

**COMMUNITY PARTICIPATION AND IMPLEMENTATION OF MALARIA
VECTOR CONTROL PROJECTS: A CASE OF BOBIRWA DISTRICT,
BOTSWANA**

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A Research Project Report Submitted in Partial Fulfilment of the Requirement for the award
of the Degree of Master of Arts in Project Planning and Management of the University of
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DECLARATION

This research project report is my original work and has not been submitted for the award of any examination at any other university.



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03/09/2022


Signature

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This project report has been presented for examination with my approval as the university supervisor.



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DEDICATION

To my children Irene, Ryan, and Nyla for being a source of inspiration during my studies.

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LIST OF ABBREVIATIONS AND ACRONYMS

BCC - Behaviour Change Communication

CFWs -Community Field Workers

GEF – Global Environmental Facility

GTS – Global Technical Strategy

IEC – Information Education Communication

ITNs – Insecticide Treated Nets

IVM – Integrated Vector Management

MEP – Malaria Elimination Program

NMCP – National Malaria Control Program

NPC – National Project Coordinator

PM&E – Participatory Monitoring and Evaluation

UNEP – United Nations Environmental Program

WHO – World Health Organization

WHO-AFRO - World health Organization-Regional Office for Africa

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ABSTRACT

Community participation has been acknowledged as a major element for effective implementation of health interventions including malaria management since the public has a significant responsibility not just as entities but also as subjects of disease annihilation program. The research scrutinized community participation and implementation of malaria vector control projects. The research was further directed by the undermentioned objectives: to evaluate the influence of participation of the community in project administration, on the implementation of malaria vector control projects; to establish the influence of participation of the community in capacity building on implementation of malaria vector control projects; to examine the influence of the participation of the community in project communication, on implementation of malaria vector control project and lastly to analyze the influence of participation of the community in monitoring and evaluation, on implementation of malaria vector control projects in Bobirwa district, Botswana. The research adopted a descriptive cross-section survey research design. The total target population was 19,829 individuals comprised of community members and community field workers from 12 villages participating in malaria vector control in Bobirwa district, Botswana. The sample size was 401 persons. Data was gathered through a set of questionnaires and analysis done using descriptive statistics. For descriptive statistics, measures of central tendency and measures of dispersion were used. The findings were presented using tables. Results showed that communities in Bobirwa district participated in projects administration process, capacity building, and selection of training participants. Results also showed that structured channels of communication that encouraged community members' participation in the malaria vector control project and in monitoring and evaluation enhanced the implementation of malaria vector control projects in Bobirwa district, Botswana. The research concluded that participation in project administration, capacity building, project communication, and monitoring and evaluation by the community members enhanced the implementation of malaria vector control projects in Bobirwa district. Based on the study results, it was recommended that the project implementation committee ought to ensure that project beneficiaries fully partake in the management process, it's important to continue laying metrics that unearth the potential and foster capacity development amongst the project beneficiaries, reliable channels of communication should be put in place to ensure seamless communication between all the stakeholders involved in the project, and an efficient framework must be put in place to ensure that community actively participate in joint monitoring and evaluation of malaria vector control projects.

CHAPTER ONE

INTRODUCTION

1.1 Background to the study

Malaria is a key health and development challenge in sub-Saharan African economies. Malaria decreases the labor productivity of household members, raises health care costs, and hinders households' ability to build wealth (Mabe and Dafurika, 2020). A report by WHO (2021) found that worldwide, the number of reported malaria cases were approximately 241 million; from which 627,000 deaths were reported in 2020; The Sub-Saharan Africa region accounted 95% of the reported malaria cases and 96% of the deaths caused by malaria were reported in the region with 80% of the deaths occurring in children aged 5 years and below. A key component of malaria prevention, which focuses on the mosquitoes that transmit the parasites that cause the disease, is vector management. Vector control has been verified to successfully lower or interject malaria transmission when coverage is adequate (WHO, 2019).

Effective vector control programs can significantly advance human and economic development in addition to providing immediate health benefits by enabling increased growth and productivity, lowering poverty in households, empowering women and promoting equity, and bolstering health systems (WHO, 2019). There are currently significant prospects for creating and putting into practice more varied, successful, and long-lasting malaria vector control measures. Increased political commitment, funding, and a return to locally tailored vector control that makes use of the complete toolkit of interventions are all essential for the successful execution of vector control programs. National malaria control and elimination programs need to have access to a wide range of more efficient vector control interventions,

therefore, global policy needs to be adjusted in order to mobilize the political and fiscal support required to take advantage of these prospects over the upcoming ten years (Bardosh et al., 2017)

Vector control is critical in the control of malaria and eradication efforts since it is a highly effective approach to lower malaria transmission. One of the preventative measures advised by the World Health Organization (WHO) is the use of insecticide-treated nets (ITNs) or indoor residual spraying (IRS) to control malaria vectors in the majority of areas at risk for the disease. Innovation is required to develop vector control tools, technologies, and strategies. These tools must also undergo rigorous individual and combined evaluation to determine whether they have the potential to play a part in an all-encompassing malaria control plan. A reorganized global effort to control and eradicate malaria was embraced in 2015 by the Global Technical Strategy (GTS) for Malaria 2016–2030. Its objectives were to minimize malaria from at least 35 countries, reduce incidences of malaria and mortality rates by at least 90%, and prevent malaria spread from malaria-free countries by 2030. The global malaria elimination program's primary intervention strategy in the GTS continues to be vector control measures (WHO, 2017). WHO named Botswana as one of 20 nations with the goal of eradicating malaria by the year 2020, but the nation was unable to meet this goal. Following the country's failure in meeting the 2018 goal of eliminating malaria, WHO indicated that Botswana was lagging behind in attaining zero indigenous cases in the 2020 timetable (WHO, 2019). Weak systems of disease surveillance and an inability to effectively implement the main interventions, particularly IRS, were blamed for the failure to reach this goal (Kgoroebutswe et al., 2020).

The notion of community engagement has been ascertained to be momentous in health programme activities despite the fact that there is nonetheless an argument over its definite connotation and how it should be evaluated. Nevertheless, community participation has been accepted to not only be how communities develop an awareness of the drawbacks confronting them but also a worthier tool for ensuring improved livelihoods for the disadvantaged within the community. This, therefore, draws out the significance of the power linked with participation, which aids the local community to pinpoint what they require, formulating decisions, and fostering the courses of achieving such yearnings. This way, they can be in charge of their health and wellbeing. Community participation ultimately aids communities to develop their own ability to sustain local development instead of depending on external sources. Community participation has been pinpointed as a crucial component of public health from the time of the Alma Ata declaration, nevertheless, in application, local participation has performed a minimal part in malaria containment programs. As many countries transition toward malaria eradication, projects will require to reenvision of malaria vector control in several ways. A significant component of this will be to re-evaluate and improve strategies for community participation, which will grow to be progressively focal for project accomplishments as countries approach malaria elimination. Nonetheless, in practice, community participation has often performed a peripheral function within malaria control and elimination projects (Whittaker & Smith, 2015).

1.2 Statement of the problem

Past experiences have revealed that the majority of donor-funded projects do not continue particularly following the withdrawal of support which is mainly attributed to the failure to integrate community participation. Results from previous studies overpoweringly propose that

community engagement should be a reiterative procedure that depends on early participation, regular response, and aggressive community engagement to be effective. Capacity building of regions and locals in designing and implementing community-based solutions is important for locals involved to ultimately achieve malaria elimination (Baltzell et al, 2019). The Integrated Vector Management (IVM) strategy is founded on the idea that the health industry should not be solely responsible for the proper management of vectors and the diseases they spread. Communities and other public and private sector players must work together and participate in it. The effectiveness of IVM implementation at the local level is largely dependent on community involvement. Local communities play a substantial role in this endeavour and are an essential resource.

