39.8%)	173 (44.1%)	23 (5.9%)	18 (4.6%)	22 (5.6%)	4
Ethnic group						
Fulani	170 (45.2%)	155 (41.2%)	14 (3.7%)	22 (5.9%)	15 (4.0%)	4.2
Yoruba	149 (34.2%)	226 (51.8%)	24 (5.5%)	20 (4.6%)	17 (3.9%)	4.1
LGAs						
Iseyin	76 (40.6%)	88 (47.1%)	5 (2.7%)	11 (5.9%)	7 (3.7%)	4.2
Itesiwaju	30 (29.7%)	62 (61.4%)	4 (4.0%)	3 (3.0%)	2 (2.0%)	4.1
Saki west	49 (40.2%)	49 (40.2%)	4 (4.3%)	5 (4.1%)	15 (12.3%)	3.9
Saki east	76 (39.8%)	81 (42.4%)	16 (3.4%)	14 (7.3%)	4 (2.1%)	4.1
Ibarapa east	27 (27.0%)	63 (63.0%)	6 (6.0%)	2 (2.0%)	2 (2.0%)	4.1
Ibarapa north	61 (55.5%)	38 (34.5%)	3 (2.7%)	6 (5.5%)	2 (1.8%)	4.4

Source: Fieldwork, 2017

Figure 4.1 presents Bovine Tuberculosis control and prevention activities according to ethnic groups. More than half (60%) of the Yoruba respondents affirmed that there was treatment support for PLWTB while 16.7% mentioned TB diagnosis and free drug each. For the nomadic Fulani, close to half (46.2%) of the respondents asserted that there was treatment support, but the Fulani believed that there were no referral of suspected BTB cases and free drugs for PLWTB. Consequently, ethnic affiliation was significantly related ($p < 0.05$) to the availability of all BTB control and prevention activities in the study area.

In Okaka, the designated TB control officer reported absenteeism of PLWTB. Based on her report, necessarily follow up was not available to checkmate the patient that refused to come back to commence the treatment. Her view shows that there was no provision for DOTs centre in Okaka but in Otu. She exposed that PHC system would require a patient to be registered at a cost before the person would be attended to. This would make the TB suspect case pay for the first-line diagnosis before such person would be referred to DOTs. Also, it was revealed that there was no way for Otu TB office to confirm whether the patient actually commenced the treatment at the Okaka. This exposes referral gap. The excerpt below captures the explanation given earlier.

The person that tested positive and he knew that he had TB. We asked him to open card and I told him to go to “Otu” so that they too will commence treatment and be monitored. He said he is coming back but since then, we have not seen him. (KII/female/45 years/Okaka /10 years of experience/).

On the contrary, the TBLs reportedly asserted that many of the Fulani had been treated of tuberculosis infection in the Ibarapa North DOTs before. Specifically, one Quaranic teacher who had 300 Arabic students was treated freely. He had spent a lot financial fortune without a positive result before he met with DOTs officer. The teacher was visited about 15 km away from the DOTs. The teacher could not believe that the treatment would be free due to previous experience with patent medicine vendors. One of the TBLs maintained that after 2 months of treatment, the patient was already getting better. The teacher reportedly joined and worked hard to sensitise the Moslem community in his preaching on Fridays’ *Jumat* service. This presents the possibility of recruiting previously infected persons into sensitisation of the people about BTB.

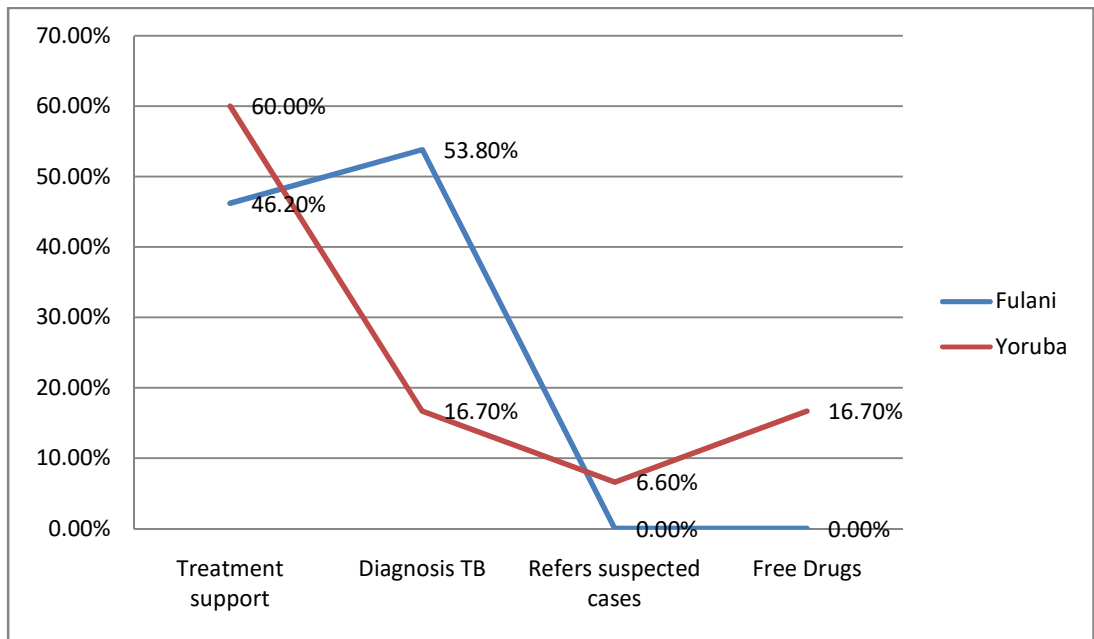


Figure 4.1 Tuberculosis Control and Prevention Activities according to Ethnic Groups

Table 4.10 presents the statement of perception about living arrangement in contracting tuberculosis. Many of the female (79.6%) and male (84.6%) respondents affirmed the possibilities of BTB transmission within household where an individual was infected. The males and females reportedly recorded high mean scores of 4.1 and 4 respectively in the study. Thus, the respondents demonstrated high level of awareness about tuberculosis transmission risk among cohabitants. Similarly, the nomadic Fulani (4.2) scored higher than the Yoruba (4.1). Ibarapa North (4.3) recorded highest mean score while 84.5% of the respondents affirmed that living with persons who have BTB could predispose one to the risk of contracting BTB. However, the least mean score was recorded in Ibarapa East (3.4), and 69% of the respondents were aware of the risk. Tuberculosis control officials in Ibarapa North and Ibarapa East could form a synergy to achieve a better result in preventive activities.

Table 4.10 Statement of Perception about Influence of Living Arrangement and Contracting Bovine Tuberculosis

Statement of Perception	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree	Mean Score
BTB can spread quickly among people living together in a home/ tent						
Gender						
Male	154 (36.7%)	201 (47.9%)	21 (5.0%)	24 (5.7%)	20 (4.8%)	4.1
Female	159 (40.6%)	153 (39.0%)	29 (7.4%)	33 (8.4%)	18 (4.6%)	4
Ethnic group						
Fulani	147 (39.1%)	149 (39.6%)	28 (7.4%)	29 (7.7%)	23 (6.1%)	4.2
Yoruba	166 (38.1%)	205 (47.0%)	22 (5.0%)	28 (6.4%)	15 (3.4%)	4.1
LGAs						
Iseyin	60 (32.1%)	96 (51.3%)	11 (5.9%)	9 (4.9%)	11(5.9%)	4
Itesiwaju	37 (36.6%)	53 (52.5%)	2 (2.0%)	7 (6.90%)	2 (2.0%)	4.2
Saki west	48 (39.3%)	41 (33.6%)	9 (7.4%)	13 (10.7%)	11 (9.0%)	3.8
Saki east	88 (46.1%)	81 (42.4%)	10 (5.2%)	9 (4.7%)	3 (1.6%)	3.9
Ibarapa east	25 (25.0%)	44 (44.0%)	9 (9.0%)	14 (14.0%)	8 (8.0%)	3.4
Ibarapa north	55 (50.0%)	38 (34.5%)	9 (8.2%)	5 (4.5%)	3 (2.7%)	4.3

Source: Fieldwork 2017

Similarly, one of the TBLSs mentioned that stigmatisation prevented some of the PLWTB to avoid being noticed by their neighbour. This affects people's health-seeking behaviour. According to her, when people perceived that someone has come down with active BTB, they would run away and not move closer. The TBLS asserted that the negative social reaction to PLWTB precluded suspected BTB cases to utilise DOTs in their communities. However, the TBLS concluded that people who truly valued themselves did not care about what others do to them. They just want to get cured and live normal again. Also, the community volunteer maintained that PLWTB experienced stigmatisation as BTB became active. Consequently, the patient would withdraw from the community life. Meanwhile, previous associates of the patient would want to know their status, which invariably influenced their health-seeking behaviour. The extract below expresses the nuances in patient stigmatisation.

...the person cannot go to the market or church if he/she is a Christian. Because when he/she gets there and starts coughing, people will begin to give him/her space. But as the person starts taking drugs, the cough will start reducing and other people will get to know about it from there. And some people will want to know how he gets to contract the cough. So they will want to ask about it. Some of them will think, I have been close to this infected person and they will want to come for test (KII/Community volunteer/female/age/Christian/3years experience /Saki west).

Table 11 presents a cross-tabulation of social support for people living with BTB in the LGAs. More than half (51.0%) of the Yoruba respondents asserted that there was encouragement support for PLWTB compared with 30.8% of Fulani respondents who agreed with such support. However, more than half (66.7%) of the Yoruba respondents stated that PLWTB were not encouraged in Saki West. More than three-quarters (77.5%) of the Fulani respondents asserted that there was no encouragement for the patients. Availability of encouragement was significantly related ($P < 0.05$) to LGAs among nomadic Fulani. This shows that the LGA where nomadic Fulani were located would determine whether or not PLWTB would access encouragement. Also, the Yoruba respondents (55.4%) in Iseyin reported information support for the PLWTB compared with 22% of the nomadic Fulani who reported such information support in the same LGA. Furthermore, nomadic Fulani respondents asserted no information

support in Saki West (91.5%), Ibarapa North (89.2%), and Saki East (81.7). Considering the trend of the results, the Yoruba had more access to information support more than the nomadic Fulani. Also, associational test revealed that information support for PLWTB was significantly related ($P<0.05$) to LGAs both in intra-ethnic and inter-ethnic groupings.

Also, Table 11 reveals the relationship between dietary support and respondents' LGAs. Obviously, all Yoruba respondents in Ibarapa North asserted that there was no dietary support for PLWTB in their community. Likewise, there was no dietary support in Saki East (96.7%) and Iseyin (91.1%). In nomadic camps across LGAs, dietary support was reportedly available in Itesiwaju (19.6%), followed by Ibarapa East (9.6%) and Saki West (8.5%). This demonstrates that there was a stronger social solidarity among nomadic in Itesiwaju. Availability of dietary support for PLWTB was significantly related ($P<0.05$) to LGAs both in intra-ethnic and inter-ethnic groups. This shows that there was a limited dietary support for the PLWTB in the study area. On financial support for the PLWTB, 15.4% of the nomadic respondents in Ibarapa East asserted that there was financial support. 18.5% in Ibarapa North and 23.9% in Saki East shared similar view. Fulani respondents' LGA of residence was significantly related ($P<0.05$) to the financial support received by the PLWTB. Thus, the location of the Fulani would determine whether or not he/she would have access to financial support. In the host communities across LGAs, 17.2% of the Yoruba respondents in Saki East reportedly maintained that there were financial supports for PLWTB while 17.8% in Ibarapa North and 25.9% in Iseyin shared similar opinion. Within Yoruba ethnic group, there was significant relationship ($P<0.05$) between financial support and respondents' LGAs of residence. Thus, regardless of respondents' ethnic affiliations, financial support was significantly related to respondents' location.

Table 11 shows the relationship between respondents' LGAs and availability of TB treatment support. In nomadic camps, more than tenth (12.7%) of the Iseyin respondents and 56.6% in Itesiwaju reported that there were treatment supports. In the host communities, Itesiwaju (47.3%) and Saki West (41.2%) reportedly asserted that there were treatment supports for PLWTB. This was significant at both location and ethnic groupings.

Table 4.11 Cross-tabulation of Social Support for People living with TB in the LGAs

	Encouragement Support						Total
	Yoruba		Result	Fulani		Result	
	Not Supported	Supported		Not Supported	Supported		
Iseyin	69 (61.6%)	43(38.4%)	$\chi^2=$	59 (83.1%)	12(16.9%)	$\chi^2=$	$\chi^2=$
Itesiwaju	34 (61.8%)	21 (38.2%)	4.108	29(63.0%)	17(37.0%)	12.465	10.269
Saki west	34(66.7%)	17(33.3%)	Df = 5	55(77.5%)	16(22.5%)	Df = 5	Df = 5
Saki east	70 (57.4%)	52(42.6%)		44 (62.0%)	27 (38.0%)		
Ibarapa east	25 (49.0%)	26 (51.0%)	P= 0.534	36 (69.2%)	16 (30.8%)	P= 0.029	P= 0.068
Ibarapa north	28 (62.2%)	17 (37.8%)		41(63.1%)	24(36.9%)		
Information Support							
Iseyin	50 (44.6%)	62 (55.4%)	$\chi^2=$	55 (77.5%)	16 (22%)	$\chi^2=$	$\chi^2=$
Itesiwaju	31 (56.4%)	24 (43.6)		27.661	33 (71.7%)			13 (28.3%)
Saki west	37 (72.5%)	14 (27.5%)	Df = 5	65 (91.5%)	6 (18.8%)	Df = 5	40.133
Saki east	86 (70.5%)	36 (29.5%)		58 (81.7%)	7 (10.8%)		
Ibarapa east	36 (70.6%)	15 (29.4%)	P= 0.000	37 (71.2%)	15 (28.8%)	P= 0.012	Df = 5
Ibarapa north	35 (77.8%)	10 (22.2%)		58 (89.2%)	7 (10.8%)			P= 0.000
Dietary Support							
Iseyin	102 (91.1%)	10 (8.9%)	$\chi^2=$	68 (93.0%)	5 (7.0%)	$\chi^2=$	$\chi^2=$
Itesiwaju	50 (90.9%)	5 (9.1%)	11.713	37 (80.4%)	9 (19.6%)	10.996	17.166
Saki west	45 (88.2%)	6 (11.8%)	Df = 5	65 (91.5%)	6 (8.5%)	Df = 5	Df = 5
Saki east	118 (96.7%)	4 (3.3%)		67 (94.4%)	4 (5.6%)		
Ibarapa east	44 (86.3%)	7 (13.7%)	P= 0.039	47 (90.4%)	5 (9.6%)	P= 0.051	P= 0.004
Ibarapa north	45 (100%)	0 (0.0%)		63 (96.9%)	2 (3.1%)		
Financial Support							
Iseyin	83 (74.1%)	29 (25.9%)	$\chi^2=$	45 (63.4%)	26 (36.6%)	$\chi^2=$	$\chi^2=$
Itesiwaju	33 (60.0%)	22 (40.0%)	17.402	32 (69.6%)	14 (30.4%)	30.445	43.100
Saki west	31 (60.8%)	20 (39.2%)	Df = 5	33 (46.5%)	38 (53.5%)	Df = 5	Df = 5
Saki east	101 (82.8%)	21 (17.2%)		54 (76.1%)	17 (23.9%)		
Ibarapa east	40 (78.4%)	11 (21.6%)	P= 0.039	44 (84.6%)	8 (15.4%)	P= 0.000	P= 0.000
Ibarapa north	37 (82.2%)	8 (17.8%)		53 (81.5%)	12 (18.5%)		
Treatment Support							
Iseyin	67 (59.8%)	45 (40.2%)	$\chi^2=$	62 (87.3%)	9 (12.7%)	$\chi^2=$	$\chi^2=$
Itesiwaju	29 (52.7%)	26 (47.3%)	13.065	20 (43.5%)	26 (56.6%)	28.904	25.869
Saki west	30 (58.8%)	21 (41.2%)	Df = 5	45 (63.4%)	26 (36.6%)	Df = 5	Df = 5
Saki east	86 (70.5%)	36 (29.5%)		53 (74.6%)	18 (36.6%)		
Ibarapa east	41 (80.4%)	10 (19.6%)	P= 0.023	39 (75.0%)	13 (25.0%)	P= 0.000	P= 0.000
Ibarapa north	31 (68.9%)	14 (31.1%)		42 (64.6%)	23 (35.4%)		

Source: Fieldwork, 2017

In Itesiwaju, the TBLS offered information support to the patient and the community members, especially close associates of the patients. According to the TBLS, information support sets the platform for other kinds of supports which would help the patient. Specifically, she said, “We do give them counselling especially for patients that come with people and let them know it’s not HIV. We let them know this person needs support, food and other things. They accept them in the community” (TBLS/Female/41 years/Christian/14years experience /Itesiwaju). For the community volunteer in Saki West, she usually counsels patients and their relatives to cover their mouths anytime a patient is coughing. This preventive measure enhances patient-caregiver relationship. Similarly, Iseyin TBLS recounted how patient/people had changed over time. This is captured in the following extract.

People’s perception has changed from what they believed previously. Formerly, they would say that ‘do not mix with TB patients’, ‘do not use their cups’, ‘do not use their spoons’ etc. But now, with the awareness, their perceptions have changed and people are getting more involved in the activities. (KII/TBLS/Iseyin/Male/46years/ Christianity/12years experience)

Table 4.12 displays the information sources of TB treatment centre among the respondents. Slightly above half of the respondents (55.1%) had known about TB treatment centre before (not displayed in the table) this study. (96.9%) of those who heard about the DOTs centre from television and radio were largely host community members. Nomadic Fulani constituted only 8% of those who knew about DOTs centre from billboard. Expectedly, only Yoruba respondents have heard about the BTB treatment online while 23% of those who heard it from community leaders were itinerant Fulani. Slightly higher than tenth (11%) of individuals who got notification from healthcare practitioners were allegedly itinerant Fulani. However, using column percentages, less than one-quarter (27.3%) of itinerant Fulani received information about DOTs centre from health professionals. Also, Fulani respondents (25%) got the information through family members, and 18% of the Fulani were informed by community leaders. Clearly, the ethnic group of the respondents was significantly related to access to sources of information about BTB treatment centre.

Table 4.12 Cross-tabulation between Ethnic Group and Sources of Information about TB Treatment Centre

Sources of Knowledge about Treatment centre	Ethnic group		Total
	Fulani	Yoruba	
Television	1 (2.3)	31 (7.7)	32 (7.2)
Radio	3 (6.8)	95 (23.6)	98 (21.9)
Billboard	1 (2.3)	11 (2.7)	12 (2.7)
Internet	0 (0.0)	15 (3.7)	15 (3.4)
Community leader	8 (18.2)	26 (6.5)	34 (7.6)
Religious leader	2 (4.5)	10 (2.5)	12 (2.7)
Health workers	12 (27.3)	94 (23.3)	106 (23.7)
Family members	11 (25.0)	47 (11.7)	58 (13.0)
Neighbour	6 (13.6)	69 (17.1)	75 (16.8)
NGOs TB Programme	0 (0.0)	1 (0.2)	1 (0.2)
Government TB Programme	0 (0.0)	4 (1.0)	4 (0.9)
Total	44	403 (100)	447 (100)
Chi-square χ^2: 22.714 df: 10, P-value: 0.012			t value: 2.340; pvalue:0.020

Source: Fieldwork 2017

Also, a test of difference³ showed there was a significant difference ($P < 0.05$) between accesses to information about BTB treatment centre owing to ethnic disparities. Thus, there is a differential in access to information about treatment for BTB based on respondents' ethnic group.

Table 4.13 displays the approaches adopted within the communities in discerning TB. The respondents stated 3 methods of identifying newly suspected TB cases. Largely, the respondents (84.2%) affirmed that the community members would suspect their fellow members had TB through physical surveillance. 14% of them asserted medical test and fewer. Only 1.7% respondents used traditional oral diagnosis. Also, close to two-third (62.3%) of the respondents were unaware of the DOTs. Bearing in mind, how long an individual had got TB information and technique of spotting suspected TB cases were related. For instance, 43.1% of those who reportedly observed physically knew about TB for 7 years and above. One in every 5 respondents (19%) knew about TB for 3-4 years, and less than one-tenth (7.2%) have known about TB in the last one year. In the category of respondents that mentioned medical diagnosis, 41.2% knew about TB for 7 years and above. In traditional diagnosis category, respondents (50%) got information about TB for 7 years and above. Also, an association between the duration of TB knowledge and TB detection approach was tested. A significant association ($P < 0.05$) was found between the two variables. Similarly, ethnicity was not related significantly ($P > 0.05$) with the approach of detecting TB among the nomadic Fulani and their host communities.

³Only result was shown

Table 4.13 Methods of Tuberculosis Detection among Nomadic Fulani and their Host Community

Method of TB detection in community		Frequency	Percentage	
Physical observation		684	84.2	
Medical test		114	14.0	
Traditional oral means		14	1.7	
Total		812	100.0	
Awareness of TB Treatment Centre				
Aware		306	37.7	
Not Aware		506	62.3	
Duration of TB knowledge	Physical observation	Medical test	Traditional means	Total
	Frequency	Frequency	Frequency	Frequency
Less than 1 year	49 (7.2%)	11 (9.6%)	2 (14.3%)	62 (7.6%)
1-2 years	105 (15.4%)	31 (27.2%)	1 (7.1%)	137 (16.9%)
3-4 years	132 (19.3%)	13 (11.4%)	3 (21.4%)	148 (18.2%)
5-6 years	103 (15.1%)	12 (10.5%)	1 (7.1%)	116 (14.3%)
7 years and above	295 (43.1%)	47 (41.2%)	7 (50.0%)	349 (43.0%)
Total	684 (100%)	114 (100%)	14 (100%)	812 (100%)
Chi-square: 16.117 df: 8 P-value: 0.041				
Detection methods among ethnic groups				
Ethnic groups	TB Detection Method			Total
	Physical observation	Medical test	Traditional means	
	Frequency	Frequency	Frequency	
Fulani	315 (46.1%)	53 (46.5%)	8 (57.1%)	376 (46.3%)
Yoruba	369 (53.9%)	61 (53.5%)	6 (42.9%)	436 (53.7%)
Total	684 (100%)	114 (100%)	14 (100%)	812 (100%)
Chi-square χ^2 : 0.680 df: 2 P-value: 0.712				

Source: Fieldwork, 2017

Sharing her experience in Itesiwaju, a TBLS pointed out that suspected TB case would be identified by coughing for at least two weeks. Afterwards, other questioning and sputum test would follow. The questions included if the person spat out mucus after coughing, whether or not there was blood in the mucus, asking about patient's weight, if the person sweated profusely when sleeping at night, and if the person could walk well or breath well. The method of diagnosis remains similar among the TBLS. Key Interview session in Iseyin with the TBLS confirmed that physical method of suspecting TB patients was common. Physical characteristics of the patients remain a vital sign to identify TB patients. The following extract portrays vividly the TBLS's view.

...they said she used to be chubby and I asked her to open her veil, so that I could see her. Then I asked if she used to be chubby because we do use our initiatives to guess. But some people think since she is breastfeeding, that might be the cause of it but anybody who is familiar with TB patients will surely know that it's not about the breastfeeding.
(KII/TBLS/Iseyin/Male/46 years/Christianity/12 years of experience)

Table 4.14 shows the respondents' perception about financial obligation during BTB episode. Nine in every ten male/female respondents reportedly affirmed that BTB episode would require an individual to incur preventable expenses. Equally, the affirmation was similar along ethnic differences. The nomadic Fulani and the Yoruba recorded a high mean score of 4.2 each. In the LGAs, Itesiwaju (4.6) recorded highest mean score. Thus, majority of the respondents asserted there were financial implications to treat TB in the hospitals. These financial implications would require patients or their caregivers to spend out-of-pocket funds.

Table 4.14 Statement of Perception about Financial Obligation during BTB Episode

Statement of Perception	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree	Mean Score
Someone with BTB will spend unnecessarily in the hospital						
Gender						
Male	169 (40.2%)	217 (51.7%)	17 (2.6%)	11 (2.6%)	6 (1.4%)	4.1
Female	107 (27.3%)	228 (58.2%)	31 (7.9%)	20 (5.1%)	6 (1.5%)	4.1
Ethnic group						
Fulani	153 (40.7%)	171 (45.5%)	17 (5.4%)	27 (7.2%)	8 (2.1%)	4.2
Yoruba	163 (37.4%)	237 (54.4%)	13 (3.0%)	17 (3.9%)	6 (1.4%)	4.2
LGAs						
Iseyin	77 (41.2%)	96 (51.3%)	7 (3.7%)	7 (3.7%)	0 (0.0%)	4.3
Itesiwaju	46 (45.5%)	53 (47.5%)	5 (5.0%)	2 (2.0%)	0 (0.0%)	4.6
Saki west	55 (45.1%)	48 (39.3%)	3 (2.5%)	12 (9.8%)	4 (3.3%)	4.1
Saki east	56 (29.3%)	114 (59.7%)	8 (4.2%)	5 (2.6%)	8 (4.2%)	4.1
Ibarapa east	28 (28.0%)	55 (55.0%)	6 (6.0%)	11 (11.0%)	0 (0.0%)	4
Ibarapa north	55 (49.1%)	46 (41.8%)	1 (0.9%)	7 (6.4%)	2 (1.8%)	4.4

Source: Fieldwork, 2017

Among TBLs, language was a bane in the effective discharge of their statutory duties. In some camps, there were needs for interpreters in order to reach the nomadic group. Apart from that, a TBL observed that the nomadic Fulani assumed they were segregated. This was evident, especially when a caregiver/community volunteer/TBL covers his/her mouth and nose to prevent TB spread. Culturally, this preventive measure could be embarrassing to nomadic Fulani since they were not used to such practice. This perception has reduced as the nomadic Fulani related with the Yoruba consistently. One of the TBLs has identified other areas of concern. Delayed referral among nomadic Fulani was common. In the nomadic group, women's health is left to the idiosyncrasies of men. Evidently, major health decision cannot be taken unless the husband suggests that the wife should seek modern health care for TB. In Iseyin, a TBL opined that the nomadic Fulani had peculiar treatment pattern which has not enhanced TB control and prevention. The TBL conclusion is captured clearly as follows:

The Fulani have their own kind of treatment. According to them, they have their own traditional medicine. Also, some people would tell you that they had some quacks that were coming to their place to give them treatments for the same disease. In fact, they would not know that, it is the TB. Tuberculosis is affecting them! They will just complain to that PMVs based on the signs and symptoms that they are suffering from. The PMVs would just sell drugs without testing them. Unknowingly, they were taking the wrong drugs eventually they will come with multidrug resistance TB. In a situation whereby somebody was suffering from TB and you were giving the person some antibiotic that were second line treatment, which was not appropriate at that point in time. It is not the first line drugs. As a result of this, the bacteria will have developed resistance capacity against real drugs (KII/TBL/Iseyin/46 years /Christianity/12 years of experience).

Tuberculosis and Leprosy Supervisors (TBLs) have identified communal clashes and language as perceived barriers to treatment. The nomadic Fulani were reportedly seen as community problem. One of the TBL maintained that "the Fulanis are our enemies, they destroy the farmland and when a farmer worked hard, he would not like it when a herd of cows destroyed his farm products" (TBL/Female/41 years/Christian/14 years of experience/Itesiwaju).

The conclusion of the TBLS demonstrated the kind of attitude that some of the TBLSs might present while they discharge their statutory duties. The stereotypic conclusion could impede nomadic Fulani's access to adequate TB treatment.

Table 4.15 presents the test of difference between nomadic Fulani and their host community in community's involvement in BTB control. At the individual level, there was a significant difference ($p < 0.05$) between nomadic Fulani and their host communities in their perceptions about who should be involved in BTB control and prevention. However, this was not significantly different at the community level. Furthermore, personal involvement in the BTB control and prevention was significantly different between nomadic Fulani and their host community. Thus, an individual is likely to join BTB control based on the ethnic group the individual belongs.

Table 4.15 Test of Difference between Nomadic Fulani and their Host Community in
Community involvement in BTB control

Ethnic group	Test Equality of means				95% Confidence Interval of the Difference	
	T	Df	Sig. (2-tailed)	Mean Difference	Lower	Upper
Ideal persons to be Involved at Individual level	-4.769	810	0.000	-0.473	-0.668	-0.278
Ideal persons to be Involved at the community level	-0.056	810	0.955	-0.013	-0.479	0.452
Personal Involvement	2.083	810	0.038	0.106	0.006	0.207

In Itesiwaju, a Tuberculosis and Leprosy Control Supervisor found it difficult to explain nomadic Fulani's lifestyle owing to their itinerant movement. Their lifestyle prevents Fulani living with TB from completing TB treatment. She expressed the situation as follows: "No, we don't understand their way of life because they move from one place to another. We go out there to treat them at the environment we meet up with them. For instance, if we have female Fulani patient who stays around here, she will definitely move with her husband once he is moving."

4.5 The Roles of the Gatekeepers in Preventing BTB among Fulani in Oyo State

Interview session with a veterinarian elucidated that the professionals were to guarantee that slaughters, Fulani, and the host community members who purchase animal products are aware of infections contractible from the animals. This included bovine TB. On the other hand, one could contract the disease by consuming TB infected beef. The veterinarian emphasised that their contribution had not generated the wanted health outcome in Nigeria. This was due to the large area to be covered, with limited supply of manpower, and high level of ignorance about the information about TB transmission. His explanation represents impediments to the curtailment of animal/human TB transmission. The expected gatekeepers at this interface were not sufficient, which exposed the porousness in abattoir system. This shows that community members could contract Bovine Tuberculosis unhindered. The veterinarian shared the experience and their coverage level as follows:

We covered Ibarapa divided into 3 divisions i.e., North, West and East. We covered all. This area is larger for the workers because we are 5 in the office and even if we had 20 people, the number would not be sufficient. For now, we cover like 30 to 40% of the location. This shows that this work require more personnel to cover more area than before (KII/Veterinarian/Male/45 years/Christian/18 years of experience/Eruwa).

Similarly, the gatekeepers reported that they did not have enough workers. In other words, limited voluntariness, low pay, stigmatisation for work content, and fear of getting infected with TB prevented community members or health staff to work in DOTs. They complained about their office structure and dilapidated building where

they work. All efforts to get the place in order have not materialised. The TBLS shared the experiences and the reality of the work thus:

It is a voluntary work and the pay is not high. Also, people don't want to work because they see the work as a dirty job, because they can't carry sputum. Some even run away when they come to the office, and personally I have just one assistant but I should have more. The old building which we were given to work is in bad shapes the roof is tattered, the store is bad, even ... Foundation promised to renovate our office but we didn't see anything. Again, Local government promised a renovation but they haven't yet (TBLS/Female/41 years/Christian /14 years of experience/Itesiwaju).

In all, TBLSs in the six LGAs reported that they did not have community volunteers. Although there was one female community volunteer in Saki West. One of the TBLSs maintained that there was a formal selection of some local governments where these community volunteers were working. Previously, the six LGAs had community volunteers, but they were sent away two years ago. The CVs did not know what they did. Presumably, the community volunteers were not living up to expectations. Specifically, the community volunteers were not referring positive TB patients in the remote areas. Some of the TBLSs believed that there were community volunteers (CVs) in Ibadan, whereas they need more of CVs in these remote LGAs where there were distanced villages. The TBLSs desired that everything worked well for them.

The TBLSs perceived that the government did not see it as a problem because if the government had seen it as such, the government would have funded it well. The TBLSs requested for adequate staff and compensation due to work hazard. They mentioned the contribution of a partner organization i.e. Damien Foundation. To them, the organisation has supported the TB control and prevention in Oyo State.

Also, the veterinarians were pessimistic about the End Tuberculosis strategy slated for 2030, considering the current situation. Several issues were highlighted which must be attended to. For instance, political support for tuberculosis was deemed necessary. They requested for a synergetic effort to curtail the disease. They mentioned quarantine and compensation system should be engendered. It was stressed that:

government ought to empower us, employ more people, send people out to go to one village or another if they see the suspected animal that have TB they should withdraw them, quarantine them and take care of them and government should provide compensation for those that have the animal. If government should do this, it will help us that are doing this work (KII/Veterinarian/Male/45 years/18 years of experience/Eruwa).

However, one of the community leaders in Eruwa maintained that the hygiene officers were many with limited experienced personnel in animal diseases. Some of the officers were gainfully employed recently of which, many of them were women with limited capacity to work on the field. For example, the personnel were expected to be visiting the abattoirs consistently so that they could check the Fulani who were selling the cattle. However, most of the officers sat in their offices.

Effective quarantine and adequate compensation become more necessary owing to the current development among nomadic Fulani in the treatment of BTB infected cattle. The veterinarian asserted nomadic Fulani treat BTB with modern medicine and injections without consulting veterinarians. They may not get the right dosage which would result in poorly treated BTB in cattle. One of the meat inspectors explained, in the following extract, what would be done if the cattle could not be treated by the nomadic Fulani.

They did not do anything about it. Once a cow is sick and is not getting better, the next thing is for them to kill the cow. And the butcher likes buying this kind of cow because it would be cheap. So, they do not care whether one cow has TB or not. The community people are not enthusiastic about eradicating the disease most especially the ones in villages (KII/Meat inspector/Male/40years /18years of experience/Eruwa).

The slaughter and sales of infected cattle is possible due to systemic challenges which were identified. For instance, there were two meat inspectors assigned to cover three abattoirs otherwise known as 'slaughter slabs' in Ibarapa East. The slaughter slabs were located in *Eruwa, Lanlate and Maya*. The chances to cover the three slaughter slabs effectively were questionable. Meanwhile, the butchers slaughtered cattle daily in these abattoirs. Consequently, it is very possible to sell infected beef to the market for public consumption in the community. This exposes the high possibility of animal/human BTB transmission apart from consumption of unpasteurised milk. The

veterinarian identified that those who liked animal intestine stand higher risk of contracting BTB. The veterinarian shared one of the field experiences as follows:

...when they slaughter a cow and this type of meat will have lesions on *fuku*⁴. When butchers see this, some do not know it is bad while some pretend they do not know. There was a time I went to market and I saw some butchers cutting cows. I told them that this meat is not good. In response, one of them cut a piece of the meat and swallowed it. Some people do not know that it is bad. They say that it is *fukuelegusi*⁵ and it is sweet but we thank GOD we are able to educate them on this (KII/Veterinarian/Male/45 years/Christian/18years of experience/Eruwa).

The animal/human TB transmission route becomes a greater threat to the public since there is no time that butchers cannot slaughter cow, even at night. For instance, if Fulani notice by 6.00 pm that one of their cows want to die, they would sell it to the butchers before 7.00 pm. The butchers would kill the cow by 7-8.00 pm same day. The butchers would bypass the abattoir system and sell the meat to the public. This is a public health threat. To the meat inspectors and veterinarians, if inspection is usually done in the morning only, such actions would go unnoticed, and this is detrimental to the people's health. In fact, a community leader maintained that some of the cattle were supplied to the community without knowing the sources, and such constitute fear for the community leaders. The community leaders reportedly stated that some of the cattle might have died in the *Gaa* or infected by a disease. Immediately, Fulani would slaughter the infected cattle quickly and bring it into the community. The issue becomes worse where there is no inspector to examine it. Also, the black market, through which nomadic Fulani and the butchers enroute unhealthy animals to the public, needs the attention of interdisciplinary approach urgently. This would protect the masses from the spread of bovine tuberculosis.

⁴ This the Yoruba word for liver.

⁵ This is a liver infected with mycobacterium bovis. The *fuku elegusi* is derived from with white spots on the liver which is the physical evidence of lesions

Also, interview session with one of the BTB gatekeepers i.e. community volunteers exposed realities on the fieldwork. The community volunteer described the involvement in the voluntary work. The experience of the community volunteer showed that the community volunteers (CVs) were closer to their community members more than the health personnel because the CVs were integral part of their communities. Also, they covered their communities, which would complement the inadequate health workforce. The services of the CVs were less expensive. Based on the CV's comment, the CVs received a stipend of 6000 naira in every three month. The areas of CVs' services comprise TB suspect referral, ensure treatment continuity, and sensitisation. The CVs work outside the working hours since they watched out for newly suspected TB cases anytime and anywhere. The following extract describes the CV's involvement on the field.

In my area which is OkeDaudu near Adaba zone, from time to time, I might be out in a party or in church. In my area, Muslim and Christians are close to me. So we do thing together. Sometimes, I might encounter somebody who is coughing. I would talk to him/her. Perhaps, he/she would go to the DOTs for sputum test. Although, some people declined and denied that they were coughing. But I do talk with, inspire and bring them for sputum test (Female/27years/Christian/TB Community Volunteer/3 years of experience/Saki West LGA).

The respondents did not recognise the CVs as a major part in tuberculosis control and prevention team. Also, the respondents maintained that the treatment givers were herbal vendors, non-government organisation, nurses, doctors, trained persons in DOTs, and collaboration within the community. Ethnicity and LGA were significantly related ($P < 0.05$) to asserting that trained persons in DOTs treat PLWTB. This confirms that residents in these LGAs decrease (1.9%) the tendency of asserting that persons living with tuberculosis were cared for by the trained personnel in DOTs. Meanwhile, respondents' ethnic affiliations rise (8.9%) such propensity.

Similarly, there was a significant relationship between respondents' level of education and the assertion that doctors and nurses were in charge of treating persons living with tuberculosis. Therefore, advancement in respondents' academic qualification would decrease (3%) the probability of asserting that doctors and nurses were treatment supporters for persons living with tuberculosis. Consequent to that, one's level of

literacy has the tendencies to expose persons to the knowledge of medicine and clinic practices. This should explain why educated respondents knew who was actually attending to the person living with tuberculosis in the study area.

One of the TBLSs identified that BTB awareness is key to avoid mortality since some of the TB suspected persons would not commence treatment early while majority of them would opt for the use of herbal medicine. The TBLS believed that such herbal remedy might not treat BTB in infected individuals. Also, the TBLS in Iseyin explained his advances to patent medicine vendors to refer some of their TB suspected clients to the DOTs. He gave such advice to prevent further spread of BTB. However, the TBLS observed that those patent medicine vendors had limited BTB knowledge, and they would want to make money from PLWTB who were not aware of the nearest DOTs. He believed that the patent medicine vendors were closer to the people. Some of them were mobile, which allowed them get to hard-to-reach areas. The patent medicine vendors were driven by capitalist tendencies which the TBLS called 'greed'. For instance, in Iseyin, the TBLS reported how PLWTB underwent poor diagnosis and blind treatment, as shared in the following extract.

...the person came with a nurse, more like a chemist, she said this person is experiencing a severe cough. She said it's been a year. The person has been using different kinds of drugs and it goes and come back again. She even said she already bought injection so we couldn't tell her not to give the injection since that is the only way she gets her own money back (KII/TBLS/Male/45 years/10 years of experience/Iseyin).

However, the TBLS mentioned that DOTs did not have that capacity to move around the community since there were inadequate personnel to meet the work demand. The TBLS presented his view as follows:

...that is the way they see it because I told patent medicine vendors last time I went there, that they should not assume I want to spoil their business. They should see it as a health threat to them i.e. they can contact the disease in the process of treating PLWTB. Unfortunately, PMVs' knowledge of TB is still low and that is why they think I want to spoil their business. When they have a suspected case of TB, they should refer them to us. However, my expectation was based on enrolment of people from them. The PMVs thought I want to spoil their market. This is why they will not tell the people to come for treatment because they are greedy. These people are

closer to them than to us. We do not have the luxury of time and human resource to be close to them. As I have mentioned it that we are just two in the health centre we are just two now we two very unfortunate and this is laboratory nobody is there so I will be here in the morning, in the afternoon seeing patient till 3.00 pm. Hence it is not possible for me to be going to settlements to be looking for people that has TB (KII/TBLS/Male/45years/10 years of experience/Iseyin/).

More so, in all the LGAs, Tuberculosis and Leprosy Supervisors (TBLSs) supposedly upheld that there were inadequate personnel in the DOTs centre. Community volunteers (CVs) were not available in the prevention and control of tuberculosis anymore. However, the CVs were relevant to the expansion of the therapeutic coverage in tuberculosis control and prevention programme. According to the TBLSs, the state government has relinquished the stipends used to support the CVs. So, the CVs favoured working with another health programme since the programmers would pay for the services of the CVs. The thoughts are vividly captured in the following extract.

This DOTs centre should have a lot of personnel due to the technical hitches from this job. However, we do not have adequate staff. We need many medical professionals to handle of several issues. (TBLS/Male/38 years/Christian/5 years of experience/Ibarapa North/).

In Itesiwaju, the TBLS reported that sometimes BTB awareness was organised at PHC centres. This avails them the opportunities to meet health workers, and TB suspected cases come from the communities and private hospitals. Also, traditional rulers were engaged in Ibarapa North. The ruler supported with a representative in the market. The representative announced and informed people about tuberculosis. It was observed that many people did not take him serious. The TBLS had to meet farmers, builders, and others on his own account. Above all, he recommended house-to-house TB sensitisation and awareness.

4.5.1 Different Bovine Tuberculosis Control Services Available in the Six LGAs

Table 4.16 presents the services provided by the DOTS in the study area. Of the respondents that asserted that there were health services in the state, only 15.9% maintained that there was counselling for people living with BTB. Close to twentieth

(4.8%) mentioned free diagnosis while one-fifth (20%) reported free treatment. Similarly, about 95% of the respondents stressed that there was no free drug for the people living with BTB. 85.5% asserted that there was no TB education for the masses while 88.3% of the respondents felt they were not involved in the activities to control and prevent BTB.

Table 4.16 Availability of Tuberculosis Control Services

Variables	Responses	Frequency	Percentage
Counselling	Not Available	122	84.1
	Available	23	15.9
Free diagnosis	Not Available	138	95.2
	Available	7	4.8
Free treatment	Not Available	116	80.0
	Available	29	20.0
Free drugs	Not Available	137	94.5
	Available	8	5.5
TB education	Not Available	124	85.5
	Available	21	14.5
Involved us in their activities	Not involved	128	88.3
	Involved	17	11.7
All of the above	Not Available	132	91.0
	Available	13	9.0

Source: Fieldwork, 2017

Table 4.17 presents the statement of perception about access to information and TB healthcare facilities. Close to three-quarters (73.8%) of male respondents but close to two-third (61.5%) of female respondents had access to information about tuberculosis. Thus, more males than females had such access. Close to three-quarters (71.8%) of the Yoruba respondents were informed about BTB while close to two-third (63.9%) of the nomadic Fulani had similar access. Comparatively, the mean scores showed that the Yoruba respondents (3.7) had more access to information about BTB than the nomadic Fulani (2.3). In Saki West, less than half (39.1%) of the respondents accessed such information, followed by Ibarapa East (74%) while Ibarapa North (83.6%) recorded highest mean score of 4.0 points. Therefore, Ibarapa North accessed information about BTB more than the other five LGAs. Also, majority of the respondents demonstrated that they knew where to access health care to treat tuberculosis. Specifically, 80% of the male respondents knew where to access health care to treat BTB, compared with 65.9% of the female respondents with similar knowledge. The mean score showed that males (3.9) were more informed about where to access health care for BTB treatment, compared with their female (3.6) counterparts.