Local community members participation in project implementation is vital since it offers an opportunity to foster competencies, recognize, and embrace the project while increasing efficiency by offering the community an opportunity in determining the objectives and approaches in the project. Community participation reduces dependence and increases self-reliance. With dynamic engrossment in the process of development and implementation, it is feasible to counter the mindset of dependence by the community thereby utilizing their own human and material resources based on the decision chosen by the community themselves and from the comprehension that they have the answers to their problems. This in return ensures that the community owns the project. Community participation approaches have for some time been integrated into various subject matter such as maternal health, politics, and human immunodeficiency virus (HIV), but it is just lately that malaria control experts have started to contemplate the importance and potential of community participation in malaria eradication (Opinion, 2019).

Although community involvement in development issues has recently been acknowledged, little to no effort has been witnessed to result in the success of projects. Furthermore, the culture of engagement in project implementation is yet to be developed, and beneficiaries rarely receive sufficient information. This study added to the existing information aperture on the community participation and implementation of malaria vector control projects. The focus was on an ongoing project in Bobirwa district, Botswana which aimed to demonstrate the impact and feasibility of community-based malaria vector control on malaria transmission. Bobirwa district had been reported as one of the main malaria hotspots in Botswana. In a report published in 2018, Bobirwa district still reported significant cases of malaria (Moakofhi et al., 2018).

1.3 Purpose of the study

The purpose of the research was to evaluate the influence of community participation on implementation of malaria vector control projects in Bobirwa district in Botswana.

1.4 Objectives of the study

- i. To evaluate the influence of community participation in project administration, on implementation of malaria vector control projects in Bobirwa district, Botswana.
- ii. To assess the influence of community participation in capacity building, on implementation of malaria vector control projects in Bobirwa district, Botswana.
- iii. To examine the influence of community participation in project communication, on implementation of malaria vector control project in Bobirwa district, Botswana.
- iv. To analyze the influence of community participation in monitoring and evaluation, on implementation of malaria vector control projects in Bobirwa district, Botswana.

1.5 Research questions

- i. What is the influence of community participation in project administration in implementation of malaria vector control projects in Bobirwa district, Botswana?
- ii. How does community participation in capacity building influence implementation of malaria vector control projects in Bobirwa district, Botswana?
- iii. How does community participation in projects communication, influence implementation of malaria vector control project in Bobirwa district, Botswana?
- iv. What is the influence of community participation in monitoring and evaluation, on implementation of malaria vector control projects in Bobirwa district, Botswana?

1.6 Significance of the study

The study determined community participation and implementation of vector control projects. This may inform project leaders and other stakeholders are informed of where to accentuate community participation to guarantee its impact on the progress and future of their projects. The study could be vital to the community, the government, developmental partners in the health sector donors, and global health organizations like the World health organization, policy makers, and researchers in tackling project implementation challenges, and in devising improved techniques of implementing health-based projects and particularly community-based malaria vector control projects.

Findings from this research can be utilized to inform policy debates at the community, organizational, national, or international level so as to develop an effective model that will shape policies on community engagement in malaria vector control programs. The policy

makers possibly will utilize recommendations of the study in coming up with an effective framework for involving the community members in malaria vector control projects. The community members within the project area will get recommendations on how they can best participate in the project in ensuring that it is successfully implemented. For the researchers, the study scrutinized the link between different levels of participation and identify the relationship between community participation and project implementation. They will also be capable of applying the outcomes of the research in developing empirical literature for future studies.

1.7 Delimitations

The study concentrated on community participation and implementation of vector control projects in Bobirwa district of Botswana. The study investigated four areas of community engagement during project implementation. They included administration, capacity building, communication, and M&E. The study targeted local community members and community field workers (CFWs) in Bobirwa district, Botswana.

The researcher delimited to Bobirwa district since there was an ongoing project in Bobirwa district, Botswana which aimed to demonstrate the impact and feasibility of community-based malaria vector control on malaria transmission. In addition, Bobirwa district was reported as one of the main malaria hotspots in Botswana with significant cases of malaria still being reported. (Moakofhi *et al.*, 2018).

1.8 Assumptions of the study

The assumption was that participants responded to queries contained in the research instruments correctly with credible information without bias and that the information provided

was valid and sufficient data for analysis. The study also assumed that no significant change had occurred to impact the research variables before its conclusion.

1.9 Limitations of the study

The study confronted time limitation as the researcher did not have plenty of time to make numerous visits to the field sites to administer the data collection tools. In trying to mitigate these limitations, the researcher trained enumerators drawn from the community field workers to assist during the collection of data.

1.10 Definition of significant terms

Community Participation in project implementation: Engagement by the local community in the conception, design, and execution of malaria vector control projects. It is an active approach by which the local community affects the path and implementation of a project with an aim of improving their welfare through appreciation and use of local resources.

Community-based projects: This refers to the malaria vector control projects where all the project activities are carried out in cooperation with the locals.

Community participation in Project administration: It is the inclusion of community in project planning, tracking, reporting and analysis of malaria vector control projects.

Community participation in Project administration: Inclusion of community in project planning, tracking, reporting and analysis of malaria vector control projects.

Community capacity building: Community capacity building refers to reinforcing the expertise of local communities to undertake activities and achieve set goals of the ongoing malaria vector control project.

Community participation in Monitoring and Evaluation: This is the inclusion of community in continuous task of assessing malaria vector control project for initial signs of advancement, or absence therefrom, in the attainment of outcomes, as well as involvement in organized and purposeful appraisal of the ongoing malaria vector control projects and their designs, execution, and outcomes.

Community participation in Project communication: Involvement of community in the exchange of knowledge, skills, and experiences within a project which guarantees timely and appropriate planning, gathering, construction, dissemination, preservation, retrieval, management, and control of project information.

Project Implementation: This is the carrying out of project activities conceived at the planning stage with the intention to attain project goals and produce outcomes and results in the malaria vector control projects.

1.11 Organization of the study

The research was designed into five chapters. The first chapter introduced the study. It covered the study background, the study objectives and research questions. Further the significance, limitations and delimitations of the study. The chapter culminated with the study assumption and definition of terms.

The second chapter spotlighted on literature review. The scholar reviewed significant literature based on the following concepts: Malaria vector projects implementation; community participation and project implementation; community participation and malaria vector control; participation in administration and implementation of malaria vector projects; capacity building and implementation of malaria vector projects; communication and implementation of malaria vector projects; and participation in M&E and implementation of malaria vector projects. In addition, it discussed the theoretical and conceptual framework and captured the research knowledge gap.

In the third chapter, the researcher explicated the research methods that were used to undertake the research. Chapter four covered the analysis of the collected data, its analysis and presentation and discussion of the results while chapter five consisted of a summation of the results. The conclusions drawn from the findings are presented in chapter five. The chapter culminates by providing recommendations and suggested areas for further research.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Chapter two spotlighted information investigating previously undertaken encompassing the following: Malaria vector projects implementation; community participation and project implementation; community participation and malaria vector control; participation in administration and implementation of malaria vector projects; participation in capacity building and malaria vector projects implementation; participation in communication and implementation of malaria vector projects; and participation in M&E and implementation of malaria vector projects.

2.2 Implementation of malaria vector control projects

Malaria prevention is a multi-sectoral engagement vital in enhancing the 2030 sustainable development goals (SDGs). Diseases transmitted by mosquitoes can only be addressed by combining various types of skills and advocacy. Community members are significant actors and vital resources in this endeavour. The involvement of impacted communities is requisite to creating effective programs that are robust in the countenance of technical, operational, and monetary hurdles in vector control projects (WHO, 2017).

Vector control is critical in the control of malaria and elimination efforts since it is a highly effective approach to lower malaria transmission. One of the WHO-recommended control measures is the use of ITNs or IRS in combating malaria vectors in the majority of malaria-risk locations. There is a need for innovation to develop new tools, technologies, and

approaches for vector control, and the rigorous evaluation of these tools singly and in combination to establish their potential role as part of a comprehensive malaria control strategy. A reorganized global effort to control and eradicate malaria adopted the GTS for Malaria 2016–2030 in 2015. Its goals are to minimize malaria from at least 35 countries, reduce incidences of malaria and mortality rates by at least ninety percent, and prevent spread of malaria by the year 2030 (WHO, 2017).

A comprehensive review conducted by the Botswana National Malaria Control Program (NMCP) in 2009 advocated that Botswana should progress to the malaria elimination phase (MEP). A strategic plan (2014-2018) was developed to direct malaria eradication (WHO Botswana 2018). The World Health Organization (WHO), Country office concentrated on fostering the competence to execute the endorsed interventions for the MEP, which comprised efficient and timely malaria incidence control, IVM, health workers training on reconnaissance, M&E along with pandemic readiness and rejoinder. Enactment of a 5-year multi-country Project on “IVM, the WHO AFRO II Project in Botswana” effectively commenced.. This project aims to demonstrate the impact and feasibility of community-based malaria vector control on malaria transmission (WHO, Botswana 2018).

2.3 Community participation in administration and implementation of malaria vector projects

Participation of community members in project administration is fundamental since it builds consciousness amongst stakeholders on fund utilization and the community gets an opportunity to decide on their welfare. When communities participate in projects administration, transparency and accountability of the leaders escalate leading to projects of excellence

standards. In order to increase community trust, it is essential to include the community to a greater magnitude in decision-making in projects. In a study undertaken in 2018 it was recommended that donor aided projects should incorporate heightened community engagement at every stage of project implementation together with advancing their awareness approaches for enhanced community ownership of such projects. In addition, participating communities ought to be urged to dedicate time and more tangible resources to the project. (Lelegwe, 2018).

A study was undertaken in 2017 that aimed to verify the magnitude to which community involvement in the project decision-making process enhanced implementation. This was assessed through community attending project meetings, having preceding information about key decisions of the project, being able to impact the choice of the project management committee, and by management committee making decisions that manifested the community members' opinions. The findings demonstrated that the participation of the community members in decision-making influenced the implementation and sustainability of community projects (Muniu *et al*, 2017).

In a study undertaken in Chikwawa District, Southern Malawi that explored community factors influencing community engagement in the management of larval sources for malaria control, some of the enabling points included the participation of community heads in the initiatives and the skills obtained from the planned training for the local community on malaria control and executing control actions. The majority of community members sensed that the skills they achieved concerning mosquito control sensitized them to their responsibilities in the combat against malaria. The community similarly acclaimed the importance of regular updates on how the intervention is evolving would reinforce their involvement in the activities. Community

involvement in vector control enhanced local understanding of malaria as a health drawback, its risk elements, and prevention measures. Nevertheless, engagement of communities differed among the respondents. Labour and time demand of the tasks, and absence of inducements, were sighted as factors impacting on the reduced participation. The study recommended that inventive strategies that can lessen the work and time prerequisites could enhance the engagement of community members in the activities (Gowelo *et al.*, 2020).

2.4 Community participation in capacity building and implementation of malaria vector projects.

It is assumed that in one way or another, those aggressively engaged in community-based projects are seeking to accelerate desirable transformation for the communities involved, although not evident in all cases. In this regard, the capacity of the local community is pivotal. Community capacity building may involve helping people help themselves by integrating external concepts, nevertheless, the heightened or realize capability occurs from the local framework, perspectives, knowledge, and skills. Capacity building brings revolution physically, socially, economically, and environmentally (Franco & Tracey 2019). For societies to become champions of their particular development, they should have the ability to distinguish, assess and effectively address their necessities. This requires a wide scope of capacities, including the capacity to comprehend their issues and devise solutions, dynamic, compromise, and precise reasoning. Moreover, it requests the total commitment of all local area individuals relying upon the insight that they have important contributions to make. A cross-sectional study was conducted in Malindi that aimed at identifying factors hindering community participation in integrated vector management which included inadequate knowledge about mosquito biology, lack of awareness of the fact that larvae represent the

immature stages of adult mosquitoes responsible for the transmission of malaria and other communicable diseases and consequently low community motivation to participate in larval control. The study concluded that successful and sustainable community-based larval source management will require innovative advocacy, communication, and social mobilization activities aimed at capacity building of the community on mosquito biology, ecology, and behaviour, taking into consideration community needs, knowledge, attitude, and practices (Kibe et al., 2019). The significance of capacity building, supervision, and intervention acclimatization to local environmental constriction drawbacks was distinguished as a critical factor to success from a study undertaken that was utilizing the cycle assessment advance to assess the execution of larviciding as one of the malaria vector management in rural Tanzania (Berlin et al., 2020).

In a study undertaken to establish whether empowering learners in schools on malaria deterrence and control by means of training, IEC and BCC items provision, and participatory cohort dialogue is an efficient approach to extend to the community with information, insights, and enhanced practices of insecticide-treated nets (ITNs) utilization. The results showed that sensitizing the locals to malaria awareness using pupils successfully supported behaviour change, in particular the use of ITNs, to be more productive towards preferred malaria control activities. The study endorsed the school-based education approach as an effective tool for malaria combating efforts. (Kebede *et al.*, 2020). In vector control projects, the value of enrolment of workforces from the local community in the project site, the result of capacity building, and performance evaluation of community field workers (CFWs) in projects that targeted malaria eradication was successfully demonstrated. The approach of staffing and training led to a workforce that was proficient in autonomously undertaking reconnaissance,

incidence management, and vector control. Results of this study noted that adding the capacity-building elements and monitoring cycles can be utilized to direct the well-being of workers and the local community and for accomplishing the national target for malaria eradication by 2030 (Rajvanshi et al., 2021).

2.5 Community participation in project communication and implementation of malaria vector projects

Establishing a transparent feedback loop is important for community participation in projects. Equally, providing the community with substantial responses on project outcomes and achievements is fundamental in keeping communities aboard. The project should reinforce continuous communication with the community through the provision of comprehensive feedback along with regular messaging, sensitization, and discussion before, during, and after an intervention which is a key component to keeping the community engaged. It is essential to foster communicative competency in a setting that permits participatory consensus in the project and that is realized when the society and particularly its leaders are knowledgeable (Hernández *et al*, 2016).

In an article that sought to review the structure of community engagement in the context of the sustainability of policy execution in development, participatory communication was identified as discursive from the planning, implementation, and Evaluation phases of a project. Participation communication was linked to community contentment and engagement in the triumphant execution of a project. It involved the local community so that their perception and aptitude of the project was an element that had an impact on their achievement of the project. The paper recommended that the local authority needed to add finances, guide, and furnish

contributions to all communities in each project that has been created in order for the community to be motivated to continue and escalate engagement in the advancement of projects. Information distribution on the planned project activities should be undertaken as part of community engagement in the implementation of the project needs and should be incessantly improved so that activities can run efficiently since communication is sustained (Yohana *et al.*, 2019).