Also, Table 4.17 shows that the nomadic Fulani (67.7%) were aware of treatment locations for TB. The nomadic Fulani's mean score (3.6) revealed high awareness. However, their level of awareness was lower than that of Yoruba (3.9) respondents. In Ibarapa East (68%), Iseyin (70%), and Ibarapa North (77.2%), respondents asserted that they knew where to access treatment for BTB. Using the mean scores, work constituted a barrier to access information and care for more males (2.7) than females (2.6). Also, more of the Fulani (2.8) than the Yoruba (2.5) respondents complained that their work precluded their access to TB information and its care. Across the LGAs, Saki West (3.3) recorded highest and complained about their poor access to such information owing to work while Ibarapa North had least score of 2.2 points. This shows that Ibarapa North with least mean score would not consider individuals' work as a barrier to accessing treatment for tuberculosis.

Table 4.17 Statement of Perception about Access to Information and Facilities

Statement of Perception	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree	Mean Score
Variables	You have access to BTB information					
Gender						
Male	94 (22.4%)	216 (51.4%)	23 (5.5%)	62 (14.8%)	25 (6.0%)	3.7
Female	61 (15.6%)	180 (45.9%)	31 (7.9%)	88 (22.2%)	32 (8.2%)	3.4
Ethnic group						
Fulani	87 (23.3%)	149 (39.6%)	24 (6.4%)	79 (21.0%)	37 (26.3%)	2.3
Yoruba	68 (15.1%)	247 (56.7%)	30 (6.9%)	71 (16.3%)	46 (24.5%)	3.7
LGAs						
Iseyin	28 (15.0%)	89 (47.6%)	11 (5.9%)	45 (24.1%)	14 (7.5%)	3.4
Itesiwaju	12 (11.9%)	62 (61.4%)	10 (9.9%)	16 (15.8%)	1 (1.0%)	3.7
Saki west	17 (13.9%)	32 (26.2%)	17 (13.9%)	28 (23.8%)	28 (23.0%)	2.9
Saki east	47 (24.6%)	97 (50.8%)	7 (3.7%)	38 (19.9%)	2 (1.0%)	3.8
Ibarapa east	16 (16.0%)	58 (58.0%)	7 (7.0%)	13 (13.0%)	6 (6.0%)	3.6
Ibarapa north	35 (31.8%)	57 (51.8%)	2 (1.8%)	10 (3.6%)	6 (5.5%)	4
Variables	You know where to go in case of BTB incidence					
Gender						
Male	128 (30.5%)	208 (49.5%)	23 (5.5%)	43 (15.6%)	23 (5.9%)	3.9
Female	94 (24.0%)	172 (43.9%)	42 (10.7%)	61 (15.6%)	23 (5.9%)	3.6
Ethnic group						
Fulani	114 (30.3%)	140 (37.4%)	22 (5.9%)	70 (18.6%)	30 (8.0%)	3.6
Yoruba	108 (24.8%)	240 (55.0%)	43 (18.6%)	34 (7.8%)	11 (2.5%)	3.9
LGAs						
Iseyin	55 (29.4%)	76 (40.6%)	20 (10.7%)	30 (16.0%)	6 (3.2%)	3.8
Itesiwaju	15 (14.9%)	65 (64.4%)	9 (8.9%)	11 (10.9%)	1 (1.0%)	3.7
Saki west	31 (25.4%)	43 (35.2%)	14 (11.5%)	16 (13.1%)	18 (14.8%)	3.4
Saki east	44 (34.6%)	97 (50.8%)	8 (4.2%)	16 (8.4%)	4 (2.1%)	3.5
Ibarapa east	18 (18.0%)	58 (50.0%)	11 (11.0%)	16 (16.0%)	5 (5.0%)	3.9
Ibarapa north	36 (32.7%)	49 (44.5%)	3 (2.7%)	15 (13.6%)	7 (6.4%)	3.8
Variables	Your work makes it difficult for you to access BTB information and care					
Gender						
Male	35 (8.3%)	106 (25.2%)	48 (11.4%)	154 (36.7%)	77 (18.3%)	2.7
Female	31 (7.9%)	77 (19.6%)	47 (12.0%)	160 (40.8%)	77 (19.6%)	2.6
Ethnic group						
Fulani	54 (14.4%)	79 (21.0%)	39 (10.4%)	131 (34.8%)	73 (19.4%)	2.8
Yoruba	12 (2.8%)	104 (23.9%)	56 (12.8%)	183 (42.0%)	81 (18.6%)	2.5
LGAs						
Iseyin	13 (7.0%)	44 (23.5%)	26 (13.9%)	76 (40.6%)	28 (15.0%)	2.7
Itesiwaju	5 (5.0%)	19 (18.8%)	11 (10.9%)	56 (55.4%)	10 (9.9%)	2.5
Saki west	33 (27.0%)	30 (24.6%)	13 (10.7%)	34 (27.9%)	12 (9.8%)	3.3
Saki east	7 (3.7%)	42 (22.0%)	14 (7.3%)	77 (40.3%)	51 (26.7%)	2.4
Ibarapa east	5 (5.0%)	22 (22.0%)	25 (25.0%)	38 (38.0%)	10 (10.0%)	2.7
Ibarapa north	3 (2.7%)	25 (22.7%)	6 (5.5%)	33 (30.0%)	43 (39.1%)	2.2

Source: Fieldwork, 2017

Table 4.18 presents the services available in the BTB control and prevention among the respondents. In the nomadic group, less than one-fifth (16.3%) of the respondents reportedly asserted that there was free BTB counselling for people living with BTB. 34.7% mentioned free treatment. Only 2% reported there was free BTB medicine. Interestingly, 95.9% exposed that BTB education was not available. Similarly, 98% were not involved in services of BTB control and prevention programme. For the Yoruba counterparts, 15.6% reported that free counselling was available. 12.5% claimed there was free treatment while 7.3% ascertained that free medicine was available. Surprisingly, 80% reported that there was no BTB education while 83.3% maintained that they were not involved. In comparison, the nomadic Fulani had similar experiences with their host communities.

**Table 4.18 Accessible Services in BTB Control and Prevention Programme
among Respondents**

Variables (n=145)	Responses	Fulani	Yoruba
Free counseling	Not available	41 (83.7%)	81 (84.4%)
	Available	8 (16.3%)	15 (15.6%)
Free treatments	Not available	32 (65.3%)	84 (87.5%)
	Available	17 (34.7%)	12 (12.5%)
Free drugs	Not available	48 (98%)	89 (92.7%)
	Available	1 (2%)	7 (7.3%)
TB education	Not available	47 (95.9%)	77 (80.2%)
	Available	2 (4.1%)	19 (9.8%)
Involvement in activities	Not available	48 (98%)	80 (83.3%)
	Available	1 (2%)	16 (6.7%)
All of the above	Not available	48 (98%)	84 (87.5%)
	Available	1 (2%)	12 (2.5%)

Source: fieldwork 2017

Similarly, the TBLS gave the reason for their limited coverage, and why majority of the nomadic Fulani were not aware of the BTB control and preventive services. The TBLS mentioned distanced locations. The places were reached during immunisation owing to its human and financial capacities invested into the programme. The TBLS mentioned the names of some locations and time required to reach there. Her comment captures the description of the hard-to-reach areas as follows:

...there are hard to reach places, but I have not been there before. Why I said so is that during immunization period, you know I told you about our sites like Oke-oyan that is a far and hard-to-reach area. Even Kusa, one will have to spend up to 3 – 4 hours before getting there (TBLS/Female/41 years/Christian/14 years of experience/Itesiwaju).

However, to eradicate BTB, awareness should precede health-seeking behaviour. Thus, suspected TB cases would come to DOTS for sputum test. This would prevent its spread. In Iseyin, according to the TBLS, the sensitisation should target nomadic Fulani since “the nomadic Fulani are the ones that even bring the sickness to the town.” Potentially, this will further curtail the spread of BTB in the communities. From the foregoing, both the host communities and the nomadic Fulani were not fully aware of the BTB control services available in their communities. The TBLS assumed that the host communities were more aware of the TB control services, but in Table 4.2⁶ the level of awareness was not different. In Iseyin, the TBLS suggested the recurring need to recruit community volunteers to reach the hard-to-reach areas. The TBLS’s line of daily duty necessitated the need for the recruitment of community volunteers. The TBLS mentioned remuneration for the community volunteers to sustain their commitment. The extract below captures the TBLS’s views:

...we need them. We need the community volunteers to get to the hard-to-reach areas. I cannot go. They will go there. I don’t know the condition they will give them. You know our people if they ask them to work, what they will be expecting is money. They won’t work well if they are not remunerated. They can give them some condition, but these people will go to the deep rural areas. I cannot do such. If you come here in the morning, you see for 4-5 hours, I will be talking and attending to patients. So, when I finish, will they expect me to go the community and find cases (KII/TBLS/Male/45 years/10 years of experience/Iseyin/).

⁶ [The table is titled Respondents’ Belief about Tuberculosis and Bovine Tuberculosis on page 80](#)

Figure 4.2 displays the available activities of BTB control programme in the six LGAs. In Ibarapa North, more than half (63.1%) of the respondents reportedly asserted that TB suspected cases were referred to DOTS, followed by 21% who mentioned BTB diagnoses, then 15% that mentioned availability of treatment supports. In Ibarapa East, the respondents affirmed that free drug (62.3%), TB diagnoses (25.6%), and treatment supports (12.5%) were available. Also, in Saki East, respondents were aware of two of BTB control activities, namely treatment supports (59.20%) and free drug (40.8%). In Itesiwaju, all the respondents asserted that treatment supports were available. This shows that some of the respondents were not fully aware of all the TB control activities available in their locations.

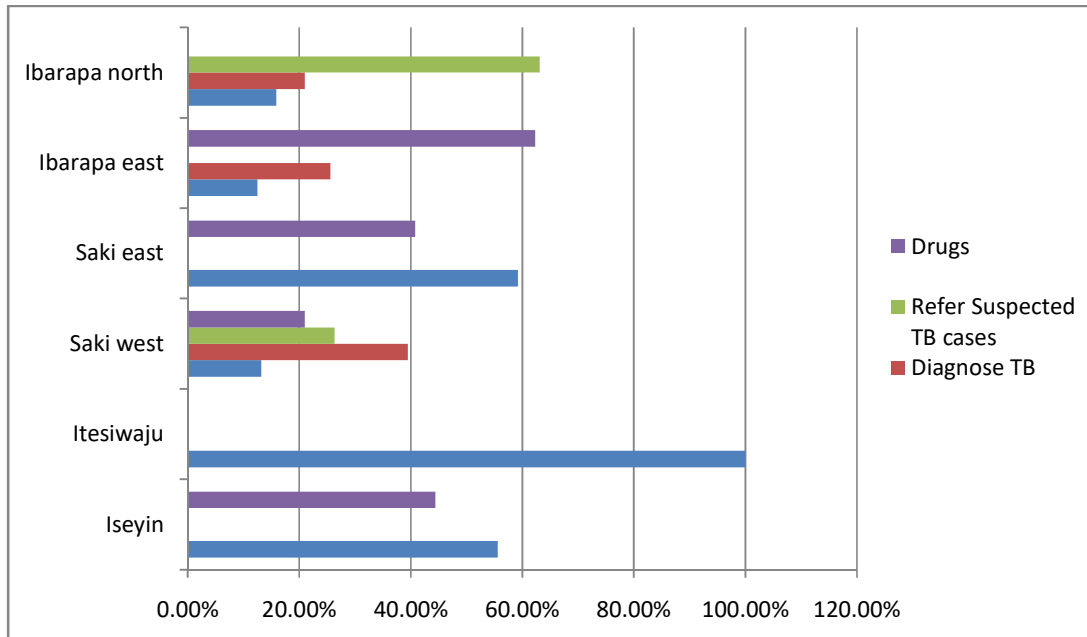


Figure 4.2 Available Activities of TB Control Programme in Six LGAs by Respondents

4.5.2 Community-based health activities for BTB care and prevention

Figure 4.3 shows the availability of community organised health programmes for BTB care according to LGAs. In Saki West, more than two-third (73.3%) of the respondents reportedly asserted there was community-based health programme for BTB care, followed by Ibarapa North (52%) while Itesiwaju recorded 15.6%. However, in Saki East more than half (58.5%) reportedly stated that there was no community organised BTB control programme. The trend forecast shows that there is higher tendency for more community organised programme while more people would be aware of the programme subsequently.

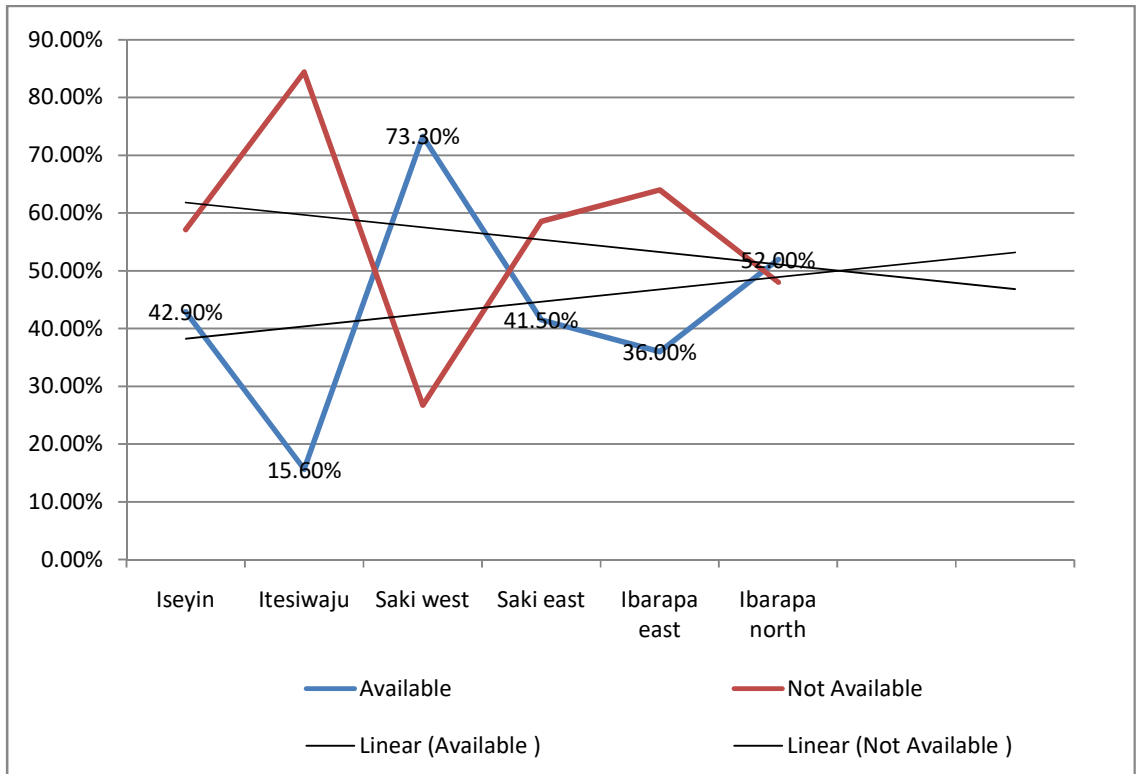


Figure 4.3 Availability of Community Organized Health Programme for BTB Care

In Itesiwaju, however, the TBLS maintained that she was engaged in community awareness to sensitise the communities about the free treatment and BTB prevention. Figure 4.2 shows that less than 20% of the respondents from Itesiwaju were aware of community-based health programme for BTB care. This shows that the impact of the sensitisation was not really felt by the majority in the community. More intensive and connected effort would help increase public awareness.

Figure 4.4 presents community organized health programme for BTB care among the respondents. Slightly above one third (35.7%) of the Fulani respondents mentioned that there was community health programme to curtail BTB in their camps. Similarly, more than half (56.4%) of the Yoruba respondents reported that there were community organized health programmes in their communities. There was a significant relationship ($p < 0.05$) between respondents' ethnic affinities and awareness of establishment of community organised health programmes for BTB control. Thus, an individual's ethnic affiliation would determine whether he/she would be aware of community-based health programme to curtail BTB.

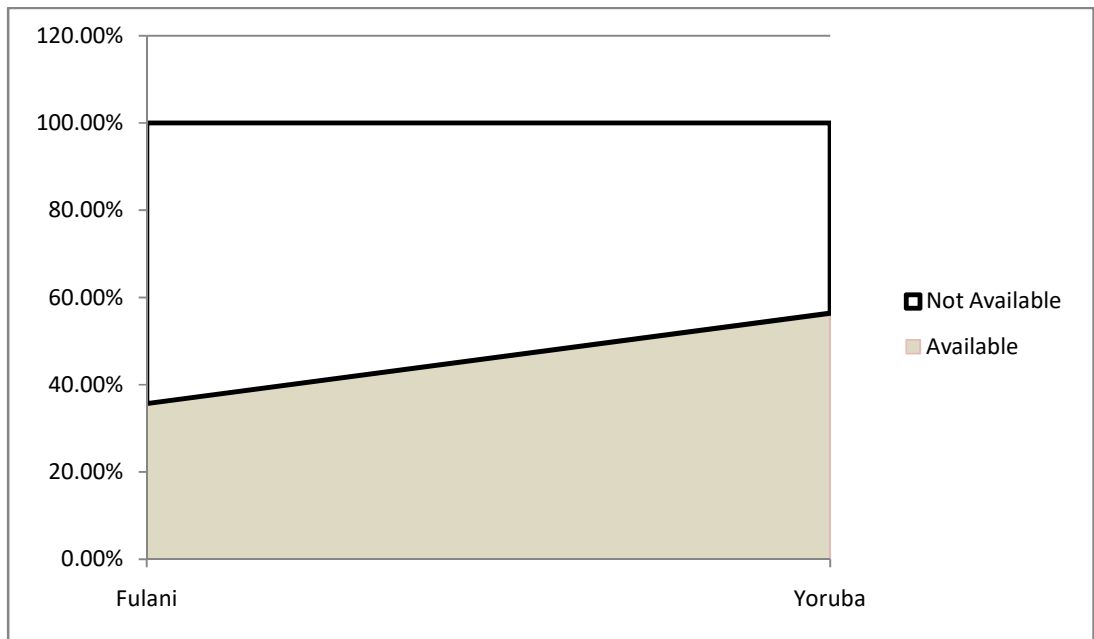


Figure 4.4 Community organized Health Programme for BTB Care among Respondents

Figure 4.5 displays the availability of community drug distributors (CDDs) in communities/camps according to ethnic peculiarities. For the nomadic Fulani, less than half (45.9%) of the respondents believed that there were CDDs in their camps while more than half (53.1%) of the Yoruba respondents opined that there were CDDs in their communities.

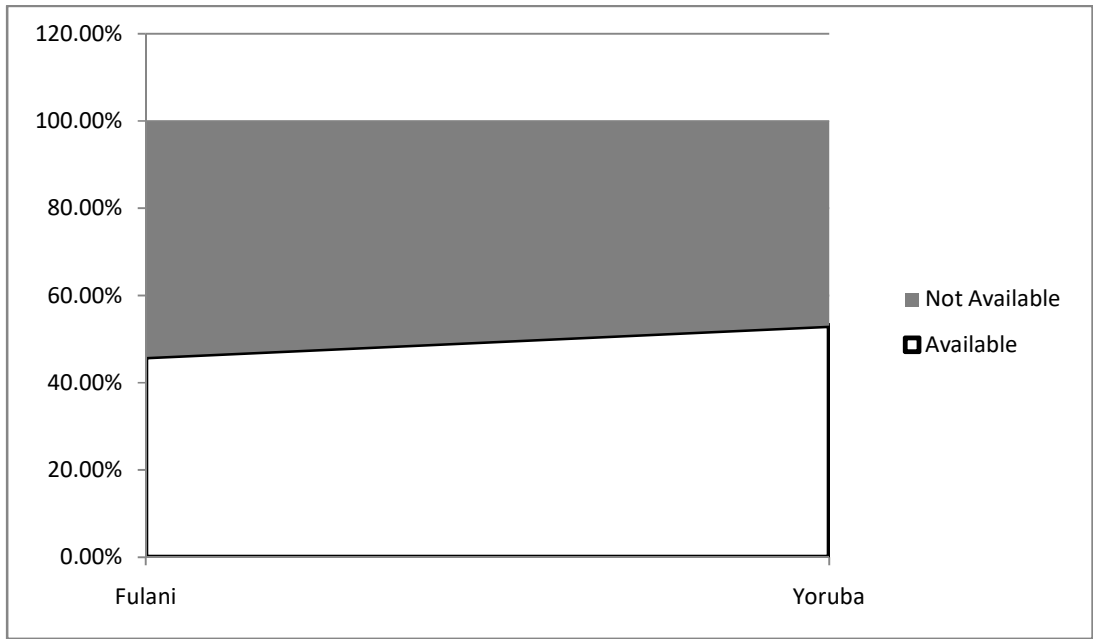


Figure 4.5 Availability of Community Drug Distributors for PLWTB among Respondents' Communities/Camps

Table 4.19 displays the availability of someone that distributes drugs for PLWTB in the community. A few (4.7%) of the respondents affirmed that there were CDDs in their communities. Of those that affirmed that CDDs were available, above one third (36.8%) asserted that the CDDs were selected by the staff of primary health care in their communities. One out of every five respondents maintained that CDDs volunteered to serve. One out of every three respondents did not know how CDDs were recruited. Considering reasons for the CDDs' service, about 39% of the respondents asserted the selections were based on health profession, experience in TB control activities (18.4%), gender sensitivity (2.6%), and making money (31.6%).

Table 4.19 Availability of Community Drug Distributors for PLWTB

Availability of someone that distributes drugs for TB in the community		
Drug Distributors (812)	Frequency	Percentage
Available	38	4.7
Not available	774	95.3
Selection (n=38)		
Community leader	3	7.9
Don't Know	14	36.8
PHC	14	36.8
Volunteering	7	18.4
Reason for service (n=38)		
Health Profession	15	39.5
Experienced in TB	7	18.4
Gender sensitivity	4	2.6
Make Money	12	31.6

Source: Fieldwork, 2017

Figure 4.6 presents the availability of CDDs for PLWTB in the LGAs. In Iseyin, less than twentieth (2.7%) of the respondents reportedly asserted that there were CDDs in their communities. 4% in Itesiwaju, but 2.5% in Saki West had similar conviction. Also, less than tenth (8.2 %) among Ibarapa North respondents maintained that there were CDDs in their communities, followed by 7.3% in Saki East, then less than twentieth (2.9%) in Ibarapa East. This shows there was a limited number of CDDs in the study area. This further shows limited presence of BTB control awareness and activities in the 6 LGAs.

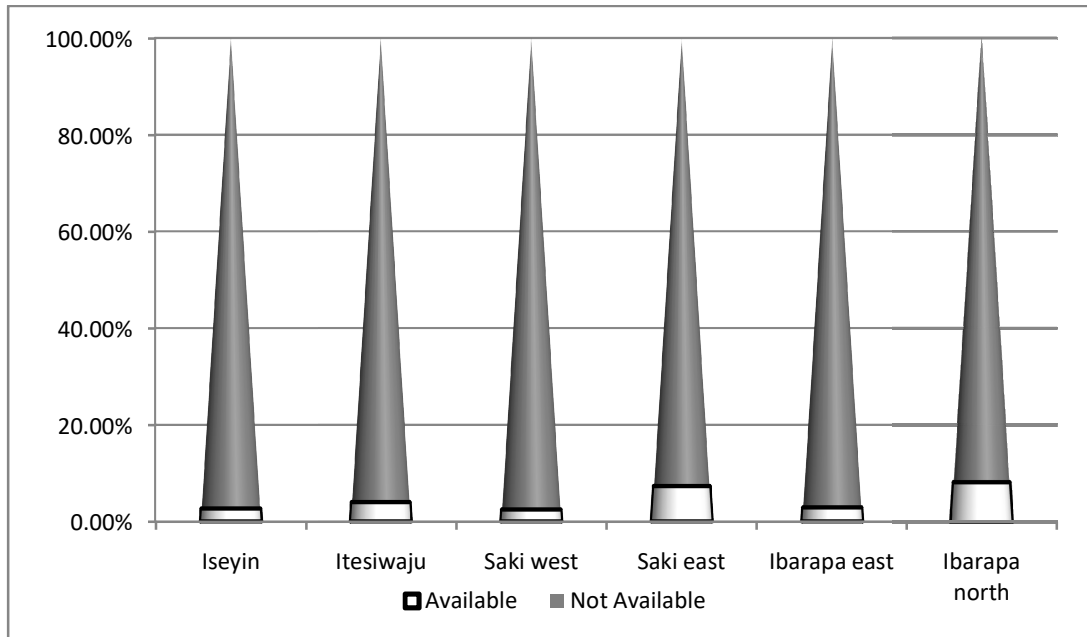


Figure 4.6 Availability of Community Drug Distributors for BTB in Respondents' LGAs

Table 4.20 presents selectors and reasons in becoming community drug distributors in the LGAs. Majority of the respondents in Iseyin (60%), Ibarapa East (66.7), and Ibarapa North (77.8) were reportedly unaware of who selected the CDDs. Less than one fifth (14.3%) of Iseyin respondents mentioned that their community leaders selected the CDDs. The respondents from Itesiwaju (100%), Iseyin (20%), and Saki West (33.3%) reported that the CDDs volunteered. Considering the reasons for recruiting the CDDs, as perceived by the respondents, majority of the respondents from Saki West (66.7%) and Itesiwaju (100%) mentioned health profession and experienced in BTB control programme respectively. In Iseyin, 60% of the respondents maintained the CDDs were recruited to make money for themselves. The shows that majority of the respondents were not aware of the selection process, or that individual who is willing to serve his/her community could apply for such position. Community leaders established that they were not aware of the process of selecting CDDs. The question that comes to mind is whether the position of CDD is competitive to call for selection of CDDs from a pool of interested candidates. If this is true, then there might be a need for the community leaders to nominate. The TBLs maintained that the CDDs were not willing to work for their communities, especially when stipends are not attached as compensation.

Table 4.20 Selectors and Reasons in becoming Community Drug Distributors in the LGAs

Knowledge of who selected the CDDs (n=38)					
LGA	Community leader	Don't Know	PHC	Volunteering	Total
Iseyin	1 (20%)	3 (60%)	0 (0.0%)	1 (20%)	5 (100%)
Itesiwaju	0 (0.0%)	0 (0.0%)	0 (0.0%)	4 (100%)	4 (100%)
Saki west	0 (0.0%)	0 (0.0%)	2 (66.7%)	1 (33.3%)	3 (100%)
Saki east	2 (14.3%)	2 (14.3%)	10 (71.4%)	0 (0.0%)	14 (100%)
Ibarapa east	0 (0.0%)	2 (66.7%)	1 (33.3%)	0 (0.0%)	3 (100%)
Ibarapa north	0 (0.0%)	7 (77.8%)	1 (11.1%)	1 (11.1%)	9 (100%)
Reason for the selection					
	Health Profession	Experienced in TB	Gender sensitivity	Make Money	
Iseyin	1 (20.0%)	1 (20.0%)	0 (0.0%)	3 (60.0%)	5 (100%)
Itesiwaju	0 (0.0%)	4 (100%)	0 (0.0%)	0 (0.0%)	4 (100%)
Saki west	2 (66.7%)	1 (33.3%)	0 (0.0%)	0 (0.0%)	3 (100%)
Saki east	7 (50.0%)	1 (7.1%)	1 (7.1%)	5 (35.8%)	14 (100%)
Ibarapa east	1 (33.3%)	0 (0.0%)	0 (0.0%)	2 (66.7%)	3 (100%)
Ibarapa north	4 (44.4%)	0 (0.0%)	3 (33.3%)	2 (22.2%)	9 (100%)

Source: Fieldwork, 2017

Table 4.21 presents the availability of someone to distribute drugs for PLWTB in the community. Less than twentieth (3.9%) of Fulani respondents asserted that there were persons who distributed the TB drug while 5.3% of respondents from the host communities reportedly asserted availability of community drug distributors (CDDs) in their communities. This shows that there was limited drug distribution service in the study area. Also, there was no significant relationship ($p>0.05$) between ethnic affiliation and availability of CDDs. Thus, ethnic affiliation of the respondents did not determine the availability of CDDs in their locations. Also, respondents mentioned the process of selecting the CDDs. A large majority (52.2%) of Yoruba respondents reportedly asserted that CDDs were selected by staff of primary health care. While slightly above tenth (13%) mentioned community leaders, 6.7% mentioned volunteering.

However, 46.7% of the nomadic Fulani and 30.4% of their Yoruba counterparts did not know how the CDDs were selected. Considering the reasons cum motives for the working as CDDs, the nomadic Fulani (40%) and the Yoruba respondents (26.1%) reportedly mentioned that the CDDs wanted to make money. This may suggest that the community members were aware of stipends usually given to CDDs in the community.

Table 4.21 Availability of BTB Drug Distribution System in the Communities/Camps

Drug Distributors (n=812)	Ethnic group (100%)		Total
	Fulani	Yoruba	
Available	15 (3.9%)	23 (5.3%)	38 (4.2%)
Not Available	361 (96.1%)	413 (94.7%)	774 (95.8%)
Chi-square χ^2: 0.748 df: 1 P-value: 0.387			
Selection (n=38)			
Community leader	0 (0.0%)	3 (13.0%)	3 (7.9%)
Don't Know	7 (46.7%)	7 (30.4%)	14 (36.8%)
PHC	2 (13.3%)	12 (52.2%)	14 (36.8%)
Volunteering	6 (40.0%)	1 (6.7%)	7 (18.4%)
Reason for service (n=38)			
Health Profession	2 (13.3%)	13 (56.2%)	15 (39.5%)
Experienced in TB	4 (26.7%)	3 (13.0%)	7 (18.4%)
Gender sensitivity	3 (20.0%)	1 (4.4%)	1 (2.6%)
Make Money	6 (40.0%)	6 (26.1%)	12 (31.6%)

Source: Fieldwork, 2017

In Saki West, a community volunteer shared her drive to be part of BTB control programme and explained the recruitment process. She was passionate about getting involved in the programme. She approached the TBLS in Saki West to express her interest in the work. She mentioned to him, “It’s not like I am in need of money but I just came to meet them that I have interest in this job. I told them I want to join them although I had no idea of community volunteer when I told daddy that I would love to join them.” In her report, she was told that there was no financial community for the DOTs to pay for her service if eventually she was absorbed. She did not mind the no-pay barrier even though she was not financially buoyant to meet her financial obligations.

Her passion for service was a reason for her recruitment. She identified training, and stipend contributed to her work. The training entails how to identify suspected BTB cases and to persuade them for sputum test. She said, “They also lecture us on how to be productive and work more so that the diseases would be reduced in the community, so we do try our best.” The training was focused on curtailing the spread of BTB through referral of suspected BTB cases. Also, the recruitment was meant to expand the programme coverage in Saki West.

Afterwards, she was getting stipends (6000 naira quarterly). Her work required her to go from house to house or find suspected BTB cases wherever she was. Besides, she was to encourage the suspect to come for sputum test and get treated if the suspect was positive. She confirmed that so many PLWTB were not aware of the free treatment, which made her work very relevant in BTB control and prevention. Consequently, she appreciated the feedback she got for her voluntary service. This earned her community recognition and built her self-esteem. She was confident of deferred rewards regardless of her present financial challenges. The following excerpt vividly captures her experience.

For instance, when I walk by, the young ones do call me *Iya-Alabere* (woman with injection) and so but the elderly ones who knows the kind of job I do, calls me nurse. They call me when they have one health issue or the other. They allow me to counsel them. I am very satisfied because I know I will surely get the reward sooner or later... it’s true that money is important but no matter what, I will still have a hundred naira to buy recharge card, even if I don’t have money at hand, there are people I can borrow from and tell them I want to call someone without mentioning the person’s name because

I wouldnot want to expose the person (KII/ Community Volunteer/Female/27 years/3 years of experience/Saki West LGA).

Table 4.22 presents the test of difference in the extent of BTB activities, using ethnic affiliations. There was no significant difference in terms of the extent to which the nomadic Fulani and their host communities participated in the BTB control activities. However, the establishment of community organised BTB control was significantly different between ethnic groups. Thus, there was dissimilarity in the level of proactivity as regards BTB control among the respondents.

Table 4.22 Test of Difference in the Extent of BTB Control Activities by Ethnicity

Variables	Test Equality of means				95% Confidence Interval of the Difference	
	T	Df	Sig. (2-tailed)	Mean Difference	Lower	Upper
Availability of community organised TB care program	1.926	810	0.054	0.030	-0.001	0.060
extent of their activities	-0.778	41	0.441	-0.262	-0.941	0.417

Source: Fieldwork, 2017

4.6. Description of Patterns of Relationship between Nomadic Fulani and their Host Communities

The host community leaders reported that there were some Fulani that have been living in their communities; their forefathers gave birth to them there. This allows inter-ethnic marriages between the nomadic Fulani and their host communities. The old Fulani have understood Yoruba language, which aided better understanding and effective communication. Contrarily, there were problems with those new Fulani that just arrived from the Northern Nigeria. The resident Fulani would not inform the community head before allowing the new Fulani to settle with them. By the time there is a problem, the resident Fulani would deny any anti-social act and shift the blame to the new Fulani that just arrived. This constitutes the major issue of inter-ethnic conflict between the host communities and the nomadic Fulani. The host community leaders would not accommodate a new set of Fulani from the Northern Nigeria to avoid inter-ethnic conflicts. However, an interview session with nomadic Fulani leaders revealed that host community leaders were responsible for the settlement of new Fulani immigrants. The process is fast-tracked wherein the new immigrants pay tribute to the host community leaders. The host community leaders did not mention anything relating to the subject of tribute. This is a shift-blame synthesis that makes it difficult to understand how new Fulani immigrants are integrated and could be held responsible for any anti-social behaviour such as encroachment on the host community farmlands.

Table 4.23 presents the social ties management among the respondents, focusing on ethnic differences. Five relationship challenges were mentioned which included grazing, encroachment, religious differences, language problem, and economic matters. The test of difference showed that there was a significant difference between Yoruba and nomadic Fulani in their assertions that grazing ($P=0.000$), encroachment ($P=0.000$), religious matters ($P=0.018$), and language differences ($P=0.000$) constituted relationship threats. However, there was no significant difference ($P>0.05$) in the assertion that economic matters posed a threat to social ties between the nomadic Fulani and the Yoruba.

Table 4.23 Social Ties Management between Host Community and Nomadic Fulani in Oyo State

Relationship Challenge	Levene's Test for Equality of variances		t-test for Equality of Means				
	F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Grazing	110.698	.000	-5.637	741.990	.000	-.183	.032
Encroachment	78.891	.000	-4.64	808.532	.000	-.153	.033
Religious matters	20.982	.000	-2.37	633.446	.018	-.020	.008
Language	20.715	.000	-2.31	765.364	.021	-.031	.013
Economic matters	2.860	.091	.845	810	.398	.015	.018
All of the above	17.816	.000	-2.25	435.000	.025	-.011	.005
No problem at all	123.804	.000	5.420	702.885	.000	.160	.030
Reconciliation method adopted after conflicts between host community and nomadic Fulani							
Method				Frequency	Percent		
Law enforcement intervention				328	52.6		
Traditional rulers/community leader				250	40.1		
Send them away				14	2.2		
Set demarcations				2	0.3		
Association mediation				29	4.7		
Total				623	100.0		

Source: Fieldwork, 2017.

Also, in Table 4.23, there was a significant difference in the assertion that all challenges ($P=0.025$) constituted challenges to social ties based on the ethnic differential of the respondents. Similarly, the perception that there was no problem at all was significantly different based on one's ethnic group. In reconciliation, more than half (52.6) of the respondents reportedly asserted that disputes were settled through law enforcement intervention, followed by 40% that said it was through traditional/community leaders. Only 0.3% asserted that demarcations were set. Thus, setting of demarcation was rarely used since there could be a problem of identifying grazing routes. Similarly, less than twentieth (2.2%) reportedly maintained that the nomadic Fulani set up demarcation as a reconciliation mechanism. This shows that little is known about the grazing routes among the respondents.

Table 4.24 presents a multinomial regression of dispute settlement among the respondents. Four dispute settlement mechanisms were mentioned. The mechanisms are legal system, demarcation, traditional ruler system, and relocation of the offenders. Also, Ibarapa North and Yoruba are the reference groups in their categories. Legal system was (0.078 times) less used in dispute settlement in Saki East than in Ibarapa North. Similarly, it was (0.042 times) less used in dispute settlement in Ibarapa East than the reference group. This was significant at $P<0.05$. This shows that the LGA influenced the use of law for settling dispute in Saki East and Ibarapa East. Also, traditional rulers were 0.082 times and 0.107 times less engaged in Saki East and Ibarapa East respectively in dispute settlement than in the reference group. The law was (0.100 times) less used in settling dispute for the Fulani than the Yoruba.

Table 4.24 Multinomial Regression of Dispute Settlement Mechanism among the Respondents

	Law	Demarcation	T. Ruler	Relocation
Factors	Exp(B)	Exp(B)	Exp(B)	Exp(B)
Iseyin	0.795	1.255	0.541	57593599.753
Itesiwaju	0.907	0.918	0.449	.728
Saki west	0.186	0.351	0.448	27880155.125
Saki east	0.078*	0.306	0.082*	.098
Ibarapa east	0.042**	30360721.193	0.107*	6080962.059
Ibarapa north	1.000	1.000	1.000	1.000
Fulani	0.100***	5880797.263	0.459	.279
Yoruba	1.000	1.000	1.000	1.000

Source: Fieldwork, 2017

Table 4.25 presents a multinomial regression analysis of the forms of relationship between the host communities and nomadic Fulani camps. In Itesiwaju, residents were 0.348 less likely, than in Ibarapa North, to assert that the form of relationships between host communities and nomadic Fulani was only business. It was 0.421 times less in Saki West than Ibarapa North. Thus, there was a significant influence ($P < 0.01$) between the LGA and the assertion that business only was their source of relationship. Also, the nomadic Fulani, compared with the Yoruba, were 0.257 times less likely to maintain that the relationship between the host communities and the nomadic Fulani was strictly formal. Furthermore, the nomadic Fulani believed (0.441 times) less, than the Yoruba, that their relationship with the host communities was purely business. This was significantly influenced by respondents' ethnic affiliations.

Table 4.25 Multinomial Regression Analysis of the Forms of Relationship between the Host Community and Nomadic Fulani Camp

Model	Formal	Health	Business
LGAs	Exp(B)	Exp(B)	Exp(B)
Iseyin	2.692	3.706	1.205
Itesiwaju	0.817	1.619	0.348**
Saki west	0.926	2.905	0.421**
Saki east	2.539	2.780	0.873
Ibarapa east	2.420	0.421	0.578
Ibarapa north	1.000	1.000	1.000
Ethnic group			
Fulani	0.257***	0.484	0.441***
Yoruba	1.000	1.000	1.000

The reference category is all kinds of relationships

Figure 4.7 displays the graphical representation of mutual visitations between nomadic Fulani and their host communities. Highest mutual visitations were reported in Itesiwaju (88.1%), followed by Ibarapa East (81.6%), then Ibarapa North (80.9%). More than one third (34.6%) in Iseyin and 30.6% in Saki East maintained that they had not visited either of the community or camp previously.

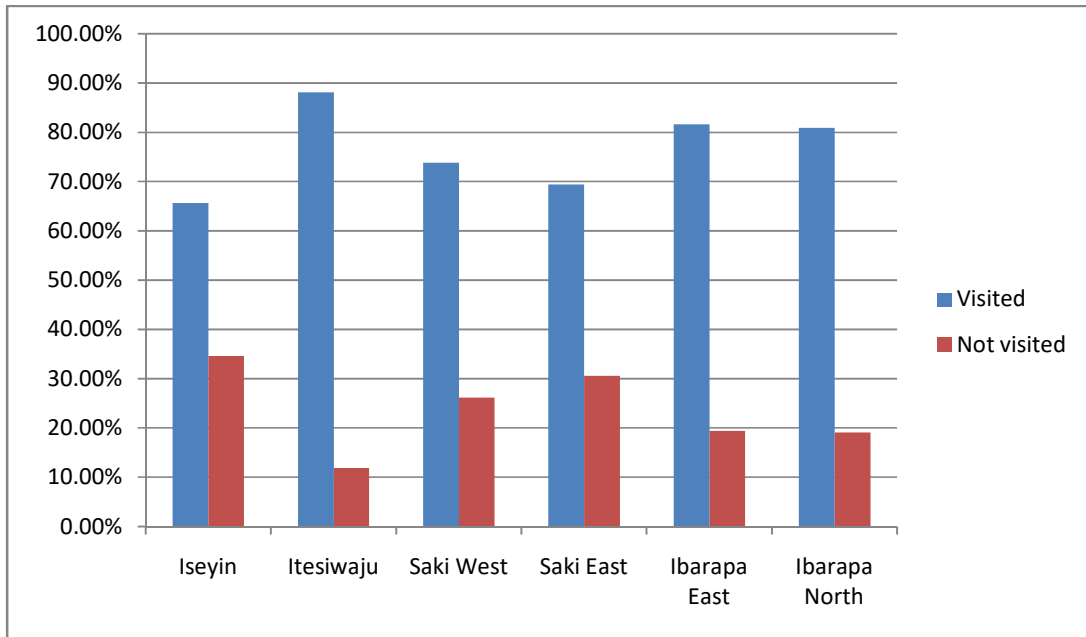


Figure 4.7 Communities/Camps Visitation among Fulani and their Host Communities

Table 4.26 presents the types of social relations that existed among the respondents. Close to two-thirds (64.2%) of the respondents had visited community/camp before. The reasons for visitation were similar across LGAs. These reasons were peace meeting, check someone, business activities, marital relationship, and religious activities.

Specifically, in Iseyin, about 80% reportedly transacted businesses, 4.8% went for peace meeting, and close to a tenth (9.5%) went to check someone. Also, Table 4.26 displays that in Itesiwaju, less than three-quarter (65%) of the respondents transacted businesses, less than twentieth (4%) had inter-ethnic marriages. This shows that there was a high level of social cohesion between Yoruba and nomadic Fulani in some LGAs. Similarly, Saki East recorded 85.3% visits purposely to transact business while Ibarapa North had 84% of the respondents visiting another tribe solely for business. Saki East and Saki West had not recorded inter-ethnic marriages.

In fact, there was a significant relationship ($P < 0.05$) between LGA of residence and reason for visitation. Similarly, the relationship ($P = 0.014$) between ethnic affiliation and reasons for visiting the different ethnic groups was significant. Evidently, slight above three-quarter (77.6%) of nomadic Fulani respondents went for trading compared to less than three-quarter (70%) of Yoruba respondents who traded.

Table 4.26 Social Relationship between the Yoruba and Nomadic Fulani in six LGAs of Oyo State

Visitation to Host community/Nomadic camp	Frequency					Percent
Visited	521					64.2
Not visited	291					35.8
Total	812					100.0%
L. Govt.	Reasons for the Visitation					Total
	Peace meeting	To check someone	Transact business	To marry	Religious activities	
Iseyin	5(4.8%)	10(9.5%)	84(80.0%)	0(0.0%)	6(5.7%)	105(100%)
Itesiwaju	7(9.5%)	17(23.0%)	46(62.2%)	3(4.1%)	1(1.1%)	74 (100%)
Saki W	20(22.0%)	10(11.0%)	60(65.9%)	0(0.0%)	1(1.1%)	91(100%)
Saki East	3(2.8%)	13(11.9%)	93(85.3%)	0(0.0%)	0(0.0%)	109(100%)
Ibarapa E	4(5.80%)	15(21.7%)	45(65.2%)	1(1.4%)	4(5.8%)	69 (100%)
Ibarapa N	1(1.4%)	8(11.0%)	62(84.9%)	1(1.4%)	1(1.4%)	73(100%)
Total	40(7.7%)	73(14.0%)	390(74.9%)	5(1.0%)	13(2.5%)	521(100%)
Chi-square	x²: 71.909	df: 20,	P-value: .000			
Ethnic						
Fulani	17(5.5%)	40(13.0%)	239(77.6%)	1(0.3%)	11(3.6%)	308(100%)
Yoruba	23(10.8%)	33(15.5%)	151(70.9%)	4(1.9%)	2(0.9%)	213(100%)
Total	40 (7.7%)	73 (14%)	390(74.9%)	5(1.0%)	13(2.5%)	521(100%)
Chi-square	x²: 12.553	df:4,	P-value: .014			
L. Govt.	Frequency of Visitation					Total
	Daily	Weekly	Monthly	Yearly		
Iseyin	22(21.0%)	36(34.3%)	24(22.9%)	23(21.9%)	105 (100%)	
Itesiwaju	28(37.8%)	27(36.5%)	14(18.9%)	5(6.8%)	74 (100%)	
Saki West	40(44.0%)	33(36.3%)	18(19.8%)	0 (0.0%)	91(100%)	
Saki East	36(33.0%)	38(34.9%)	18(16.5%)	17(15.6%)	109(100%)	
Ibarapa East	23(33.3%)	34(49.3%)	7(10.1%)	5(7.2 %.)	69 (100%)	
Ibarapa North	32(43.8%)	33(45.2%)	7(9.6%)	1(1.4%)	73 (100%)	
Total	181(34.7%)	201(38.6%)	88(16.9%)	51(9.8%)	521(100.0%)	
Chi-square	x²: 55.885	df:15,P-value: .000				
Ethnic						
Fulani	143(46.4%)	130(42.2%)	33(10.7%)	2(0.6%)	308(100%)	
Yoruba	38(17.8%)	71(33.3%)	55(25.8%)	49(23.0%)	213(100%)	
Total	181(34.7%)	201(38.6%)	88(16.9%)	51(9.8%)	521(100.0%)	
Chi-square	x²: 113.495	df:3,	P-value: 0.000			

Fieldwork, 2017

Considering the frequency of visitation, there was a significant relationship between LGA of residence and frequency of visitation. For instance, Saki West had the highest portion (44%) of respondents visiting on daily basis. On weekly distribution, two of the LGAs shared almost the same proportion. Iseyin and Saki East reportedly had 34.3% and 34.9% respectively. Itesiwaju (36.5%) and Saki West (36.3%) reportedly shared similar proportions. In Iseyin, the daily (21.0%) and yearly (21.3%) visits had similar percentage. Also, the frequency of visit by respondents and ethnic affiliation was tested for association. There was a significant relationship ($P < 0.05$) between the two variables. This suggests that ethnic affiliations of respondents could influence the frequency of visit to another ethnic group. For instance, close to half (46.4%) of nomadic Fulani respondents as compared to less than one-fifth (17.8%) of Yoruba respondents visited each other's communities/ nomadic camps daily.

In the qualitative study, a veterinarian reported that there was cordial relationship between the nomadic Fulani and the host communities. However, the relationship was strained recently in Eruwa. The clashes were settled quickly by the community heads and the nomadic leader. Also, the TBLS in Itesiwaju observed that there were meetings between kings and the Fulani's representatives who were educated⁷. In the meetings, the king warned them against grazing in unauthorised sites or in farms. To her, the relationship between them may not be that cordial, but there is better level of understanding. Noticeably, the relationship between the nomadic Fulani and their host communities got strained while it was evident in Itesiwaju.

Table 4.27 displays the statement of perception on inter-communal relationship and BTB prevention among the respondents. Close to one-third (32.1%) of the male respondents agreed that inter-communal relationship would prevent their access to information about BTB while one-fourth (25.5) of the female respondents agreed with that notion. However, the mean score for males (2.7) and females (2.5) showed that large majority of the respondents disagreed with that view. Similarly, large majority of the Yoruba (64%) and the nomadic Fulani (63.8%) disconfirmed the view that inter-communal relationship would prevent access to information about BTB. Using the mean scores, Iseyin (2.8), Itesiwaju (2.4), Saki East (2.3), Ibarapa East (2.5) and Ibarapa North (2.3) disagreed with the notion. However, Saki West with mean score of

⁷These are the nomadic Fulani children who were going to nomadic schools

3.2 agreed that inter-communal relationship would prevent respondents from accessing information about BTB. Thus, this portends that LGAs bedevilled by inter-community/camp conflicts could experience the conclusion from Saki West.

Table 4.27 Statement of Perception on Inter-communal Relationship and BTB Prevention

Statement of Perception	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree	Mean Score
Your inter-communal relationship will prevent you from accessing TB inform						
Gender						
Male	50 (11.9%)	85 (20.2%)	46 (11.0%)	147 (35.0%)	92 (21.9%)	2.7
Female	24 (6.1%)	76 (19.4%)	58 (14.8%)	157 (40.1%)	77 (19.6%)	2.5
Ethnic group						
Fulani	47 (12.5%)	81 (21.5%)	54 (14.4%)	120 (31.9%)	74 (31.9%)	2.8
Yoruba	27 (6.2%)	80 (18.3%)	50 (11.5%)	184 (42.2%)	95 (21.8%)	2.5
LGAs						
Iseyin	21 (11.2%)	40 (24.8%)	26 (13.9%)	74 (39.6%)	26 (13.9%)	2.8
Itesiwaju	4 (4.0%)	21 (20.8%)	4 (4.0%)	55 (54.5%)	17 (16.8%)	2.4
Saki west	19 (15.6%)	29 (23.8)	35 (28.7%)	31 (25.4%)	8 (6.6%)	3.2
Saki east	15 (7.9%)	31 (16.2%)	16 (8.4%)	74 (38.7%)	55 (28.7%)	2.3
Ibarapa east	7 (7.0%)	19 (19.0%)	10 (10.0%)	44 (44.0%)	20 (20.0%)	2.5
Ibarapa north	8 (7.3%)	21 (19.1%)	13 (11.8%)	25 (22.7%)	43 (39.1%)	2.3

Source: Fieldwork, 2017

Table 4.28 presents the relationship that existed between the age of the respondents and reasons for visiting another ethnic group. Close to three quarter (68.8%) of the respondents within 15-19 years visited another ethnic group to transact business. 3% married from other group while 4.5% visited for peace meetings. Also, three quarter (75%) of the respondents within 20-24 years transacted business while 3.3% each visited for religious and marital purposes. Among the respondents within 25-29 years, a large majority (83.1%) of the respondents transacted business with another ethnic group. Also, Table 28 shows that less than a tenth (7.5%) of the respondents within 30-34 years visited another ethnic group for peace meetings while 23.3% of respondents within age 50-54 years went for a similar purpose.

The trend shows that business transactions constitute a major reason for visiting another ethnic group among the respondents. Besides, there was a significant relationship ($P < 0.05$) between age of respondents and reason for visiting another ethnic group. This shows that age influences the reason for visiting another ethnic group. Considering the frequency of visit among the respondents, 40% of the respondents within 45-49 and 50-54 each visited daily while 44% and 42% of the respondents within 15-19 years and 55-60 years respectively visited on weekly basis.

Table 4.28 Cross-tabulation between Age and Reasons for visiting Host Community/Fulani Camp

Age	Reasons for visit					Total
	Peace meeting	To check someone	Transact business	To marry	Religious activities	
15-19 yrs	3(4.5%)	11(16.4%)	46(68.6%)	2(3.0%)	5(7.5%)	67(100%)
20-24 yrs	4(6.7%)	7(11.7%)	45(75%)	2(3.3%)	2(3.3%)	60(100%)
25- 29 yrs	5(6.0%)	8(9.6%)	69(83.1%)	1(1.2%)	0(0.0%)	83(100%)
30- 34 yrs	6(7.5%)	11(13.9%)	59(74.7%)	0(0.0%)	3(3.8%)	79(100%)
35- 39 yrs	4(6.1%)	9(12.8%)	50(76.9%)	0(0.0%)	2(3.1%)	65(100%)
40- 44 yrs	3(7.9%)	3(7.9%)	32(84.2%)	0(0.0%)	0(0.0%)	38(100%)
45- 49 yrs	5(11.1%)	5(11.1%)	35(77.8%)	0(0.0%)	0(0.0%)	45(100%)
50- 54 yrs	7(23.3%)	2(6.7%)	20(66.7%)	0(0.0%)	1(3.3%)	30(100%)
55-60 yrs	3(5.5%)	17(31.5%)	34(63%)	0(0.0%)	0(0.0%)	54(100%)
Total	40(7.7%)	73(14.0%)	390(74.8%)	5(1.0%)	13(2.5%)	521(100%)

	Frequency of Contact				Total
	Daily	Weekly	Monthly	Yearly	
15-19 yrs	23(34.3%)	30(44.8%)	12(17.9%)	2(3.0%)	67(100%)
20-24 yrs	21(35.0%)	24(40.0%)	12(20.0%)	3(5.0%)	60(100%)
25- 29 yrs	28(33.7%)	34(41.0%)	12(14.5%)	9(10.8%)	83(100%)
30- 34 yrs	30(38.0%)	30(38.0%)	13(16.4%)	6(7.6%)	79(100%)
35- 39 yrs	23(35.4%)	21(32.3%)	11(17.0%)	10(15.3%)	65(100%)
40- 44 yrs	13(34.2%)	15(39.5%)	5(13.15%)	5(13.15%)	38(100%)
45- 49 yrs	18(40.0%)	14(31.1%)	7(15.6%)	6(13.3%)	45(100%)
50- 54 yrs	12(40%)	10(33.3%)	6(20.0%)	2(6.7%)	30(100%)
55- 60 yrs	13(24.1%)	23(42.6%)	10(18.5%)	8(14.8%)	54(10.4%)
Total	181(34.7%)	201(38.6%)	88(16.9%)	51(9.8%)	521(100.0%)

Source: Fieldwork, 2017

Also, close to one fifth (18.5%) of the respondents within 55-60 years had monthly contact while 3% of 15-19 years reportedly had yearly contact.

Figure 4.8 displays the interethnic business transactions between the nomadic Fulani and their host communities. Large majority (90.2%) of the Fulani affirmed that they had transacted business with the host communities before. However, close to half (48.8%) of the Yoruba respondents reportedly asserted that they had not transacted business with Fulani previously. This shows that economic activities remain a major avenue to contact the nomadic Fulani

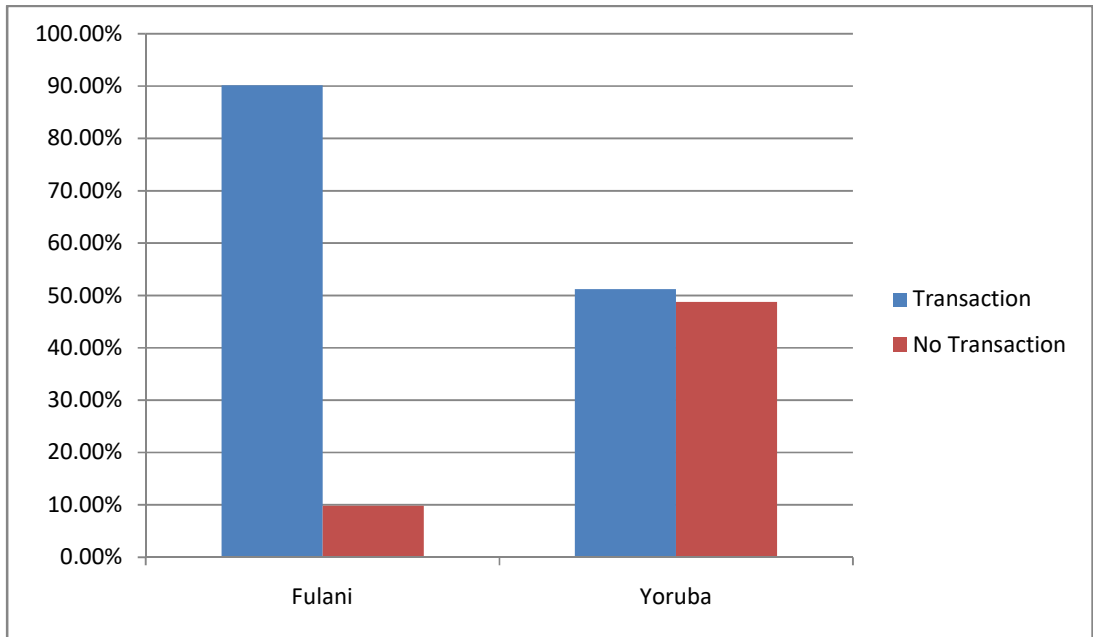


Figure 4.8 Inter-ethnic Business Transactions among the Respondents

Figure 4.9 demonstrates the points of social ties between the nomadic Fulani and their host communities. More than three quarters (77.5%) of the Yoruba respondents and 90.2% of the Fulani mentioned economic activities. About 6.16% of the Fulani and 4.8% of the Yoruba respondents mentioned social activities. The graph shows that the locations of economic activities are a major point of social ties between the two ethnic groups.

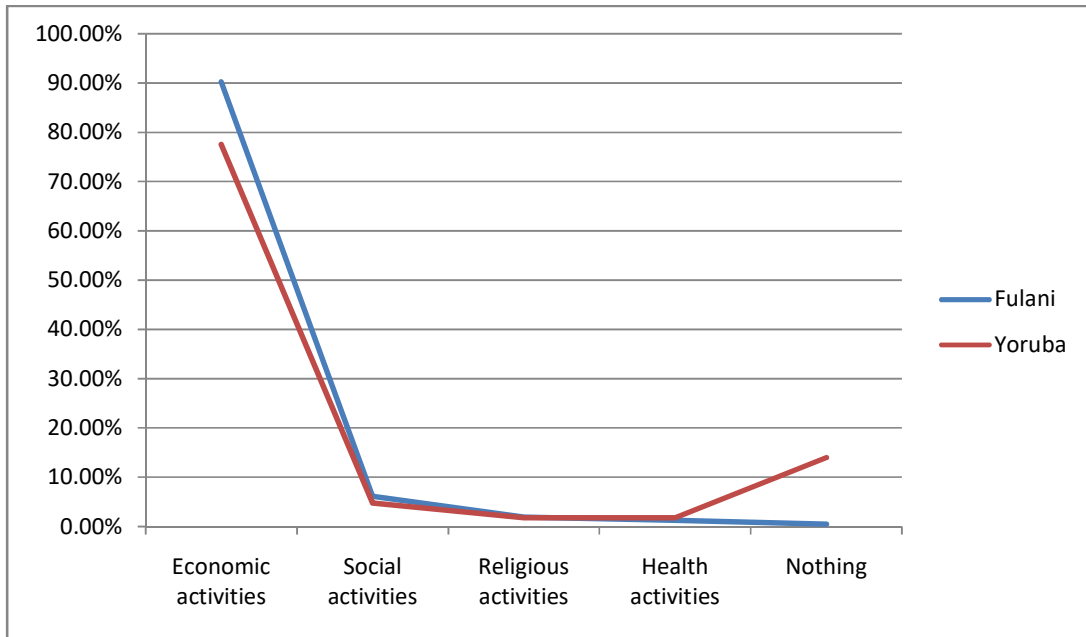


Figure 4.9 Inter-ethnic Point of Social Ties among the Respondents

Table 4.29 displays the types of business transactions between nomadic Fulani and Yoruba. More than half (53.1%) of the Fulani respondents reportedly transacted milk products with the Yoruba. 31% transacted beef while 2.4% dealt in services. Similarly, less than half (48.6%) of the Yoruba respondents had bought from the Fulani while less than hundredth (0.03%) of the Yoruba respondents rented house to Fulani. There was a significant relationship between the kind of business transacted and ethnic peculiarities. Thus, the ethnic affiliation of the respondents significantly influenced the type of business transacted by the respondents.

Table 4.29 Types of Business Transactions between Nomadic Fulani and Yoruba

Ethnic group	Kind of Businesses						Total
	Milk products	Beef	Grains	Housing	Clothing	Services	
Fulani	180(53.1%)	105(31.0%)	23(6.7%)	4(1.2%)	19(5.6%)	8(2.4%)	339(100%)
Yoruba	130(48.6%)	69(25.9%)	28(10.47%)	1(0.03%)	8(3%)	31(11.6%)	267(100%)
Total	310(51.2%)	174(28.7%)	51(8.4%)	5(0.8%)	27(4.5%)	39(6.4%)	606(100.0%)

Chi-square χ^2 : 27.685 df:5, P-value: .000

Source: Fieldwork, 2017

Table 4.30 presents the pattern of business transaction according to the respondents' LGAs. In Iseyin, more than one third (35.0%) traded in milk products, and 40.8% transacted beef while 8.3% traded in grains and services each. Similarly, more than half of the respondents sold/bought milk products in Itesiwaju (55.1%), Saki West (55.6%), Saki East (53.7%), and Ibarapa East (73.8%). Close to one third of the respondents in Itesiwaju (29.2%) and Saki West (31.1%) traded in beef. In Ibarapa North, 14.6% of the respondents traded in services. There is a significant relationship ($p < 0.05$) between the type of business transacted and the local government of residence.

Table 4.30 Pattern of Business Transaction according to Respondents' LGAs

L. Govt	Type of Business Transacted during Visitation						Total
	Milk product	Beef	Grains	Housing	Clothing	Services	
Iseyin	42(35.0%)	49(40.8%)	10(8.3%)	3(2.5%)	6(5.0%)	10(8.3%)	120(100%)
Itesiwaju	49(55.1%)	26(29.2%)	8(8.9%)	0(0.0%)	1(1.1%)	5(5.6%)	89(100%)
Saki W	50(55.6%)	28(31.1%)	4(4.4%)	0(0.0%)	4(4.4%)	4(4.4%)	90(100%)
Saki E	72(53.7%)	37(27.6%)	14(10.5%)	2(1.4%)	5(3.7%)	4(3.0%)	134(22.1%)
Ibarapa E	62(73.8%)	9(10.7%)	7(83.3%)	0(0.0%)	3(3.6%)	3(3.6%)	84(100%)
Ibarapa N	35(39.3%)	25(28.1%)	8(9.0%)	0(0.0%)	8(9.0%)	13(14.6%)	89(14.7%)
Total	310(51.2%)	174(29.0%)	51(8.4%)	5(0.8%)	27(4.5%)	39(6.4%)	606(100%)

Source: Fieldwork, 2017

Table 4.31 displays the multinomial regression of the kinds of business transacted among the respondents. In Iseyin, beef was 3.988 times transacted more than in Ibarapa North. Also, it was 4.246 times transacted more in Itesiwaju than in Ibarapa North. In Saki West, more milk products (4.629 times) and beef (3.629 times) were transacted than in Ibarapa North. Similarly, in Saki East, more milk products (10.831 times), beef (8.099 times) and grains (8.068 times) were sold or bought than in Ibarapa North. These were significantly influenced by the LGAs of the respondents. Also, Fulani transacted more milk products (6.672 times), beef (7.694 times), and grains (4.171 times) than the Yoruba. These were significantly influenced ($P < 0.01$) by respondents' ethnic affiliations. Fulani would transact milk products 6.672 times than the Yoruba would transact services.

Table 4.31 Multinomial Regression of Kinds of Business transacted among the Respondents

LGAs	Milk product	Beef	Grains	Clothing
	Exp(B)	Exp(B)	Exp(B)	Exp(B)
Iseyin	2.365	3.988**	2.203	1.623
Itesiwaju	5.534	4.246**	3.532	.543
Saki west	4.629**	3.629*	1.621	1.619
Saki east	10.831***	8.099***	8.068**	3.686
Ibarapa east	9.553***	1.971	4.469	2.112
Ibarapa north	1.000	1.000	1.000	1.000
Ethnic group				
Fulani	6.672***	7.694***	4.171**	
Yoruba	1.000	1.000	1.000	1.000

The reference category is: Service

Figure 4.10 presents the willingness of respondents to stay in their place of residence by LGA. In Iseyin, less than tenth (8.10%) wanted to leave their place of residence. For Saki West, one out of every five respondents wanted to leave their environment. Ibarapa North had least (4.5%) of respondents that would leave their locations. In Saki East, however, majority (92.8%) would stay in their LGA. The linear progression shows that community members were willing to stay in than leaving these LGAs.

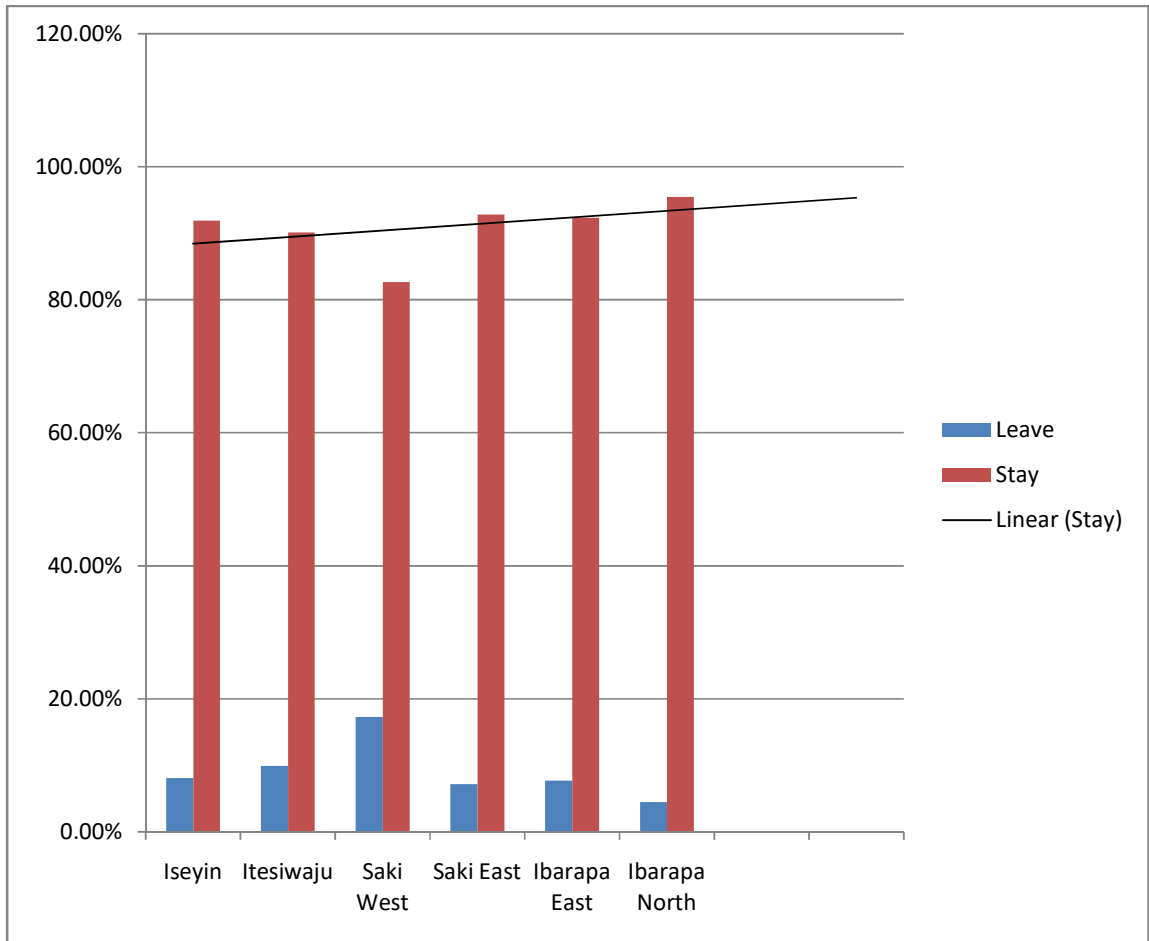


Figure 4.10 Willingness to stay in the Place of Residence

Figure 4.11 shows the Fulani and the Yoruba's willingness to stay in the location. Majority of the nomadic Fulani (98.3%) were reportedly willing to stay in their LGAs. Similarly, nine out of every ten Yoruba respondents were willing to stay in their location. This suggests a level of cordial relationship between the nomadic Fulani and their host communities.

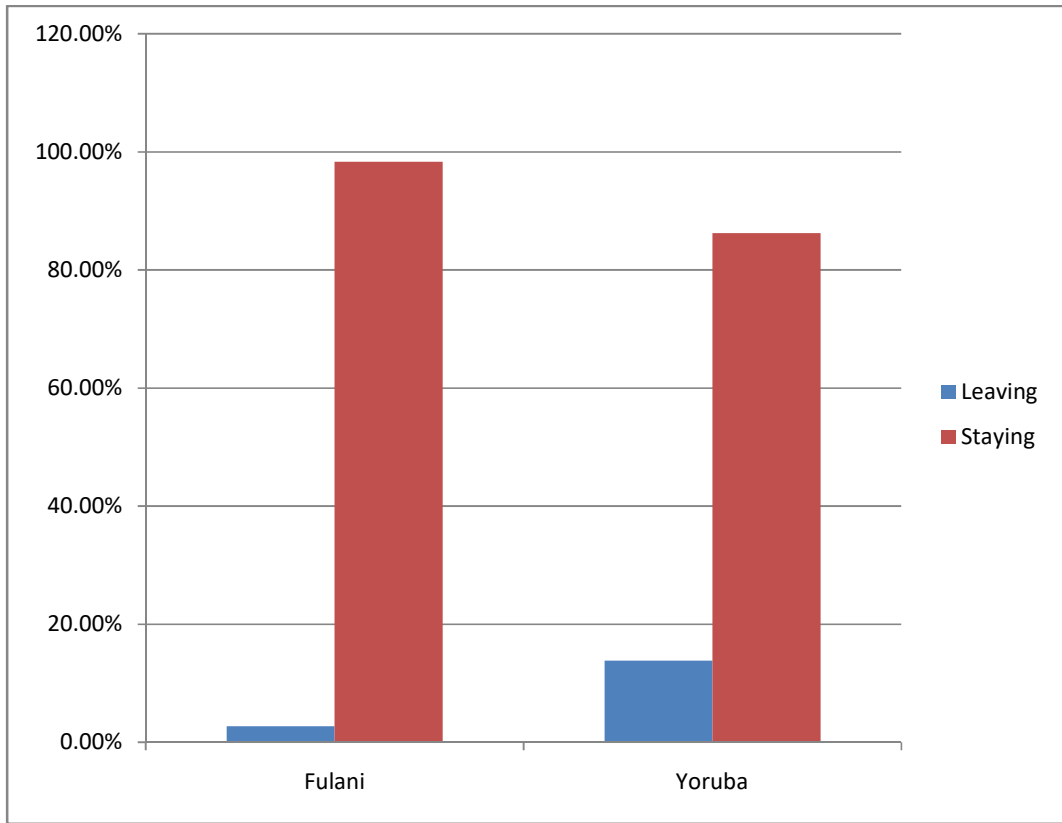


Figure 4.11 Fulani and Yoruba's Willingness to stay in their Location

Table 4.32 shows the extent of social relationship between nomadic Fulani and their host communities. Less than one fifth (17.0%) of the Fulani respondents asserted that social relationship was to a very large extent, and 27.1% claimed it was to a large extent while close to half (45.5%) mentioned that the relationship was moderate. However, less than one third of the Yoruba respondents mentioned that the relationship between nomadic Fulani and their host communities was moderate (31.0%), small extent (23.6%), and very small extent (23.6%). Majority of the nomadic Fulani saw their relationship with their host communities as cordial unlike the host communities that felt their relationship was at the surface level. There was a significant relationship ($p < 0.05$) between respondents' ethnic affiliation and perceived level of their social relationship. Consequently, the respondents' ethnic affiliation related with how individuals perceive their relationship with another tribe.

Table 4.32 Extent of Social Relationship between Nomadic and their Host Communities

Ethnic Group	Extent of Relationship					Total
	Very large extent	Large extent	Moderate extent	Small extent	Very small extent	
Fulani	64(17.0%)	103(27.1%)	171(45.5%)	23(6.1%)	15(3.9%)	376(100%)
Yoruba	43(9.2%)	66(15.1%)	135(31.0%)	89(20.4%)	103(23.6%)	436(100%)
Chi-square χ^2: 117.184 df:4, P-value: .000						

Figure 4.12 presents the respondents' description of relationship between the nomadic Fulani and their host communities. Majority of the respondents in Saki West (71.3%), Ibarapa East (69.0%), and Ibarapa North (64.5%) reportedly asserted that the relationship between the nomadic Fulani and their host communities was cordial. Contrarily, less than one quarter (22.4%) of the respondents in Iseyin, 26.4% in Ibarapa North, and 23.7% in Itesiwaju maintained that nomadic Fulani and their host community were suspicious of each other while 16.6% in Saki East asserted that the relationship was not beneficial. The linear trend shows that the non-beneficial relationship was fading away.

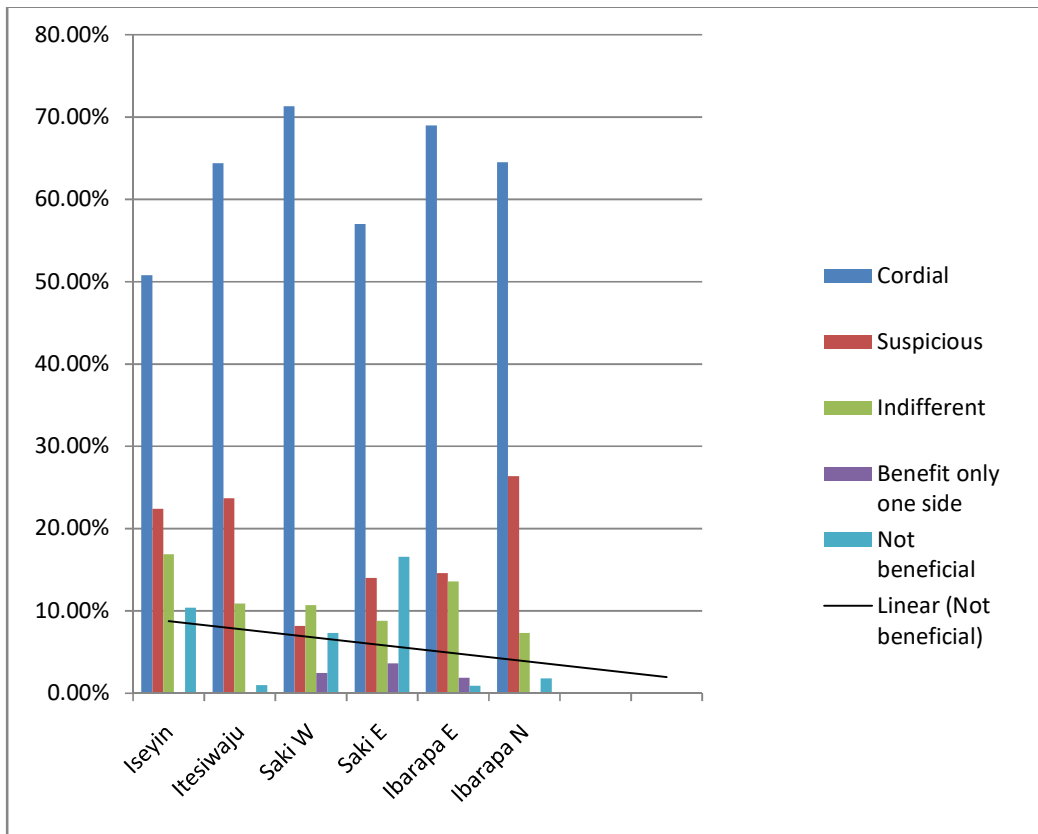


Figure 4.12 Descriptions of Social Ties between Host Community/Nomadic Fulani in LGAs

Table 4.33 presents the respondents' tendencies to help their neighbouring nomadic Fulani/ host communities. Large majority (96.0%) of the nomadic Fulani would help their neighbouring host communities while only 2.9% would not help. Similarly, majority (82.0%) of the respondents from the host communities would render help to nomadic Fulani when there is need while more than tenth would not do such. There was a significant relationship between tendency to help neighbouring camps/communities and ethnic affiliations.

Table 4.33 Cross-tabulation between Ethnic Group and Tendency to help Neighbouring Community/Camp

Ethnic Group	Tendency to Help			Total
	Can Help	Not sure	Cannot Help	
Fulani	361(96.0 %)	4(1.1%)	11(2.9%)	376(100%)
Yoruba	358(82.1%)	20(4.6%)	58(13.3%)	436(100%)
Total	719(88.5%)	24(3.0%)	69(8.5%)	812(100%)

Chi-square χ^2 : 38.470, df:2, P-value: .000

Source: Fieldwork, 2017

Table 4.34 presents the cross-tabulation of the respondents' education and their tendency to help neighbouring community/camp. Majority (93.0%) of the respondents without formal education were ready to support their neighbouring communities/camps. Similarly, respondents with primary school education (84.4%), Quaranic school (98.6%), and vocational training (87.5) were willing to help their neighbouring communities/camps. However, more than tenth of the respondents with higher/tertiary education would not help their neighbouring camps⁸.

⁸*None of the Fulani had higher education in the study thus those with higher education were Yoruba.*

Table 4.34 Cross-tabulation of Respondents' Education and Tendency to help Neighbouring Community/Camp

Education	Readiness to Support Neighbouring community/camps			Total
	Ready	Not sure	Not ready	
No Formal Edu.	256(93.0%)	4(1.5%)	15(5.5%)	275(100%)
Primary	114(84.4%)	4(3.0%)	17(12.6%)	135(100%)
Secondary	199(85.4%)	8(3.4%)	26(11.2%)	233(100%)
Vocational	14(87.5%)	2(12.5%)	0(0.0%)	16(100%)
Higher/Tertiary	67(80.7%)	6(7.2%)	10(12.1%)	83(100%)
Quaranic sch.	69(98.6%)	0(0.0%)	1(1.4%)	70(100%)
Total	719(88.5%)	24(3.0%)	69(8.5%)	812(100.0%)

Source: Fieldwork, 2017

Table 4.35 presents the binomial regression of factors affecting social ties among the respondents. Five factors were identified by the respondents. The factors were grazing, encroachment, religious matter, language differences, and economic matters. In Itesiwaju, grazing was 0.543 times ($P < 0.05$) less likely to impede social ties between nomadic Fulani and their host communities than in Iseyin (the reference category). Similarly, residents in Saki East were 0.392 less likely to assert that grazing was a relationship threat among nomadic Fulani and their host communities than Iseyin residents. However, grazing was a major threat to social ties in Saki West, as grazing caused disagreement 1.837 times more than in Iseyin. In Saki West, language and economic matters (4.543 times and 12.188 times respectively) weakened social ties more than in Iseyin. These were significant influenced at $P < 0.05$. Ibarapa East residents were 10.898 times ($P < 0.01$) more likely to report religious conflicts as a major bane to strong social ties between the nomadic Fulani and their host communities than in the reference category. In Ibarapa North, residents were 1.884 times more likely to assert that there was no threat to social ties between the two groups than residents in Iseyin.

Also, the host communities were 2.894 times more likely to maintain that grazing threatened inter-ethnic social cohesion than nomadic Fulani (the reference group). Similarly, the Yoruba maintained that an encroachment was 2.198 times a threat to social ties than the nomadic group. Also, the Yoruba asserted that language difference was 6.531 times a bane to social ties than the reference group. Individuals with 50001-60000 naira were 5.262 times more likely to assert that there was no social tie threat than individuals without income (the reference group). Individuals with secondary education were 3.980 times more likely to assert that economic issues constituted a threat to social ties than individuals without formal education. Also, those who attended Islamic school were 2.597 times more likely to mention grazing as a major threat to social ties than person without formal education. Females were 2.196 times ($P < 0.05$) likely to maintain that economic issues constituted a threat to social relationship among the respondents than males. The widowed and the individuals (55years and above) asserted that economic issue constituted 33.166 times and 7.130 times social tie threat than the married and individuals within 15-24years. respectively.

Table 4.35 Binomial Regression of Factors affecting Social Ties among Respondents

	Grazing	Encroachment	Religion	Language	Economic matters	No problem
LGAs	Exp(B)	Exp(B)	Exp(B)	Exp(B)	Exp(B)	Exp(B)
Iseyin	1.000	1.000	1.000	1.000	1.000	1.000
Itesiwaju	0.543*	0.309***	.000	1.346	2.455	3.400***
Saki west	1.837*	0.525*	4.428	4.543**	12.188***	0.365**
Saki east	0.392***	1.357	1.019	.338	.000	2.322**
Ibarapa east	1.098	.792	10.898**	1.598	.403	1.673
Ibarapa north	.800	0.471**	.000	2.508	.000	1.884*
Ethnic Affiliation						
Fulani	1.000	1.000	1.000	1.000	1.000	1.000
Yoruba	2.894***	2.198***	5.905	6.531**	.415	.353
Income						
no income	1.000	1.000	1.000	1.000	1.000	1.000
#1-#10000	1.294	1.382	.986	.444	1.694	1.031
#10001-#20000	.912	1.076	.447	.917	1.703	1.273
#20001-#30000	.902	1.596	.411	.595	.852	1.153
#30001-#40000	.926	1.357	1.777	.657	.000	1.377
#40001-#50000	.772	.495	1.045	.546	1.661	2.494
#50001-#60000	.366	.954	.000	.000	3.430	5.262*
#60001-#70000	1.106	1.071	.000	.000	.000	2.084
#70001 & above	1.169	1.079	.000	.719	.475	1.814
Education						
No formal Edu.	1.000	1.000	1.000	1.000	1.000	1.000
Primary	1.105	.785	.237	.720	1.360	.979
Secondary	1.349	.757	.585	0.213*	3.980*	.764
Vocational	1.174	1.156	1.411	.727	1.009	.819
Higher/Tertiary	1.538	.812	.773	0.140*	3.342	0.421*
Quaranic school	2.597**	1.334	.000	.667	.684	0.328**
Gender						
Male	1.000	1.000	1.000	1.000	1.000	1.000
Female	.766	0.717*	0.099**	.690	2.196*	1.502*
Marital Status						
Married	1.000	1.000	1.000	1.000	1.000	1.000
Single	0.607*	.863	2.142	2.266	2.095	1.469
Separated	.702	.492	.000	.000	.000	2.968
Widowed	.669	3.721	.000	.000	33.166***	2.206
Age						
15-24 years	1.000	1.000	1.000	1.000	1.000	1.000
25-34 years	.821	.715	.659	.886	1.976	1.183
35-44 years	.891	.852	.399	.778	1.745	1.069
45-54 years	1.273	.950	.786	.593	3.117	.822
55years & above	1.797	1.222	.395	.160	7.130**	.569

NB: *** = significant at 0.001; ** = significant at less than 0.01; * = significant at less than 0.050

Table 4.36 presents the influence of TB perception on community involvement in TB prevention across the LGAs. In Saki West, 15.6% of the respondents affirmed that perception of TB influenced community involvement in TB prevention, followed by Ibarapa North (10.9%), then 9.3% in Iseyin. However, majority of the respondents in Saki East (95.3%), Ibarapa East (92.5%), and Itesiwaju (92.1%) attested that there was no connection between the perception of TB and community involvement in TB control. There was a significant relationship between the belief that perception of TB influences community involvement and the LGAs of the respondents.

Table 4.36 Cross-tabulation of Influence of TB perception on Communal Involvement in TB Prevention

LGAs	Perception of TB influenced Communal involvement		Total
	Influenced	Not Influenced	
Iseyin	17(9.3%)	166(90.7%)	183(100.0%)
Itesiwaju	8(7.9%)	93(92.1%)	101(100.0%)
Saki West	19(15.6%)	103(84.4%)	122(100.0%)
Saki East	9(4.7%)	184(95.3%)	193(100.0%)
Ibarapa East	18(7.5%)	85(92.5%)	103(100.0%)
Ibarapa North	12(10.9%)	98(89.1%)	110(100.0%)
Total	83(10.2%)	729(89.8%)	812(100.0%)
Chi-square χ^2: 17.025 df:5,			P-value: .004

Source: Fieldwork, 2017

Table 4.37 presents the statement of perception about community efforts in the prevention of TB among the respondents. More than three-quarters (83.8%) of male respondents agreed that community efforts could prevent TB in their communities while 77.3% of the female respondents aligned their view with the males' conclusion. Using the mean score, the nomadic Fulani (3.9) and the Yoruba respondents (4.0) agreed with the view. Also, all the LGAs believed that community efforts to prevent TB would protect their families from the disease. This exposes the need to further engage the community in the BTB prevention.

Table 4.37 Statement of Perception about Community Efforts in the Prevention of BTB

Statement of Perception	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree	Mean
Community efforts to prevent TB will protect you and your family from TB						
Gender						
Male	136 (32.4%)	216 (51.4%)	21 (5.0%)	26 (6.2%)	21 (5.0%)	4
Female	93 (23.7%)	210 (53.6%)	47 (12.0%)	27 (6.9%)	15 (3.8%)	4
Ethnic group						
Fulani	118 (31.4%)	172 (45.7%)	42 (11.2%)	23 (6.1%)	21 (5.6%)	3.9
Yoruba	111 (25.5%)	254 (58.3%)	26 (6.0%)	30 (6.9%)	15 (3.4%)	4
LGAs						
Iseyin	55 (29.4%)	115 (61.5%)	7 (3.7%)	9 (4.8%)	1 (0.5%)	4
Itesiwaju	31 (30.7%)	66 (64.4%)	5 (5.0%)	0 (0.0%)	0 (0.0%)	4.3
Saki west	33 (27.0%)	39 (32.0%)	24 (19.7%)	6 (4.9%)	20 (16.4%)	3.5
Saki east	46 (24.1%)	97 (50.8%)	11 (5.8%)	29 (15.2%)	8 (4.2%)	3.7
Ibarapa east	21 (21.0%)	63 (63.0%)	11 (11.0%)	1 (1.0%)	4 (4.0%)	4.9
Ibarapa north	43 (39.1%)	46 (41.8%)	10 (9.1%)	8 (7.3%)	3 (2.7%)	4.1

Source: Fieldwork, 2017

Table 4.38 displays the relationship between perceived BTB severity on community health-seeking behaviour among the respondents. Majority (80.8 %) of the Fulani and (79.6%) of the Yoruba respondents asserted that perceived severity of BTB did not affect their health-seeking behaviour. This was not significantly related to each other. Considering the area of community involvement in the prevention and control of the disease, majority (62.5%) of the Fulani gave financial support, and 30.6% were involved in BTB control activities. For the Yoruba, close to half (44.8%) of the respondents were involved in BTB control activities, followed by 28.7% that gave financial supports. Thus, areas of involvement in BTB control and prevention were significantly related to respondents' ethnic affiliations. More Fulani were willing to give financial support to BTB patient in their camps, which further strengthened the social cohesion. Again, this form of social relation remains mechanical solidarity within the group. Thus, the health challenge of one member is the challenge of all. This form of social cohesion would engender synergetic community efforts to combat Bovine Tuberculosis.

Table 4.38 The Relationship between perceived BTB Severity and Communal Health-seeking Behaviour among Respondents

Ethnic group	Perceived TB Severity		Total
	Influenced	Not Influenced	
Fulani	72(19.2%)	304(80.8%)	376(100%)
Yoruba	87(20.4%)	349(79.6%)	436(100%)
Total	159(19.6%)	653(80.4%)	812(100.0%)

Chi-square χ^2 : 0.040; df:1, P-value: 0.842

Ethnic group	Involvement in TB control activities	Areas of Involvement			Total
		Give financial support	Consult government	Initiate campaign against TB	
Fulani	16(30.6%)	45(62.5%)	9(12.5%)	2(2.7%)	72(100%)
Yoruba	39(44.8%)	25(28.7%)	16(18.4%)	7(8.1%)	87(100%)
Total	5(34.6%)	70(44%)	25(15.7%)	9(5.7%)	159(100.0%)

Chi-square χ^2 : 17.728; df:3; P-value: 0.001

Fieldwork, 2017

4.7 Determination of the Extent of Community Involvement in the Prevention of Bovine Tuberculosis among the Study Population

Figure 4.13 displays how Bovine Tuberculosis control and prevention was initiated. Less than one-third (27.8%) of the respondents reportedly mentioned that community leaders were consulted. Similarly, less than one-fifth (15.9%) asserted that community meetings were organised at the initial state of the programme development. In contrast, more than one-fifth (21.1%) were not aware of the initial processes of tuberculosis control in their communities/camps.