2.6 Community participation in monitoring and evaluation and implementation of malaria vector projects.

Governments, project donors, and global organizations are promoting participatory tactics by amalgamating the community's comprehension as the foundation for planning and adjustment. There is rising attention in making Monitoring and evaluation (M&E) more participatory in recognition of community engagement in the improvement angle, thereby embracing the model of Participatory Monitoring and Evaluation (PM&E). The PM&E paradigm arose in the 1970s, as a result of attempts by NGOs and in correlation with newly emerging approaches to progress studies. PM&E has reaped impetus in various donor and governments ventures. PM&E rallies together stakeholders in order to guarantee suitable efficacy and proficiency of the project management (Bakari *et al.*, 2018). Involvement by the locals in M&E of projects can boost the development of their specialized and administrative abilities, consequently increasing their employment openings. This in return directs to community empowerment and leads to ownership of the outcomes. For M&E to react to the requirements of the project recipients, it's imperative that the local community ought to be embraced in the M&E processes. Disproportionate power affiliations between donors and the local community can alter the extent to which the local community participates in this process (Steele & Scherrer,

2018). A Joint M&E system permits sharing of project targets intensifies stakeholders' obligation to the project and broadens the comprehension of the project's evolvement and assessment exercises. The model escalates the use of information and generates comprehensive know-how for project execution while saving both financial and human resources (Kang *et al.*, 2021).

For health interventions to emerge successfully, community participation has proved to be key. Despite this, inadequate infrastructure, and absence of all-embracing information structures for malaria vector dispersion have rendered it problematic to examine the general pointers of malaria eradication. A citizen science approach involving local community members for vector surveys can aid malaria vector reconnaissance and management by offering intuition in vector species spread and transmission designs. Data produced through this approach are pertinent for the scheduling, executing, and assessment of vector management measures by the National Malaria Control Programs (NMCP). Therefore, involving community members in the knowledge of mosquito biology will generate sustainable measures for malaria management. The citizen science model offers prospects to topple organizational obstructions, such as little engagement by the community in vector control, restrained fiscal reserves for mosquito reconnaissance, and the existing seclusion of marginalized zones in mosquito surveillance (Murindahabia *et al.*, 2018).

2.7 Theoretical framework

A theoretical framework acts as a researcher's guide that keeps the researcher in check to ensure she or he does not diverge from the borders of the acknowledged theories to construct ultimate contributions scholarly. Consequently, the theoretical framework is the exclusive

hypothesis or speculations about attributes of a venture that can be advantageous to the investigation of happenings. (Adom, 2018).

2.7.1 Empowerment theory

Perkins Douglas and Zimmerman Marc (1995) advanced the empowerment theory. This is a fundamental theory of community consciousness employed to lead projects for boosting the wellbeing and welfare of persons and communities. It is a multifaceted concept that integrates ideas and techniques from a broad array of topics and combine the application of theory to action (Zimmerman & Eisman, 2017). Community participation can be strengthened in projects advised by this theory which stresses critical awareness, public engagement, perceived control, and a decrease in physical hindrances to power (Agner, 2017). The theory stations human setbacks in a multifaceted environment, not only distinguishing the interconnection and joint influence of entities and societies, but also suggesting that effective interventions to human problems arise at the intrapersonal, interpersonal, and community levels concurrently (East, 2016).

Empowerment recommends the construction of accountable societies in which those persons who comprise the configuration shoulder larger charge over their environs and engage in day-to-day life, paying attention to the diverse mutual engagements and their framework. The theory of empowerment is multifaceted and has exhibited growing scholarly and social significance in various arenas of education, following integration into a broad range of topics including, administration, public health, psychology, social work, and political sociology (Cavalieri & Almeida, 2018). Empowerment is attached to change in persons, gatherings, and societies, and to a change from a condition of absence of capacity to one wherein they gain power over their lives. Regardless of a process or result, empowerment is always a result of a

collaboration, to a degree bargained among the limit with respect to the activity of an individual, group, or society and the choices offered by the environs in which their live (Martínez *et al.*, 2017).

The communities have opportunities to take part in developing their town through community development programs. Community development efforts are put together using a "bottom-up" methodology or framework to remove obstacles, impediments, and discrimination that prevent the inclusion of the neighborhood in planning and policymaking. In addition to being supported in community development programming and execution, local engagement is also seen as essential to addressing the perceived needs of communities. Community development professionals should view participation as a human right that has the ability to enhance the skill set and self-perception of the local population. Therefore, community development can be described as a means of promoting locals' social capital and personal growth as well as enhancing the economic and social situations that directly influence them (Gyan, 2021).

The notion of community development entails teamwork, engagement, and contribution from all stakeholders and the active engagement from the community members in planning, executing, evaluating, and setting milestones for their development. Project success is pegged on the ability of the community which will only be realized when all stakeholders participate enthusiastically in the development programs. Early development acclimatization using the top-down approach has been diminished and instead concentrated on the bottom-up approach which highlights the function of community members as the central players in the community progress process. This process of discovering, improving, and escalating human capacity is what is referred to as community empowerment (Ani *et al.*, 2018)

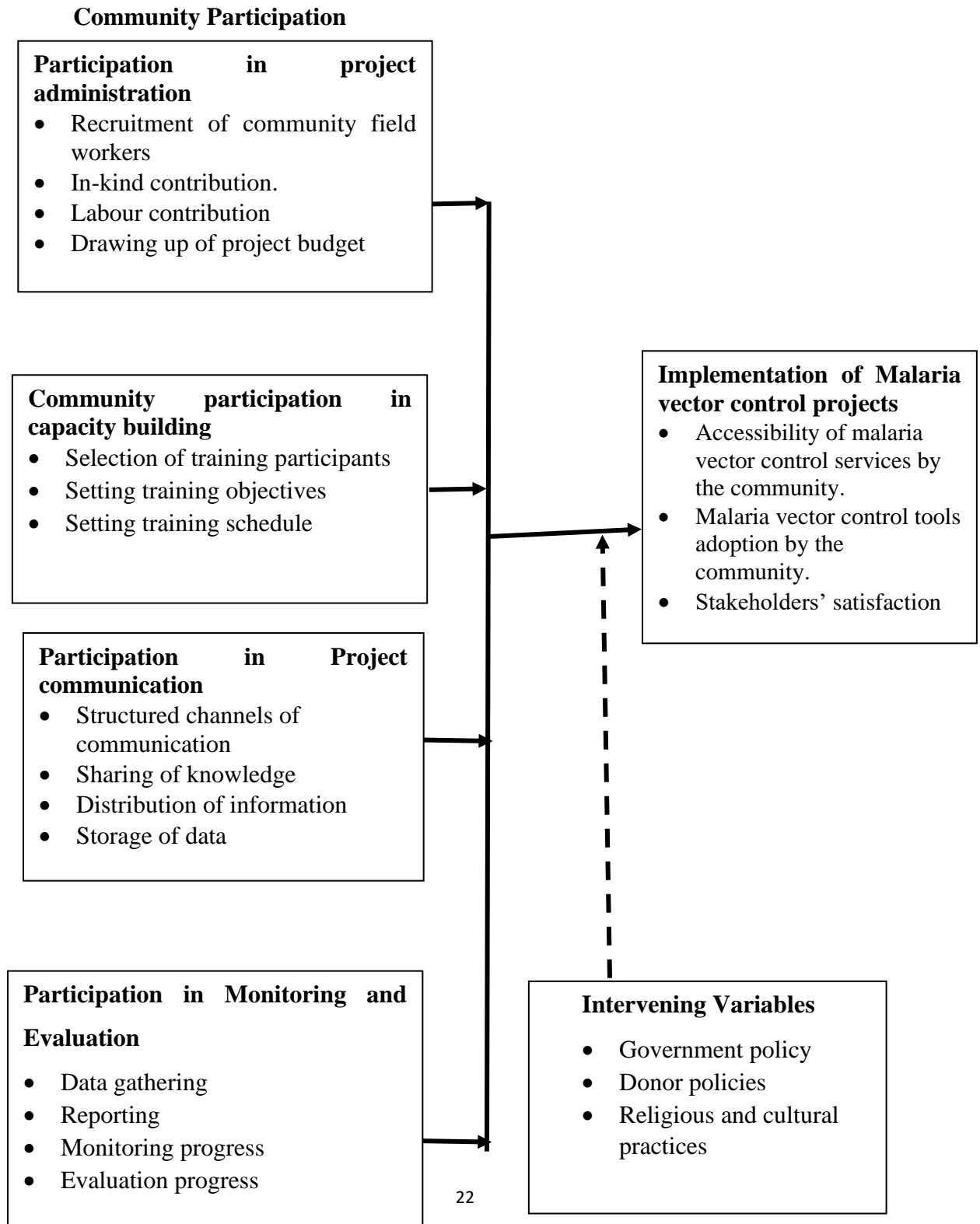
2.8 Conceptual framework

A conceptual framework depicts the connection among the principal constructs of research. It is positioned in a rational structure to help in providing a graphic presentation of how concepts in a study link to each other. The conceptual framework enables the scholar to straightforwardly postulate and expounds the constructs within the study (Adom, 2018).