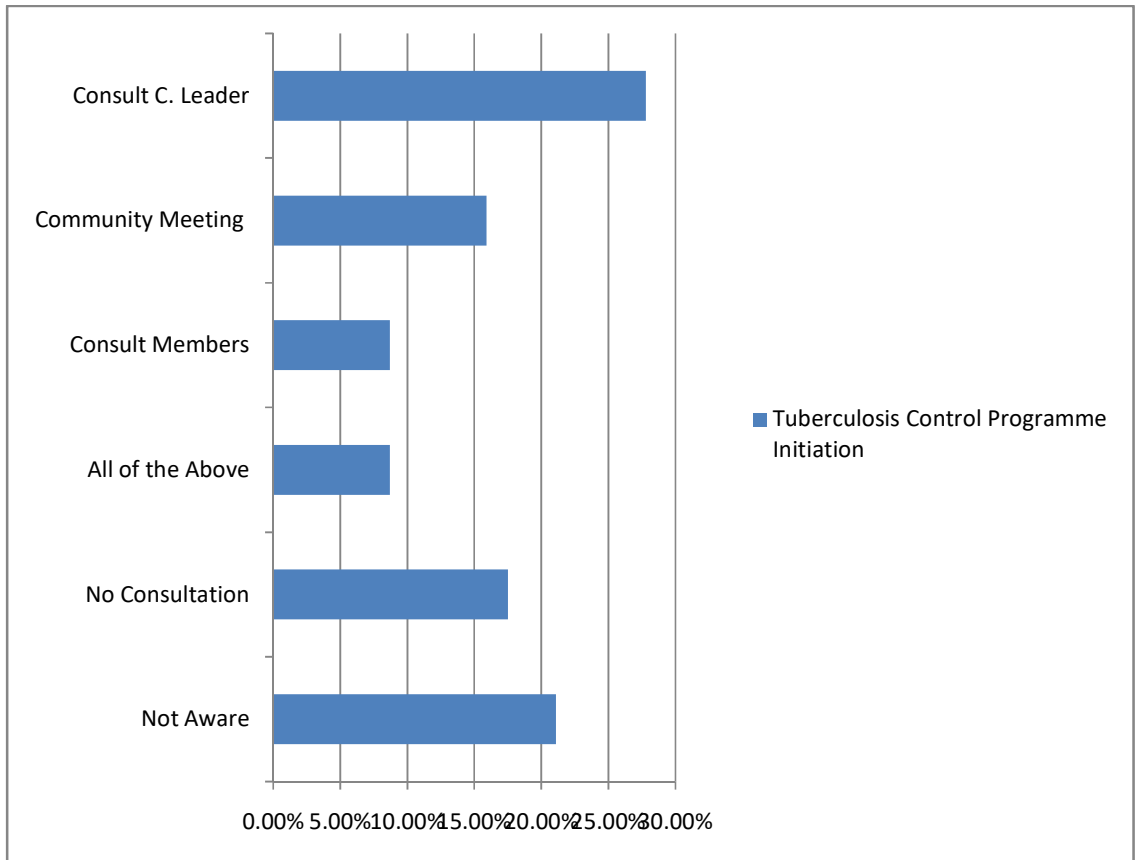


Figure 4.13 Bovine Tuberculosis Control Programme Initiation

Figure 4.14 indicates how tuberculosis programme was initiated in the LGAs by ethnic affiliations. Three ways were identified, namely consultation of community leaders, consultation of community members, and communal meetings. About two-third (65.7%) Yoruba respondents believed that their leaders were consulted. Similarly, close to three quarters (72.7%) of respondents who were Yoruba reportedly maintained that community members were consulted by BTB control programmers. On communal meeting, 25% of the respondents who had communal meeting initiation of BTB control programme were nomadic Fulani while 44% of the respondents that were not aware of TB control programme were Fulani.

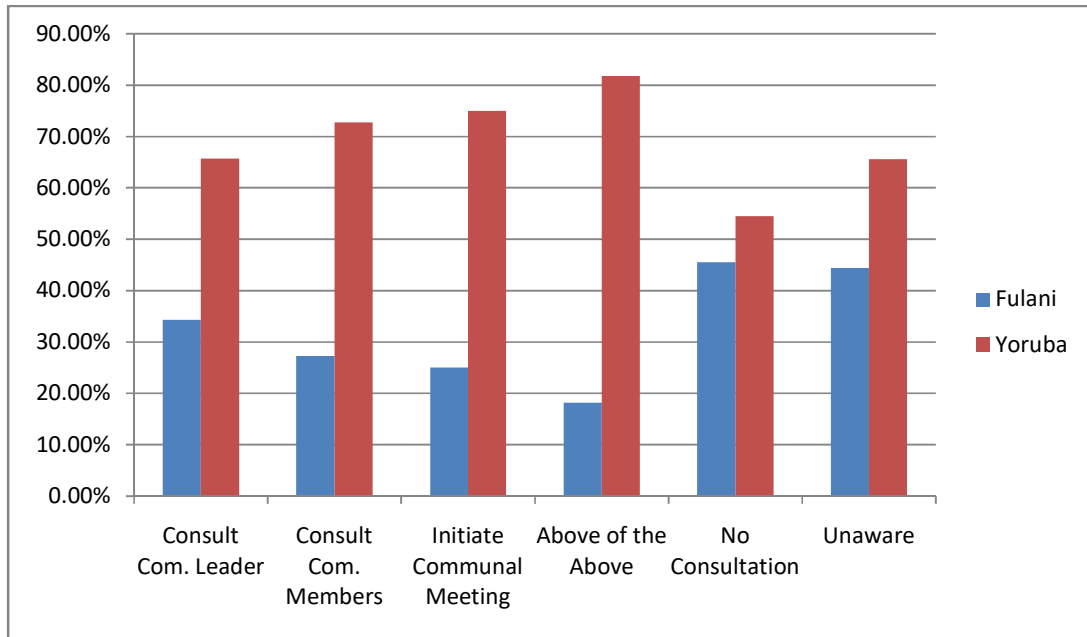


Figure 4.14 Process in Initiating BTB programme in the Community/Camp

Figure 4.15 presents the distribution of how BTB control and programme was initiated in different LGAs of Oyo State. 60% of those who reported that there was a community meeting before the initiation of the programme were from Saki West, followed by 30% from Saki East while Iseyin and Ibarapa North were 5% each. On consulting community members, Saki West had above one-third (34.4%), followed by Itesiwaju (27.3%) while Iseyin and Saki East recorded less than one-fifth (18.2%) each. For community leader consultation, Itesiwaju had 25.7% while Iseyin and Saki West had 20%. Also, Saki West represented close to half (48.2%) that were not aware of the programme initiation, followed by Ibarapa East (29.6%).

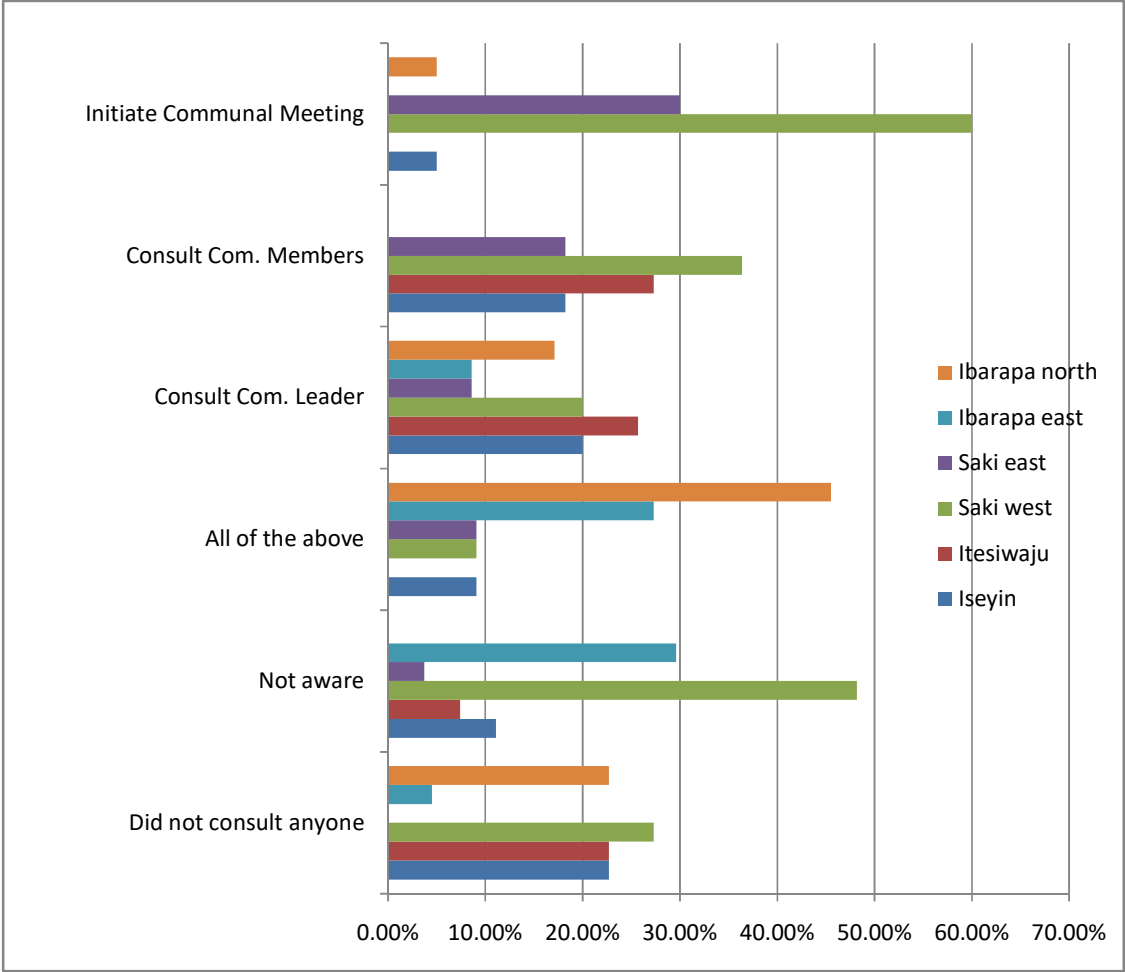


Figure 4.15 Initiation of BTB Control and Prevention Programme in the LGAs

Figure 4.16 presents the initiators of BTB control programme in the study area. Close to one quarter (23.6%) of the respondents reportedly maintained that government was responsible for the TB control activities while slightly above twentieth (5.7%) mentioned community/camp leaders. Few (1.4%) of the respondents asserted that non-governmental organisations were responsible for the BTB control activities. 1.7% mentioned community initiatives while 1.4% reportedly stated that TB control was jointly initiated (community and the government). On the contrary, large majority (66.3%) reported that there was no activity.

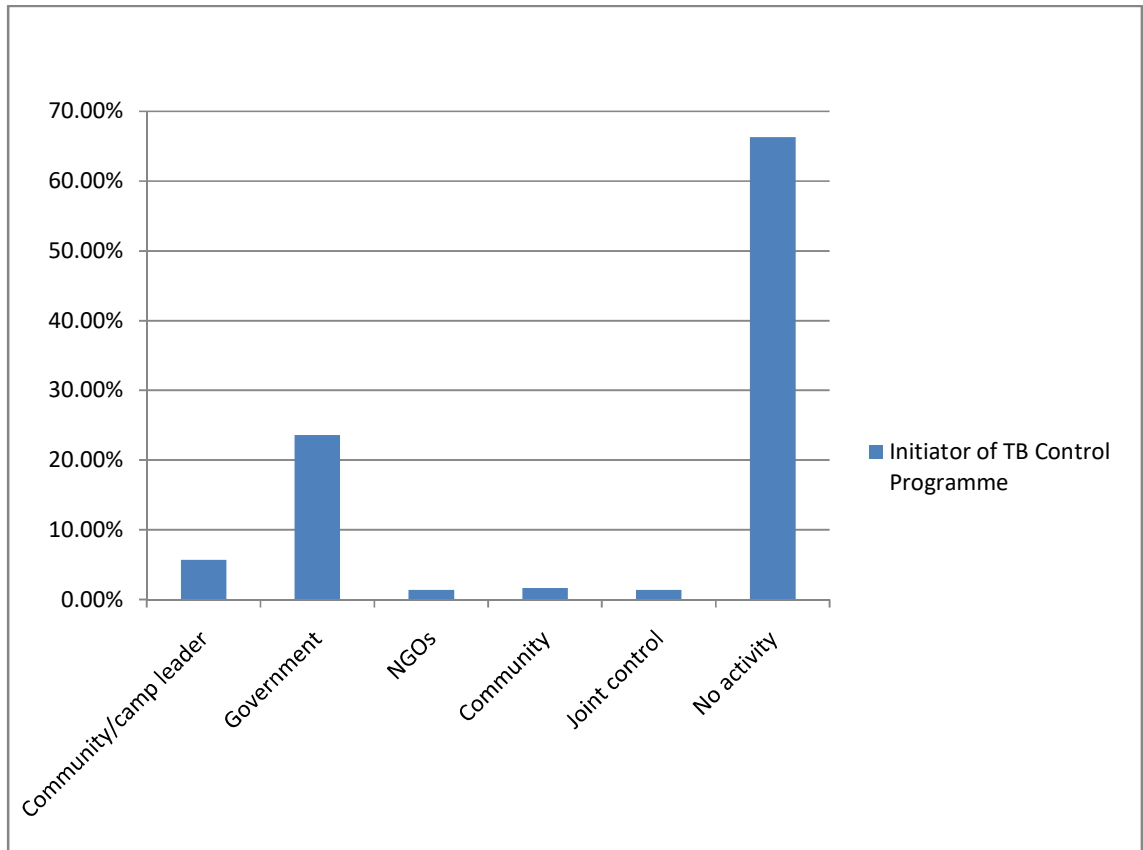


Figure 4.16 Initiators of BTB Control Programme

4.8 Finance and Tuberculosis Prevention and Control in six LGAs

Figure 4.17 displays the perceived donors for Tuberculosis control and prevention programme in Oyo State. Close to half (44.2%) reportedly asserted that the local government supported TB control and prevention programme financially. Also, less than one quarter (23.3%) mentioned international donor while less than tenth (9.3%) affirmed that financial support for TB control was locally sourced.

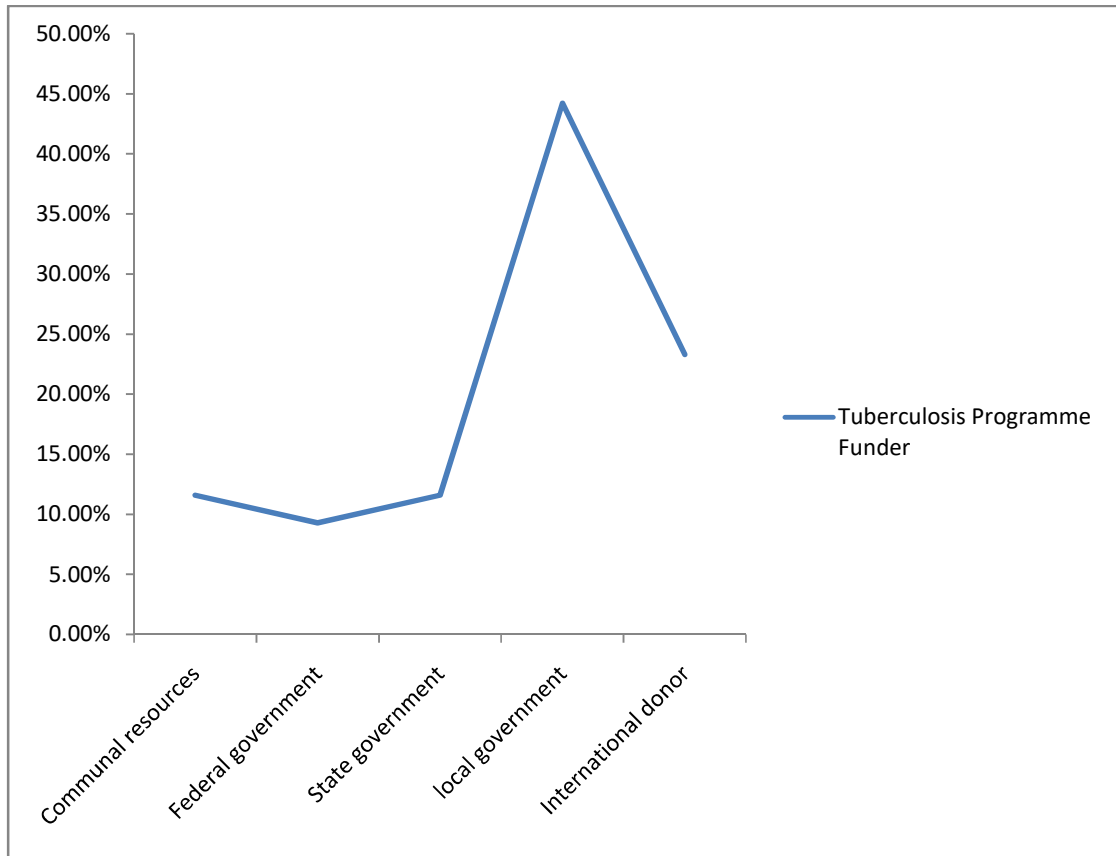


Figure 4.17 Perceived Donors for Tuberculosis Control and Prevention Programme

Figure 4.18 displays the perceived donors in BTB control and prevention programme according to ethnic groups. In the host communities, one third (33.3%) of the Yoruba respondents mentioned that international donors contributed financially to support BTB control and prevention activities, followed by local government (30%), and communal resources (10%). Also, slightly above three-quarter (76.9%) of the nomadic Fulani reportedly asserted that local government supported BTB control and prevention. About 15% of the nomadic Fulani mentioned communal resources while financial impacts of the state government and international donors were not felt in BTB control activities.

Similarly, there was a significant relationship between perceived donors for BTB control and ethnic affiliation. Thus, respondents' ethnic affiliation would influence their level of awareness about the funders of BTB control activities. This shows that the nomadic Fulani were not aware of the contributions of National Tuberculosis and Leprosy Control in Nigeria. Also, the Fulani were not aware of the non-governmental organisations such as Damien Foundation that partnered with the Oyo State government to control TB in the state.

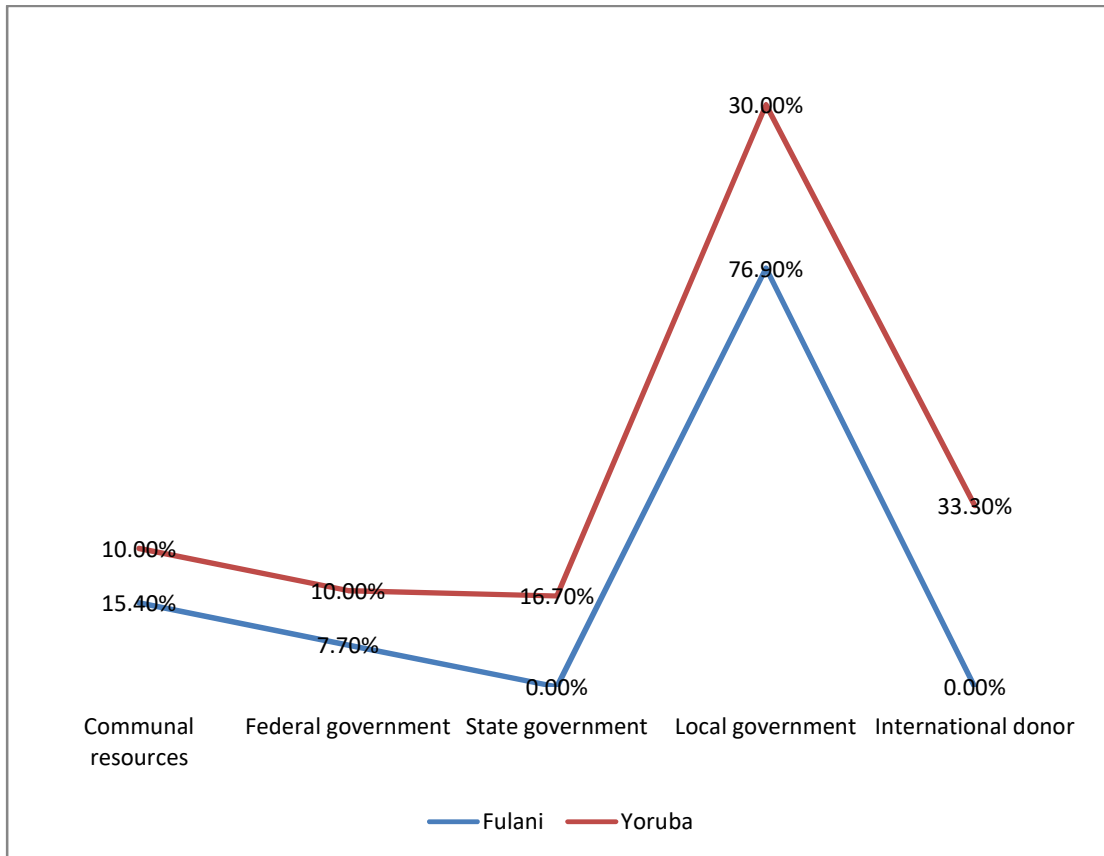


Figure 4.18 Perceived Donors in BTB Control and Prevention Programme according to Ethnic Group

In Iseyin, the TBLS emphasized that the nomadic Fulani were not willing to pay any amount to the public clinic since they believed it was government's responsibility to care for them. On the side of the TBLS, he expected potential TB suspect to pay for possible initial diagnosis because the treatment of tuberculosis is free for all. Thus, the nomadic Fulani might be denied access to TB care in such location, especially when the nomadic Fulani could not accept such position.

We collect small money from them because Fulani would not give something for treatment. They believe that government is not taking care of them so why should they pay for treatment. Hence, they will take care of their cattle themselves. They believe that the worst thing that can happen is for them to sell the infected cow. They expect government to provide the drugs for them free of charge (KII/TBLS/Male/45 years/10 years of experience/Iseyin/).

Figure 4.19 shows the perceived donors in BTB control and prevention programme according to LGAs. In Iseyin, more than half (52.8%) of the respondents believed that state government funded TB control and prevention activities while 25% mentioned international donor. All respondents in Itesiwaju LGA believed that community resources were used in BTB control activities. In Ibarapa East, two sources of funds were mentioned, which were communal resources (80%) and international donations (20%). Federal government was mentioned in Saki West (16.9%), Saki East (40%), and Ibarapa North (30%). Thus, this shows that there were community resources committed to the BTB control activities in Itesiwaju and Ibarapa East.

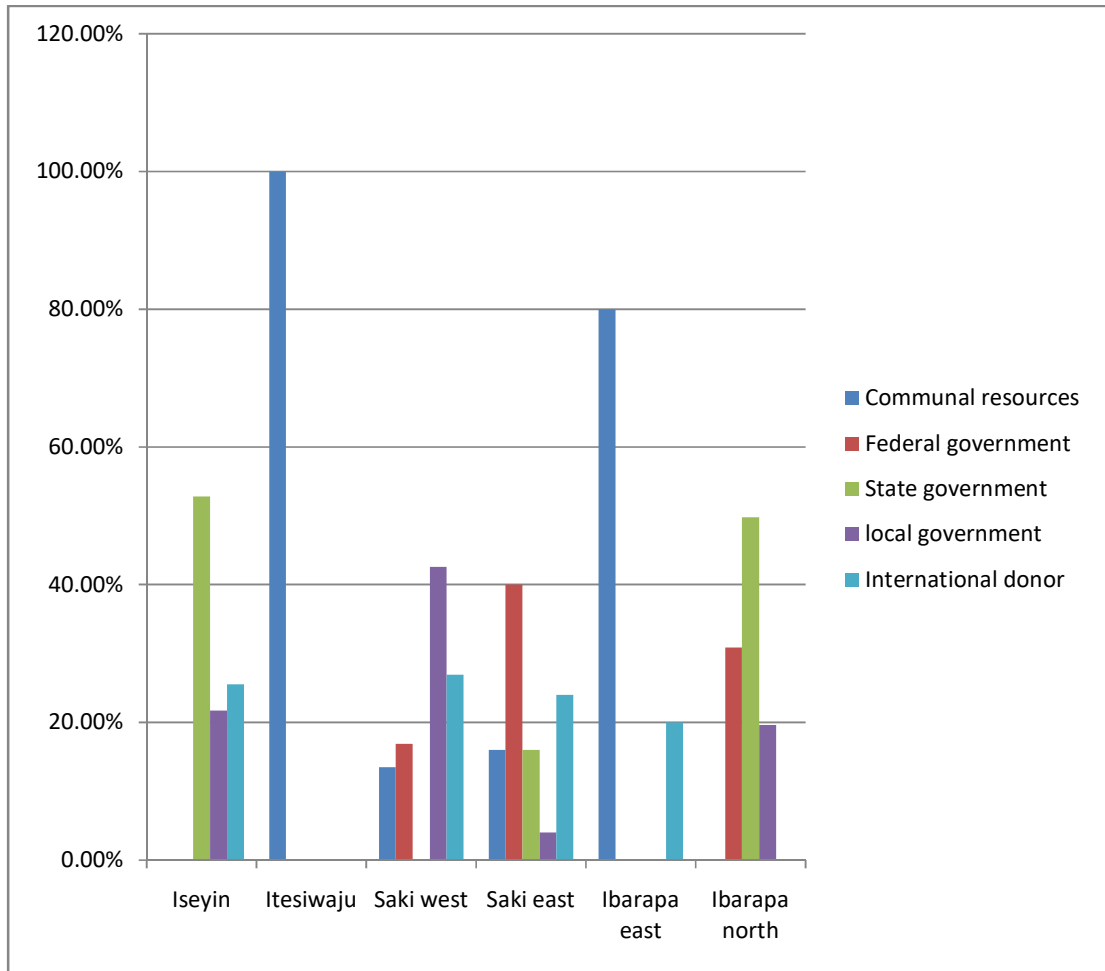


Figure 4.19 Perceived Donors in BTB Control and Prevention Programme in LGAs

All the TBLs expressed their views about the financial sustainability of BTB control and prevention in their LGAs. They claimed that the programme has not been funded to expectation comparing with HIV/AIDS programmes in their LGAs. They were not encouraged owing to inability of the Local Government administrators to meet their financial obligation. One of the TBLs mentioned, for instance, “The local government where I work do not render much support to encourage us because normally we should be paid #200,000 per month as counterpart fund but since I've been here I have not received any payment.” The TBLs maintained that TB programme has not been supported philanthropically as found in the State or Local Government Action Committee on AIDS. All the TBLs mentioned that they had some trainings which built their capacities to deliver.

The content of these trainings covered guardian and counselling for BTB patients, health promotion, and some of the trainings lasted for 3 months. Most of their co-workers have benefited from the system. Also, the organization sponsoring the programs helped in logistics, especially the transportation. Apparently, there were stipends for attendance. For example, one of the TBLs said: “We were not paid, but we are sure not going to come back empty handed (TBLs/Female/41 years/Christian/14 years of experience/Itesiwaju).

Some of the TBLs observed that the political attention and action committed to BTB control and prevention was not sufficient to curtail the disease as slated. Noticeably, reference was made to the fact that Tuberculosis is one of the deadliest infectious diseases. However, it has not been treated as HIV/AIDS and Ebola disease. Presumably, it is a disease of the poor who have their immune system compromised. Consequently, the treatment of the infected people is costlier since PLWTB mostly present late. One of the TBLs expressed the reality of BTB control in Oyo State as follows:

Out of the deadly diseases, BTB is one of them. Thus, government should shift their attention from whatever thing. Because concerning this disease, if somebody is suffering from any disease coupled with BTB, the person would die. BTB is enough to kill somebody. But the government does not see it that way. I could remember that two years ago, they

were funding some programmes such as immunization, National Action Committee on AIDS, but they forgot TB. Fine, maybe immunization is prevention and of course it is good to prevent. But for TB, there are established cases that it can kill people and before they die, they might transmit it to another person. So why are we looking at it as if it is nothing? This is an air borne disease. We are taking of airborne diseases here so it should be the number one priority. So, government should look in into it and see that BTB is a real problem. Now people are coming down with drug resistance TB and it is cost almost 1.5 million to treat one person that has drug resistance (KII/TBLS/Male/ 42 years/ 10 years of experience/Ibarapa East).

One of the host community leaders observed that government most time come to their communities without informing the leaders. To him, the leaders, likewise the community members, would not hear about the upcoming TB programme since the government would meet few people. Consequently, this precluded the public announcement of the programme by the stakeholders. Considering the manner of engagement, the community members would not be aware of the programme. He maintained that government agencies do not engage appropriate community entry strategies which could engender the public acceptance and support for the programme.

Table 4.39 presents the level of community involvement in BTB prevention. The involvement covers decision making, activities, and accountability. About 84.9% of the respondents were reportedly not involved. This is followed by less than a tenth (8.7%) involved in TB preventive activities such as campaigning and volunteering to search for suspected BTB cases. Less than a percent (0.1%) got involved in accountability. Of those involved in decision making, less than a tenth (9.1%) were Fulani while slightly below half (49.3%) of those engaged in activities were Yoruba. More than one quarter (27.6%) of those engaged in all aspects of involvement were Fulani. Test of association revealed that there was a significant relationship ($P < 0.05$) between the respondents' ethnic affiliation and their level of engagement in TB prevention.

Moreover, 22.7% and 22.5% of the respondents who asserted their communities/camps' involvement in decision and activities respectively were reportedly between 30-34 years. Similarly, the relationship was not significant ($P=0.47$). Also, Table 4.38 reveals that less than twentieth (2.1%) had feedback from the TB prevention agencies. Furthermore, a test of difference showed that there was a significant difference ($P<0.05$) between ethnic group and tendency to receive feedback for BTB control agencies. Thus, the ethnic group of an individual could preclude access to BTB feedback.

Table 4.39 Levels of Community Involvement in BTB Prevention

TB Prevention	Frequency	Percentage				
Decision making	22	2.7				
Activities	71	8.7				
Accountabilities	1	0.1				
All the above	29	3.6				
Not involved at all	689	84.9				
Total	812	100.0				
Levels of community involvement in BTB prevention among ethnic groups						
TB Prevention	Ethnic groups		Total			
	Fulani	Yoruba				
Decision making	2 (9.1%)	20 (90.9%)	22 (100.0%)			
Activities	36 (50.7%)	35 (49.3%)	71 (100.0%)			
Accountabilities	0 (0.0%)	1 (100.0%)	1 (100.0%)			
All the above	8 (27.6%)	21 (72.4%)	29 (100.0%)			
Not involved at all	330 (47.9%)	359 (52.1%)	689 (100.0%)			
Total	376 (46.3%)	436 (53.7%)	812 (100%)			
Community involvement in BTB prevention						
Age	Levels of community involved in TB prevention					Total
	Decision making	Activities	Accountabilities	All levels	Not involved	
15-19	2 (9.1%)	3 (4.2%)	0 (0.0%)	2 (6.9%)	91 (13.2%)	98 (12.1%)
20-24	2 (9.1%)	7 (9.9%)	1 (100.0%)	5 (17.2%)	73 (10.6%)	88 (10.8%)
25-29	4 (18.2%)	8 (11.3%)	0 (0.0%)	5 (17.2%)	106 (15.4%)	123 (15.1%)
30-34	5 (22.7%)	16 (22.5%)	0 (0.0%)	5 (17.2%)	93 (13.5%)	119 (14.7%)
35-39	4 (18.2%)	9 (12.7%)	0 (0.0%)	0 (0.0%)	86 (12.5%)	99 (12.2%)
40-44	2 (9.1%)	7 (9.9%)	0 (0.0%)	5 (17.2%)	60 (8.7%)	74 (9.1%)
45-49	1 (4.5%)	10 (14.1%)	0 (0.0%)	3 (10.3%)	56 (8.1%)	70 (8.6%)
50-54	1 (4.5%)	5 (7.0%)	0 (0.0%)	1 (3.4%)	47 (6.8%)	54 (6.7%)
55-60	1 (4.5%)	6 (8.5%)	0 (0.0%)	3 (10.3%)	77 (11.2%)	87 (10.7%)
Total	22 (100.0%)	71 (100.0%)	1 (100.0%)	29 (100.0%)	689 (100.0%)	812 (100.0%)
Reception of feedback						
Feedback	Frequency	Percentage				
Received	17	2.1				
Not Received	795	97.9				
Total	812	100.0				

Source: Fieldwork, 2017

Table 4.40⁹ presents the respondents' involvement in BTB prevention and control. Close to one third (32.6%) of those who partook in decision making were Yoruba while less than half (41.7%) of those who took part in BTB prevention and control activities were Fulani. A large majority (73%) of those who received feedback were Yoruba. Also, a test of association revealed that the individual's ethnic group, religious affiliation and age were significantly related ($P < 0.05$) to their level of involvement in the BTB prevention and control. Expectedly, a large majority of those who were personally engaged in different levels of involvement practised Islamic religion since the nomadic Fulani were predominantly Moslems. Specifically, Table 4.34 reveals that more than three quarters (83.7%) in decision making, close to three quarter (72.6%) in activities, and close to two third (62.2%) in accountability were Moslems.

For the age and personal involvement in the BTB prevention and control, one quarter (25%) of those involved in decision making were within 30-34 years, 16.3% were within 15-19 years while 55-60 years were not involved. On activities, one fifth (20%) involved were within 35-39 years, followed by 16.7% with age ranging from 30 to 34 years. For accountability, 24.3% each of those involved were within 15-19 years and 25-29 years while 50-54 years were not involved.

Table 4.40 presents the relationship between individual's income and tendency to be involved in the TB prevention and control. The associational test revealed that the duo was not significantly related since $p\text{-value} > 0.05$. Similarly, Table 4.40 shows that the respondents who earned between 1-10000 naira were generally more involved in the TB prevention and control. For instance, more than half (58.3%) of those who partook in all aspects of the TB prevention and control were earning less than 10001 naira monthly. Also, those without income reportedly partook more than those who were earning 50001 naira and above.

Figure 4.20 displays the respondents' assessment of the level of community involvement in the prevention of BTB in the study area. The involvement was rated from three areas—decision making, activities, and accountability. The rating scores ranged from zero to nine marks. In decision making, 86% of the respondents scored

⁹ Table not displayed

the programme zero mark, 5.8% scored it one while 1.7% scored it two. Similarly, less than one hundredth (0.2%) of the respondents rated the programme nine. On the activities, 85% scored the programme zero mark, less than twentieth (3.2%) scored it two marks, followed by 2.1% that rated four while 1.2% scored the activities nine marks. For accountability of the programmes, 85.5% of the respondents rated it zero. However, slightly above twentieth (6.3%) scored the programme in accountability as one mark, followed by 2.2% who scored it two and four marks each, and only 0.2% rated it nine marks. In all, majority of the respondents believed in community involvement in the prevention of BTB. Thus, this shows that there is need to incorporate more people in the control and prevention of BTB.

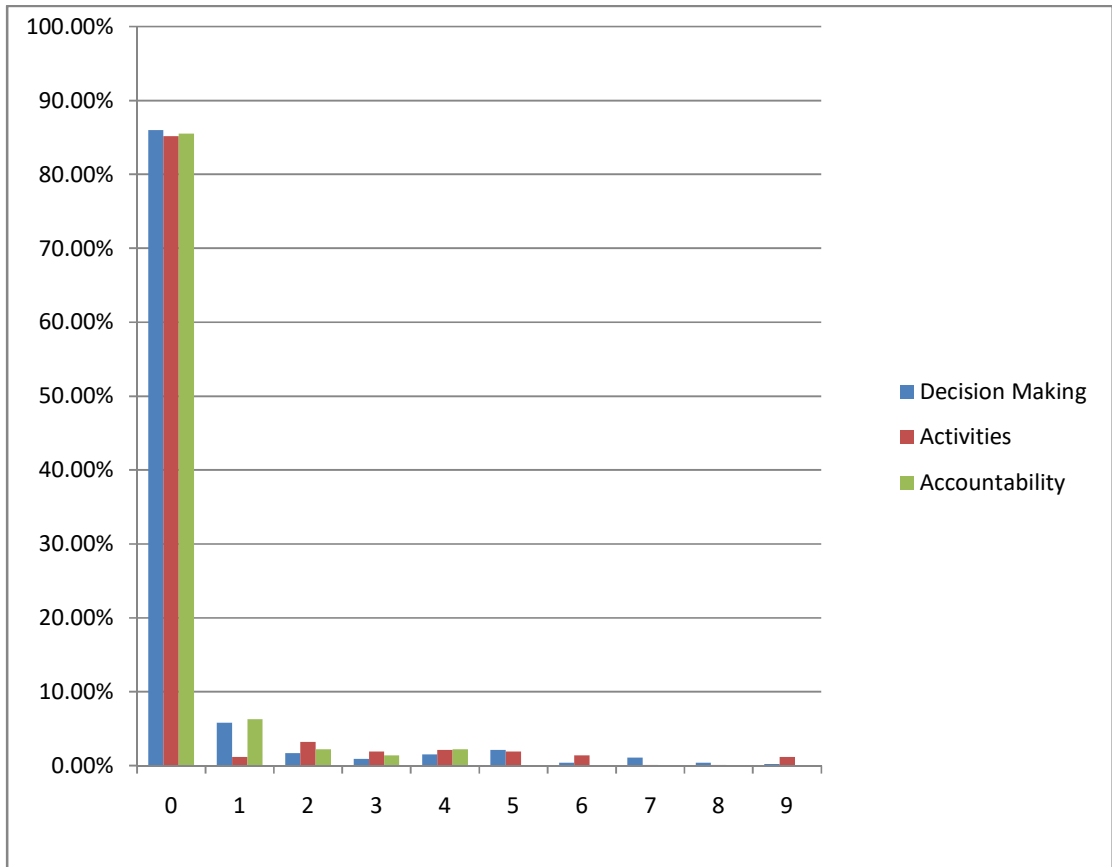


Figure 4.20 Assessment of Community Involvement in the Prevention of BTB by the Respondents

All the TBLSs reported that they have not covered their jurisdictions geographically and therapeutically. For instance, one of them said: “We don't normally get many patients. We don't really get patients around here; hardly do we get up to 10 patients in a quarter. There are patients, but maybe distance is a barrier, and some won't come for treatment until the sickness is very serious. So, I think that is one of the reasons we have reduced number of patients.” This comment is related to the respondents' assessment of their community involvement in the prevention of BTB. Respondents could not participate actively in tripod strings of community involvement—activities, accountability, and decision making. This could be responsible for the limited numbers of cases found in these locations. Apart from that, one of the TBLSs identified areas of concern in TB control and prevention in the following excerpt.

The TBLS mentioned level of literacy as it affects the comprehension of TB sensitisation message. This suggests the need to translate the content of the message into local language which could form language of instruction in the DOTs. This would help integrate or accommodate indigenous people who may find it difficult to comprehend English language. Again, he observed limited social cohesion, especially in the host communities, which makes it difficult for PLWTB to enjoy social supports. However, there is a strong social tie noticed among nomadic Fulani.

The challenges are, transportation, low number of staffs because I will be the one to collect sample from patients from patient from a far distance of maybe (65 km) to the health post sometimes. I use bike and will have to protect the sample, which in the process, I could get infected. One cannot over risk his own life because you want to save other's life their culture. Sometimes, you know lack of education affects many people. If one did not understand English language and we explained in English language, he would not understand. Many of the people in this locality were not educated. Even the ones that were educated did not stay around to help their people. The people in these villages were not ready to help themselves. Sometimes, we have to go to them 15 times before we could get sample from some of their patients (TBLS/Male/38 years/Christian/5 years of experience/Ibarapa North).

Figure 4.21 shows the pattern of involvement in decision making in the BTB programme by LGAs. Saki West rated the programme well in terms of the score given to decision making process in TB programme. Of the LGAs where decision making was scored 2 and 9 marks, Saki West constituted 50% while the same LGA constituted 33.3% among LGAs that scored the programme 6, 7, and 8 marks each. Similarly, Ibarapa East constituted 33.3% and 50% among the LGAs that scored 8 and 9 marks respectively in decision making. For Itesiwaju, none of the respondents rated decision making 6, 8, and 9 marks, but 12% of those who scored decision making zero were from Itesiwaju. Also, 19% and 17.6% of those who rated it 1 and 5 marks were from the same LGA. For Iseyin, none of the respondents scored the decision making 6 marks. Of the LGAs that rated decision making zero, Iseyin represented 23.8%. Also, Iseyin constituted 33.3% among the LGAs that scored decision making 8 marks. This pattern shows that the respondents from Saki West participated more in decision making than Saki East, Iseyin, Ibarapa East, Ibarapa North, and Itesiwaju.

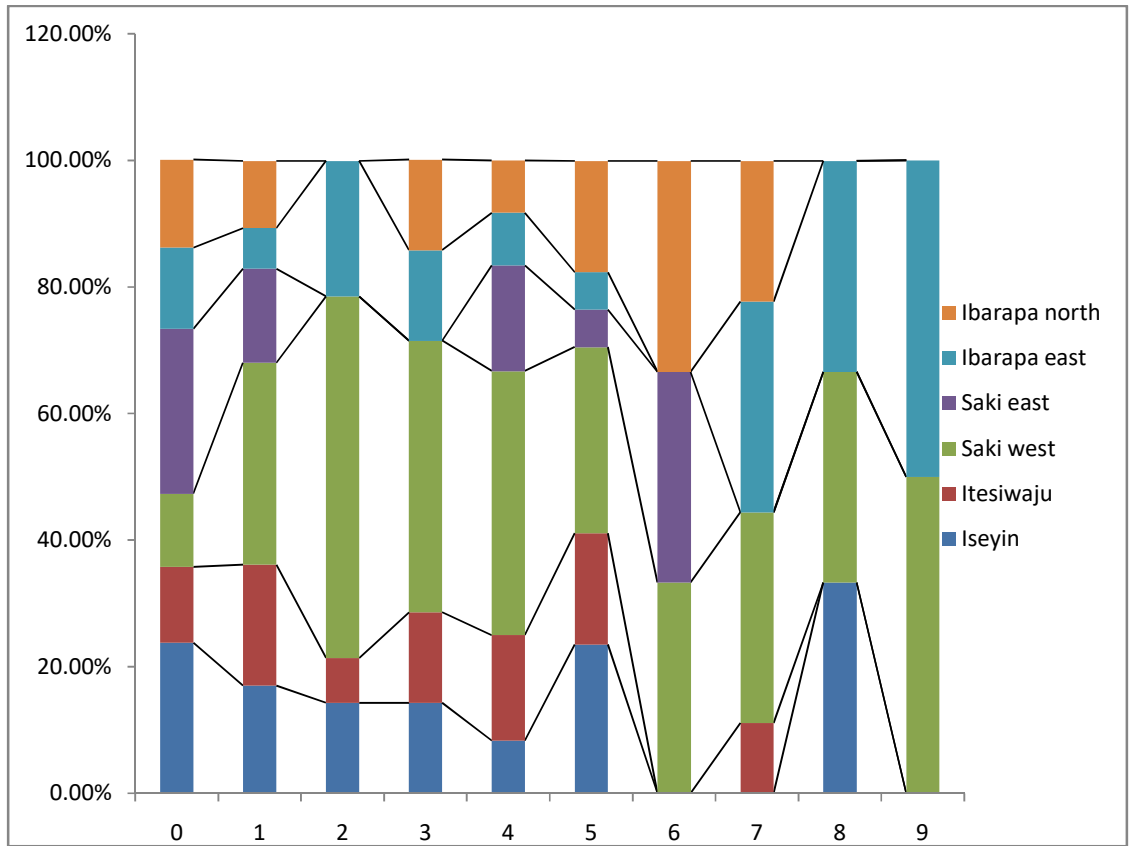


Figure 4.21 Pattern of Involvement in Decision making in BTB Programme by LGAs

Figure 4.22 exhibits the pattern of involvement in the BTB programme in terms of activities by LGAs. Saki East constituted 66.7% of the LGAs that scored the programme zero, and represented 46.7% of the LGAs that scored it 3 marks. Saki West did not score the activities zero and seven. Also, of the LGAs that scored the activities 2, 4, and 8 marks, Saki West constituted 40%, 70%, and 51% respectively.