Figure 1: Conceptual Framework

Independent Variable

Dependent Variables



This conceptual framework shows how implementation of malaria vector control projects is affected by various independent variables including community engagement in project administration, capacity building, project communication, and M&E. Participation of the community in project administration was measured using four indicators including community field workers recruitment, contribution in kind, labour contribution, and development of project budgets. Community participation in capacity building was assessed using three indicators namely selection of training participants, setting of training objectives, and setting of the training schedule. Four indicators were used to measure participation in project communication including the presence of communication channels that are well structured, sharing of knowledge, dissemination of information, and storage of acquired data. Four indicators were employed to measure the participation of community in M&E. They included the gathering of data, reporting, monitoring, and evaluation progress.

2.9 Knowledge Gap

Table 2.1: Summary of findings and research gap table.

Author and Year	Topic	Summary of findings	Gaps identified
Nankoris & Mwangi (2017)	Effect of the participation of the community in project identification and design on the completion of CDF funded projects in Matapato South Ward, Kenya	It was revealed that the participation by the community in projects identification and design have a positive effect on CDF funded projects' completion.	The study was conducted in a field that is not on malaria vector control. The study did not focus on the implementation processes including project administration, capacity building, project communication, and M&E
Mbui & Wanjohi (2018).	The effect of the participation of the community on the performance of Ruiru water projects in Meru County, Kenya	Engagement of communities in M&E, project operations, governance and management positively impacted the operation of the water projects. Vigorous participation of community members in nominating their leaders, being present in meetings to deliberate on accountability and transparency and contributing to decision-making improved the performance of the project.	The study was conducted on a water project and not on malaria vector control projects. The study was also undertaken in a different country
Muriungi (2015)	Participatory M&E program in public organizations; A case of Ewaso Ngi'ro North Development Authority	The study concluded that Participatory M&E (PM&E) influenced the inclusiveness, empowerment, project ownership by the	The study only concentrated on PM&E but did not cover other areas like capacity building, project administration, and project communication.

		community project sustainability. The study suggested that the project administration needs to ensure the empowerment of all stakeholders for them to participate in the M&E of the project.	The study was not on malaria vector control projects.
Baltzell <i>et al.</i> , (2019)	Community involvement and its effect in eliminating malaria	Results showed that community participation is an iterative procedure that depends on early engagement, active participation by the community, and regular feedback for effective implementation.	The study was more general and did not dwell on specific areas of intervention like project administration, capacity building, M&E, and project communication. The study discussed malaria elimination in general but not specifically malaria vector control.
Murindahabi <i>et al.</i> , (2018)	A citizen science model for malaria mosquito control and surveillance in Rwanda	The study indicated that engagement of the community members resulted in the development of sustainable solutions in the control of malaria.	The study was conducted in a different location from our study area. It concentrated mainly on community engagement in surveillance and control but did not touch on areas like project administration.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter covers the methodology that was used in undertaking the study. It covers the design of the research, the population, the sampling technique and sample size. Further, the study covers the research instruments, the method of data collection and the analysis of the data collected. The chapter culminates on ethical considerations and the operationalization of the study variables.

3.2 Research Design

The project used a descriptive cross-sectional survey research design and was quantitative. This involved gathering data from a cross-section of the target population with regard to variables (Gift and Obindah et al. 2020). Given that the study sought information from a target group, the design was suitable. The design involved gathering and examining the data gathered. The study's use of a questionnaire to solicit respondents' opinions was the most practical method of gathering accurate data, and the research design was most acceptable because it allowed for decision-making or generalization based on the analyses' findings (Funmilayo et al. 2019).

3.3 Target Population

The target population was 19,829 individuals that comprised 19,805 community members and 24 community field workers drawn from 12 villages (strata) that are malaria hotspots hence targeted by the malaria vector control project in Bobirwa district, Botswana. The data on the target population was obtained from WHO-AFRO II Project social demographic survey census undertaken in 2019.

3.4 Sample Size and sampling procedure

3.4.1 Sample size

Krejcie and Morgan table (1970) was employed in determining the sample size from the community members, while a census was done for all the community field workers. The formula permitted the computation of the ultimate sample size given a desired degree of precision, preferred confidence level, and the anticipated proportion of the trait present in the populace. A sample size of 401 persons was obtained.

Table 3.1: Sample size description

Category	Population	Sample size
Community Members	19,805	377
Community Fieldworkers	24	24
Total population	19,829	401

3.4.2 Sampling Procedure

This implies the technique where a portion of the population is implicated in the research study. Stratified proportionate sampling was used. The technique separated the population into several strata, each of which was more homogeneous than the entire population. To create a sample, items from each stratum were chosen. The estimate's population characteristics served to define the strata. Even though the strata varied in size, using equal samples from each stratum was more effective for comparing the differences between the strata (Etikan et al.,2017). In this study, Bobirwa district was stratified into 12 strata (villages).

3.5 Research Instruments

Participants answered to questionnaires that were highly structured to gather information on the four study questions were used to compile the data. Four components made up the questionnaire's structure. Section A concentrated on the respondent's sociodemographic information including gender, age group, highest education level, and occupation. Sections B, C, D, E, and F contained highly structured knowledge information, attitude, and self-perception questions that addressed the 4 objectives and were gauged using a 5-point Rickert scale where Strongly Agree (5); Agree (4); Neutral (3); Disagree (2) and Strongly Disagree (1). In addition to the questionnaire, a structured interview schedule similar to the questionnaire was prepared

for use by the trained community field worker who were trained as an enumerator and assisted in administering the research tool.

3.5.1 Piloting of Instruments

Piloting refers to a preliminary study undertaken to assess the efficiency of a research instrument. It is imperative to the enhancement of the worth and efficacy of the key study (In, 2017). The pilot study let the researcher determine how long it took to answer each question and whether the questions were precise, logical, and clear. Any queries that were identified to have a different interpretation throughout the piloting were rephrased to provide everyone involved the same understanding. According to Mugenda and Mugenda (2003), piloting was done with a 10% representative of the sample. A total of 40 respondents representing the different categories were used for the pilot studies. The 40 respondents used for the pilot study were not used for the main study. Observations provided by the participants during piloting was evaluated and used to perfect the tool prior to the real gathering of data. The improved tool was evaluated for validity and reliability

3.5.2 Validity of instruments

To make sure the research instrument measured the things it was meant to test, the validity of the instrument was assessed. The reliability of a measurement tool was crucial in research to guarantee that the data from this study were as relevant to practice as possible and as close to the real world as possible. The degree to which the instrument captures the problem the tool is intended to address is known as content validity (Connelly, 2022).