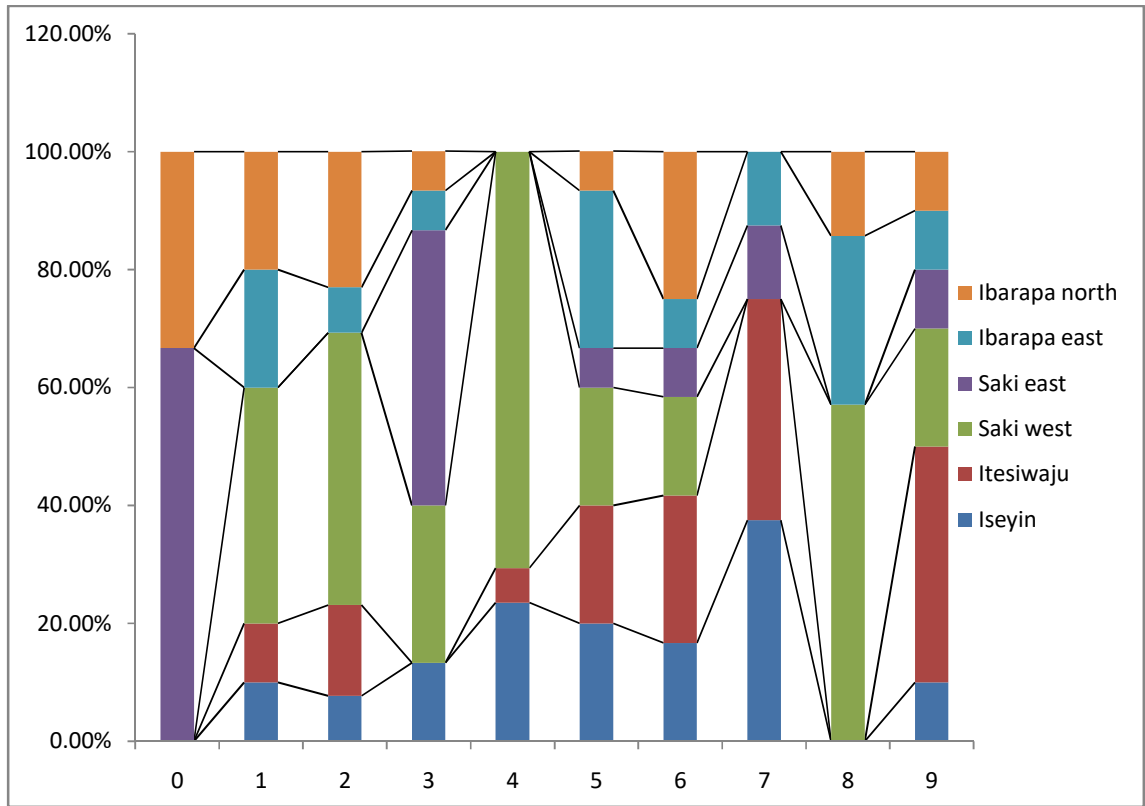


Figure 4.22 Pattern of Involvement in Activities in BTB Programme by LGAs

Figure 4.23 displays the respondents' rating of activities to control TB in the study area. In Iseyin (21.5%), Saki East (20.5%), and Ibarapa North (31.4%), the respondents scored the TB control and prevention activities zero. Similarly, Saki East (14.1%), Ibarapa East (3%), and Ibarapa North (5.1%) rated the activities one, and all the LGAs scored the activities three. Less than twentieth of Ibarapa East (4.3%) and Ibarapa North (4.8%) respondents rated the activities three. Close to half (40%) of Iseyin respondents, (46.1%) Itesiwaju, and (52.1%) Saki West scored the activities five and above. Majority (83.1%) of Ibarapa East respondents reportedly scored the activities five and above. This shows that the respondents that were supposedly involved in the BTB control activities rated their level of involvement high in Itesiwaju, Saki West, and Ibarapa East.

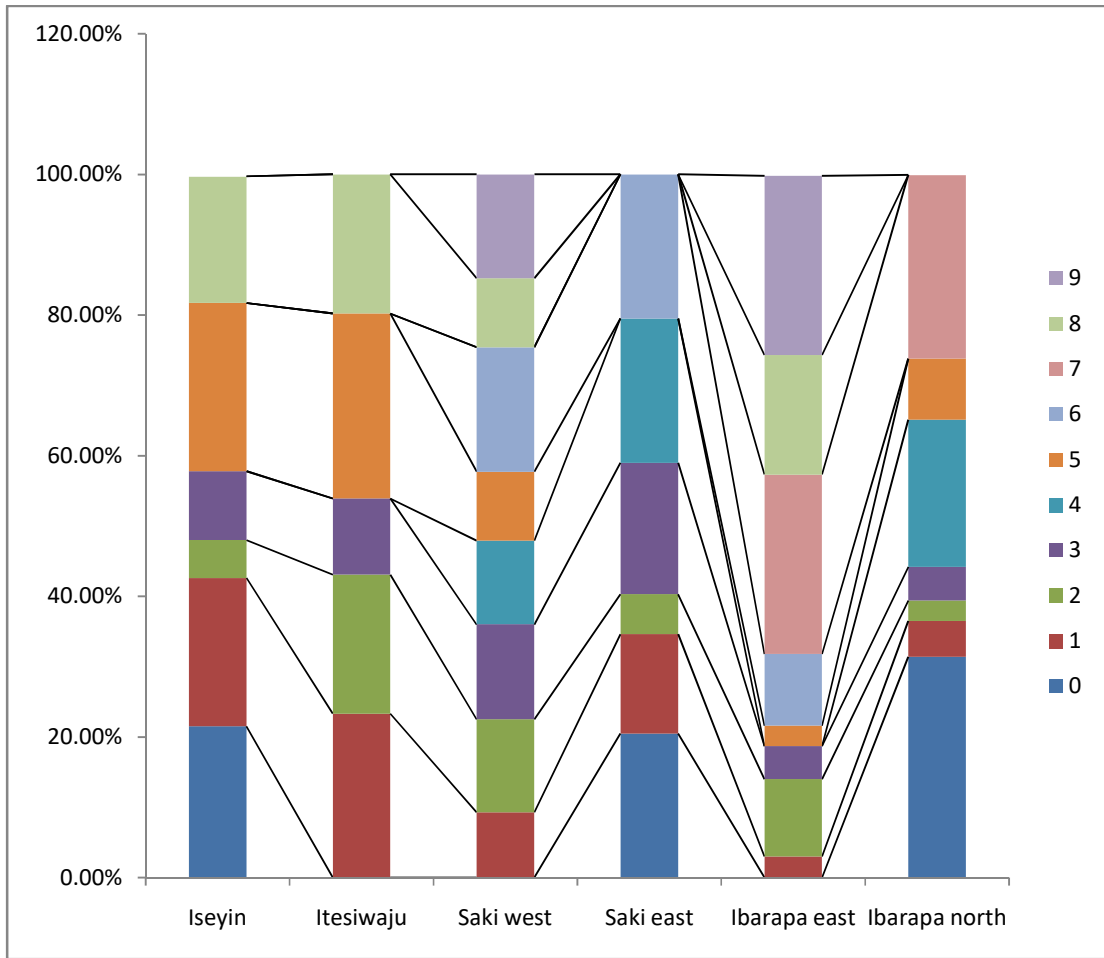


Figure 4.23 Degree of Involvement in Activities

Table 4.41 presents the community/camp's contribution to BTB prevention and control among respondents based on their LGAs. Among the Yoruba, all (100%) of the respondents in Ibarapa North, 98% in Ibarapa East, followed by 96.4% in Itesiwaju reported that their communities were not attending meetings that could help share information about BTB. Close to one-fifth (17.6%) of respondents from Saki West acknowledged that their communities usually attended such meetings. Also, about 22.5% of the nomadic Fulani in Saki West attested that their camps attended such meetings. Noticeably, Saki West recorded highest level of participation in community meetings to prevent or control BTB.

More so, only 13.5% of the respondents from Ibarapa North, followed by Iseyin (11.3%) and Saki East (11.3%) in nomadic camps reportedly adhered to BTB preventive measures while a large majority (97.2%) in Saki West did not. For the Yoruba respondents, more than one-fifth (20.5%) in Saki East reportedly observed the preventive measures. The results show that adhering to preventive measure among the respondents was significantly related ($P < 0.05$) to LGAs. Saki East (20.5%) and Ibarapa East (13.5%) reportedly had highest adherence level among the Yoruba and the nomadic Fulani respectively. Similarly, in sensitizing others about BTB in Ibarapa East, 15% of the nomadic Fulani told someone about the disease compared with 11.8% of Yoruba respondents that did the same. In Saki West, close to one-fifth (17.6%) of the Yoruba respondents sensitized their community members compared with less than twentieth (2.8%) of the Fulani respondents who did the same. Sensitizing people about BTB prevention was significantly related ($P < 0.05$) to LGAs. Consequently, the respondents' LGAs would determine whether individuals would be sensitized or not.

In terms of referral of suspected cases to DOTs, all (100%) of the Yoruba and the Fulani respondents in Iseyin did not refer BTB suspected cases. This may not necessarily mean that there were no BTB cases. In fact, Iseyin had highest number of cases presented and treated in her zone. Although referral system was significantly related to LGAs at the intra-ethnic level, it was not significant at inter-ethnic group level of LGAs. Also, limited community volunteering was reported. Specifically, less than tenth (8.9%) volunteered to search for BTB suspected cases among the Yoruba respondents in Ibarapa North. Contrarily, there was no Fulani community volunteer in Ibarapa North, Ibarapa East, Saki East, and Iseyin. Likewise, there was no community volunteer in Iseyin, Itesiwaju, and Saki East.

Table 4.41 Cross-tabulation of Community Contribution to the Prevention and Control of Bovine Tuberculosis among Ethnic Groups and their LGAs

Community/camp contribution to BTB Prevention: Attending meeting						
LGAs	Yoruba (N=436)		Nomadic Fulani (N=376)		Results P value	Total P value
	Attending	Not Attending	Attending	Not Attending		
Iseyin	6 (5.4%)	106 (94.6%)	2 (2.8%)	69 (97.2%)		
Itesiwaju	2 (3.6%)	53 (96.4%)	0 (0.0%)	46 (100%)		
Saki west	9 (17.6%)	42 (82.4%)	16 (22.5%)	55 (77.5%)		
Saki east	9 (7.4%)	113 (92.6%)	3 (4.2%)	68 (95.8%)		
Ibarapa east	1 (2.0%)	50 (98.0%)	0 (0.0%)	52 (100%)		
Ibarapa north	0 (0.0%)	45 (100%)	0 (0.0%)	65 (100%)		

Community/Camp Contribution to BTB Control: Adhering to Preventive Measures

LGAs	Adhering		Not Adhering		$\chi^2=$	Results $\chi^2=$	Total $\chi^2=$
	Adhering	Not Adhering	Adhering	Not Adhering			
Iseyin	7 (5.4%)	105 (93.8%)	8 (11.3%)	63 (88.7%)			
Itesiwaju	1 (1.8%)	54 (98.2%)	6 (13%)	40 (87%)	23.960	11.251	23.356
Saki west	3 (5.9%)	48 (94.1%)	2 (2.8%)	69 (97.2%)	Df = 5	Df = 5	Df = 5
Saki east	25 (20.5%)	97 (79.5%)	8 (11.3%)	63 (88.7%)	P=	P=	P=
Ibarapa east	3 (5.9%)	48 (94.1%)	7 (13.5%)	45 (86.5%)	0.004	0.047	0.000
Ibarapa north	3 (6.7%)	42 (93.3%)	1 (1.5%)	64 (98.5%)			

Community/Camp Contribution to BTB Control and Prevention: Telling People about BTB

LGAs	Telling		Not Telling		$\chi^2=$	Results $\chi^2=$	Total $\chi^2=$
	Telling	Not Telling	Telling	Not Telling			
Iseyin	16 (14.3%)	96 (85.7%)	0 (0.0%)	71 (100%)			
Itesiwaju	4 (7.3%)	51 (92.7%)	6 (4.3%)	44 (95.7%)	12.561		
Saki west	9 (17.6%)	42 (82.4%)	2 (2.8%)	69 (97.2%)	Df = 5		
Saki east	4 (3.3%)	118 (96.7%)	0 (0.0%)	71 (100%)	P=		
Ibarapa east	6 (11.8%)	45 (88.2%)	8 (15.4%)	44 (84.6%)	0.028		
Ibarapa north	4 (8.9%)	41 (91.1%)	3 (4.6%)	62 (95.4%)			

Community/Camp Contribution to BTB Control and Prevention: Referring Suspected TB Cases

LGAs	Referring		Not Referring		$\chi^2=$	Results $\chi^2=$	Total $\chi^2=$
	Referring	Not Referring	Referring	Not Referring			
Iseyin	8 (7.1%)	104 (92.9%)	1 (1.4%)	70 (98.6%)			
Itesiwaju	4 (7.3%)	51 (92.7%)	4 (8.7%)	42 (91.3%)	12.405	12.971	6.318
Saki west	10 (19.6%)	41 (80.4%)	1 (1.4%)	70 (98.6%)	Df = 5	Df = 5	Df = 5
Saki east	13 (10.7%)	109 (89.7%)	1 (1.4%)	70 (98.6%)	P=	P=	P=
Ibarapa east	4 (7.8%)	47(7.8%)	6 (11.5%)	46 (88.5%)	0.030	0.024	0.276
Ibarapa north	10 (22.2%)	35 (77.8%)	4 (6.2%)	61 (93.8%)			

Community/Camp Contribution to BTB Control and Prevention : Volunteering to search for TB Suspects

LGAs	Volunteered		Not Volunteered	
	Volunteered	Not Volunteered	Volunteered	Not Volunteered
Iseyin	0 (0.0%)	112 (100%)	0 (0.0%)	71 (100%)
Itesiwaju	0 (0.0%)	55 (100%)	4 (8.7%)	42 (91.3%)
Saki west	2 (3.9%)	49 (96.1%)	6 (8.5%)	65 (91.5%)
Saki east	0 (0.0%)	122 (100%)	0 (0.0%)	71 (100%)
Ibarapa east	2 (3.9%)	49 (96.1%)	0 (0.0%)	52 (100%)
Ibarapa north	2 (8.9%)	43 (91.1%)	0 (0.0%)	65 (100%)

Table 4.42 presents the binary logistics regression of community/camp contribution to BTB control according to LGAs. Results reveal that living in Saki West significantly influenced ($P < 0.001$) going to meeting for BTB control or prevention. People residing in Saki West were 6.097 times more likely to attend such meeting than people in Iseyin (the reference category). In adherence to BTB control procedure, residents in Saki East were 2.216 times more likely to adhere to BTB control procedure than the residents in Iseyin. Similarly, residents in Saki East were 0.210 time more likely to sensitize their neighbour than the reference category i.e. Iseyin. This was not significant ($P > 0.05$) in other LGAs. Also, considering giving feedback to the TB control agency, this was significantly related in Saki West ($P < 0.005$) and Ibarapa North ($P < 0.05$). More specifically, residents of Saki West and Ibarapa North were 15 times and 9.498 times respectively more likely to give feedback than Iseyin residents (the reference category). This shows that an individual's location would influence the act of giving feedback to the control agency in the study area. Potentially, this would enhance efficient delivery of service.

Considering ethnic affiliations, the respondents' ethnic affinity significantly influenced ($P < 0.001$) sensitization and referral. The results demonstrate that the Yoruba were 3 times more likely to sensitize and refer suspected BTB cases to DOTs in their neighbourhood than the nomadic Fulani (the reference category). Also, income significantly influenced ($P < 0.05$) the choice of community/camp contribution to BTB control. Individuals earning 20001-30000 naira were 0.418 time less likely to maintain that all activities were performed to control TB than individuals without income (the reference category). Also, individuals with 50001-60000 naira were 6.6932 times more likely to assert that individuals adhered to BTB control procedure than individuals without income. This shows that people with income at least 20001 naira are more likely to be involved than people without income. This follows the assertion that TB is the disease of the poor. Thus, people with low or no income might continually be predisposed to the disease if proper sensitisation about BTB is not engaged

**Table 4.42 Binomial Regression Analysis of Community/Camp Contribution to
BTB Control**

	Going for meeting	Adherence	Sensitising	Feedback	Referral	All Activities
LGAs	Exp(B)	Exp(B)	Exp(B)	Exp(B)	Exp(B)	Exp(B)
Iseyin	1.000	1.000	1.000	1.000	1.000	1.000
Itesiwaju	.413	.891	.712	.000	1.841	.912
Saki west	6.097***	.451	1.219	15.157**	2.268	0.279***
Saki east	1.498	2.216**	0.210**	2.586	1.498	.756
Ibarapa east	.194	1.292	1.908	2.152	2.446	.613
Ibarapa north	.000	.413	.885	9.498*	3.542**	.705
Ethnic Affiliation						
Fulani	1.000	1.000	1.000	1.000	1.000	1.000
Yoruba	1.124	.960	2.954***	69.112	3.195***	0.466***
Income						
no income	1.000	1.000	1.000	1.000	1.000	1.000
#1-#10000	4.157	1.040	1.005	.919	.947	.817
#10001-#20000	6.440	1.515	1.070	1.870	.824	.568
#20001-#30000	7.912	2.148	2.178	.000	.933	0.418*
#30001-#40000	4.214	1.023	1.351	2.059	.555	.537
#40001-#50000	2.994	2.717	1.860	.733	1.001	0.392*
#50001-#60000	.000	6.6932**	.000	.000	1.653	.325
#60001-#70000	.000	1.972	2.735	.000	.000	1.395
#70001 & above	2.977	2.318	2.785	1.448	1.219	0.347*

Source: Fieldwork, 2017. NB: *** = significant at 0.001; ** = significant at less than 0.005; * = significant at less than 0.050

Table 4.43 presents the statement of perception about barrier to the prevention of tuberculosis. Two-third (66.4%) of the male respondents reportedly disagreed that language constituted a barrier to accessing health care for BTB treatment while more than two-third (68.1%) of the female respondents had same belief. Similarly, less than one-third (28.7%) of the nomadic Fulani agreed that language constituted an impediment in health care for BTB treatment. However, using mean score, language is not a barrier for the nomadic Fulani (2.5) in the health care access for BTB treatment. In all the LGAs, language would not prevent persons living with TB (PLWTB) from using TB control services.

Also, both males (3) and females (3.1) could not afford to isolate PLWTB or animal infected with BTB. The nomadic Fulani (3.4) could not afford to isolate the infected individual person/animal, but the Yoruba (2.9) respondents confirmed that they could do so. Across the six LGAs, only respondents from Itesiwaju (2.7) could isolate PLWTB or animal infected with BTB. Also, 69.8% of the male and 64.5% of the female respondents misconceived that treatment for BTB was expensive. Similarly, the nomadic Fulani (62%) and the Yoruba (64%) respondents had the same misconception about the cost of treating TB. The misconception was strongest in Saki East where more than three-quarters (79.6%) of the respondents reportedly affirmed that the treatment was costly, followed by Ibarapa North (75.6%), and Iseyin (63.8%) with similar belief. Potentially, this misconception could partly explain why many individuals would not seek modern treatment or delay in seeking modern treatment. Again, this misconception could be borne out of the expectation of a TBLS who asserted the nomadic Fulani wanted to enjoy the TB healthcare free of charge. However, the situation necessitates that standard of operation should be explained to every patient presented at the DOTs in all the LGAs. This would allow mutual understanding of the standard operation. Hence, misconception about TB treatment, especially in terms of cost, would no longer be an issue of concern.

Table 4.43 Statement of Perception about Barrier to the Prevention of Bovine Tuberculosis

Statement of Perception	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree	Mean Score
Your language will prevent you from using available health care						
Gender						
Male	37 (8.8%)	76 (18.1%)	28 (6.7%)	157 (37.4%)	122 (29.0%)	2.3
Female	25 (6.4%)	59 (15.1%)	41 (10.5%)	166 (42.3%)	101 (25.8%)	2.3
Ethnic group						
Fulani	41 (10.9%)	67 (17.8%)	29 (7.7%)	144 (38.3%)	95 (26.3%)	2.5
Yoruba	21 (4.8%)	68 (15.6%)	40 (9.2%)	179 (41.10%)	128 (29.4%)	2.3
LGAs						
Iseyin	16 (8.6%)	40 (21.4%)	20 (10.7%)	70 (37.4%)	41 (21.9%)	2.6
Itesiwaju	2 (2.0%)	20 (19.8%)	8 (7.9%)	56 (55.4%)	15 (14.9%)	2.4
Saki west	11 (9.0%)	22 (18.0%)	19 (15.6%)	36 (29.5%)	34 (27.9%)	2.5
Saki east	14 (7.3%)	30 (15.7%)	9 (4.7%)	56 (56.0%)	64 (33.5%)	2.1
Ibarapa east	12 (12.0%)	4 (4.0%)	9 (9.0%)	31 (28.2%)	19 (19.0%)	2.7
Ibarapa north	7 (6.4%)	18 (16.4%)	4 (3.6%)	4 (3.6%)	50 (45.5%)	1.6
You cannot afford to isolate BTB infected animal or human from herd or tent						
Gender						
Male	88 (20.5%)	116 (27.6%)	75 (17.9%)	84 (20.0%)	59 (14.0%)	3
Female	56 (14.3%)	87 (22.2%)	116 (29.6%)	102 (26.0%)	31 (7.9%)	3.1
Ethnic group						
Fulani	103 (27.4%)	109 (29.0%)	44 (11.7%)	85 (22.6%)	35 (9.3%)	3.4
Yoruba	39 (8.9%)	94 (21.6%)	147 (33.7%)	101 (23.2%)	55 (12.6%)	2.9
LGAs						
Iseyin	37 (19.8%)	57 (30.5%)	31 (16.6%)	43 (23.0%)	19 (10.2%)	3.3
Itesiwaju	6 (5.9%)	20 (19.8%)	26 (25.7%)	35 (34.7%)	14 (13.9%)	2.7
Saki west	29 (23.8%)	29 (23.8%)	25 (20.5%)	26 (21.3%)	13 (10.7%)	3.3
Saki east	27 (14.1%)	46 (24.1%)	60 (31.4%)	35 (18.3%)	23 (12.0%)	3.1
Ibarapa east	12 (12.0%)	23 (23.0%)	25 (25.0%)	29 (29.0%)	11 (11.0%)	3
Ibarapa north	31 (28.2%)	28 (25.5%)	24 (21.8%)	17 (15.5%)	10 (9.1%)	3.5
Cost of diagnosis and treatment of BTB are expensive						
Gender						
Male	126 (30.0%)	167 (39.8%)	92 (23.5%)	34 (8.7%)	13 (3.3%)	2.2
Female	118 (30.1%)	135 (34.4%)	92 (23.5%)	34 (8.7%)	13 (3.3%)	2.2
Ethnic group						
Fulani	135 (35.9%)	133 (27.4%)	69 (13.0%)	26 (6.9%)	13 (3.5%)	2.1
Yoruba	109 (25.0%)	169 (30.3%)	103 (23.6%)	38 (8.7%)	17 (3.9%)	2.3
LGAs						
Iseyin	59 (31.6%)	79 (42.2%)	34 (18.2%)	11 (5.9%)	4 (2.1%)	2.1
Itesiwaju	16 (15.8%)	38 (37.6%)	30 (29.7%)	11 (10.9%)	6 (5.9%)	2.5
Saki west	36 (29.5%)	33 (27.0%)	30 (24.6%)	18 (14.8%)	5 (4.1%)	2.4
Saki east	72 (37.7%)	80 (41.9%)	24 (12.6%)	8 (4.2%)	7 (3.7%)	1.9
Ibarapa east	13 (13.0%)	36 (36.0%)	38 (38.0%)	12 (12.0%)	1 (1.0%)	2.6
Ibarapa north	48 (43.6%)	35 (31.8%)	16 (14.5%)	4 (3.6%)	6.4 (9.1%)	1.8

Table 4.44 presents the barriers to controlling Bovine Tuberculosis among the respondents, using their location and ethnic affiliation. For the Yoruba, all (100%) of the respondents in Iseyin, Saki West and Ibarapa North claimed that tribalism did not interfere with the control of BTB while only 5.9% in Ibarapa East reportedly disconfirmed such a position. The belief among the Fulani was like the Yoruba's; it was similar. Considering political barrier as a factor that could affect BTB control, majority of the Fulani in the different LGAs—Saki West (100%), Saki East (98.6), Itesiwaju (97.8%), Ibarapa North (96.9%)—maintained that there was no political barrier in TB control.

Among the Yoruba respondents, more than one-third (54.9%) in Saki West, 36.4% in Itesiwaju, followed by 35.7% in Iseyin asserted that lack of information about BTB control precluded its control. The lack of information in BTB control was significant related ($P < 0.05$) to LGA among the Yoruba respondents. This shows that BTB information sharing is crucial to the prevention of the disease among the Yoruba. Also, close to half (48.1%) of the nomadic Fulani respondents in Ibarapa East reportedly mentioned that lack of information sharing impeded the BTB prevention in their location. Across the six LGAs, there was a significant relationship ($P < 0.05$) between respondents' LGAs and lack of BTB information as a barrier to BTB prevention. Examining the relationship between language as a barrier to the control of the disease in LGAs, this was significant ($P < 0.05$) among the Yoruba but it was not significant ($P > 0.05$) among the nomadic Fulani. On a general note, language remained a barrier for the control of TB ($P < 0.05$). This shows that the nomadic Fulani believed that language would not prevent them from using health facilities available to them. However, the Yoruba concluded that the Fulani's inability to comprehend local language would prevent them from accessing the healthcare for TB, especially in DOTs.

Table 4.44 shows that 43.8% of the Yoruba respondents in Iseyin host communities maintained that absence of TB cases in their location was a barrier to the prevention of the disease. More than one-third (35.2%) had similar belief among the nomadic Fulani in Iseyin. There was a significant relationship ($P < 0.05$) between absence of BTB cases as a barrier to BTB control and respondents' ethnic affiliations cum LGAs

Table 4.44 Cross-tabulation of Barriers to Bovine Tuberculosis Prevention in Relation to Respondents' Location and Ethnic Affiliation

Barrier to BTB Prevention: Tribalism							
LGAs	Yoruba (N=436)		Results	Nomadic Fulani (N=376)		Results	Total
	Hindered	Not Hindered	P value	Hindered	Not Hindered	P value	P value
Iseyin	0 (0.0%)	112 (100%)		0 (0.0%)	71 (100%)		
Itesiwaju	1 (1.8%)	54 (98.2%)		2 (4.3%)	44 (95.7%)		
Saki west	0 (0.0%)	51 (100%)		3 (4.2%)	68 (95.8%)		
Saki east	1 (0.8%)	121 (99.2%)		0 (0.0%)	71 (100%)		
Ibarapa east	3 (5.9%)	48 (94.1%)		4 (7.7%)	48 (92.3%)		
Ibarapa north	0 (0.0%)	45 (100%)		4 (6.2%)	61 (93.8%)		
Barrier to BTB Prevention: Political Barriers							
	Hindered	Not Hindered		Hindered	Not Hindered		
Iseyin	12 (10.7%)	40 (35.7%)		4 (5.6%)	67 (94.4%)		
Itesiwaju	4 (7.3%)	51 (92.7%)		1 (2.2%)	45 (97.8%)		
Saki west	5 (5.9%)	46 (90.2%)		0 (0.0%)	71 (100%)		
Saki east	4 (3.3%)	118 (96.7%)		1 (1.4%)	70 (98.6%)		
Ibarapa east	1 (2.0%)	50 (98.0%)		3 (5.8%)	49 (94.2%)		
Ibarapa north	0 (0.0%)	45 (100%)		2 (3.1%)	63 (96.9%)		
Barrier to BTB Prevention: Lack of Information							
	Hindered	Not Hindered		Hindered	Not Hindered		
Iseyin	40 (35.7%)	72 (64.3%)	$\chi^2=$	19 (26.8%)	52 (73.2%)	$\chi^2=$	$\chi^2=$
Itesiwaju	20 (36.4%)	35 (63.6%)	24.686	17 (37.0%)	29 (63.0%)	11.986	19.540
Saki west	28 (54.9%)	23 (45.1%)	Df = 5	19 (26.8%)	52 (73.2%)	Df = 5	Df = 5
Saki east	23 (18.9%)	99 (81.1%)	P=	17 (23.9%)	54 (76.1%)	P=	P=
Ibarapa east	15 (29.4%)	36 (70.6%)	0.000	25 (48.1%)	27 (51.9%)	0.035	0.002
Ibarapa north	11 (24.4%)	34 (75.6%)		16 (24.6%)	49 (75.4%)		
Barrier to BTB Prevention: Language							
	Barrier	Not a Barrier		Barrier	Not a Barrier		
Iseyin	2 (1.8%)	110 (98.2%)	$\chi^2=$	5 (1.4%)	66 (93.0%)	$\chi^2=$	$\chi^2=$
Itesiwaju	1 (1.8%)	54 (98.2%)	43.109	1 (2.2%)	45 (97.8%)	2.855	27.628
Saki west	12 (23.5%)	39 (76.5%)	Df = 5	7 (9.9%)	64 (90.1%)	Df = 5	Df = 5
Saki east	2 (1.6%)	120 (98.4%)	P=	5 (5.6%)	67 (94.4)	P=	P=
Ibarapa east	3 (5.9%)	48 (94.1%)	0.000	4 (7.7%)	48 (92.3%)	0.722	0.000
Ibarapa north	2 (4.4%)	43 (95.6%)		5 (7.7%)	60 (92.3%)		
Barrier to BTB Prevention: No BTB activities							
	Barrier	Not a Barrier		Barrier	Not a Barrier		
Iseyin	49 (43.8%)	63 (56.3%)	$\chi^2=$	25 (35.2%)	41 (64.8%)	$\chi^2=$	$\chi^2=$
Itesiwaju	23 (41.8%)	32 (58.2%)	18.104	19 (41.3%)	27 (58.7%)	20.181	32.842
Saki west	9 (17.6%)	42 (82.4%)	Df = 5	11 (15.5%)	60 (84.5%)	Df = 5	Df = 5
Saki east	31 (25.4%)	91 (74.6%)	P=	22 (31.0%)	49 (69.0%)	P= 0.001	P=
Ibarapa east	20 (39.2%)	31 (60.8%)	0.003	27 (51.9%)	25 (48.1%)		0.000
Ibarapa north	12 (26.7%)	33 (73.3%)		25 (38.5%)	40 (61.5%)		

Source: Fieldwork, 2017

Table 4.45 presents the binary regression analysis of factors hindering community/camp contribution to BTB prevention. The results show that tribalism significantly hindered ($P < 0.001$) community/camp contribution in Saki West only. In Saki West, tribalism significantly influenced ($P < 0.05$) community contribution in controlling the disease. In the same vein, tribalism was 4.428 times more likely to hinder community involvement in the BTB prevention than Iseyin (the reference category). However, no BTB prevention activity was 0.286 time less likely to hinder the community/camp contribution to BTB prevention in Saki West than Iseyin. This was significant at $P < 0.05$. Likewise, inactivity of TB control programme significantly influenced ($P < 0.05$) community/camp contribution, and 0.54 time less likely to prevent community/camp contribution in Saki East than the reference group. Compared with the reference category (Iseyin), political barrier was 0.307 time and 0.220 time less likely to preclude contribution to BTB curtailment in Saki East and Ibarapa North respectively. Absence of BTB cases significantly influenced ($P < 0.05$) community/camp contribution, and it was 0.382 times less likely to prevent the contribution, in Saki West than Iseyin.

Relatedly, income was an insignificant influence in community/camp contribution to BTB control in different income categories. However, income significantly influenced ($P < 0.05$) the contribution in two income categories. Earning 10001-20000 naira and 40001-50000 naira were 0.246 time and 0.098 time respectively less likely to hinder the contribution than no income at all where there was tribalism. Also, secondary education was 1.749 time more likely to hinder community/camp contribution to BTB prevention than no formal education (reference group) where there were no BTB control activities as presented in Table 4. Vocational training was 4.959 times likely to hinder community/camp contribution where there were no BTB control activities. This was significant at $P < 0.05$.

Table 4.45 Binomial Regression Analysis of Factors Hindering Community/Camp Contribution to BTB Control

	Tribalism	No Activities	Political	No TB Cases	Lack of Information
LGAs	Exp(B)	Exp(B)	Exp(B)	Exp(B)	Exp(B)
Iseyin	1.000	1.000	1.000	1.000	1.000
Itesiwaju	0.542	0.939	0.531	1.507	1.261
Saki west	4.428***	0.286***	0.487	0.382**	1.246
Saki east	0.823	0.540**	0.307**	0.738	.575
Ibarapa east	1.865	1.161	0.467	1.843	1.537
Ibarapa north	1.594	0.692	0.220*	0.939	.714
Ethnic Affiliation					
Fulani	1.000	1.000	1.000	1.000	1.000
Yoruba	0.798	0.759	1.807	1.519	1.199
Income					
no income	1.000	1.000	1.000	1.000	1.000
#1-#10000	0.509	1.098	82653.354	0.961	1.667
#10001-#20000	0.246**	0.843	447654.621	1.067	1.128
#20001-#30000	0.205	0.922	586643.233	1.432	1.345
#30001-#40000	0.209	0.516	897541.735	1.466	1.830
#40001-#50000	0.098**	0.581	282525.571	1.350	1.843
#50001-#60000	0.000	0.228	0.713	0.000	1.980
#60001-#70000	0.000	0.000	0.517	2.376	4.188
#70001 and above	0.476	0.519	487639.177	1.927	2.736
Education					
No formal education	1.000	1.000	1.000	1.000	1.000
Primary	1.276	1.017	0.748	1.547	0.741
Secondary	0.838	1.749**	0.820	0.949	0.809
Vocational	3.854	0.574	1.553	4.959***	1.497
Higher/Tertiary	1.030	1.550	1.132	0.814	0.708
Quaranic school	0.306	1.421	0.428	0.614	0.557

Source: Fieldwork, 2017. NB: *** = significant at 0.001; ** = significant at less than 0.01; * = significant at less than 0.05

4.9 Accountability in Tuberculosis Programme using Feedback

Figure 4.24 shows that large majority (97.9%) of the respondents reported that there were no feedbacks about the activities of TB control programme in the study area. This shows that many people were not aware of the programme.

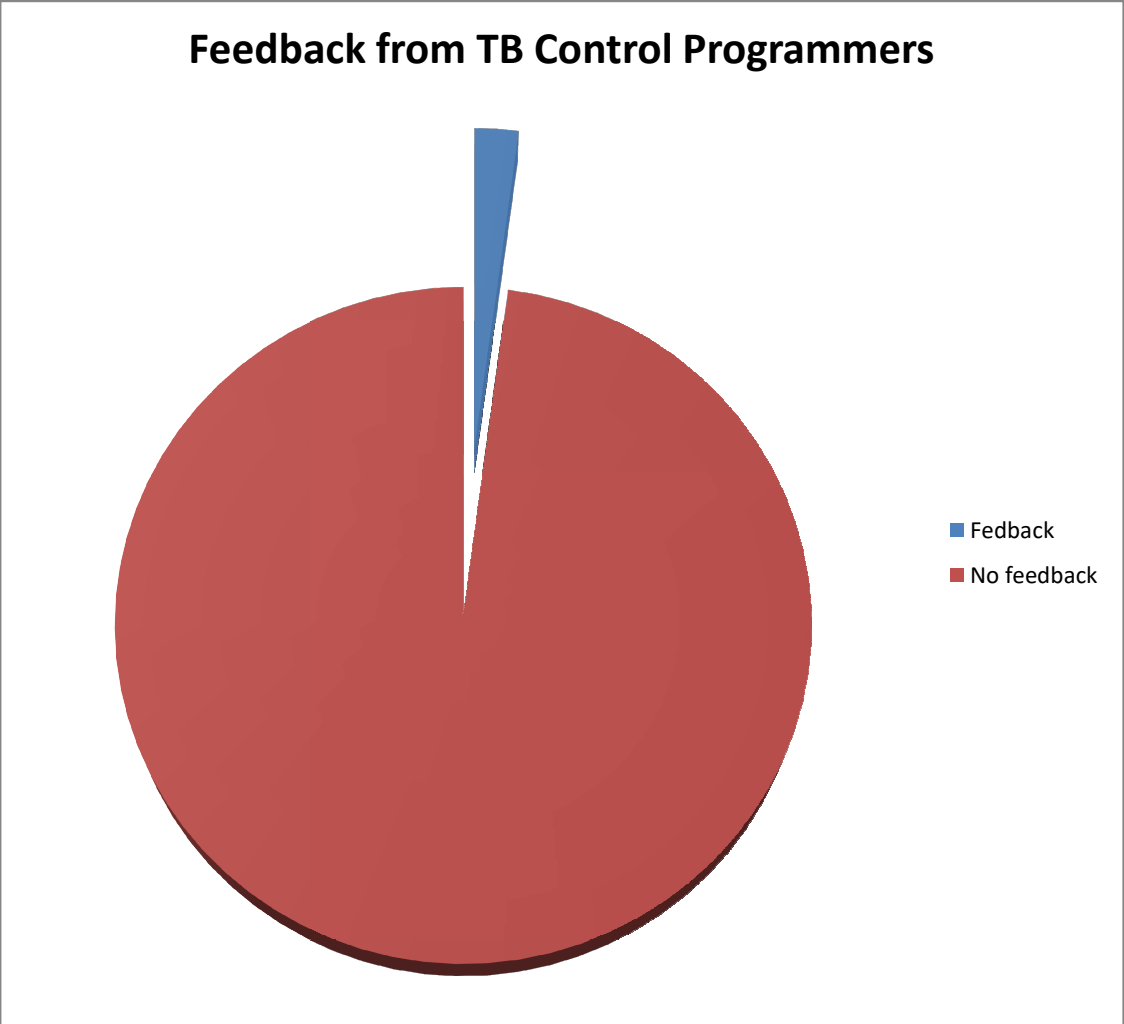


Figure 4.24 Tuberculosis Control Programme Feedback among the Respondents

Figure 4.25 presents the respondents' access to feedback from TB control and prevention agencies. More than half (53.2%) of Iseyin respondents reportedly asserted that there were no feedbacks. All the respondents in Itesiwaju maintained that there was no feedback. On the contrary, in Saki West, majority (76.7%) of the respondents received feedback, followed by Saki East (43.9%) and Ibarapa East (41.9%). This shows that TB programme feedback was new in Itesiwaju, followed by Ibarapa North while Saki West needs improvement in covering more people during feedback dissemination.

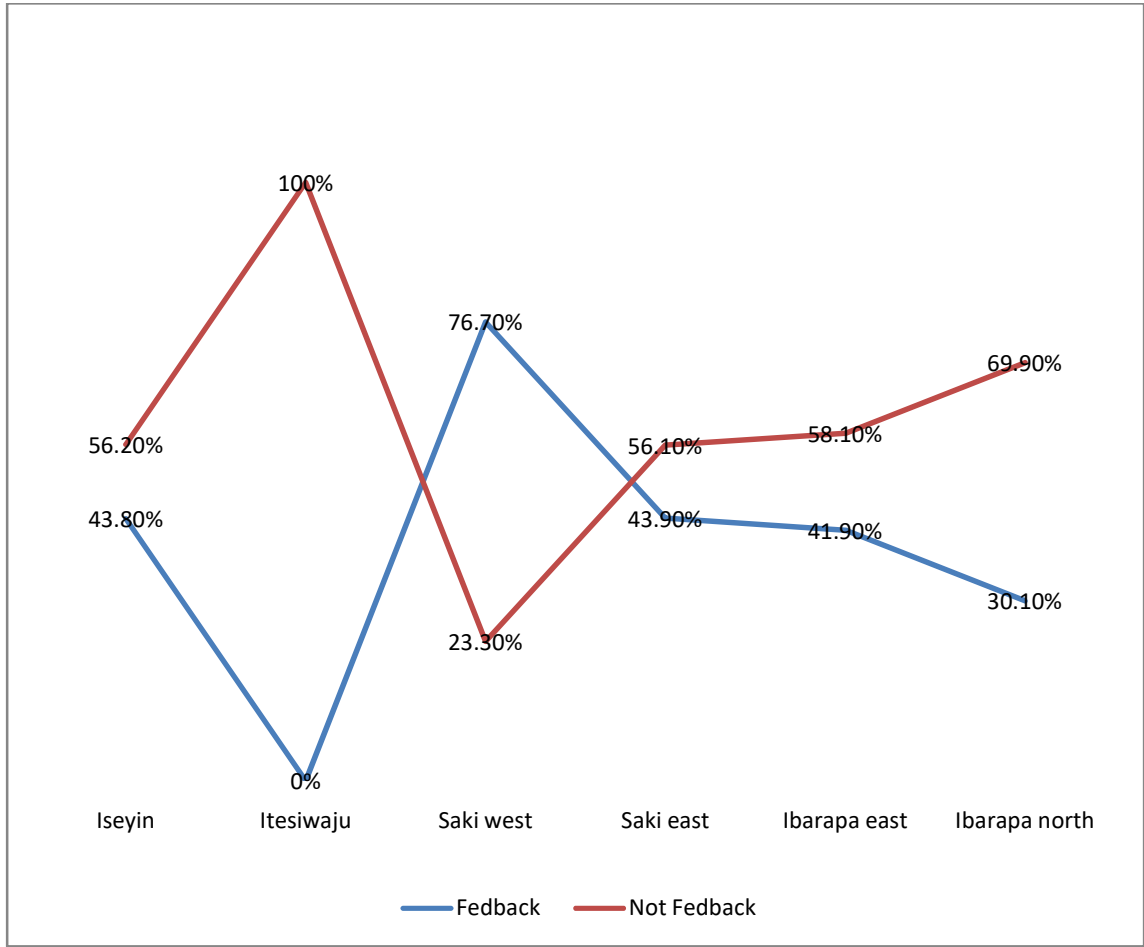


Figure 4.25 Assessing BTB Control Programme Feedback by LGAs

Figure 4.26 reveals access to BTB programme feedback between ethnic groups. The Fulani respondents reportedly asserted that there was no feedback from the organisers of BTB control and prevention programme. Contrarily, majority (65.4%) of the Yoruba respondents reportedly received information from /sent information to the BTB control and prevention agency.