The Content Valid Index (CVI), which was focused on expert scoring for each object focused on content applicability, was used to test the validity of the data. Copies of the survey tool were

given to the supervisors and vector control specialists to assess the survey's relevance and representativeness in light of the study's goals. CVI was calculated by dividing the pertinent items by the overall items (Almanasreh et al., 2018).

3.5.3 Reliability of Instruments

Reliability of an instrument referred to the degree to which results were devoid of measurement errors. It served as a measure of an instrument's internal consistency or stability when it came to quantifying specific constructs. The Test-retest reliability was used for the study. This was obtained by dispensing the same questionnaires to similar respondents on two varied instances and then assessing the correlation between the two sets of results (Md Ghazali, 2016). Cronbach's Coefficient Alpha (α) was utilized in assessing the study instruments' reliability:

$$\alpha = \frac{N \cdot \bar{c}}{\bar{v} + (N - 1) \cdot \bar{c}}$$

Where:

- N = instrument objects.
- \bar{c} is the average covariance between item pairs.
- \bar{v} is the average variance.

A coefficient of 0.7 and over showed that the instrument was reliable translating to consistency in the results of the study. To evaluate the questionnaires' reliability, a pilot study was performed. α was then used for reliability analysis, which examined internal consistency by determining if a specific item on a scale assesses the similar construct. The baseline for the study was the 0.7 Alpha value threshold established by Gliem and Gliem in 2003. Every scale's objective was given a Cronbach alpha score.

Table 3.2: Reliability Analysis

Variable	α score	No. Of Items	Comments
Project administration	0.877	5	Reliable
Project Capacity Building	0.822	5	Reliable
Project Communication	0.856	5	Reliable
M&E Structure	0.844	5	Reliable

The table demonstrates that the most reliable process was project administration (= 0.877), then project communication (= 0.856), M&E structure (= 0.844), and project capacity building (= 0.822). Overall, the instrument had an α score (=0.850) which showed that the research instrument was reliable. This indicated that all the variables were truthful because their dependability values were higher than the required cutoff of 0.7.

3.6 Data Collection Procedures

The scholar with the assistance of the NPC for the WHO-AFRO II project in Botswana made prior appointments and explained the rationale of the study. The scholar with the assistance of the CFWs visited the respondents and administered the tool.

3.7 Data Analysis Techniques

Following data collation, the scholar embarked on clean-up involving the detection of partial or erroneous feedback. The data was thereafter subjected to analysis using descriptive statistics with the help of Statistical Package for Social Sciences (SPSS) according to the variables and objectives of the study. Measures of central tendency, percentages, and distributions of frequency were utilized to assess the distribution of scores, while measures of dispersion (standard deviation) were used to give information on how data points of a variable were dispersed from the real average. Tables were used to display the statistical data. A five-point Likert Scale was used for the 4 research questions. The standard deviation depicted degree of

variation in the respondents' responses where a low standard deviation figure of less than 0.5 had a positive impact and therefore desired. The data was then presented in tables and figures.

3.8 Ethical Considerations

Ethical approval was sort from the Botswana Ministry of health and wellness, Health research and development; Reference Number: HPDME 13/18/1. Prior informed consent (PIC) was gotten from the respondents before collecting the data where the respondents were issued with forms to read, comprehend and sign stating their willingness in taking part in the research. The PIC exemplified the information required from respondents, how this information was to be used and what (if any) consequences there could be such as comprehending their entitlement to access to their data and the merit to pull out at any instant (Fleming 2018). The respondents were notified of the intent of the investigation. The researcher ensured that all the participants remained anonymous and clarified this to them before administering the tool (Kothari, 2019).

3.9 Operationalization of variables

Successful implementation of malaria vector control projects is conceptualized to be influenced by community participation in project administration, capacity building, project communication, and M&E. The correlation between dependent and independent variables is expected to be moderated by government policies, donor policies, and religious and cultural practices.

Table 3.3: Operationalization of variables

Variables	Type	Indicators	Scale of measurement	Type of data analysis	Tools of data analysis
Implementation of Malaria vector control projects	Dependent	<ul style="list-style-type: none"> • Accessibility of malaria vector control services. • Malaria vector control tools adoption • Stakeholders' satisfaction. 	Nominal Ordinal Interval	Descriptive statistics	<ul style="list-style-type: none"> • Frequency • Percentages • Arithmetic mean • Standard deviation
Participation in project administration	Independent	<ul style="list-style-type: none"> • Recruitment of community field workers • Labour contribution • Contribution in kind • Drawing up of project budget 	Nominal Ordinal Interval	Descriptive statistics	<ul style="list-style-type: none"> • Frequency • Percentages • Arithmetic mean • Standard deviation
Participation in M&E	Independent	<ul style="list-style-type: none"> • Data gathering • Reporting • Monitoring progress • Evaluation progress 	Nominal Ordinal Interval	Descriptive statistics	<ul style="list-style-type: none"> • Frequency • Percentages • Arithmetic mean • Standard deviation
Community participation in capacity building	Independent	<ul style="list-style-type: none"> • Selection of training participants • Setting training objectives • Setting of training schedule 	Nominal Ordinal Interval	Descriptive statistics	<ul style="list-style-type: none"> • Frequency • Percentages • Arithmetic mean • Standard deviation
Participation in Project communication	Independent	<ul style="list-style-type: none"> • Structured communication channels • Knowledge sharing 	Nominal Ordinal Interval	Descriptive statistics	<ul style="list-style-type: none"> • Frequency • Percentages • Arithmetic mean

		<ul style="list-style-type: none">• Information dissemination• Data storage			<ul style="list-style-type: none">• Standard deviation
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CHAPTER FOUR

DATA PRESENTATION, ANALYSIS, AND INTERPRETATION

4.1 Introduction

The analysis, presentation, and interpretation of data obtained are presented in the chapter with the aim of accomplishing the study's objectives.

4.2 Questionnaire Return Rate

Table 4.1 shows that out of 401 issued questionnaires, 383 were returned with the required information, representing a return rate of 95.5%. According to Mugenda (2008), a return rate must be at least 50% to be considered satisfactory, and a chance of 70% is acceptable.

Table 4.1 Questionnaire Return Rate

Category	Frequency	Percentage (%)
Questionnaires issued	401	100
Questionnaires returned	383	95.5
Questionnaires not returned	18	4.5

This suggests that the 95.5 percent response rate was satisfactory and suitable for analysis, drawing conclusions, and drawing inferences.

4.3 Socio-demographic information

The researcher began by analyzing the participant's socio-demographic information. Primarily, the information analyzed under this section included the following: gender categorization, age bracket, highest academic qualification, and occupation. The study and the results are represented in table 4.2.

Table 4.2: Socio-demographic information

Distribution of Respondents by Gender

	Frequency	Percentage
Female	209	54.6
Male	174	45.4
Total	383	100.0

Distribution of Respondents by Age Bracket

	Frequency	Percentage
Below 25 years	52	13.6
26-35 years	102	26.6
36-45 years	111	29.0
46-55 years	67	17.5
Above 55 years	51	13.3
Total	383	100.0

Highest Academic Qualification of the respondents

	Frequency	Percentage
O-Level	163	42.6
Diploma	55	14.4
Degree	19	5.0
Postgraduate	3	.8
Graduate	143	37.3
Total	383	100.0

Occupations of the respondents

	Frequency	Percentage
Employed by the government	83	21.7
Employed in private sector	53	13.8
Self-employed	32	8.4
Unemployed	201	52.5
Student	14	3.7
Total	383	100.0

Respondents were asked to specify their gender grouping. This information was critical in demonstrating participation parity in relation to gender groups. Based on the study results, it was evident that 54.6% of the respondents involved in this study were female whereas 45.4% were male. The findings demonstrated fair involvement of both males and females in this study.