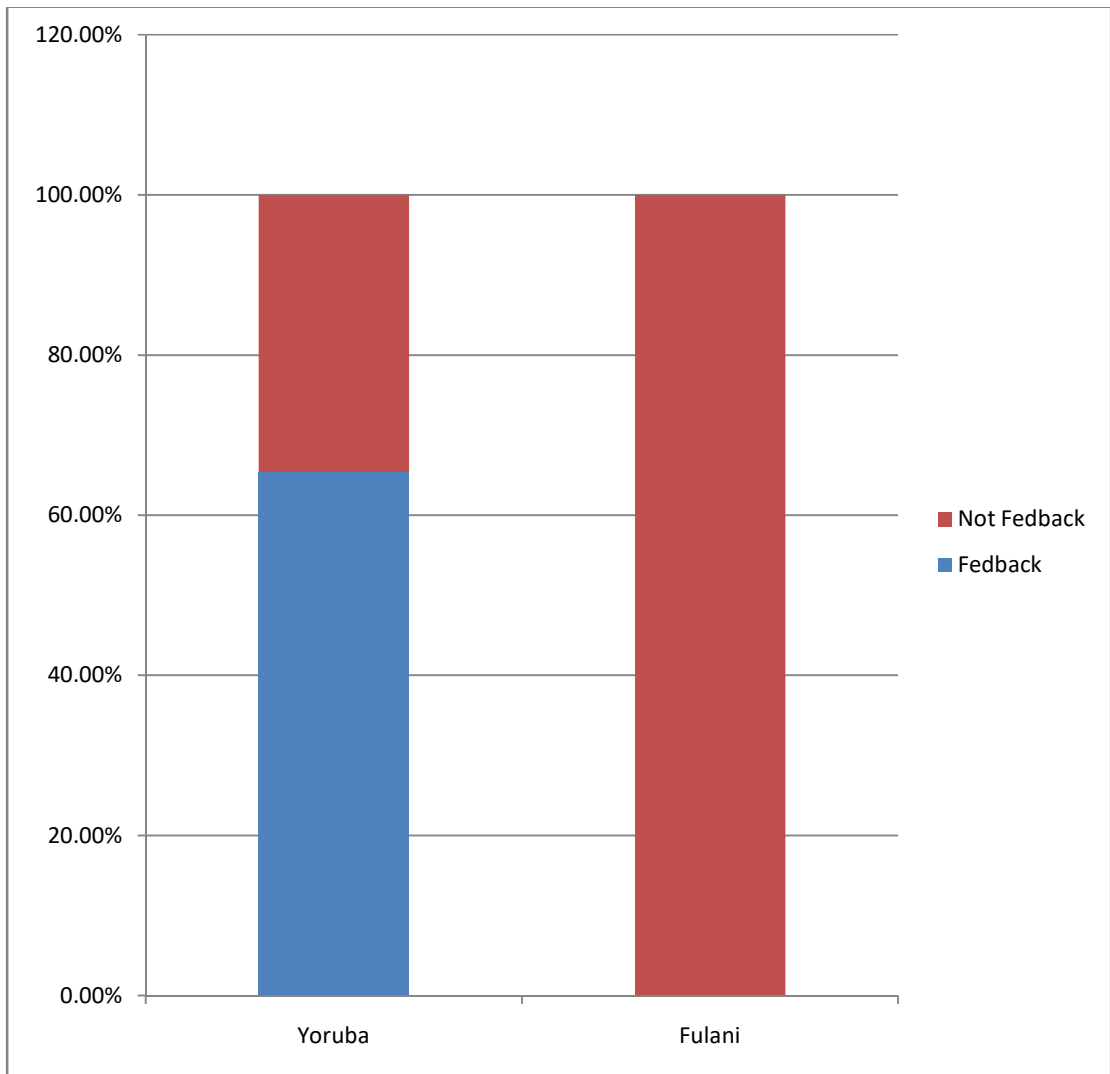


Figure 4.26 Access to BTB Programme Feedback between Ethnic Groups

Figure 4.27 shows the frequency of BTB Programmer Feedback. Close to half (47.4%) of the respondents mentioned that they had opportunity for feedback yearly, followed by slightly above one-third (36.8%) that reported monthly, and slightly above twentieth (5.3%) mentioned weekly. This depicts that majority of the respondents do not have consistent and frequent information about the activities.

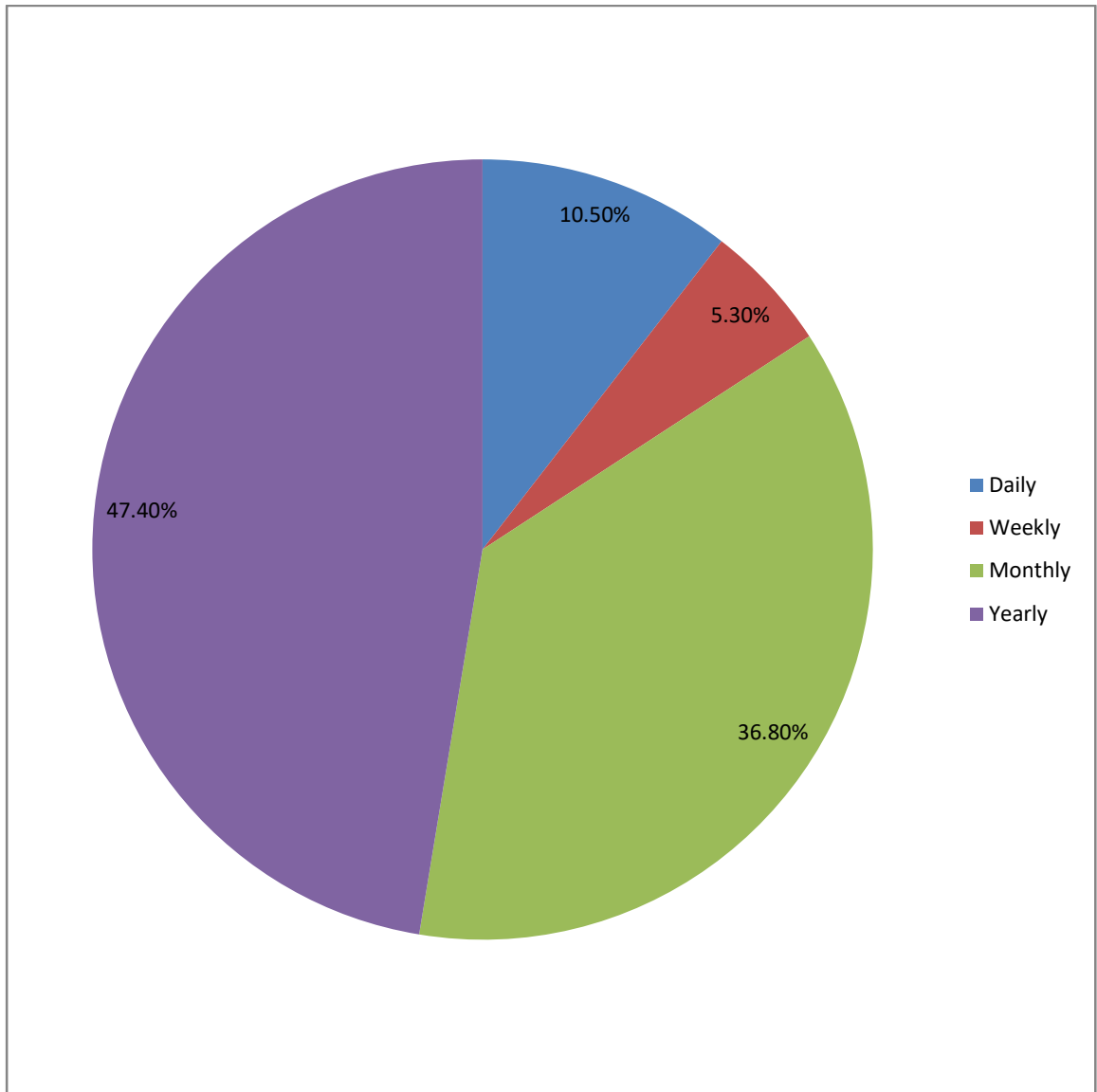


Figure 4.27 Frequency of BTB Programmer Feedback

Table 4.46 presents the extent of feedback in BTB programme. Respondents were asked to rate the feedback reception of BTB programme in terms of their experiences. Close to half (42.1%) of the respondents reportedly asserted that it was encouraging while 42.1% stated that it was not encouraging. Similarly, close to half (42.1%) of the respondents reported that the TB programme organisers received the feedback without necessarily acting in line with the feedback that was received. Arnstein (1969) refers to this as ‘tokenism’ which means the organisers would only listen to people’s feedback without necessary and corresponding actions. Consequently, only few (5.9%) of the respondents were reportedly satisfied while close to three-quarters (71.3%) were dissatisfied. Similarly, majority (65.6%) of the respondents were not willing to give feedback to the TB prevention and control programme.

Table 4.46 Extent of Feedback in BTB Prevention Programme

Variables	Responses	Frequency	Percentage
Feedback reception in the TB programme (n=19)	Encouraging	8	42.1
	Indifferent	3	15.8
	Not encouraging	8	42.1
Feedback handling (n=19)	Use it to modify their programme	11	57.9
	Just hear and no action	8	42.1
Satisfaction with TB Programme (n=812)	Satisfied	48	5.9
	Indifferent	185	22.8
	Not satisfied	579	71.3
Advise for Programme Improvement (N=812)	Unwilling	533	65.6
	Willing	279	34.4

Source: Fieldwork, 2017

Table 4.47 shows the binary regression analysis of potential areas of community engagement in BTB control. Six items were mentioned by the respondents. These items were as follows: readiness to support, sensitisation, feedback, volunteer, finance, and treatment supports and those who were willing to do all. For the LGAs, Iseyin was the reference category. Respondents in Saki West and Itesiwaju were 3.941 and 1.685 times respectively ready to support BTB control than the reference group. These LGAs significantly influenced ($P<0.05$) the tendency that individual would support BTB control programme. On sensitization, the respondents from Saki East were 0.556 time less ready to sensitize their neighbour than in the reference category (Iseyin).

Also, the respondents from Saki East were 3.868 times more ready to give feedback to the BTB control programmers than in Iseyin. This was significant in Saki East at $P<0.001$. Saki West had 3.972 times people who were ready to serve as community volunteers and 3.334 times ready to give financial support to people living with BTB than Iseyin. Likewise, Saki West respondents were 3.411 times willing to become treatment supporters than in Iseyin (the reference category).

The host communities were 1.937 time ready to support the BTB prevention than the nomadic Fulani (the reference category). Similarly, the host communities were 3.328 times willing to give financial support to people living with BTB than the nomadic Fulani. Also, the host communities were 1.802 time ready to sensitize their neighbours than the nomadic Fulani. Thus, ethnic affiliation significantly influenced the readiness to support ($P<0.001$), giving financial support, ($P<0.05$) and sensitization ($P<0.05$). This shows that the respondents' ethnic affinity would determine the kind of contribution individuals would be willing to support with.

Considering income, those who earned between 1 – 10000 naira were 2.857 times more willing to become community volunteers than people without income (the reference category). Also, those who earned between 20001-30000 naira were 0.166 time less likely to support in all aspects of BTB control than people without income. Thus, income significantly influenced the readiness to become community volunteer ($P<0.001$). Education background of individuals significantly influenced the readiness to support BTB control. Specifically, individuals with primary and secondary education were 0.492 time and 0.430 time respectively less likely to be ready to support

BTB prevention than no income earners. Furthermore, females were less likely to give feedback to BTB prevention programmers than males (the reference category). Interestingly, the widowed were 32.675 times ready to give financial support to people living with BTB than the reference category (married). This could be as a result of premium priority they placed on health. Across ages, individuals aged 55 years and above were 2.536 times more likely to sensitise their neighbours than the reference category (15-24 years). The individuals between age 55 years and above were significantly influenced ($P < 0.01$).

Table 4.47 Binomial Regression Analysis of Potential Areas of Community Engagement in BTB Control and Prevention

	Readiness	Sensitisation	Feedback	Volunteer	Finance	Treatment	All
LGAs	Exp(B)	Exp(B)	Exp(B)	Exp(B)	Exp(B)	Exp(B)	Exp(B)
Iseyin	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Itesiwaju	1.685*	1.417	3.973*	1.258	1.232	1.280	1.877
Saki west	3.941***	0.553*	2.906	3.591***	3.334**	3.411*	.149
Saki east	0.626*	0.556**	.650	.790	1.081	1.599	0.056**
Ibarapa east	1.742*	1.024	3.868*	.874	.863	.893	.979
Ibarapa north	1.638	0.580*	.913	1.784	.000	1.901	.569
Ethnic Affiliation							
Fulani	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Yoruba	1.937**	1.802*	1.902	.781	3.328*	.800	1.924
Income							
no income	1.000	1.000	1.000	1.000	1.000	1.000	1.000
#1-#10000	1.015	1.156	1.495	2.857**	.582	1.491	.460
#10001-#20000	1.028	1.463	.696	2.547	.272	.729	0.166*
#20001-#30000	.802	2.166	1.069	2.566	.702	1.525	.077
#30001-#40000	1.505	1.054	3.700	3.304	.000	2.130	.211
#40001-#50000	1.029	1.620	2.432	2.862	.705	1.174	.000
#50001-#60000	.766	2.528	2.690	.000	.000	.000	1.212
#60001-#70000	.575	.896	2.857	.000	.000	.000	.000
#70001 & above	.813	1.856	.627	2.248	.969	.947	.348
Education							
No formal Edu.	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Primary	0.492**	1.092	.533	1.058	.266	.554	1.994
Secondary	0.430***	1.261	.408	1.252	.299	.863	2.372
Vocational	.342	2.667	2.225	1.348	.505	.000	.000
Higher/Tertiary	.563	2.220*	.902	.727	.558	.291	2.542
Quaranic school	0.550*	.790	.344	1.050	1.176	.214	.702
Gender							
Male	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Female	1.378	1.205	0.335*	1.094	1.026	.890	.871
Marital Status							
Married	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Single	1.407	1.075	1.103	1.185	.878	1.260	1.077
Separated	1.159	.000	.000	9.119	.000	.000	.000
Widowed	.663	.444	.000	1.676	32.675**	.000	.000
Age							
15-24 years	1.000	1.000	1.000	1.000	1.000	1.000	1.000
25-34 years	1.008	1.252	.447	1.346	2.431	.414	.697
35-44 years	.911	1.385	.500	1.217	1.421	.537	2.317
45-54 years	1.142	1.657	1.023	1.270	1.281	.395	.843
55years & above	.947	2.536**	.500	1.557	.000	.725	1.503

Source: Fieldwork, 2017. NB: *** = significant at 0.001; ** = significant at less than 0.01; * = significant at less than 0.050

Table 4.48 presents the binomial regression analysis of the respondents' contribution to BTB control in the LGAs. In Itesiwaju, individuals contributed manpower 7.402 times more than in Iseyin (the reference category). In Saki West, individuals sensitized 4.322 times more than individuals from Iseyin. Notably, residents from Saki East (0.498 time), Ibarapa North (0.482 time), and Ibarapa North (0.505 time) sensitized lesser than Iseyin residents. This was significant at $P < 0.05$. Also, the host communities (the Yoruba) participated in planning BTB control 19.212 times more than the nomadic Fulani in the control of the disease. Similarly, the Yoruba sensitized their neighbours 1.829 times more than the nomadic Fulani.

For income distribution, those who earned 30001-40000 naira sensitized their neighbours 3.579 times more than no income earners (the reference category) while those who earned between 50001 to 60000 naira sensitized their neighbour 5.919 times more than the reference category. Similarly, individuals with age 55 years and above contributed through manpower (ad-hoc service) 6.391 times than the young persons (15-24 years). This was significant at $P < 0.05$.

Table 4.48 Binomial Regression Analysis of Respondents' Contribution to BTB Prevention

	Financial	Planning	Manpower	Sensitisation
LGAs	Exp(B)	Exp(B)	Exp(B)	Exp(B)
Iseyin	1.000	1.000	1.000	1.000
Itesiwaju	0.136	9.353	7.402***	.918
Saki west	4.311***	9.201	.950	.839
Saki east	.665	1.528	0.168*	0.498**
Ibarapa east	1.340	.000	.000	0.482*
Ibarapa north	.265	1.395	.153	0.505*
Ethnic Affiliation				
Fulani	1.000	1.000	1.000	1.000
Yoruba	.747	19.212*	1.314	1.829*
Income				
no income	1.000	1.000	1.000	1.000
#1-#10000	.813	.300	.633	1.939
#10001-#20000	.605	.359	.769	2.147
#20001-#30000	.984	.000	.347	2.526
#30001-#40000	1.781	.000	.582	3.579*
#40001-#50000	.724	.000	1.344	3.305*
#50001-#60000	.856	1.018	.000	5.919*
#60001-#70000	.000	.000	.000	5.590
#70001 and above	.938	.214	.000	2.573
Age				
15-24 years	1.000	1.000	1.000	1.000
25-34 years	1.131	1.719	1.283	1.444
35-44 years	.843	2.481	3.178	1.103
45-54 years	1.245	.570	3.762	1.218
55 years and above	.149	.000	6.391*	.837

Source: Fieldwork, 2017. NB: *** = significant at 0.001; ** = significant at less than 0.01; * = significant at less than 0.050

Table 4.49¹⁰ presents the relationship between literacy level and the perceived reason for joining activities to prevent BTB. More than half (59.3%) of the respondents were without formal education did not know why their community/camp joined activities to prevent BTB while 4.4% maintained their community's participation emanated from the inter-communal relationship.

For respondents with primary school education, one fifth (20%) asserted that their community did not join the activities, and 3% mentioned that the level of awareness was responsible. Less than twentieth (4.3%) of respondents with secondary education asserted that level of awareness made their communities/camps join the activities, and 18.8% of those who had vocational training reportedly asserted that awareness made them join. For respondents with higher education, 20% reported that their communities were not involved while less than twentieth (4.3%) of the respondents with Quranic education asserted that their community/camp joined the activities owing to perceived problems associated with BTB. There is a significant relationship ($P < 0.05$) between education attainment and reasons for community involvement in TB prevention activities. Thus, level of education influences the perception of the reason for joining BTB prevention activities.

Table 4.50¹¹ presents issues of major concerns in communities across the selected LGAs in Oyo State. In Iseyin, more than half (59.6%) of the respondents were not involved in the community meeting, but slightly above quarter (26.8%) reportedly asserted that security was discussed. Almost one-third (32.7%) maintained that security was a major issue in Itesiwaju while 5% reported that disease discussion featured in their community meeting. In Saki West, one third (33.6%) of the respondents asserted that their community meeting discussion focused on the relationship with other communities/camps, but 22.1% were not involved in such meeting. For Saki East, about 30% of the respondents reported security, 4% mentioned disease, but 14% asserted infrastructural provision constituted major concern in their gathering. More than a tenth (12.6%) and more than half (51.5%) of the respondents reportedly mentioned access to health care and not involved in the community meetings respectively in Ibarapa East. For Ibarapa North, tenth (10%) of the

¹⁰The table is not presented

¹¹The table is not presented

respondents asserted that relationship with other communities/camps remained a major concern, but 35% mentioned security.

Table 4.51 presents the binomial regression analysis of advice for BTB prevention programmes in the study area. The residents in Itesiwaju (0.258 time, $P < 0.001$) and Saki West (0.5 time, $P < 0.01$) advised the programmer less than residents in Iseyin (the reference LGA). More specifically, Ibarapa East residents were 4.108 times likely to advise the programmers to engage their communities/camps than the reference LGA. Furthermore, Saki East and Ibarapa North residents were 0.479 time and 0.319 time respectively less likely to suggest for need-oriented intervention than in Iseyin. In Itesiwaju, residents were 1.670 time more likely to suggest for much information about TB and its prevention than Iseyin residents. On the contrary, Saki East and Ibarapa East were 0.412 time and 0.563 time less likely to advise for much BTB information than Iseyin residents. For those that were mentioned previously, the LGAs significantly influenced ($P < 0.05$) the kind of advice the residents would give. Also, the Yoruba were significantly 1.779 times likely to advise them to supply much information than Iseyin residents.

In Table 4.51, those earning 30001 to 40000 naira and 40001 to 50000 naira were 0.282 time and 0.0204 time respectively less likely to request need-oriented intervention than those who were not earning (the reference category). Also, income earners within 50001 to 60000 naira and 60001 to 70000 naira were 8.782 times and 8.8 times respectively more likely to advise the programmers to engage them than individuals without income. Considering the influence of education on the kind of advice given to the programmers, individuals with vocational qualification were 4.627 times more likely to suggest need-oriented intervention as well as 5.534 times more likely to request that BTB control programmes be indigenised through using local languages.

Individuals with a higher degree were 3.230 times more likely to suggest that need-oriented intervention is initiated than individuals without formal education. Singles were 0.396 times less likely to suggest need-oriented intervention than married persons (the reference category). Also, the widowed were 5.407 times more likely to suggest engagement, need-oriented intervention, local language, and dissemination of much information about BTB prevention than the married (the reference category). These were significantly influenced ($P < 0.05$) by the independent variables.

Table 4.51 Binomial Regression Analysis of Advice for BTB Prevention Programmers

	Willing to Advise	Engagement	Need oriented Intervention	Local Language	More information	All
	Exp(B)	Exp(B)	Exp(B)	Exp(B)	Exp(B)	Exp(B)
LGAs						
Iseyin	1.000	1.000	1.000	1.000	1.000	1.000
Itesiwaju	0.258***	1.125	1.182	.511	1.670*	1.334
Saki west	0.500**	2.081	.781	2.076	.684	1.058
Saki east	1.198	1.635	0.479**	1.075	0.412***	0.272**
Ibarapa east	0.416*	4.108***	1.194	1.584	0.563*	.705
Ibarapa north	.669	1.278	0.319**	1.639	1.008	.576
Ethnic Affiliation						
Fulani	1.000	1.000	1.000	1.000	1.000	1.000
Yoruba	.789	1.339	1.428	.696	1.779**	1.788
Income						
no income	1.000	1.000	1.000	1.000	1.000	1.000
#1-#10000	1.411	2.920	.863	.595	1.107	4.294
#10001-#20000	1.325	1.818	.491	.651	1.175	2.082
#20001-#30000	1.863	3.949	.681	.346	1.621	1.105
#30001-#40000	1.940	2.111	0.282*	.563	.680	2.075
#40001-#50000	1.394	1.940	0.204**	.869	1.383	3.332
#50001-#60000	1.732	8.782**	.704	1.451	3.843	.000
#60001-#70000	3.353	8.800*	.276	.000	.320	7.049
#70001 & above	1.383	.620	1.533	.519	1.453	3.254
Education						
No formal Edu.	1.000	1.000	1.000	1.000	1.000	1.000
Primary	.761	.984	1.526	.672	0.558*	1.387
Secondary	.936	1.419	1.476	.815	.838	.577
Vocational	2.463	2.414	4.627**	5.534*	.694	.483
Higher/Tertiary	1.183	1.179	3.230**	.932	.871	.295
Quaranic school	1.217	.852	1.072	1.089	1.217	1.236
Gender						
Male	1.000	1.000	1.000	1.000	1.000	1.000
Female	1.289	.725	.958	.503	.926	1.018
Marital Status						
Married	1.000	1.000	1.000	1.000	1.000	1.000
Single	.915	.892	0.396**	.782	.815	2.215*
Separated	.000	2.307	.000	.000	4.270	.000
Widowed	1.432	2.425	.416	.000	.328	5.407*

Source: Fieldwork, 2017. NB: *** = significant at 0.001; ** = significant at less than 0.005; * = significant at less than 0.050

In Table 4.51, the associational test reveals that there was a significant relationship ($P=0.000$) between major issues of concern and LGAs in the study area. This depicts that the LGA of a respondent would determine the issues of concern. Furthermore, Table 4.51 presents major issues of concern by respondents' ethnic disparities. Each of the ethnic groups had slightly below half (48%) of the respondents who were not involved in community/camp meeting. Close to one fifth (18.1%) of the nomadic Fulani respondents asserted that relationship with other community remained a major issue for them compared with 3.2% Yoruba respondents that mentioned likewise. Also, 6.1% of the nomadic Fulani respondents noted that access to health care constituted a major concern in their meeting. In comparison, such discussion was less (2.5%) among Yoruba respondents.

However, Yoruba had more security challenge discussion compared with their Fulani counterparts. More than one third (34.9%) reported security challenge among the Yoruba while less than one fifth (17.6%) asserted such challenge among the Fulani. Test of association was significant ($P < 0.05$) in the relationship between respondents' ethnic group and their major issues of concern. Thus, the ethnic group of respondents would determine the issues to be discussed at the community/camp meetings.

Table 4.52 presents the test of difference to explain the socio-economic relationship and the community health activities among respondents. There was a significant difference in business transactions between the Fulani and their host community. This shows that the dimension of business differs when considering ethnic differences. Iseyin and Itesiwaju were significantly different ($P=0.030$) in business transactions that transpired among respondents. Similarly, Ibarapa North and Ibarapa East shared a similar significant difference in business transactions unlike Saki West and Saki East where there was no significant difference in business transactions among the respondents of the LGAs.

Table 4.52 Socio-economic Relationship and Community Health Activities among Respondents

Fulani/Yoruba	Levine's Test for Equality of Variances		t-test for Equality of Means					Iseyin/Resiwaju Sig.(2-tailed)	Ibarapa North/Ibarapa East Sig.(2-tailed)	Saki West/ Saki East Sig.(2-tailed)
	F	Sig.	T	Df	Sig.(2-tailed)	Mean Difference	Std. Err. Difference			
Business transaction	1.613	0.000	-3.263	449.018	0.001	-0.449	0.138	0.030	0.000	0.942
Activities that bind	24.75	0.000	-7.268	583.346	0.000	-0.540	0.074	0.000	0.232	0.047
Major issue in communal meetings	9.746	0.000	4.412	808.659	0.000	0.649	0.147	0.397	0.165	0.849
Relationship with host community/nomadic Fulani	85.23	0.000	-13.210	597.439	0.000	-0.971	0.073	0.000	0.774	0.007
Community join activities to combat TB	.573	0.059	0.646	810	0.519	0.066	0.103	0.088	0.626	0.000
Influence of Community perception of TB on communal involvement in prevention	.078	0.003	1.510	809.959	0.131	0.032	0.021	0.698	0.173	0.003
Influence of TB Effect on communal health-seeking behaviour	.332	0.564	.288	810	0.773	0.008	0.028	0.024	0.705	0.000

Source: Fieldwork, 2017

There was a significant difference ($P < 0.05$) in the bonding activities between Yoruba and nomadic Fulani. However, there was no significant difference ($P > 0.05$) in the bonding activities in Ibarapa North and Ibarapa East. There was a significant difference in other paired LGAs. Table 25 portrays that there was a significant difference in the subject of discussion in the communal meetings of the two ethnic groups. However, this was not significant in all the paired LGAs. Thus, the content of community discussion was not significantly different across the LGAs. There was a significant difference ($P < 0.05$) in how nomadic Fulani related with Yoruba and vice versa. At LGA level, this was significantly different between Iseyin and Itesiwajuas well as between Saki West and Saki East. Table 25 shows no significant difference ($P = 0.519$) between Fulani and Yoruba in joining activities for combating BTB.

Thus, community involvement in activities to control TB by the respondents was not influenced by ethnic affiliations. However, the level of involvement in TB prevention in Saki West was significantly different ($P = 0.000$) compared with such activities in Saki East. Similarly, there was no significant difference in community involvement in BTB prevention owing to perceived BTB susceptibility and threat between nomadic Fulani and their host community. This was found significantly different between Saki West and Saki East. Considering the influence of perceived BTB effects on community health-seeking behaviour, there was no significant difference ($P > 0.05$) between community health-seeking behaviour of nomadic Fulani and that of the Yoruba. However, a test of difference revealed that there were significant differences in communal health-seeking behaviour between Iseyin and Itesiwaju ($P = 0.024$) while it was not significant between Ibarapa North and Ibarapa East.

In the qualitative data, it was mentioned that public media for health promotion should be engaged to improve community involvement. Potentially, higher level of awareness and knowledge of BTB would improve health-seeking behaviour of both nomadic Fulani and their host communities. It was suggested that there should be community radio in which local languages would be spoken to meet different cultural groups in these locations. Also, transportation aid should be supplied to reduce out-of-pocket

expenses by the BTB gatekeepers. The following extract presents a comprehensive suggestion about how to make the BTB programmers achieve more results.

We can eradicate BTB if government can provide what we need like conducting enlightenment campaign on radio in Hausa, Fulani, Yoruba, and English. Government can mobilize people like us that are known as livestock technologist with bike to help us to move from one location to another. It will help us because it is not possible for me to spend my money on preventing TB from spreading. If they can mobilize, employ people to enlighten community members about TB, it will be good for the campaign against TB (KII/Veterinarian/Male/40 years/18 years of experience/Eruwa).

Table 4.53 Study Objectives and Qualitative data Matrix

Type	Ethnic Group	Respondents	Perceived risk of itinerant Fulani and their host population to BTB	Health-seeking practice of pastoralist Fulani and their host population to BTB	Roles of the gatekeepers in preventing the BTB among Fulani in Oyo State	Pattern of connection among the nomads and their host communities.	Community involvement in the prevention of Bovine Tuberculosis among the study population.
KII	Yoruba	TBLS	Increased awareness Lower level of awareness among pastoralist Fulani	Herbal medicine was largely used especially among the pastoralist Fulani Self-medication	Limited personnel Language barrier	Fulani are enemies Unable understanding Fulani	Limited coverage Limited NGO supports
		VET	Few people were aware of BTB. Government should engage sensitisation Butchers do not believe obviously infected liver is not good for consumption.	A butcher swallowed uncooked infected liver to prove that there was no health risk in consuming such animal product. People maintained physical distance from suspected TB patient. Animals with identifiable BTB were sold into the market to avoid total financial loss.	Limited personnel to cover distanced slaughter slabs Communicated with the religious leaders for community sensitisation. Government should organise a compulsory monthly meeting for all health professionals involved to discuss the curtailment of BTB	Unstable relationship pattern: mixture of both smooth and strained relationship. Currently strained relationship between the host and pastoralist	They are involved
		Volunteer	Host communities were a bit aware of TB Fulani were less aware of TB		No stipend for volunteers Limited personnel Volunteers are closer to the people		Volunteers were retrenched from DOTs service
	Fulani	Volunteer	Believed human-human transmission of TB Animal-human transmission of BTB not possible	Modern treatment path Infected with TB			Transportation challenge
IDI	Yoruba	Leaders	Community members were aware TB and not necessarily	Both medical and traditional health pathways Home treatments and herbal medicine are commonly used by both host communities and Fulani	The officers are working	There were some conflicts and we do settle the matter. The relationship is a bit cordial	Difficult to get the nomadic Fulani We are not really involved.
	Fulani	Leaders	Mixed response about bovine tuberculosis in animal TB is called <i>Heren Bororo</i> are not aware of BTB. Aware of human/human transmission Deadly	Patronised private clinic (<i>Awojobi</i>) Prayers can help Home treatment is common, and drugs are supplied by patent medicine vendors Human and animal share the same water source.	Engage veterinary doctor for BTB Pastoralist Fulani treated their cattle seemingly infected with TB Government should build hospital for the Fulani	Neglected by government, health officers and populace.	Sales of BTB infected cattle for public consumption was meant to avoid wastage Community health sensitisation

Source: fieldwork 2017

4.10 Discussion of Findings

The study sought to understand the perceived risk of BTB among nomadic Fulani and their host communities. This premised on the respondents' awareness of the strain of mycobacterium bovis i.e. zoonotic Tuberculosis, mode of transmission, and health behaviour in the context. To start with, very few (21.0%) respondents were aware that there are types of tuberculosis. Ethnic affinity and respondents' LGA of residence were fundamentally associated with access to BTB information. Although there was a limited level of access to information about BTB, the host communities had more access to this information than their nomadic Fulani counterparts living in the camps. This is similar to Hassan et al, (2017)'s findings. In this manner, access to sensitization about BTB treatment is affected by the respondents' ethnic grouping. On that note, respondents' ethnic affinity is related to knowledge about Bovine Tuberculosis cum tuberculosis complex. This points to the belief among itinerant Fulani that people dealing with infected digestion tracts would not contract BTB. Hence, the belief encouraged the unhealthy consumption practices among the respondents. The proportion of consumers and reasons for the consumption of unpasteurised milk further substantiated the assertion.

For instance, of 51.8% respondents who consumed unpasteurised milk, 18.3% apparently ingested the milk to stay healthy. Apart from that, the pattern of unpasteurised milk consumption was fundamentally related to ethnicity, religion, academic qualification, and those who contracted BTB. Similarly, Hambolu, Freeman, and Taddese (2013) affirm that utilization of such milk amplifies the probability to come down with BTB. Be that as it may, the finding of Fada (2013) and Ibrahim, et al. (2012) is unable to draw a relationship between ingestion of unpasteurised milk and BTB in the North-West Nigeria. The inconsistencies might be related to the belief of the Fulani respondents recruited into their study. Such belief in limited risk from the consumption of unpasteurized milk would impede the adoption of healthier behaviour as explained in the health belief model. Also, cue to action would be an avenue for genuine information (Rosenstock, 1974). Nafamda et al (2015) prescribe public sensitisation to curb such conduct. Consequently, this heralds the need to consciously engage health promoters to map-out how to inform the host communities, with more attention on the nomadic camps. Potentially, this would enhance higher level of BTB

awareness, case finding, and prevention. This was one of the mandates of Community BTB Care in Nigeria (FMoH, 2010).

Also, the study revealed that individuals living with active TB were not aware of the probability to have contracted the illness from unpasteurized milk. Subsequently, such people are probably going to contract BTB repeatedly. In fact, the respondents were aware of re-infection window of TB after a completely treated TB episode. By the prediction relating to perceived seriousness and attendant behaviour in Health Belief Model, this investigation confirmed that individuals may recognize the seriousness of a sickness and still embrace less healthy conduct unconsciously. The findings uncover that female cows were increasingly at risk of BTB which could impede normal animal growth and the herd adversely. Animal-human transmission is more likely since female cattle that have higher prevalence of BTB produce milk for consumption. In particular, in an abattoir study, Tillo (2017) and associates reveal that 72.9% of butchered female dairy animals were confirmed positive for *Mycobacterium bovis*. Similarly, the investigation further uncovers that the migrant Fulani were not aware about higher tendency for female cattle to be a reservoir for the disease except for one of the camp leaders who alluded to the fact. This accounts for the general disposition toward the extraction of milk from female cattle and subsequent ingesting the milk without pasteurisation. This knowledge among some of the Fulani has not translated into adoption of healthier behaviour. The finding is supported by previous scientific evidences (Tillo et al, 2017; Ejeh, et al, 2014).

The study explored the health-seeking practice of itinerant Fulani and their host population to BTB. This aspect examined the respondent's characteristics and activities that can keep them healthy in the context of bovine tuberculosis. The result demonstrates that the respondents' religious connection and ethnicity were altogether related to referring people living with TB (PLWTB) to the primary healthcare. The respondents' income alongside ethnicity significantly related to avoidance of animal parts that have been infected and living in close proximity with persons who had come down with symptomatic TB. This could be linked with the nomadic Fulani's scepticism about the risk of contracting BTB from the cattle. Hence, the Fulani's belief and practices would find expression in previous studies that detailed that TB infection persisted among the defenceless population (Zerbini et al, 2017; WHO 2017). In this way, the later conclusions demonstrate that this infection would affect destitute

individuals than the rich individuals in the study location. Additionally, adoption of health-seeking behaviour to diminish BTB was dictated by the respondents' ethnic association as this was significantly associated to the mobilization of individuals for BTB prevention activities.

Apart from the contribution of ethnic connection, gender of the respondents was vital in embracing micro prevention of TB among individuals. More females than males took part in such preventive activities (WHO, 2017). This was similar to health-seeking practices found at the community level during the study. Specifically, ethnic group and sex of the respondents were essentially associated with the referral of suspected TB cases to the clinic. In contrast, the LGA of residence and religion of respondents were not measurably related in this regard. This implies that ethnic affiliation of the respondents and sex of the respondents are likely to decide if one is likely to refer suspected TB cases to DOTs.

Apart from that, the study showed that the nomadic Fulani did not want to bear the impending economic loss. Meanwhile, such an act has a negative health implication. Hambolu, Freeman, and Taddese (2013) maintain that 28% of meat handlers tasted and sold Bovine Tuberculosis infected lungs (*fukuelegusi*) to people. Other previous studies have shown that Bovine Tuberculosis remains a public health concern, considering several routes for the disease to be transmitted to human being (WHO, 2018; Abubakar, et al., 2011; Ibrahim, et al., 2010). This shows the nexus between total loss prevention among the nomadic Fulani and potential health risks for the larger community. Also, the relevance of the adoption of slaughter and compensation remains clear in Nigerian animal husbandry context.

Furthermore, the respondents' refusal to consume infected cattle parts was significantly associated with the respondents' LGA of residences, religious affiliation, and ethnicity. However, living in distance to the PLWTB was not commonly practised in the study. This illustrates that there were strong social ties in the study area, especially at the family level. Hence, respondents were not likely to stay away from PLWTB. Such practice remains plausible provided that respondents understand how to stay healthy in such a situation. Considering the obvious peculiarities of the respondents, TB incidence would increase. Thus, the individuals who keep PLWTB in close physical proximity need to embrace other more beneficial practices. The

practices include covering of mouth and nose when PLWTB are coughing as well as living in well ventilated apartment. Also, the respondents' reactions towards TB cases demonstrated the level of mobilization of individuals for TB prevention among ethnic groups.

The result uncovers that there was a limited accessible treatment support for PLWTB in the study location although there was at least a DOTs centre in each of the LGAs. This may reduce the PLWTB's chances of receiving timely treatment. Aside from monetary and dietary supports, only education was significantly related to access to treatment. The relationship was a negative relationship. The factors influencing the decision of treatment for BTB among respondents, apart from language as well as common conflicts between Fulani and their host, has affected TBLS to show an undesirable disposition towards migrant individuals in nomadic camps. This would influence the performance of her official obligations.

Furthermore, it was mentioned that there was no portable water in nomadic camps in the LGAs. They claimed that government has not taken care of that. This exposes that they were aware of the responsibilities of the government to the people. It is unimaginable to think that animals and humans would be sharing the same water source (streams and stagnant water, which might dry in the dry season). The stream would serve two vital purposes, namely life sustaining but health threatening water. The leaders were not heard. Probably, they could not channel their request to the appropriate governmental or non-governmental agencies. For instance, the leader from Iseyin chose to use the interview medium to advise the government to meet two major public health issues. Firstly, he requested for the establishment of hospital/clinic in the camps. This would fast track access to holistic healthcare by the group.

The concept of Health for All will find more expression among people who are the hard-to-reach group (Brieger, 2011). Besides, nomadic Fulani should be employed in the health outlets. The community leader from Itesiwaju made similar request. This shows that the nomadic Fulani want to be involved in the decisions that would influence their health outcome. This is further substantiated by the language barrier concern usually experienced when nomadic Fulani want to access healthcare facilities in their host communities.

Secondly, the leader stressed the need for the government to provide portable water for the community. He was aware of the risk involved in using water from such source. The WASH programme is relevant in such scenario. The situation of the nomadic Fulani questions the geographic coverage of the WASH programme, especially at the grassroots. Similarly, such source of water reduces the tendencies for the nomadic Fulani to practise effective water hygiene. Consequently, this explains why scholars have concluded that the nomadic people are high-risk and vulnerable population who need government's attention. Similarly, the Fulani's experience in Eruwa presents the untold physical and psychological traumas bedevilling the group.

The experience of traumas would occur when one is aware of the health risk in drinking water with particles. Nonetheless, if there is no alternative such individual would continue with the behaviour. This scenario negates Health Belief Model which hypothesizes that perceived susceptibility cum the interplay of other constructs would influence positively the adoption of healthier behaviour. This model would not be able to explain a situation where there is seasonal or no option to adopt healthier behaviour within cultural psychology. For the nomads, they were all aware that they were drinking bad water, but they could not influence their reality. This discussion could be added to the model.

The roles of the gatekeepers remain crucial in the prevention of BTB among the study population in Oyo State. However, the gatekeepers were not completely, consciously, and technically drawn into preventive activities of BTB. Consequently, the synergetic force between them was limited. For example, it was uncovered that trained personnel were insufficient in the field of LGA veterinary service in the study area. The terrain became more challenging for the few LGA veterinarians to oversee effectively the huge territory of obligation. Subsequently, their inadequate contributions have not generated the ideal outcome in the country. Earlier studies have emphasised the potential strength of abattoir interface to diminish the spread of numerous zoonotic infections among human beings (WHO 2018; Tillo et al, 2017; Okeke, et al, 2014). This curtailment space has not been explored based on its potential capacity. Likewise, the awareness of BTB transmission was low in the study. This is corroborated by Hassan et al (2017) who detailed that few respondents (26.5%) had information about BTB. In effect, it would be difficult to use abattoir interface to interrupt the transmission of the zoonotic diseases to the people in the study area.

Moreover, family, NGOs, PHC, and ethnicity were related significantly to the act of gatekeeping TB. This could be due to previous experiences of people living in the communities/camps. In fact, some of the communities have encountered some of the NGOs' activities. For instance, during the interview sessions with the TBLSs, they asserted that Damien Foundation was an accomplice in the BTB counteractive action and control. Additionally, in those areas, PHCs were the major option for health matters.

Apart from the fact that professional gatekeepers were limited, community volunteers (CVs) were disengaged from the TB control programme, which further reduced the tendency to accomplish the END TB 2030. Concerning TB prevention and control, there were impediments which included compensation for the volunteers who are working to support the programme. The government was unwilling to support the programme with the stipends for the community volunteers. These community volunteers were adjudged to be closer to their communities than other stakeholder in the TB prevention. Akogun (2011) mentioned that the success of their malaria programme was also attributed to the contribution of community volunteers (CVs). Be that as it may, Saki West DOTs centre engaged a volunteer. She received monthly stipends informally from the TBLS in the LGA for her sustenance. Noticeably, community volunteers were much close to their communities compared to the community health professionals because the community volunteers were residents of the local communities. Also, they had wider geographic and therapeutic coverage.

Adejumo et al (2016) affirm that CVs had the most noteworthy TB cases referral. For them to accomplish the task, they were trained and compensated for their services.

In fact, professional gatekeepers asserted that stipends were sufficient for the services. Again, the CVs did not enjoy community recognition which could boost the morale of the CVs. Indeed, the respondents were not aware that community volunteers were part of BTB gatekeepers. Also, patent medicine merchants who were serving as CVs were exhibiting personal business interest. However, DOTs staff could not control their activities owing to limited manpower available in the control and prevention of the disease. The findings were similar to the outcome of Olusola-Falae et al (2016). This

exposes the limited human capacity to prevent the disease. Thus, there is need for the reassessment of the government's commitment to SDG 3.

In the community involvement in the prevention of Bovine Tuberculosis, there was a significant association between ethnic alliance of the respondents and level of commitment to prevention of BTB. In 2015, National Strategic Plan for Tuberculosis Control (NSPTBC) wanted to engage itinerant Fulani in the TB prevention (Federal Ministry of Health, 2014). Till now, access to feedback from TB control organizations differs based on the respondents' ethnic grouping. In this way, a person's ethnic affiliation could block access to TB feedback. Besides, the respondents had constrained their involvement to prevent BTB. For instance, majority of the respondents (84%) were not included by any means while 8.7% took part in the crusade and wilful services to control the disease. Similarly, 1% of the respondents mentioned that there was programme accountability. None of the itinerant Fulani was engaged in programme accountability, but below 10% (2 people) of those who participated in BTB programme decision-making were Fulani. Such level of involvement was substandard for both the nomadic Fulani and their hosts based on WHO recommendation in 2015.

Along these lines, Nigeria would not depend on this level of CI to accomplish 2030 target to end TB. Likewise, ethnicity, religious association, and age were fundamentally related to respondents' level of contribution in BTB prevention. Obviously, religious affiliation was significant since majority of the respondents were Moslems. Again, itinerant Fulani were predominantly Moslem. Also, academic qualification was fundamentally related to sticking to preventive activities. Earlier studies have recognized the importance of creating mass awareness about TB (Hassan, et al, 2017; FMOH, 2014). Besides, ethnic affiliation was essentially related to alerting other community members about BTB. This shows that strong social bond existed among each of the ethnic groups. This is one of the tenets of network theory. In this way, individuals within an ethnic in-group would share accessible health facts to keep everybody posted and healthy. This demonstrates that respondents' association with an ethnic group builds the inclination of imparting BTB information to community members.

The description patterns of relationship between the nomadic Fulani and their host communities helped understand the areas of social ties that could be used for BTB health promotion. In this study, social ties were strained between the nomadic Fulani and their host communities. The strain debilitated rapport among the respondentseven though there were areas of positive social connections. The network theory explains similar dimension with the itinerant Fulani and their hosts (Wellman, 1983). This was demonstrated by the kind of relationship that existed in in-group and inter-group. Language differences, religious affiliations, and grazing are platforms for conflict while economic relationship was a point of relationship strengthening. In compromise, law enforcement was generally utilized, and traditional/community pioneers were significantly associated with dispute settlement.

Boundary demarcations for grazing were hardly utilized since it would be difficult for those involved to recognize grazing paths. This brings to mind the question of who was really infringing since these itineraries were not obvious to the itinerant Fulani and their host. Consequently, there is a propensity that the host communities' farmers are currently infringing into the grazing routes. Such recent encroaching tendency by the local farmers is in opposition to the public conclusion about nomadic Fulani and infringement. To this fact, the leaders in nomadic camps asserted that their host often believed nomadic Fulani were the root of every inter-ethnic conflict. A recent community inter-ethnic conflict in Itesiwaju LGA was undeniable evidence that the host communities could initiate an inter-ethnic conflict.

Be that as it may, economic issues worked for double positive purposes. It invigorated both out and in-group social bonds between the host communities and the itinerant Fulani. Also, inter-community visits happened mostly for business purposes. For instance, In Saki East and Ibarapa North, the respondents visited to execute commercial obligations. More so, Itesiwaju, Ibarapa East and Ibarapa North recorded inter-ethnic marital unions. The recurrence of contact is noteworthy amid business exercises. Possibly, point of business contacts could be utilized for public or mass sensitisation of itinerant Fulani in the networks.

Furthermore, participating in exercises to fight TB was not significantly different between Fulani and Yoruba. In this way, respondents' ethnic peculiarity was not an index for their engagement in the control of TB. In fact, this displayed the level of

respondents' alertness about their risk of contracting Bovine Tuberculosis. Nevertheless, in Saki West, compared to Saki East, the level of people's engagement in TB control was essentially different. More people were engaged in Saki West, which could explain why the LGA was rated among the high TB prevalence in Oyo State. Among the remaining 5 LGAs, no critical variance in community engagement in the prevention of TB was noticed. Inferably, this was due to perceived TB risk between the host communities and the itinerant Fulani. Also, an essentially difference in the perceived risk of TB between Saki East and Saki West was recorded.

Apart from that, as regards the impact of apparent TB consequences for community health-seeking conduct, no noteworthy discrepancy in shared health-seeking conduct between the itinerant Fulani and their Yoruba host was found. Nonetheless, a test of dissimilarity uncovers the noteworthy difference in shared health-seeking conduct between Itesiwaju and Iseyin, which was different between Ibarapa East and Ibarapa North.

Lastly, there was no specific consolidated control programme targeted towards Bovine Tuberculosis. However, official tuberculosis prevention captured all efforts targeted towards case finding documentation and treatment regime. Limited or no attention is given to bovine tuberculosis in the standard operation guideline for tuberculosis prevention and control. Thus, limited conscious effort to prevent bovine tuberculosis would engender unnoticed direct and indirect negative impact or impede the End TB goal slated for 2030 (WHO, 2018).

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

The study investigated the intricacies in perceived risk of contracting Bovine Tuberculosis as well as consumption habits among the host communities and the itinerant Fulani. The study concentrated on how forms of inter-ethnic relationship could influence the dissemination of information about tuberculosis, consciousness about the causal route of Bovine Tuberculosis, and respondents' inclinations to contract the TB among the respondents. Additionally, consideration was given to ingestion of unpasteurized milk. Frequencies, explanations behind, and seeming risk in ingesting the milk were investigated to comprehend the important required behavioural modification to reduce tuberculosis in the study territory.

Additionally, the study examined the respondents' health-seeking conducts. This conduct included all exercises in which the respondents were intentionally involved in order not to be infected with TB. Data relating to TB preventive measures adopted at the macro and micro levels were retrieved from the respondents. The preventive measures incorporated kinds of supports available for people living with TB. These measures included treatment, monetary, information, dietary, and psychological cares.

Likewise, in the study, routes of health communication were investigated through their sources. Moreover, the study elicited data about community method of evaluating tuberculosis and factors influencing its treatment. Family quality that impacts decision of treatment was considered. The undertakings of tuberculosis gatekeepers in reducing TB were investigated. This exposed the state of professionals' consciousness of the need to jointly contribute to eradicate TB. Apart from that, the study revealed the level of synergy that existed among the professionals that could help combat TB. For this study, the gatekeepers were the CVs, TBLS, veterinarians, and leaders of host communities and camps.

In addition, the respondents' conclusion about their optimal treatment supporters was requested. This brought about evaluative conclusions which placed the gatekeepers in three different categories based on professionals' level of activity that could help curtail the disease.

The form of connection between the host communities and the itinerant Fulani was investigated. This investigation exposed the dynamics of social ties among the respondents as explained in the network theory. This session revealed the weak and strong social ties. The investigation recognized relationship stressor and its consequences for the shared relationship. Also, appeasement tool was analysed to prescribe conflict management between the host communities and the nomadic Fulani. Ultimately, the degree of community contribution in the prevention of TB among respondents was examined.

This provided the general insight on whether their kind of relationship impacts access to the preventive activities of tuberculosis. The conclusion and recommendation were reached based on the study outcome.

5.2 CONCLUSION

Based on the study outcome, community engagement was limited in the prevention of tuberculosis among the study population. The End TB Strategy will turn into a hallucination in Nigeria if the accompanying circumstances still proceed in Oyo State. Initially, there were little differences between the host communities and the itinerant Fulani in terms of access to TB information. Although the two ethnic groups had limited information about tuberculosis, it would be barely sufficient to initiate vital behavioural changes or more engagement in the TB preventive activities. The nomadic Fulani and their host would not adjust their consumption practices until proper sensitization is initiated to cover host communities and the hard-to-reach group.

Ingestion of unpasteurised milk conceivably exposes people to TB, which a large portion of the respondents did not know. Likewise, the acceptance to practise appropriate and healthier behaviour was affected by LGA of residence, ethnic divergence, earnings, and gender. Once more, the gatekeepers in the prevention of tuberculosis have not been completely involved, which potentially would constitute a major bane to the effective treatment and preventive activities by the stakeholders and international partners. The gatekeepers were not aware of the synergetic tendency to prevent BTB. Thus, there were no intentional synergetic contributions from the tuberculosis gatekeepers sufficient to battle the disease. Similarly, the

respondents did not know about tuberculosis programme, and in this manner their involvement was limited in activities, accountability, and decision-making for the programme.

Also, evidence of invisible health violence against the nomadic Fulani was not clear-cut in the study since both the nomadic Fulani and their host communities had limited access to tuberculosis control and prevention programme in Oyo State. Even though nomadic Fulani had lower access to and engagement in tuberculosis prevention and control, they are high-risk population. Physical and social indices have necessitated this unequal access to the prevention and control of the disease among the two ethnic groups. Besides, the nomadic Fulani remain closed-culture community of people who are constantly misunderstood, neglected, and stereotyped. Data collection among the nomadic Fulani is a uniquely dynamic and possible experience. The nomadic Fulani are accessible when people pay careful attention to their cultural peculiarities.

The following diagram displays the route to end Bovine Tuberculosis in the study area. The local talking drum represents the mega media mechanism or platform to sensitize the public about the Bovine Tuberculosis.

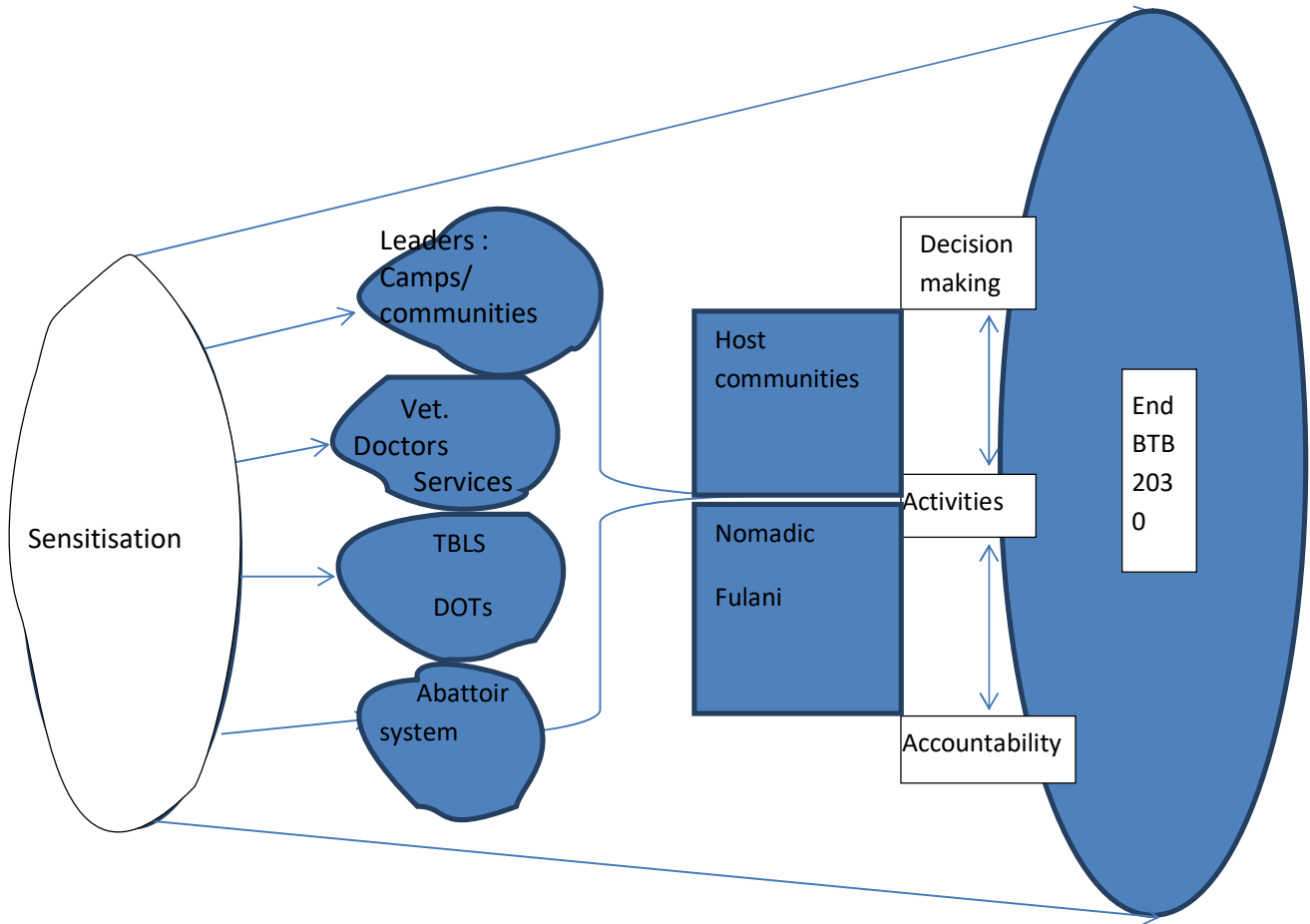


FIGURE 5.1 : END BTB 2030 Talking Drum

5.3 RECOMMENDATIONS

Potentially, the following recommendations would help in the curtailment of tuberculosis if they are carefully adhered to.

1. There should be adequate sensitization about TB for both the host communities and the migrant Fulani, but special attention should be given to the itinerant Fulani. The sensitization activities should take into cognizance the right channel of communication for specific group. The mass media should be engaged for BTB preventive information, especially on radio since the nomadic Fulani are usually found with a radio set each. Also, such TB sensitization jingles should be culture sensitive. In other words, local languages such as Yoruba and Fulbe should be used to meet the health information need of people without formal education. More so, religious leaders should not be left out in the crusade to eradicate TB since the respondents practised at least one religion.
2. Economic activities remained a major point of social positive interactions. This avenue constitutes a platform to reach the respondents since they constantly visit the market for business transactions. Public sensitization about tuberculosis would be appropriate, especially during the market days. Information, education, and communication materials (IECs) should be pasted in strategic locations in the market square. This would further reduce stigmatization. The message should state clearly that the treatment is free. This statement would reduce the fear of out-of-pocket expenses among the low-resource persons.
3. Besides, establishment of the Direct Observation Treatment short-course (DOTs) centres in nomadic camps is vital to the curtailment of the disease. Similarly, the nomadic Fulani should be recruited to work alongside other experts in the DOTs centre. This would serve two functions. First, the establishment of the DOTs centre would create constant reminder of the risk of contracting TB among the itinerant population. Second, the recruitment of the Fulani nomads would help resolve language barrier encountered in the government hospitals usually managed by the individuals from the host communities.
4. Community volunteers are important in TB case finding. Consequent to that, the state government should reengage, retrain, and prepare to remunerate the community volunteers. Evidences in the study and previous studies have proved that community volunteers play a significant role in increasing both geographical and therapeutic coverage of health promotion programmes.

5. Health professionals in the prevention of tuberculosis should practise fairness in the performance of their statutory roles. This would allow the nomadic Fulani to gain confidence in government health facilities closer to them. Report has revealed that the nomadic Fulani usually patronise the private health clinics.
6. Government and stakeholders should identify all TB gatekeepers, and bring them together in meetings. The meetings should expose the gatekeepers to the need to work conceitedly and systematically to prevent the transmission of Bovine Tuberculosis (animal interface) and tuberculosis (human interface).
7. Maps that clearly delineate grazing route should be simplified to easy-to-read maps, and they should be made available for public use.
8. Researchers among the nomadic Fulani should carefully adhere to research realism as demanded by specific field experience. This remains a major field endeavour to accomplish successful data collection among the group.

5.4 CONTRIBUTION TO KNOWLEDGE

1. The study clarifies how social relationship could impact on access to health information in location where major and minority ethnic groups reside.
2. The investigation has endeavoured to expand the use of network theory to explain wellbeing conduct. During the study, two new concepts were identified and added to the theory, namely positive and negative ties.
3. The study investigated the forms of social relationship to recognize the purpose of and recurrence of social contact. Consequently, economic platform was found to be point of frequent inter-ethnic contact, which could be used for public sensitization about Bovine Tuberculosis.
4. This study attempts to extend wellbeing conduct explanation. The study's exploration moved from micro to macro levels of explanation i.e. moving to how social relationships shape individual's perception and behaviour.
5. The study has added to understanding of how to curtail a neglected strain of TB i.e. Bovine Tuberculosis among people, especially the neglected immune-deficient and vulnerable itinerant Fulani. This was done, trying to contribute definitively to End TB procedure 2030.
6. The gatekeepers were not engaged consciously to work conceitedly to combat the disease in Oyo State.

7. For the scientific community, this investigation adopted multidisciplinary method to study TB. This brought about a synergetic research from criminology, veterinary medicine, pathology, and medical sociology to help the end of TB even among the host and the itinerant population. As a result, this study has opened up other niches where other researchers can study further.
8. Finally, the study exposed that community involvement in BTB prevention and control was limited in Oyo State.

REFERENCE

- _____. 1978 Declaration of Alma-Ata. From http://www.euro.who.int/__data/assets/pdf_file/0009/113877/E93944.pdf 10 Oct., 2015.
- Abbah, T. 2013. Fulani/farmers clashes claim 300 lives in five months. *Sunday Trust* May 26.
- Abbass, I. M. 2012. “No retreat, no surrender”, conflict for survival between Fulani pastoralists and farmers in Northern Nigeria. *European Scientific Journal* 8.1: 337-352.
- Abubakar, A. A., Brook, P. H., Abdullahi, S. U., Kudi, A.C. and Okaiyeto, O. 2005. Epidemiology of bovine and human tuberculosis in the Federal Capital Territory of Nigeria, Abuja. *Proceedings of the British Society of Animal Science Annual Conference*. 4th-6th April. New York.
- Abubakar, M. S., Musab, A. M., Ahmeda, A. and Hussaini, I. M. 2007. The perception and practice of traditional medicine in the treatment of Cancers and inflammations by the Hausa and Fulani tribes of Northern Nigeria. *Journal of Ethnopharmacology* 1.11: 625–629
- Abubakar, U. B., Ameh, J. I., Abdulkadir, I. A., Salisu, I., Okaiyeto, S.O. and Kudi A.C. 2011. Bovine TB in Nigeria: a review. *Veterinary Research* 4:24-27
- Adamu, M and Kirk-Green A. H. M. 1986. *Pastoralists of West African Savanna*. Proceedings of the International African Institute, A. B.U., Zaria.
- Adebayo, A. G. 1995. Of Man and Cattle: A Reconsideration of the Tradition of Origin of Pastoral Fulani of Nigeria. *History of Africa* 18:1-21.
- Adejumo, A. O., Azuogu, B., Okorie, O., Lawal, O. M., Onazi, O. J., Gidado, M., Daniel O. J., Okeibunor J. C., Klinkenberg, E. and Mitchell, E. M. H. 2016. Community referral for presumptive TB in Nigeria: a comparison of four models of active case finding. *BMC Public Health* 16:177. 9
- Adesokan, H. K., Akinseye, V. O., Streicher, E. M. van Helden, P. D., Warren, R. M., Cadmus, S. I. B. 2019. Reversing zoonotic tuberculosis transmission from an emerging Uganda I stain between pastoralist and cattle in South-Eastern Nigeria *BMC Vet. Res.* 15:437 PMC-PubMed
- Adogi, M. 2013. *Fulani-farmers conflicts in Nasarawa state: the ecology, population and politics*. Abuja: Murry Greens Consult.
- African Union-Interafrican Bureau for Animal Resources 2013. *Pan African animal resources yearbook, (60 p.)*. African Union Commission (AUC). Retrieved Dec. 24 2015, from <http://www.au-ibar.org/pan-african-animal-resources-yearbook>.
- Agbalaya, M. A., Ishola, O. O., Adesokan, H. K., &Fawole, O. I. 2020. Prevalence of bovine tuberculosis in slaughtered cattle and factors associated with risk of disease transmission among cattle handlers at Oko-Oba Abattoir, Lagos, Nigeria. *Veterinary world*, 13(8), 1725–1731. Available on <https://doi.org/10.14202/vetworld.2020.1725-1731>
- Ajayi, I. O., Jegede, A. S., Falade, C. O. and Sommerfeld, J. 2013. Assessingresources for implementing a communitydirected intervention (CDI) strategy in delivering multiple

- health interventions in urbanpoorcommunities in Southwestern Nigeria: a Qualitative Study. *InfectiousDiseases of Poverty* 2.25. Retrieved Mar. 17, 2015, from <http://www.idpjournals.com/content/2/1/25>
- Akighir, D. T. 2013. Government expenditure on nomadic education in Nigeria: implications for achieving the millennium development goals. *Journal of Economic and Social Studies* 3.2:147-167.
- Akogun, O. 2011. Robotic Health Assistant (feverkit) for the rational management of fevers among Nomads in Nigeria. *Nurs Leadership* 24.2: 58–67.
- Akogun, O. B., Gundiri, Badaki, J. A. Njobdi, S., Adesina, A. O. and Ogundahunsi. 2012. Febrile illness experience among Nigerian Nomads. *Int J Equity Health* 10.1186/1475-9276-11-5.
- Aliyu, M. M., Adamu Y. J., and Bilyaminu Y. A., 2009. Current prevalence of tuberculosis lesions among slaughtered Cattle in Northeastern States of Nigeria. *Revue d'Élevage et de Médecine Vétérinaire des Pays Tropicaux*, 62.1:13–16.
- Amadi, D.C. 2015. Nomadic education in Nigeria: using English to foster communal peace and enhance the education of the herdsmen. *Global Journal of Arts Humanities and Social Sciences* 3.5:16-21.
- Amazat, J., Razum, O. 2018. Towards a Sociology of Health Discourse in Africa. DOI 10.1007/978-3-319-61672-8_9
- Aminu, J. (1991). The Evolution of Nomadic Education Policy in Nigeria in Gidado Tahir (ed). *Education and Pastoralism in Nigeria*. Ibadan: Agoro Publicity Company.
- Anaelom, N. J., Ikechukwu, O. J., Sunday, E. W. and Nnemeka, U. C. 2010. A review of epidemiology, clinical presentation, prevention and control. *J. Public Health Epidemiol.* 2:118-124
- Anosike, J. C., Nwoke, B. E. B., Onwuliri, C. O. E., Obiukwu, C. E., Duru, A. F., Nwachukwu, M. I., Ukaga, C. N., Uwaezuoke, J. C., Uduji, O. S., Amajuoyi, O. U. and Nkem, B. I. 2004. Prevalence of parasitic diseases among nomadic Fulanis of South-Eastern Nigeria. *Ann Agric Environ Medicine* 11:221-225.
- Arnstein, S. 1969. Eight rung on a ladder of citizen participation. *American Institute of Planners Journal* 34:216-24.
- Atoyebi, O. A. and Gbadegesin, A. S. 2005. Sampling and sampling distributions. In A.S. Gbadegesin, A. Olopoenia, and A. Jerome. *Statistics for the social sciences*. Ibadan; Ibadan University Press.
- Audu, S. D. 2014. Fresh water scarcity: a threat to peaceful co-existence between farmers and pastoralists in Northern Nigeria. *International Journal of Development and Sustainability* 3.1: 242-251.
- Babbie, E. 2011. *The basics of social research*. Wadsworth: Belmont USA.

- Bakari, N. A., Umoh, J. U., Kabir J., Otolorin, G. R., Ehizibolo P. O., Jibril, Y. J. and Yahaya, R. J. 2015. A case study of Yola modern abattoir, Adamawa State, Nigeria. *J. Vet. Adv.* 5.6: 995-1003.
- Baker, W. E. 1990. Market networks and cooperative behaviour. *American Journal of Sociology* 96:589-625.
- Beals, F.T. 2007. The risk of Bovine Tuberculosis from raw milk consumption with a focus on Michigan in wise traditions in food, farming and the healing arts. *The quarterly magazine of the Weston a price foundation* Retrieved June 20, 2015, from: www.trit.us/farming/raw-milk-and-tb-michigan.html.
- Bello, S. I. 2010. Challenges of DOTS implementation strategy in the treatment of Tuberculosis in a tertiary health institution, Ilorin, Nigeria. *African Journal of Pharmacy and Pharmacology* 4.4:158-164. Retrieved April 25, 2015. from :www.academicjournals.org/ajpp.
- Blench, R. 2010. Conflict between pastoralists and cultivators in Nigeria. *Review paper prepared for DFID, Nigeria*. Kay Williamson Educational Foundation. Cambridge: United Kingdom. Retrieved Jan. 30, 2015, from <http://www.rogerblench.info/RBOP.htm>.
- Blench, R. M. 1994. The Expansion and Adaptation of Ful'e Pastoralism to Subhumid and Humid Conditions in Nigeria. *Cahiers d'études Africaines*, 133–135:197–212.
- Brieger, W. 2011. Malaria among Nomads and migrants: a neglected people at risk. *Africa Health CPD Challenge* Retrieved July 05, 2015, from: <https://www.researchgate.net/.../2977582...>
- Bwala, G. D., McCrindle, C., Fasina, F. O. and Ijagbone, I. 2015. Abattoir characteristics and seroprevalence of Bovine Brucellosis in Cattle slaughtered at Bodija municipal abattoir, Ibadan Nigeria. *Journal of Veterinary Medicine and Animal Health* 7.5:164-168.
- Cadmus, S. I. B., Adesokan, H. K., Adepoju, A. F. and Otesile, E. B., 2008. Zoonotic risks and transmission of Mycobacteria species from cows' milk and slaughtered cattle to man in Ibadan: Role of butchers. *Nigerian Veterinary Journal* 29:1. 30-39
- Cadmus, S. I. B., Atsanda, N. N., Oni, S. O. and Akang, E. E. U. 2004. Bovine Tuberculosis in one cattle herd in Ibadan in Nigeria. *Vet. Med. Czech* 49.11:406-412.
- Chema, S. and Ward, D. 1990. Cost effective disease control routines and animal health management in animal agriculture. *Proc.FAO Expert Consultation* held in Rome, Italy.
- Chima, I. Martha-Rose, C. I., Charles U. and Okereke W. 2014. Counselling for effective management of nomadic education in Nigeria. *Higher Education of Social Science* 6.1: 10-14.
- Clawson, D., Neustadt, A. and Bearden J., 1986. The logic of business unity: corporate contributions to the 1980 congressional elections. *American Sociology Review* 51:797-811.
- Cochran, W. G. 1963. *Sampling Techniques*. 2nd Ed., New York: John Wiley and Sons, Inc.
- Collins, C. H. and Grange J. M. 1987. Zoonotic implication of Mycobacterium Bovis infection. *Int. Vet. Journal* 41: 363-366.

- CORE Group 2013. *Community Based Tuberculosis Prevention and Care* available online https://coregroup.org/wp-content/uploads/media-backup/.../Community-Based_TB.pdf. Retrieved Dec 10, 2015.
- Cosivi, O., Grange, J. M., Daborn, C. J., Raviglione, M.C., Fujikura, T., Cousins, D., Robinson, R. A., Huchzermeyer, H. F., De Kantor, I. and Meslin, F. X. 1998. Zoonotic Tuberculosis due to Mycobacterium Bovis in developing countries. *Emerg Infectious Disease* 4.1:59-70.
- Curry, F. J. 2006. *The patients' charter for tuberculosis care: patients' rights and responsibilities* World Care Council. From www.worldcarecouncil.org. Retrieved 23 Sept., 2016.
- Dao, Y. J. M. and Brieger, W. R. 1995. Immunization for the migrant Fulani: identifying an under-served population in southwestern Nigeria. *Int'l. Quarterly of Community Health Education* 15:1.21-32.
- Davies, P. D. O. 2006. Tuberculosis in humans and animals: are we a threat to each other? *J. R. Soc. Medicine* 99.10: 539-540.
- Ehizibolo, D. O., Ehizibolo, P. O., Ehizibolo, E. E., Sugun M. Y. and Idachaba S. E 2011. The control of neglected zoonotic diseases in Nigeria through animal intervention. *Afr. J. Biomed. Res.* 14:81 -88.
- Ejeh, E. F., Adesokan, H. K., Raji, M. A., Bello, M., Musa, J. A.Kudi, A. C., and Cadmus, S. I. B. 2014. Current status of Bovine Tuberculosis in Otukpo, Nigeria. *Journal of Animal Production Advances* 4:501–507.
- Ejeh, E. F., Raji, M. A., Bello, M., Lawan, F. A., Francis, M. I., Kudi, A. C., and Cadmus, S. I. B. 2014. Prevalence and direct economic losses from Bovine Tuberculosis in Makurdi, Nigeria. *Veterinary Medicine International* 1–6.
- Emikpe, B. O., Konadu, A., Folitse, R. D., Burimuah, V., Shaibu, E. 2020. Causes of kidney condemnation and associated direct financial loss at Kumasi Abattoir, Ghana between 2002 – 2014 *Animal Research International* 17:1.
- Emiru, L., Tadesse, D., Kifleyohannes, T., Sori, T. and Hagos, Y. 2015. Prevalence and public health significance of Bovine Cysticercosis at Elfora abattoir, Bishoftu, Ethiopia. *Journal of Public Health and Epidemiology* 7.2:34-40.
- Fabusoro, E. 2007. Key issues in livelihoods security of migrant Fulani pastoralists: empirical evidence from Southwest Nigeria. *AEGIS European Conference on African studies – African Alternatives: Initiative and Creativity beyond Current Constraints* African Studies Centre, Leiden, the Netherlands.
- Fada, A.G. 2013. Nomadic pastoralism and the prevalence of pulmonary tuberculosis (TB) in the north-west region of Nigeria. Thesis. Geography, Social Sciences. University of Ibadan. iv+134
- Fajimi, A. K. and Taiwo, A. A 2005. Herbal remedies in animal parasitic diseases In Nigeria: A review. *African Journal of Biotechnology* 4.4:303-307. Retrieved June 12, 2016. Retrieved <http://www.academicjournals.org/AJB>.

- Federal Ministry of Health (FMoH) 2010. National Tuberculosis and Leprosy control programme (NTBLCP). *Workers' manual* – Revised 5th ed. Abuja.
- Federal Ministry of Health (FMoH), World Health Organization (WHO) and the US Centers for Disease Control and Prevention (CDC). 2013. *Report first national TB prevalence survey 2012, Nigeria*.
- Federal Ministry of Health (FMoH). 2014. *The National Strategic Plan for Tuberculosis Control: Towards Universal Access to Prevention, Diagnosis and Treatment 2015 – 2020*. National Tuberculosis and Leprosy Control Programme, Department of Public Health, Federal Ministry of Health, Nigeria.
- Food and Agricultural Organization (FAO) 1994. *Manual on meat inspection for developing countries (Animal Production and Health Paper 119)*. Retrieved Dec.12 2015, from <http://www.fao.org/docrep/003/t0756e/T0756E00.htm#TOC>.
- Gosling, L. and Edwards, M. 2003. *Toolkits: A practical guide to planning, monitoring, evaluation and impact assessment*. London: Save the Children UK.
- Habib, A. G. 2011. Walking the walk: partnerships for TB-HIV care of native and nomadic populations. *Int'l J Tuberculosis and Lung Dis*. Retrieved Dec.20, 2015, from www.capetown.
- Hambolu, D., Freeman, J., and Taddese, H. B. 2013. Predictors of Bovine TB risk behaviour amongst meat handlers in Nigeria: A cross-sectional study guided by the health belief model. *PLoS ONE* 8.2:
- Harvey A. 2010. Public participation: 'theory and practice'. *LCA CPD training course*, planning and development officer, The Heritage Council.
- Hassan A. O., Olukolade, R., Ogbuji, Q. C., Afolabi S., Okwuonye L. C., Kusimo, O. C., Osho, J. A., Osinowo, K. A., and Ladipo O. A. 2017. Knowledge about Tuberculosis: A Precursor to Effective TB Control—Findings from a Follow-Up National KAP Study on Tuberculosis among Nigerians. *Tuberculosis Research and Treatment* Article ID 6309092, 8 pages Retrieved <https://doi.org/10.1155/2017/6309092>.
- Ibekwe, N. N. and Ameh, S. J. 2014. Plant natural products research in Tuberculosis drug discovery and development: A situation report with focus on Nigerian biodiversity. *African Journal of Biotechnology*. Retrieved Dec.20, 2015, from <http://www.academicjournals.org/AJB>.
- Ibrahim, M. A., Nwude, N., Ogunsusi, R. A., and Aliu, Y. O. 1984. Screening of West African plants for anthelmintic activity. *ILCA Bull.* 17:19–23.
- Ibrahim, S., Cadmus, S. I. B., Umoh, J. U., Ajogi, I., Farouk, U. M., Abubakar, U. B. and Kudi A. C. 2012. Tuberculosis in humans and Cattle in Jigawa State, Nigeria: risk factors analysis. *Veterinary Medicine International* 1-5
- Ibrahim. S., Agada, C. A., Umoh J. U., Ajogi I., Farouk U. M. and Cadmus S. I. B. 2010. Prevalence of Tuberculosis in Jigawa State, Northwestern Nigeria. *Trop Anim Health Production* 42.7:1333-5

- Imperator, P. 1974. Nomads of the West African Sahel and delivery of health service to them. *Social Science and Medicine* 8:443-457.
- Integrated Regional Information Networks (IRIN), 2009. Nigeria: curbing farmer-nomad clashes and protecting livestock routes. *Integrated Regional Information Networks (IRIN)* Retrieved Dec. 12, 2015, From <http://www.preventionweb.net/English/professional/news/v.phd>.
- Isah M. A., 2012. No retreat no surrender conflict for survival between Fulani pastoralists and farmers in Northern Nigeria. *European Scientific Journal* 8.1: 1857-7881
- Isioma, D. C., Chukwu, O. O., Yvonne, T. K., Olajide, O., Chika, N., Godwin, O. A., Benschak, J. A. and Solomon, C. C. 2013. Detection of Mycobacterium Tuberculosis complex in Lung specimen of slaughtered Cattle and Goats by a DNA based Multiplex Polymerase chain reaction and Ziehl-Neelsen methods in Jos, Nigeria. *Br. Microbiol. Res. Journal* 3.4:550-556.
- Iyalomhe, G. B. S and Iyalomhe, S. I. 2012. Health-seeking behaviour of Rural dwellers in Southern Nigeria: implications for healthcare professionals. *International Journal of Tropical Disease & Health* 2.2:62-71. From: www.sciencedomain.org. retrieved 02 Mar., 2013.
- Janz, N. K. and Becker, M. H. 1984. The health belief model: A decade later. *Health Education Quarterly* 11.1:1-47.
- Jenkins, A. O., Cadmus, S. I. and Venter, E. H. 2011. Molecular epidemiology of human and animal Tuberculosis in Ibadan, Southwestern Nigeria. *Vet. Microbiology*. 151.1-2:139-47.
- Kahssay, H. M. and Oakley, P. 2007. *Community involvement in health development: a review of the concept and practice*. Geneva, World Health Organization. Retrieved Nov. 26, 2007, from http://whqlibdoc.who.int/pha/WHO_PHA_5.pdf.
- Kish, L. 1965. *Survey sampling*, New York: Wiley
- Lamidi, A. A. and Ogunkunle, T. 2015. Occurrences of resources conflicts among the Fulani's herdsman and arable farmers in Yewa area, Ogun State, Nigeria. *Research Journal of Agriculture* 2.1:1-11.
- Lawan, F. A., Ejeh, E. F., Waziri, A., Kwanashie, C. N., Kadima, K. B., Kazeem, H. M. 2020. Prevalence of Tuberculosis in Cattle Slaughtered at Maiduguri Central Abattoir, Nigeria. *Sahel Journal of Veterinary Sciences*, 17:3.14-21. Retrieved from <http://saheljvs.org/index.php/saheljvs/article/view/167>
- Manu, I. N., Andu, W. N, Tarla, D. N. and Agharih W. N. 2014. Causes of Cattle theft in the North West Region of Cameroon. *Scholarly Journal of Agricultural Science* 4.4:181-187. From <http://www.scholarly-journals.com/SJAS>. Retrieved 15 Sept., 2015.
- Martin, S. 2009. *Zoonoses*. 2nd ed. Pharmaceutical Press, (PhP), London.
- Martinho, A. P., Franco, M. M. and Ribeiro, M. G. 2013. Disseminated Mycobacterium Tuberculosis infection in a Dog. *Am. J. Trop. Med. Hyg.* 88.3:596-600.

- Martinho, A. P., Franco, M. M. and Ribeiro, M. G. 2013. Disseminated Mycobacterium Tuberculosis infection in a Dog. *Am. J. Trop. Med. Hygiene* 88.3:596-600.
- Metiboba, S. 2012. The challenge of community participation in rural health development in Nigeria. *Prime Journal of Business Administration and Management (BAM)* 2.5:551-555.
- Mizuchi, M.S. and Koenig, T. 1986. Economic sources of corporate political consensus: an examination of inter-industry relations. *American Sociology Review* 51:482-491.
- Moatasim, F. 2005. *Practice of community architecture: a case study of zone of opportunity housing cooperative*, Montreal. School of Architecture McGill. Sherbrooke West QC H3A 2K6.
- Morgan, L. M. 2001. Community participation in health: perpetual allure, persistent challenge. *Health Policy and Planning*. 16:221–230.
- Muhammad-Baba, T. A., & Amzat, J. 2012. Pastoralism, nomadism and transhumance: an explanation of the socio-economic organisation of Fulani/Ful'be of northern Nigeria. In A. S. Jegede, A. O. Olutayo, O. Omololu & B. E. Owumi (Eds.), *People and cultures of Nigeria* (pp.78-96). Ibadan: Department of Sociology, University of Ibadan.
- Murray, V. S., Wiseman, H. H., Dawlings, S., Morgan, I., and Houseman I. M. 1992. Health effects of organophosphate Sheep. *Dips. Brit. Vet. Journal* 305:1090.
- Nafarnda, W.D., Obudu, C.E., Omeiza, G.K., Enem S.I. and Adeiza M.A. 2008 Prevalence of Zoonotic Bovine Tuberculosis and associated risk factors among cattle herds in North Central Nigeria. *International Journal of Current Research and Academic Review* 3:7. 113-119
- Nampila, T. 2005. Assessing community participation: the huidare informal settlement. Thesis. Social Work: University of Stellenbosch. Retrieved April 20, 2016, from <http://www.google.co.za/search?hl=en&source=hp&q=Assessing+community+participation&meta>.
- National Population Census (NPC) 2006. *National population commission Federal Republic of Nigeria. Nigeria headcount 2006*. Retrieved Aug. 20, 2015. From www.npc.org.ng
- Nchi, S. I. 2013. Religion and politics in Nigeria: The constitutional issues. Jos: *Greenworld*
- Nunzi, E. 1996. Proceedings of a workshop on community based rehabilitation and country experiences of CBR. *Health Cooperation Papers*. Bologna, Italy.
- Nvau, J. B., Oladosu, P.O, and Orishadipe, A.T. 2011. Antimycobacterial evaluation of some medicinal plants used in Plateau State of Nigeria for the treatment of Tuberculosis. *Agriculture and Biology Journal of North America* Retrieved July 20, 2015, from <http://www.scihub.org/ABJNA>.
- Nwanta, J. A., Onunkwo, J. I, Ezema, W. S., and Umeononigwe C. N., 2010. Zoonotic Tuberculosis: A Review of Epidemiology, Clinical Presentation, Prevention and Control. *Journal of Public Health and Epidemiology* 2.6:118-124. Retrieved June 12, 2016, from <http://www.academicjournals.org/JPHE>.