Further, respondents were asked to specify their age bracket. This information was pursued in view of guaranteeing that all age groups were involved in this study. Results showed that most 29.0% of the participants were aged between 36-45 years, 26.6% were aged between 26-35 years, 17.5% indicated 46-55 years, 13.6% below 25 years while 13.3% of the participant indicated over 55 years. This implies that respondents of various age groups were engaged in the research, therefore encompassing views from these age groups.

Academic qualification was closely linked to the respondent's ability in interpreting and responding to research questions. Results showed the highest academic qualification of the participants. Statistical results show that most (42.6%) of the respondents had O-Level 37.3% of the respondents indicated graduate, 14.4% of the participant indicated diploma 5.0% of the respondents indicated, degree while 0.8% of the participant indicated postgraduate. The results indicated that the majority of participants were literate, which allowed them to easily respond to the study's questions.

Respondent's occupation was closely connected with an individual's experience in a particular practice. In view of correlating individuals' experiences in responding to the study subject, respondents were requested to specify their occupation. Results on job occupation showed that 52.5% of the respondents were unemployed, 21.7% of the respondents were employed by the

government, 13.8% of the respondents worked in the private sector 8.4% of the respondents worked were self-employed while 3.7%% of the respondents were students. This implied that participants in this study were drawn from various professional backgrounds.

4.4 Implementation of Malaria Vector Control Projects

Respondents were asked to rate the following statements in regard to malaria vector control project.

Table 4.3: Implementation of Malaria Vector Control Projects

Statement	N	Min	Max	Mean	Std Dev
Malaria vector control services are readily accessible by the community.	383	1.00	5.00	3.62	1.07
Most of the community members in Bobirwa district have adopted the available malaria vector control tools offered by the project.	383	1.00	5.00	3.90	1.07
To what extent would you agree that the project implementation is efficient?	383	1.00	5.00	3.59	1.12
Project implementation is satisfactory to the stakeholders	383	1.00	5.00	3.51	1.19

Table 4.3 demonstrates that the participants agreed that most of the community members in Bobirwa district have adopted the available malaria vector control tools offered by the project (M=3.90 SD=1.07) and that Malaria vector control services are readily accessible by the community (M=3.62 SD=1.07). These findings concur with the study conclusion by Mbui and Wanjohi, (2018) who assert that community members are important partners in project implementation given that, their participation and ownership foster project success in implementation.

Results also showed that project implementation of malaria vector control project is efficient (M= 3.59 SD=1.12) and that project implementation is satisfactory to the stakeholders (M= 3.51 SD=1.19). These findings corroborate with similar observations by Brunton *et al.*, (2017) that participation of the community in malaria prevention projects fostered project ownership and management of reserves which has a great impact on project implementation success.

Descriptive results showed that out of the variables used to measure community participation; M&E strongly influenced project implementation of malaria vector control. This was followed

by project communication, project administration and project communication respectively. The findings agree with results by Whittaker and Smith, (2015) that participation of community positively impacts project implementation success. Descriptive findings show that active community participation in the planning and implementation of a malaria vector control project can improve project design by incorporating local knowledge, promoting project implementation success, boost project acceptance, and ensure equity in the distribution of the benefits.

4.5 Community Participation in Project Administration

The study participants were asked to rate the following statements in regard to project administration malaria in vector control project

Table 4.4: Community Participation in Project administration

Statement	N	Min	Max	Mean	Std Dev
Community members are involved in the recruitment of community field workers.	383	1.00	5.00	3.94	0.99
Community members contribute labour for the vector control project.	383	1.00	5.00	4.19	0.83
Community members contribute in kind to the vector control project.	383	1.00	5.00	3.90	1.02
Community members are involved in drawing up of project budget	383	1.00	5.00	2.38	1.33

Table 4.4 indicated that community members contributed labour for the vector control project. (M=4.19 SD=0.83) and that they are involved in the recruitment of field workers (M= 3.94 SD=0.99). These findings concur with Lelegwe, (2018), that community participation in

project administration is fundamental since it builds consciousness amongst stakeholders on fund utilization and the community gets an opportunity to decide on their welfare.

Further, results showed that community members contributed in kind to the vector control project (M=3.90 SD=1.02), however the community members were engaged to a greater degree in drawing up of project budget (M=2.38 SD=1.33). These findings contradict the study by Gowelo *et al.*, (2020) that indicated that when local communities are involved in malaria control through executing control actions, they sensed that the skills they achieved concerning mosquito control sensitized them to their responsibilities in the combat against malaria.

Respondents were asked to clarify whether project administration influenced the implementation of malaria vector control projects.

Table 4.5: Project administration of malaria vector control projects

Opinion	Frequency	Percentage
Yes	375	97.9
No	8	2.1
Total	383	100.0

From the results, 97.9% of the respondents agreed that project administration influenced the implementation of malaria vector control projects while 2.1% were of the contrary opinion. This implied that project administration influenced the implementation of malaria vector control projects. Descriptive results showed that when communities participate in project administration, transparency and accountability of the leaders escalated leading to projects of excellence standards. In order to increase community trust, it is essential to include the community to a greater magnitude in decision-making in projects. These results collaborate with research conclusion by Muniu *et al.*, (2017) that indicated that participation of community

in project administration considerably affected the implementation success of community-based projects.

4.6 Community participation in Project Capacity Building

The study participants were asked to rate the following statements in regard to project capacity building.

Table 4.6: Community Participation of Project capacity building

Statement	N	Min	Max	Mean	Std dev
Community members are involved in the selection of training participants for the training.	383	1.00	5.00	2.81	1.36
Community members are involved in setting training objectives	383	1.00	5.00	2.13	1.21
Community members are involved in setting training schedules	383	1.00	5.00	2.16	1.19

Table 4.6 showed that the community members were fairly engaged in the selection of training participants for trainings (M=2.81 SD=1.36), however, the community members were not involved in setting training objectives (M=2.13 SD=1.21) and in setting training schedules (M=2.16 SD =1.19). These results are consistent with research by Franco and Tracey (2019), which established that a capacity-building strategy encourages community members to actively participate in societal issues and not depend on external sources of resources, information, and solutions to community challenges.

Respondents were asked to clarify whether community participation in capacity building influenced the implementation of malaria vector control projects.

Table 4.7: Capacity Building of malaria vector control projects

Opinion	Frequency	Percentage
Yes	373	97.4
No	10	2.6
Total	383	100.0

From the results, 97.4% of the respondents affirmed that community participation in capacity building influenced the implementation of malaria vector control projects. This suggests that community involvement in capacity building had an impact on how malaria vector control projects were carried out. It was also determined that community capacity building in malaria vector control focuses on enabling all community members, to gain proficiencies to exercise more personal responsibility and participate in inclusive local development. Rajvanshi et al., (2021) showed that adding the capacity-building elements and monitoring cycles can be utilized to direct the well-being of workers and the local community and for accomplishing the national target for malaria eradication by 2030.

4.7 Community Participation in Project Communication

The study participants were asked to rate the following statements in regard to project communication.

Table 4.8: Community Participation in Project communication

Statement	N	Min	Max	Mean	Std Dev
There are structured channels of communication allowing participation by community members in the malaria vector control project.	383	1.00	5.00	3.91	0.90
There is knowledge sharing with the community members in the malaria vector control project.	383	1.00	5.00	4.31	0.72

Information in the malaria vector control project is normally disseminated to the community members.	383	1.00	5.00	4.10	0.86
Data collected in the malaria vector control project is stored for the sake of community members.	383	1.00	5.00	3.66	1.23

According to table 4.8, there was knowledge sharing with the community members in the malaria vector control project (M= 4.31, SD=0.72), and that information in the malaria vector control project was normally disseminated to the community members (M=4.10 SD=0.86). These findings concurred with Hernández *et al.*, (2016) that suggested providing the community with substantial responses on project outcomes and achievements is fundamental in keeping communities aboard.