- Nwanta, J. A., Umeononigwe, C. N., Abonyi G. E. and Onunkwo, J. I. 2011. Retrospective study of Bovine and Human Tuberculosis in abattoirs and hospitals in Enugu State, Southeast Nigeria. *Journal of Public Health and Epidemiology* 3.7:329-336. Retrieved Dec.12, 2015, from <http://www.academicjournals.org/jphe..>
- Nwude, N. 1986. Veterinary aspects of medicinal plant research in Nigeria. In *State of Medicinal Plant Resources Nigeria* A Sofowora. eds 197.
- O'Reilly, L. M. and Daborn, C. J. 1995. The epidemiology of Mycobacterium Bovis infections in animals and man: A Review. *Tuberc. Lung Diseases* 76: 1-46.
- Obasanya, J., Adam, B. G., Awe, A. Labaran, S., Nwosu, T., Oladapo O., Onuaguluchi N., Adamu, H. I. and Al-Rashid, U. 2013. Nigeria stop TB partnership strategic plan 2013-2015. *Nigeria Stop TB Partnership*.
- Okeibunor, J. C., Onyeneho, N. G., Nwaorgu, C. O., I'Aronu, N., Okoye, I., Iremeka, U. F. and Sommerfeld 2013. Prospects of using community directed intervention strategy in delivering health services among Fulani Nomads in Enugu State, Nigeria. *Int'l Journal Equity Health* 12:24.
- Okeke, E., Dingsdale, H., Parker, T., Voronina, S., Tepikin, A.V. 2016. Endoplasmic reticulum-plasma membrane junctions: structure, function, and dynamics: Endoplasmic reticulum-plasma membrane junctions. *J Physiol.* 1;594:11.2837–47.
- Okeke, L. A., Cadmus, S., Okeke, I. O., Muhammed, M., Awoloh, O., Dairo D; Waziri, E. N. Olayinka, A., Nguku, P. M. and Fawole. 2014. Prevalence and risk factors of Mycobacterium Tuberculosis complex infection in slaughtered Cattle at Jos South abattoir, Plateau State, Nigeria. *Pan Afr Med Journal* 18.suppl 1:7.
- Okoli, A. C. and. Atelhe G. A. 2014. Nomads against natives: a political ecology of herder/farmer conflicts in Nasarawa State, Nigeria. *American International Journal of Contemporary Research* 4.2:
- Okoli, R. I., Aigbe, O., Ohaju-Obodo, J. O. and Mensah, J. K. 2007. Medicinal herbs used for managing some common ailments among Esan people of Edo State, Nigeria. *Pakistan Journal of Nutrition* 6.5:490-496.
- Olabode, A. D. and Olajide, L. T. 2010. Environment induced conflict and sustainable development: a case of Fulani-farmers' conflict in Oke-Ero LGAs, Kwara State, Nigeria. *Journal of Sustainable Development in Africa* 12.5:269-270.
- Olusola-Falae, B., Obeagu, E. I., Odo, M., Ochei, K. C., Solanke, E. and Idaboh, T. 2016. Impact of community based tuberculosis care interventions on TB case detection in Nigeria – What works and what does not? *Int. J. Adv. Multidiscip. Res.* 3:2.30–39.
- Olusola-Falae, B., Obeagu, E. I., Odo, M., Ochei, K. C., S., E. and Idaboh, T. 2016. Impact of community based tuberculosis care interventions on TB Case detection in Nigeria – What works and what does not? *International Journal of Advanced Multidisciplinary Research* 3.2: 30–39
- Oruene, I., Ndukwe, S. 2020. An Assessment of Meat Inspection for Bovine Tuberculosis and the Functional Conditions of Major Abattoirs/ Slaughter Slabs in Rivers State. *Black*

Sea Journal of Agriculture. 3:3.205-210 Retrieved from <https://dergipark.org.tr/en/pub/bsagriculture/issue/53806/723846>

- Otusanya, S. A., Brieger, W. R., Titiloye, B., Salami, K. K. and Adesope, A. 2007. Ethnic variations in health-seeking behaviours and attitudes between Fulani herders and Yoruba farmers in Southwestern Nigeria. *Trop Doct.* 37.3:184–5.
- Oyo State Ministry of Health, in collaboration with state TB and Leprosy control 2015. *Unpublished data on Tuberculosis* Received April 25, 2016 form Tuberculosis Unit Oyo State Ministry of Health.
- Radostits, O. M., Blood, D. C., Hinchey, K. W. and Gray, C. C. 2007. *Veterinary Medicine: A Textbook of Diseases of Cattle Sheep, Pigs, Goats, Horses*. 10th ed. St Louis: Saunders Elsevier.
- Radostits, O. M., Gay, C. C., Blood, D. C. and Hinchelift, K. W. 2000. Disease caused by Bacteria – Mycobacterium. In *Veterinary Medicine: A Text Book of Disease of Cattle, Sheep, Pig, Goat and Horses*. 9th ed. Harcourt Publisher Ltd., London, 909-918.
- Reid, J. N. 2000. *How people power brings sustainable benefits to communities*. United States Department of Agriculture, Rural Development Office of Community Development.
- Rifkin, S. B. 1990. *Community participation in maternal and child health/family planning programmes: an analysis based on case study materials*. World Health Organization, 20 Avenue Appia, 1211 Geneva 27, Switzerland.
- Rosenstock, I. M. 1978. Historical origins of the health belief model. *Health Educ Monogr* 2:328.
- Saidu, A.S., Okolocha, E.C., Gamawa, A. A., Babashani, M. and Bakari, N. A. 2015. Occurrence and distribution of Bovine Tuberculosis (*Mycobacterium bovis*) in slaughtered Cattle in the abattoirs of Bauchi State, Nigeria. *Veterinary World* 8.3:432-437.
- Saidu, A.S., Okolocha, E.C., Gamawa, A. A., Babashani, M. and Bakari, N. A. 2015. Occurrence and distribution of Bovine Tuberculosis (*Mycobacterium bovis*) in slaughtered Cattle in the abattoirs of Bauchi State, Nigeria. *Veterinary World* 8.3:432-437.
- Shaler, C. R., Horvath, C. N., Jeyanathan, M. and Xing, Z. 2013. Within the enemy's camp: contribution of the granuloma to the dissemination, persistence and transmission of *Mycobacterium Tuberculosis*. *Front. Immunol.*, 4.30:1-8.
- Shehu, L. M. 1988. *Survey of Tuberculosis and Tubercle Bacilli in Fulani herds, "Nono" and some herdsmen in Zaria area, Nigeria*. M.sc. Thesis, Ahmadu Bello University Zaria. P 84-103.
- Sheik-Mohamed, A. and Velema, J. P. 1999. Where health care has no access: the nomadic populations of Sub-Saharan Africa. *Tropical Medicine and International Health* 4.10: 695–707.
- Shima, K., Mosugu I. and Apaa T. 2015. *Assessment of livestock slaughtered for food and meat inspection issues in selected abattoirs in Benue State, Nigeria*. Cogent Food & Agriculture

- Shitaye, J. E., Tsegaye, W. and Pavlik, I. 2007. Bovine Tuberculosis infection in animal and human populations in Ethiopia: a Review. *VeterinariMedicina*, 52.8: 317–332.
- Simon, K. J. and Das, A. 1984. An application of the health belief model towards educational diagnosis for VD education. *Health Education Quarterly*, 11:403-418.
- Smithies, J. and Webster, G. 1998. *Community involvement in health form passive recipient to active participant*. Aldershot, Ashbgate.
- Stukas, A. A., Clary, E. G., & Snyder, M. 1999. Service learning: who benefits and why. *Social Policy Report*, 13: 1–19.
- Swa, E. S., Schoonman, L. and Daborn, C. J. 2010. Knowledge and attitude towards zoonoses among animal health workers and livestock keepers in Arusha and Tanga, Tanzania. *Tanzania Journal of Health Research* 12.4: 282-288.
- Swa, E. S., Schoonman, L. and Daborn, C. J. 2010. Knowledge and attitude towards zoonoses among animal health workers and livestock keepers in Arusha and Tanga, Tanzania. *Tanzania Journal of Health Research* 12.4: 282-288.
- Swanepoel, H. and De Beer, F. 2006. *Community development: breaking the circle of poverty*. 4th Ed. Johannesburg. Juta & Co.
- Theron, F. 2005. Public participation as a micro-level development strategy, in Davids, F. Theron and K. J. Maphunye. *Participatory development in South Africa. A Development Management Perspective*. Pretoria. Van Schaik Publishers.
- Thomas, M. and Thomas M. J. 2001. Planning for ‘community participation’ in CBR. *Asia Pacific Disability Rehabilitation Journal* 12.1: 44-51.
- Tillo I.M., Francis M.I., Liba J.W. and Atsanda N.N. 2017. Prevalence of Bovine Tuberculosis in slaughtered Cattle at Yola modern abattoir, Adamawa State, Nigeria. *Vom Journal of Veterinary Science* 12. 80 – 86
- Udoh, E. J. and Akintola J. O. 2003. An analysis of beef demand in Nigeria urban cities. *Global Journal of Pure and Applied Sciences* 9.1:7-12.
- Uduak, A. 2015. A review on Bovine Tuberculosis. *J Vet Adv*, 5.3:841-847. From: www.grjournals.com. Retrieved 22 Feb., 2016.
- United Nations Development Program: *Human development report (UNDP)*. 1997. Retrieved Oct. 10, 2015, from http://hdr.undp.org/sites/default/files/reports/258/hdr_1997_en_complete_nostats.pdf.
- United States Embassy in Nigeria (USEN) 2012. *Nigeria Tuberculosis fact sheet*
- Wellman, B. 1983. Network analysis : Some Basic Principles. In R. Collins ed. *Sociological Theory*. San Francisco. Jossey-Bass.
- Wellman, B. and Wortley S. 1990. Different strokes for different folks: community ties and social support. *American Journal of Sociology* 96:558-588

- Wilkins, E. G., Griffiths, R. J., Roberts, C. and Green, H. T. 1986. Tuberculous Meningitis due to *Mycobacterium Bovis*: a report of two cases. *Postgrad. Med. J.* 62:729:653-5.
- Williams, J. J. 2009. *Community participation and democratic practice in post-apartheid South African: rhetoric vs. reality. Critical Dialogue: Public Participation in Review* 2.1: 19.
- World Health Organisation (WHO) 2014. *Global tuberculosis report 2014* WHO Press, World Health Organization, 20 Avenue Appia, 1211 Geneva 27, Switzerland
- World Health Organisation (WHO) 2015a. *Global tuberculosis report 2015* World Health Organization 20 Avenue AppiaCH-1211 Geneva 27 Switzerland.
- World Health Organisation (WHO) 2015b. *Empowering communities to end TB with the ENGAGE-TB approach* World Health Organization 20 Avenue AppiaCH-1211 Geneva 27 Switzerland.
- World Health Organisation (WHO) 2015c. *A global action framework for TB research in support of the third pillar of WHO's end TB strategy* World Health Organization 20 Avenue AppiaCH-1211 Geneva 27 Switzerland.
- World Health Organisation (WHO) 2015d. *Use of high burden country lists for TB by WHO in the post-2015 era.* Discussion paper initially prepared in April 2015 to facilitate feedback, and finalized after the June 2015 meeting of WHO's Strategic and Technical Advisory Group for TB (STAG-TB). World Health Organization 20 Avenue AppiaCH-1211 Geneva 27 Switzerland.
- World Health Organization (WHO) 2008. *Community involvement in Tuberculosis care and prevention: towards partnerships for health guiding principles and recommendations.* Based on a WHO review stop TB Department World Health Organization 20 Avenue AppiaCH-1211 Geneva 27 Switzerland.
- World Health Organization (WHO) 2010. *Global Tuberculosis control: surveillance, planning and financing. WHO Report, WHO/HTM/ TB/2010.7.* WHO, Geneva, Switzerland.
- World Health Organization 2017. *Global tuberculosis report 2017.* Geneva: Licence: CC BY-NC-SA3.0 IGO.
- World Health Organization. 2018. *The challenges of preventing Bovine Tuberculosis Bulletin* 96:82–83
- Yakubu, A. A. G., Jibir, S., and Zubairu, N. 2013. Factors influencing consumer preference for fresh Beef in Sokoto metropolis, Nigeria. *International Journal of Applied Agricultural and Apicultural Research* 9.1&2: 106-112.
- Yamane, T. 1973. *Statistics: an introductory analysis.* New York: Harper & Row.
- Zerbini E., Greco A., Estrada S., Cisneros M., Colombo C., Beltrame S., Boncompain C, Genero S. 2017. Risk Factors Associated with Tuberculosis Mortality in Adults in Six Provinces of Argentina. *MEDICINA (Buenos Aires)* 77: 267-273
- Zhang, H., Ehiri, J., Yang, H., Tang, S., Li, Y. 2016. Impact of community-based DOT on tuberculosis treatment outcomes: a systematic review and meta-analysis. *PLoS ONE* 11:2.1-19

Zlotkowski, E. 1998. *Successful service-learning programs: new models of excellence in higher education*. Bolton, MA: Anker.

Appendix 1

Questionnaire

Department of Sociology
Faculty of the Social Sciences
University of Ibadan

Date _____

Serial No _____

Enumerator code.....

Dear Respondent,

I am a Ph.D student of the Department of Sociology, Faculty of the Social Sciences, University of Ibadan. This questionnaire is designed to obtain information on **‘Community Involvement in the Prevention of Bovine Tuberculosis among Nomadic Fulani and their Host Communities’**. Your open and sincere response will be treated with utmost respect and confidentiality. The information is required sole for research purpose. Thank you.

Yours faithfully,

Abolaji AZEEZ.

(a) LGA :.....

(b) Ward:

(c) Camp/community:.....

(d) Tent/house:.....

(e) Duration of stay.....

(f) Ever heard about TB /Dhojiro? Yes/No. if no, please discontinue then go to the

next respondent (Note: discontinue for respondents with less than **6months** stay in the community; **MRA**= Multiple Responses

Allowed; ***Please read out the options to the respondents***)

Section A Socio-demographic characteristics of respondent

s/n	Questions	Categories	code	Go to
1	Sex (ask if not obvious)	Male	1	
		Female	2	
2	Marital status	Married.....	1	
		Single.....	2	
		Separated.....	3	
		Divorced.....	4	
		Widowed	5	
3	Religion	Islam	1	
		Christianity	2	
		Traditional.....	3	
		Others specific.....	4	
4	Education	No formal education.....	1	
		Primary	2	
		Secondary	3	
		Vocational	4	
		Higher/tertiary.....	5	
		Quranic school.....	6	
		Nomadic education	7	

		Others specific.....	8		
5	Ethnic group	Fulani.....	1		
		Yoruba.....	2		
		Hausa.....	3		
		Igbo.....	4		
		Others specify.....	5		
6	Age				
7	Monthly income				
8	Occupation	Business/Trading.....	1		
		Civil servant.....	2		
		Clergy.....	3		
		Driving	4		
		Farmer.....	5		
		Herdsman (no. of cattle)	6		
		Housewife.....	7		
		Retiree.....	8		
		Student	9		
		Unemployed	10		
		Others specify.....	11		
9	How many people are living in your house?		Male	female	Total
		Adults			
		Adolescence			
		Children			

Section B: Objective 1: perceived susceptibility of nomadic Fulani and Host communities to BTB (Awareness)

10	Have you ever heard about TB?	Yes	1	
		No	2	→Q31
11	From which source did you hear about TB? (MRA)	By experience.....	1	
		Television	2	
		Radio.....	3	
		Billboard.....	4	

		Internet.....	5	
		Community Leader.....	6	
		Religious Leader.....	7	
		Health Workers	8	
		Family members.....	9	
		Neighbour	10	
		NGOs TB programmes	11	
		Government TB programmes	12	
		Others specify.....	13	
12	What did you hear about TB from that source?	..... .....	
13	For how long have you heard about TB?	Less than 1 year.....	1	
		1-2 years	2	
		3-4 years	3	
		5-6years.....	4	
		7years and above	5	
14	Do you know there are types of TB?	Yes	1	
		No	2 → Q16	
15	Mention the ones you know?	..... .....	
16	What are the factors that can promote transmission of TB? <i>(MRA)</i> <i>Please read the options</i>	Unpasteurized milk consumption	1	
		Contact with infected body fluid	2	
		Living in a poor ventilated building with people living with TB	3	
		Poor dietary habits.....	4	
		Dew.....	5	
		Others specify.....	6	
17	What are the different sources of contracting TB? <i>(MRA)</i>	Cattle	1	
		People living with TB.....	2	

	<i>Please read the options</i>	Wind.....	3	
		Water	4	
		Cigarette.....	5	
		Infected bodily fluid.....	6	
		Supernatural forces.....	7	
		Others specify.....	8	
18	How can someone get TB from the cattle? (MRA) <i>Please read the options</i>	Drinking uncooked milk	1	
		Eating uncooked meat.....	2	
		Working on infected intestine.....	3	
		Contact with infected body fluid	4	
		Using cattle urine for local medicine.....	5	
		Leaving infected cattle untreated	6	
		Milking infected cattle without precautions.....	7	
		One cannot contract TB form cattle.....	8	
		Others specify.....		
19	Have you ever been infected with TB?	Yes	1	
		No	2 → Q26	
20	At what age, were you diagnosed?	_____year(s)		
21	What do you think was responsible for it?	_____ _____		
22	Have you ever visited a health centre before to treat TB?	Yes	1	
		No	2 → Q24	
23	How many times in the last 6months?	_____		
24	What did you use to treat the TB?	Modern medicine	1	
		Traditional medicine	2	
		Both	3	
25	How much did you pay for TB treatment?	.....	1	
		I didn't pay	2	
		I can't remember	3	

26	Have you ever stayed with someone living with TB?	Yes	1	
		No	2	
27	In the last one year, how many people do you know that have had TB in your community?	_____ person(s)		
28	How many people died as a result of TB?			
29	In your community/camp at what age do people get infected most with TB?	_____ year(s)		
30	If a person got TB from the cattle, what effect would it have on such person? <i>(MRA)</i> <i>Please read the options</i>	Pulmonary disorder.....	1	
		Extra pulmonary disorder.....	2	
		Multidrug resistance TB.....	3	
		Consistent sweating	4	
		Prolong coughing	5	
		Weight loss.....	6	
		I don't know.....	7	
		Others specify.....	8	
31	If a person got TB, what physical effect would it have on such person? <i>(MRA)</i> <i>Please read the options</i>	Pulmonary disorder.....	1	
		Extra pulmonary disorder.....	2	
		Multidrug resistance TB.....	3	
		Consistent sweating	4	
		Prolong coughing	5	
		Weight loss.....	6	
		Others specify.....	7	
32	If a person got TB, what economic effects would it have on such person? <i>(MRA)</i> <i>Please read the options</i>	Treatment cost (Out of pocket).....	1	
		Inability to work.....	2	
		Possibly loss of job	3	
		Loss of valuable time.....	4	
		Others specify.....	5	
33	If a person got TB, what social effect would it have on such person? <i>(MRA)</i>	Stigmatization	1	
		Social neglect.....	2	
		Social support.....	3	

	<i>Please read the options</i>	Low self-esteem.....	4	
		Self-withdrawal.....	5	
		Others specify.....	6	
34	What are the physical signs and symptoms to see on someone living with TB? <i>MRA)</i> <i>Please read the options</i>	Coughing beyond 2 weeks.....	1	
		Consistent Weakness	2	
		Loss of Appetite.....	3	
		Weight loss.....	4	
		Fluctuating fever	5	
		Consistent sweating	6	
		Others specify.....	7	
35	What other kinds of disease can someone contract from cattle? <i>(MRA)</i>	Bovine Tuberculosis.....	1	
		Brucellosis.....	2	
		Rabies	3	
		Lasa Fever	4	
		Anthrax.....	5	
		Others specify.....	6	

(Knowledge)

Please indicate your opinion about the following statement. For this section, kindly mark (✓) and enter the code as appropriate (SA= Strongly Agree, A=Agree, UND= Undecided, D= Disagree, SD= Strongly Disagree) (While code for analysis SA= 5, A=4, UND=3, D=2, SD=1)

	Knowledge Statement (HBM) (KABP)	SA	A	UND	D	SD	Code
Dietary							
D1	You can contract TB from the cattle by drinking uncooked animal products	1	2	3	4	5	
D2	Poor diet can make someone easily contract TB	1	2	3	4	5	
D3	You are at risk of TB based on your milk/meat consumption	1	2	3	4	5	
Belief and Attitude towards TB							
B1	Tuberculosis is a condition someone is born with	1	2	3	4	5	
B2	You are very healthy, so your body can fight off tuberculosis	1	2	3	4	5	
B3	You are too young or too old to have TB	1	2	3	4	5	
B4	TB is curable and preventable	1	2	3	4	5	
B5	TB is a deadly disease	1	2	3	4	5	

B6	If you had tuberculosis and got treated, you will not contract it again	1	2	3	4	5	
B7	TB can spread quickly among people living together in a home /tent, if they have not had TB before	1	2	3	4	5	
B8	Someone with TB will spend unnecessarily in hospital	1	2	3	4	5	
B9	You take your bath everyday with soap and water, so you are not likely to catch tuberculosis	1	2	3	4	5	
B10	When someone is infected with TB, it would waste ones' time	1	2	3	4	5	
B11	You will enjoy itch-free year if you and your household or animal were not infected with TB	1	2	3	4	5	
B12	No resource will be wasted if you can prevent TB from your household and animal	1	2	3	4	5	
B14	Community efforts to prevent TB would protect you and your family from the disease	1	2	3	4	5	
Knowledge of effect of BTB		SA	A	UND	D	SD	Code
Ke1	You are at risk of TB based on your job	1	2	3	4	5	
Ke2	Working on the infected intestine puts you at risk of BTB	1	2	3	4	5	
Ke3	TB affects work negatively	1	2	3	4	5	
Ke4	TB will affect animals' reproduction negatively	1	2	3	4	5	
Ke5	Your language will prevent you from using available health care	1	2	3	4	5	
Ke6	You cannot afford to isolate TB infected animal or human from herd or tent/home	1	2	3	4	5	
Ke7	Cost of diagnosis and treatment of TB are expensive	1	2	3	4	5	
Knowledge about BTB information and treatment		SA	A	UND	D	SD	Code
Ki1	You have access to TB information	1	2	3	4	5	
Ki2	You know where to go in case of TB incidence	1	2	3	4	5	
Ki3	Your work makes it difficult for you to access TB information and care	1	2	3	4	5	
Ki4	Your inter-communal relationship will prevent you from accessing TB information and care	1	2	3	4	5	
Practices		SA	A	UND	D	SD	Code
P1	You consume animal products such as milk, cheese and meat	1	2	3	4	5	
P2	You can consume medicine done with animal excrete such as urine and cattle dung.	1	2	3	4	5	
P3	You can suck from cattle direct for any reason (for thirst and fun)	1	2	3	4	5	

P4	You eat fruits everyday	1	2	3	4	5	
P5	You eat vegetable everyday	1	2	3	4	5	
P6	You consider your health in the choice of meal everyday	1	2	3	4	5	
For Fulani only							
PF1	When your animals are infected with TB you will spend more on them	Yes				1	
		No				2	
PF2	What will it cost you to treat your animal living with TB	.....Naira					
PF3	If TB treatment for your animal is taking long time, what will you do?	Sell it for consumption.....				1	
		Kill it for consumption.....				2	
		Isolate the infected animal.....				3	
		Kill it and destroy it.....				4	
		Others specific.....				5	
PF4	Do you wear protective glove and cover when milking cow?	Yes				1	
		No				2	
PF5	Can you live very close to herds?	Yes				1	
		No				2	
PF6	Do you suck cattle breast for fresh milk?	Yes				1	
		No				2	

FOR ALL RESPONDENTS (EXPERIENCE AND PRACTICES)

Type of milk consumed		How often (times per week)	Reason	Perceived risk (if no, why not)
36	Fresh uncooked milk			
37	Sour uncooked milk			
38	Boiled milk			
39	evaporated milk			
Type of meat				
40	Uncooked meat			
41	Partially or roasted meat			
42	Cooked meat			
Major food				

43a				
43b				
43c				
43d				
44	<p>What home practice can expose you to contract TB? <i>MRA</i></p> <p><i>Please read the options</i></p>	<p>Drinking sour uncooked milk,</p> <p>Drinking fresh uncooked milk.....</p> <p>Eating uncooked meat.....</p> <p>Eating partially cooked meat.....</p> <p>Milking cattle</p> <p>All of the above.....</p> <p>Chest-beating play.....</p> <p>Others specify.....</p>	<p>1</p> <p>2</p> <p>3</p> <p>4</p> <p>5</p> <p>6</p> <p>7</p> <p>8</p>	

Objective 2: Health-seeking Behaviour

45	What are the TB preventive measures you know?											
46	<p>(Q46- 49 For those who were/are infected with TB) Statement of Actions (if not applicable then go to 50)</p> <p>Use Home treatment</p> <p>Go to hospital or DOTs</p> <p>Consult traditional healer</p> <p>Faith house</p> <p>Call TB volunteers or treatment supporters</p> <p>Consult community pharmacist,</p> <p>Consult community health worker</p> <p>Consult religious leader</p> <p>Patent medicine vendors/ <i>Chemist</i></p>	Sequence of actions of household that contracted TB										
		1st	2nd	3rd	4th	5th	6th	7th	8th	9th		
		47	How soon did you seek medical treatment when you suspect symptoms of TB? (<i>Response in day</i>)day(s)								
48	Did you pay for the treatment?	Yes									1	

		No	2	→Q50
49	How much did you pay	_____ Naira		
50	How do you detect TB in your community?	Physical observation.....	1	
		Medical test.....	2	
		Spiritual means	3	
		Traditional means.....	4	
		Others specify.....	5	
51	Are you aware of any TB treatment centre in your community	Yes	1	
		No	2	→Q53
52	How quick can someone access TB treatment?	_____ .hour(s)		
53	How do you as individual prevent the spread of TB? <i>MRA)</i> <i>Please read the options</i>	Referring suspected TB cases	1	
		Avoid eating infectious animal products	2	
		Avoid close contact with persons living with TB	3	
		Educating people about TB	4	
		Mobilizing people to participate in its prevention	5	
		Encourage drug adherence	6	
		Other specify.....	7	
54	How do the community prevent the spread of TB? <i>MRA)</i> <i>Please read the options</i>	Referring suspected TB cases	1	
		Avoid eating infectious animal products	2	
		Avoid close contact with persons living with TB	3	
		Educating people about TB.....	4	
		Mobilizing people to participate in its prevention	5	
		Encourage drug adherence	6	
		Other specify.....	7	
55	What kind of support do you give to people living with TB? <i>MRA)</i> <i>Please read the options</i>	Withdraw from them.....	1	
		Treatment support.....	2	
		Financial support.....	3	
		Dietary support.....	4	
		Informational support.....	5	

		Encouragement	6	
		Others specify.....	7	
56	What type of TB treatment centre is available in your community/camp?	Direct Observation Treatment shortcourse (DOTS)	1	
		Primary health care.....	2	
		Private Clinics.....	3	
		Chemist	4	
		NGOs.....	5	
		Traditional centre.....	6	
		Others specify.....	7	
57	How did you get to know about the treatment centre?	Television	1	
		Radio.....	2	
		Billboard.....	3	
		Internet.....	4	
		Community Leader.....	5	
		Religious Leader.....	6	
		Health Workers	7	
		Family members.....	8	
		Neighbour	9	
		NGOs TB programmes	10	
		Government TB programmes	11	
		Others specify.....	12	
58	What type of TB treatment does your community/camp prefer?	DOTs.....	1	
		Primary Health Care.....	2	
		Private Clinics.....	3	
		Chemist	4	
		NGOs.....	5	
		Traditional treatment.....	6	
		Others specify.....	7	
59	Why do they prefer the treatment?	Easy to access.....	1	

		Cheap.....	2	
		Effective.....	3	
		Positive Attitude.....	4	
		No fear of domination.....	5	
		Others specify.....	6	
Q60-Q62 for those who were/are infected with BTB)				
60	Are you willing to pay for TB treatment?	Yes	1	
		No	2	
61	Do you have the capacity to pay for TB treatment?	Yes	1	
		No	2	→ Q62
62	How much can you afford to treat TB?	Put actual amount (.....naira)		
63	Who decides the kind of treatment to be used for TB at community level?	Community/camp leader.....	1	
		Family heads.....	2	
		Government	3	
		Non-governmental organisation	4	
		Others specify.....	5	
64	What do you think cause TB?			
65	What factors affect choice of treatment for TB? <i>MRA)</i> <i>Please read the options</i>	Inadequate information.....	1	
		Income of the family	2	
		Perceived cost of treatment.....	3	
		Religious beliefs	4	
		Previous TB experience.....	5	
		Distance/proximity	6	
		Health workers' attitude.....	7	
		Drug reaction.....	8	
		Job/Itinerant life style.....	9	
		Language barriers.....	10	
		Cost	11	
		Clashes between near communities.....	12	

		Others specify.....	13				
66	Who are involved in the decision making process for treatment? (MRA)	Family head	1				
		Spouse.....	2				
		Children.....	3				
		Extended family members.....	4				
		Siblings.....	5				
		In-law	6				
		Others specify.....	7				
67	Whose opinion is final?	Family head	1				
		Spouse.....	2				
		Children.....	3				
		Extended family members.....	4				
		Sibling.....	5				
		In-law	6				
		Others specify.....	7				
68	Why?						
69	What are household attribute determines the choice of treatment for TB (MRA) <i>Please read the options</i>	Family location	1				
		Family income.....	2				
		Family culture.....	3				
		Family religion.....	4				
		Others specify.....	5				
70	How many DOTs do you have in this camp/community?	_____ DOTs (answer in figure)					
71	Is there any DOTs in neighbouring community/camp?	Yes	How many?	Distance?(min.)	Used before?	1	
					Yes			1
					No	2	why?.....
		No				2	
72	Are there herbal treatments for TB in community/camp?	Yes				1	
		No.....				2	→ Q76

73	What are the names of herbal medicine for TB?	..... .....	
74	How effective is herbal medicine?	Very effective..... Somehow effective..... Not effective..... Can't say.....	1 2 3 4	
75	How long does someone living with TB have to use herbal medicine to get cure?	Few days..... Few week..... 1month..... 2 months..... 3 months..... Others specify.....	1 2 3 4 5 6	
76	Name the modern drugs for TB you know? <i>(You can help check the names of the drug on their packs)</i>	..... ..... .....	
77	How effective is the modern drug in the treatment of TB?	Very effective..... Somehow effective..... Not effective.....	1 2 3	
78	How long would it take to use the modern drug to cure TB?	Few days..... A week..... Few weeks..... 1month less than 2 months..... 2 months less than 3 months..... 3 months and above..... I don't know.....	1 2 3 4 5 6 7	
79	Which treatment do you prefer?	Modern medicine..... Herbal medicine..... Both.....	1 2 3	

80	Give reason for your preference	Effective.....	1	
		Cheap.....	2	
		Convenient.....	3	
		Accessible.....	4	
		Faster to cure.....	5	
		Others specify.....	6	

Objective 3: Examine the role of gatekeepers in preventing the disease among the study population

81	Who do you think should take care of persons living with TB? (MRA)	Self.....	1	
		Family.....	2	
		Government.....	3	
		NGOs	4	
		Primary health care	5	
		All of the above.....	6	
		Others specify.....	7	
82	Who should be involved in TB eradication at the household level?	Father.....	1	
		Mother.....	2	
		Siblings	3	
		Everybody in the family.....	4	
		Others specify.....	5	
83	Who should be involved in TB eradication at the community level?	People from your ethnic group.....	1	
		Doctors only.....	2	
		Non-governmental organizations.....	3	
		Collaboration from the community level	4	
		People in the nearby community	5	
		Abattoir workers.....	6	
		Veterinary Doctors.....	7	
		Every family.....	8	
		All of the above	9	
Others specify.....				
84	Who often treat people living with TB	Trained persons in the camp (DOTs)	1	

	in your community? (MRA)	Trained persons in nearby community (DOTs)..... Doctors and Nurses..... Non-governmental organizations..... Collaboration from the community level..... Herbal vendors..... None..... Others specify.....	2 3 4 5 6 7 8	
85	What is your perception about TB treatment?	Free treatment Expensive..... Curable..... Incurable Treatable in private clinics Difficult to access treatment..... Treatable in community pharmacy..... Others specify.....	1 2 3 4 5 6 7 8	
86	What, in your opinion, is the challenge in using TB free treatment?	Far distance..... Itinerant lifestyle Language..... Cost of Treatment..... Poor attitude of health workers Do not believe in the TB Intervention programmes Don't know free treatment exist..... Communal crisis..... Others specify.....	1 2 3 4 5 6 7 8 9	
87	What kind of TB referral system do you have in your community/camp?	House to hospital..... Pharmacies to Clinic TB volunteers to DOTs..... All of the above..... None of the above..... Other specify.....	1 2 3 4 5 6	

88	What do you think should be done to control TB in your environment/camp?	Regular diagnosis..... Education on TB Involving you in the TB control activities Taking care of our infected animals..... Adequate compensation for quarantined animals..... All of the above Others specify	1 2 3 4 5 6 7	
89	Name any TB control agency that has worked in your community?	..... I don't know/ No idea	1 2	→ Q92
90	What kind of service do they render? (MRA)	Diagnosis and Test..... Drug prescription..... Drugs administration Counselling..... all of the above..... Others specify.....	1 2 3 4 5 6	
91	How much do you or people pay for their services?	Less than 1000 naira..... 1000-1999 2000-2999..... 3000-3999..... 4000 and above..... No payment Others specify.....	1 2 3 4 5 6 7	
92	What is the major challenge of the people involved in the controlling and preventing BTB? (MRA) Pls read the options	Lack of funds..... Inadequate drug..... Inadequate diagnostic centres..... Inadequate public awareness Long duration of treatment Inadequate support from the people..... Distance	1 2 3 4 5 6 7	

		Poor knowledge of the environment.....	8		
		Tribalism	9		
		Language barriers.....	10		
		Poor road network.....	11		
		Bribery and corruption.....	12		
		All of the above.....	13		
		Others specify.....	14		
93	How involved are you in TB control?	Very much.....	1		
		Much.....	2		
		Not much.....	3		
		Others specify.....	4		
94	At what level of TB control are you involved?	Decision making.....	1		
		Activities	2		
		Accountabilities.....	3		
		All of the above.....	4		
		Others specify.....	5		
95	In what way is your community involved BTB prevention?	Decision making.....	1		
		Activities (campaign, Volunteering, T. Support).....	2		
		Accountabilities.....	3		
		All of the above.....	4		
		Not involved at all.....	5	→Q99	
96	How involved is your community in the prevention of BTB? (if 10=highest of involvement & 1 = lowest,) choose between 1-10	Decision making,	Activities	Accountabilities	Total 3-30
97	How did they start their prevention and control programme?	Consult the community leader	1		
		Consult the people about their health	2		
		Initiates communal meeting.....	3		
		All of the above.....	4		
		Did not consult anyone.....	5		

		Others specify.....	6	
98	How does the programme work? (MRA)	Free Counselling	1	
		Free Diagnosis	2	
		Free Treatments.....	3	
		Free drugs	4	
		Tb education	5	
		Involving us in their activities.....	6	
		All of the above.....	7	
		None of the above.....	8	
		Others specify.....	9	
99	What is community/camp doing to contribute to BTB control? MRA)	Going to meeting regularly.....	1	
		Adhering to preventive measures.....	2	
		Telling people about TB.....	3	
	<i>Please read the options</i>	Giving feedback to the agencies.....	4	→ Q101
		Volunteering to search for people living with TB	5	
		Referring them to nearest PHC.....	6	
		Others specify.....	7	
		None of the above.....	8	
100	What hinders your community/camp from performing? MRA)	Language barriers.....	1	
		There is no such activities here.....	2	
		Political barriers.....	3	
		Tribalism.....	4	
	<i>Please read the options</i>	Lack of information.....	5	
		No TB case(s).....	6	
		Others specify.....	7	
101	If you are given opportunity, what will you like to do to prevent and control TB? MRA)	Adhering to preventive measures.....	1	
		Educate people about TB.....	2	
		Giving feedback to the agencies.....	3	
		Volunteering to search for people living with TB	4	

	<i>Please read the options</i>	and refer them Financial support..... 5 TB Treatment Supporters..... 6 All of the above..... 7 None of the above..... 8		
102	What is your specific contribution towards the prevention of TB? <i>(MRA)</i> <i>Please read the options</i>	Advising the TB agencies..... 1 Contributing financially..... 2 Being part of the planning committee 3 Contributing Manpower..... 4 Educating people about TB..... 5 None of the above..... 6 Others specify..... 7		
103	Have you ever received feedback?	Yes..... 1 No..... 2		→ Q108
104	On what?			
105	How often?	Daily..... 1 Weekly..... 2 Monthly..... 3 Yearly..... 4		
106	To what extent do the organizers of the TB programme obtain feedback from you?	Very well..... 1 Somehow..... 2 Not at all..... 3 Others specify..... 4		
107	How do they handle the feedback?	Used it to modify their programmes..... 1 Just hear and no action..... 2 Open rejection 3 Others specify..... 4		
108	Are you satisfied with TB programme?	Yes 1 Not sure..... 2		

		No.....	3	
109	What would you want to advise them to do to improve the effectiveness of the TB Health interventions? (MRA)	Listen to your health needs..... Engage you in the planning..... Working based on the community health needs..... Speak your language..... Give more information..... Educate more on TB..... All of the above..... Others specify.....	1 2 3 4 5 6 7 8	
110	Who initiated the present TB activities in your community/ camp?	Community/camp leader..... Government..... NGOs..... Community Joint control..... Others specify.....	1 2 3 4 5 6	
111	Do you have community organised health program for TB care?	Yes..... No.....	1 2	→ 116
112	What is the extent of their activities?	Treatment support..... Diagnosis TB..... Refer Suspected cases..... Treatment and Administration drug..... Admitting people living with TB..... Others specify.....	1 2 3 4 5 6	
113	Who is funding the program?	Communal resources..... Federal government State government Local government..... International donor..... Others specify.....	1 2 3 4 5 6	

114	Rate its performance (if 10=highest of performance & 1 = lowest,) choose between 1-10	Case detection	Treatment support	Drug administration	Total	
115	What are the challenges of the locally initiated TB program?	Inadequate medical personnel			1	
		Funding.....			2	
		Power problem.....			3	
		Others specify.....			4	
116	Do you have someone that distributes drugs for tuberculosis in your community?	Yes.....			1	
		No.....			2	→Q119
117	How was the person(s) selected?					
118	Why was the person selected?					

Objective 5: Patterns of relationship and Social ties

119	What are the things that cause problem between host community and nomadic Fulani? <i>MRA)</i> <i>Please read the options</i>	No problem at all.....	1	→Q121
		Grazing.....	2	
		Encroachment	3	
		Religious matters.....	4	
		Language	5	
		Economic matters.....	6	
		All of the above.....	7	
		Others specify.....	8	
120	How do you settle your conflicts with the host community/nomadic Fulani?	Law enforcement intervention.....	1	
		Traditional rulers/community leaders.....	2	
		Send them away.....	3	
		Set demarcations.....	4	
		Association mediation.....	5	
		Others specify.....	6	
121	To what extent do you relate with people from other host community/nomadic Fulani?	Very large extent.....	1	
		Large extent	2	

129	Why did you visit the host community/nomadic Fulani camp?	Peace Meeting	1	
		To check someone.....	2	
		Transact business	3	
		To marry	4	
		Religion activities.....	5	
		Others specify.....	6	
130	How often do you have contact with neighbouring community/camp that binds you together?	Everyday.....	1	
		Weekly.....	2	
		Monthly.....	3	
		Yearly.....	4	
131	Are you planning to leave this location?	Yes.....	1	
		No	2	→Q 134
132	When do you intend to leave this location?	.....Months		
133	Why do you want to leave this location? (MRA)	Communal conflict.....	1	
		Insecurity.....	2	
		Anthrax.....	3	
		Tuberculosis.....	4	
		Rabies.....	5	
		Malaria.....	6	
		HIV/AIDS.....	7	
		Poor business.....	8	
		Poor harvest.....	9	
		Inadequate social amenities.....	10	
		Others specify.....	11	
134	Have ever transacted business with the host community/ camp?	Yes.....	1	
		No.....	2	→Q136
135	What kind of business do you transact with the host community/nomadic Fulani?	Milk products.....	1	
		Beef.....	2	
		Grains.....	3	

		Housing.....	4	
		Clothing.....	5	
		No business	6	
		Others specify.....	7	
136	What are the things that bind you together?	Economic activities.....	1	
		Social activities.....	2	
		Religious activities.....	3	
		Health activities.....	4	
		Nothing	5	
		Other specify.....	6	
137	In your communal meetings, what is the major issue you discuss?	Security.....	1	
		Disease.....	2	
		Access to health care (specify.....)..	3	
		Provision of Infrastructure.....	4	
		Relationship with other community.....	5	
		I am not involved.....	6	
		Others specify.....		
138	How can you describe your relationship with host community/nomadic Fulani?	Cordial	1	
		Suspicious	2	
		Indifference	3	
		Benefits only one side (.....).....	4	
		Not beneficial	5	
		Others specify.....	5	
139	Why did your community join activities to combat TB?	Level of Awareness	1	
		Inter-communal relationship.....	2	
		Problem associated with TB.....	3	
		Tendency for TB to spread.....	4	
		To receive information about TB.....	5	
		We did not join.....	6	
		I don't know.....	7	

		Others specify.....	8	
140	Does your community perception of TB influence your communal involvement in TB prevention activities?	Yes.....	1	
		No	2	→Q142
141	How?			
142	Does effect of TB influence communal health-seeking behaviour?	Yes.....	1	
		No.....	2	→End
143	How?	Involvement in TB control activities.....	1	
		Give financial support.....	2	
		Consult government.....	3	
		Initiate campaign against TB.....	4	
		Others specify.....	5	

Appendix II

Key Informant Interview (KII)

Significant Others – Community Leaders

Department of Sociology,
University of Ibadan,
Ibadan Nigeria.
2016

Dear Respondent,

INTRODUCTION

I am a postgraduate student of the Department of Sociology, Faculty of the social Sciences, University of Ibadan, Nigeria. In partial fulfilment for the award of the Doctor of Philosophy (PhD), I am conducting a study on **‘Community Involvement in the Prevention of Bovine Tuberculosis among Nomadic Fulani and their Yoruba Host Communities in Oyo State’**. I hereby, welcome you to this academic research interviewee. Please note that your responses will be regarded for academic studies and strictly confidential. I assure you that your identity and responses will be kept confidential. I, therefore, urge you to give credible responses to the questions and provide information in relation to the context of this study

Thanks for your anticipated cooperation.

Sincerely,

Abolaji AZEEZ

Socio-demographic information of the discussant

- a. Age
- b. Sex.....
- c. Religion.....
- d. Occupation.....
- e. Community in Status.....
- f. Approximated population.....
- g. How many clinic(s)/hospital(s) do you have.....
- h. How minutes would it take to get to the nearest hospital.....
- i. Source of water.....
- j. Alternative to water.....

Interview guide

1. What are your experiences of Bovine Tuberculosis?
2. What are the causes?
3. What are the symptoms?
4. How can it be controlled?
5. What are the possible mechanisms of controlling the disease?
6. How do you feel by making the community participate in the prevention of the disease?
7. Kindly describe the level of your community's involvement in the prevention?
8. What role are you playing in the prevention of the disease?
9. What are the challenges?
10. Probe: on education, skills required, confidence, organisational relationship, trust, interest, alienation from government, social exclusion, poverty and marginalization.
11. Describe the social relations that exist with neighbouring communities?
12. How the social relationship access to TB healthcare?
13. What does future holds for your community people when it comes to tuberculosis?
Probe more on response.
14. What kind of treatment do people use to treat tuberculosis? Probe: for Access to source of TB healthcare?
15. Probe: on equity in healthcare access?

Appendix III

In-depth Interview guide: Gatekeepers

Department of Sociology,
University of Ibadan,
Ibadan Nigeria.
2016.

Dear Respondent,

INTRODUCTION

I am a postgraduate student of the Department of Sociology, Faculty of the social Sciences, University of Ibadan, Nigeria. In partial fulfilment for the award of the Doctor of Philosophy (PhD), I am conducting a study on '**Community Involvement in the Prevention of Bovine Tuberculosis among Nomadic Fulani and their Yoruba Host Communities**'. I hereby, welcome you to this academic research interviewee. Please note that your responses will be regarded for academic studies and strictly confidential. I assure you that your identity and responses will be kept confidential. I, therefore, urge you to give credible responses to the questions and provide information in relation to the context of this study.

Thanks for your anticipated cooperation.

Sincerely,

Abolaji AZEEZ

Socio-demographic information of the discussant

- a. Age.....
- b. Sex.....
- c. Religion.....
- d. Occupation.....

1. What roles are you playing to prevent tuberculosis?
2. Why are you playing that role?

3. What are your benefits from playing these roles?
4. How satisfied are you?
5. What are the levels of intimacy of the nomadic Fulani and host communities about your activities? Probe on: trust
6. Do you really understand the way of life of nomads and their constantly changing geographical setting?
7. What are your challenges? Probe on Cultural, personnel, corruption, distance, network
8. What is the level of people's awareness of TB?
9. Describe people's involvement level in the prevention of Bovine Tuberculosis?
10. Describe the level of your coverage?
11. Describe nomadic Fulani participatory level in the prevention of Bovine Tuberculosis?
12. What kind of therapy do people use to treat tuberculosis? Probe response
13. Kindly appraise the following: The present state of your role; future of end TB struggle; level of people involvement in TB control; cooperation from the people; stigmatization and awareness

Appendix IV

INFORMED CONSENT FORM

Community Involvement in the Prevention of Bovine Tuberculosis among Nomadic Fulani and their Yoruba Host Communities in Oyo State

Name of Researcher: AZEEZ, Abolaji

Name of Institution: University of Ibadan

Introduction: My name is AZEEZ, Abolaji and I am a graduate student of the Department of Sociology, Faculty of the Social Science, University of Ibadan. I am conducting a research study on Community involvement in the Prevention of the Bovine Tuberculosis among Nomadic Fulani in Oyo State

Purpose of the research: the purpose of this study is to examine the role of community participation in the prevention of tuberculosis among the nomadic Fulani and their host communities in Oyo State.

Procedures: you are encouraged to participate in this research project. Your acceptance to participate gives you the opportunity to fill a questionnaire or answer an interview session.

Feel free to answer any question or not to answer any question, however, it is important for the research that you answer all questions. Only the researcher and his colleagues will be present to dispense questionnaires or conduct interviews. All information you will supply are confidential and only for academic purpose.

For interview sessions, we will take notes and your responses will be recorded so that we can remember everything you will tell us. The filling of questionnaire and interview sessions will last for approximately 45 and 55 minutes respectively.

Risks or Discomforts: there may be tendency that you may feel uncomfortable talking about some issues. At such point, call our attention to it, since we do not wish this to happen. You are free to discontinue your participation.

Benefits: the study will increase the level of awareness of participants about Bovine Tuberculosis and communal role in combating the disease. Beyond that, information obtained from you will help researcher provide suggestions to policy makers and international agencies to developing suitable programmes to prevent tuberculosis in among the nomadic Fulani and their host community.

Confidentiality: all information to be gathered will be kept confidential. To achieve this, following steps will be taken:

- a. Filling of questionnaires and interviews will take place outside the house/tent but in a secured place.
- b. All information collected in this research project will be kept in a confidential file in secured room with lock and key.
- c. The file will not have your name on it, but a number will be assigned to it.
- d. The questionnaires and interview audio recordings will be kept for 5years after which it will be destroyed.

Alternative to participation: You can decide not to take part in this research, if you wish so. Your decision will not at any point in time preclude you from benefiting from the outcome of this research.

Statement of person obtaining informed consent

I have fully explained this research to and have given sufficient information, including risk and benefits, to make an informed decision.

clarifications and withdrawal when I am not comfortable with the discussion, as a result, I hereby willingly allow the researcher to proceed with the study.

Date..... Name.....

Appendix V

MAP OF THE SIX SELECTED LOCAL GOVERNMENT AREAS IN OYO STATE