Results also showed that there were structured channels of communication to allow participation of community members in the malaria vector control project (M= 3.91 SD=0.90) and that data collected in the malaria vector control project was stored for the sake of community members (M=3.66 SD=1.23). These findings go hand in hand with Yohana *et al.*, (2019) recommendation that projects should reinforce continuous communication with the community through the provision of comprehensive feedback along with regular messaging, sensitization, and discussion before, during, and after an intervention that was a key component to keeping the community engaged.

Respondents were asked to clarify whether community participation in project communication influenced the implementation of malaria vector control projects.

Table 4.9: Project communication of malaria vector control projects

Opinion	Frequency	Percentage
Yes	376	98.2
No	7	1.8
Total	383	100.0

From the study results, 98.2% of the respondents agreed that community participation in project communication influenced the implementation of malaria vector control projects. Consequently, the study recognized that information distribution on the planned project activities should be undertaken as part of community engagement in the implementation of the project needs and should be incessantly improved so that activities can run efficiently since communication is sustained. According to Baltzell et al, (2019) community participation in project communication encouraged locals to recognize critical issues and establish common ground for action, as well as to develop a feeling of identity and engagement in order to put their decisions into action.

4.8 Community Participation in Project Monitoring and Evaluation

The study participants were requested to rate the statements in regard to community participation in project M&E.

Table 4.10: Community participation in Project Monitoring and Evaluation

Statement	N	Min	Max	Mean	Std Dev
The community members are involved in gathering information in the malaria vector control project.	383	1.00	5.00	4.26	0.74
The members of the community are engaged in reporting in the malaria vector control project.	383	1.00	5.00	4.03	0.87

The members of the community monitor and evaluate the malaria vector control project.	383	1.00	5.00	3.94	0.95
The members of the community are engaged in evaluating progress of the malaria vector control project.	383	1.00	5.00	3.25	1.30

Table 4.10 reveals that majority of the community members are involved in gathering information in the malaria vector control project (M=4.26 SD=0.74) and that community members were involved in reporting in the malaria vector control project (M=4.03 SD=0.87). These findings concurred with study findings by Kang *et al.*, (2021) that contribution by the local community in M&E of projects can boost the development of their specialized and administrative abilities, consequently increasing their employment openings. This in return directs to community empowerment and leads to ownership of the outcomes.

Results also showed that community members were engaged in monitoring activities in the malaria vector control project (M= 3.94 SD=0.95), however, respondents moderately agreed that they are engaged in evaluating the evolvement of the malaria vector control project (M= 3.25 SD=1.30). These findings go hand with study results by Steele and Scherrer, 2018) that a joint M&E system permits sharing of project targets intensifies stakeholders' obligation to the project and broadens the comprehension of the project's evolvement and assessment exercises.

Respondents were asked to clarify whether M&E influenced the implementation of malaria vector control projects.

Table 4.11: Monitoring and evaluation of malaria vector control projects

Opinion	Frequency	Percentage
Yes	383	100.0

Total	383	100.0
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All (100.0%) of the participants indicated that M&E affected the implementation of malaria vector control projects. This implied that for health interventions to emerge successfully, participation by community members in M&E is critical. The participation of the community in M&E helped members to learn skills that will help them improve their local capacity for activities including resource management and planning, issue resolution, and collaborative decision-making. M&E helped members to have a better grasp of the internal and external aspects that influence project dynamics, such as successes, failures, potential solutions, and alternative actions.

4.9 Cross Tabulation Results

Table 4.12 presents the cross-tabulation results that sought to determine the relationship between structured channels of communication that allow community members to take part in the implementation of malaria vector control projects

Table 4.12: Project communication channels and Implementation of Malaria vector control projects

		Implementation of Malaria vector control projects					Total
		SD	D	N	A	SA	
To what extent would you agree that the project communication channels are efficient?	Strongly Disagree	1	0	4	0	27	32
	Disagree	0	1	8	14	3	26
	Moderate	1	2	24	30	9	66
	Agree	1	8	25	94	39	167
	Strongly agree	4	5	8	27	16	60
Total		7	16	69	165	94	351

Results presented showed that 167 respondents agreed that there were structured channels of communication allowing community to take part in malaria vector control projects, similarly,

66 were neutral with the statements, 26 disagreed with the statement and 32 participants expressed that they strongly disagreed with the statements. This showed that the availability of structured communication channels allowed community members to participate in the malaria vector control project which consequently made the implementation process efficient.

The study pursued to ascertain whether the stakeholders were contented with the project implementation efficiency of malaria vector control projects

Table 4.13: Project implementation efficiency and stakeholders' satisfaction with project implementation

		Stakeholders' satisfaction in implementation of malaria vector control projects					
		SD	D	N	A	SA	Total
To what extent would you agree that the project implementation is efficient?	Strongly Disagree	1	0	4	9	28	42
	Disagree	1	2	5	4	7	19
	Moderate	0	2	29	40	14	85
	Agree	0	2	19	66	52	139
	Strongly agree	1	3	6	22	35	67
Total		3	9	63	141	136	352

Results showed that 139 respondents agreed that the project implementation was efficient hence the stakeholders' satisfaction with the implementation of vector control projects in Bobirwa district is significant. A total of 67 respondents strongly agreed while 61 disagreed with the statement. This implies that project implementation affected the implementation of malaria vector control projects in Bobirwa district

The study aimed to establish if the involvement of community members in drawing up of project budget affected the implementation of malaria vector control project

Table 4.14: Drawing up of project budget and implementation of malaria vector control projects

		Implementation of malaria vector control projects.					
		SD	D	N	A	SA	Total
Community members are involved in drawing up of project budgets	Strongly Disagree	0	0	0	2	29	31
	Disagree	1	2	6	5	5	19
	Moderate	0	3	13	22	12	50
	Agree	1	11	38	97	56	203
	Strongly agree	0	0	3	26	18	47
Total		2	16	60	152	120	350

From the study results, 203 respondents affirmed that community members were involved in drawing up of project budgets. Results also showed that 120 respondents strongly agreed with the statements while 50 were of moderate views. This implied that community involvement in drawing up of project budgets was linked to increased community participation in malaria vector control projects.

Table 4.15 presents the cross-tabulation results that pursued to clarify the link between labour contribution and implementation of malaria vector control projects

Table 4.15: Labour contribution and implementation of malaria vector control projects

		Implementation of malaria vector control projects					
		SD	D	N	A	SA	Total
Community members contribute labour for the malaria vector control projects.	Strongly Disagree	0	0	1	1	24	26
	Disagree	0	1	5	4	1	11
	Moderate	0	2	17	17	7	43
	Agree	2	17	39	73	40	171
	Strongly agree	1	4	14	27	51	97
Total		3	24	76	122	123	348

Results showed that 171 respondents agreed that most of the community members in Bobirwa district had adopted the art of labour contribution towards the malaria vector control projects. Also 97 respondents strongly agreed with the statements while 37 disagreed with the statement. This implied that community members engaged in labor contribution served an instrumental role in encouraging community members towards the adoption of available malaria vector control tools offered by the project.

Table 4.16 presents the cross-tabulation results that seek to establish the link between knowledge sharing with the community and the implementation of malaria vector control projects.

Table 4.16: Knowledge sharing with the community and implementation of malaria vector control projects

		Implementation of malaria vector control projects					Total
		SD	D	N	A	SA	
To what extent would you agree that there is knowledge sharing with the community members in the malaria vector control project	Strongly Disagree	0	0	2	9	31	42
	Disagree	0	0	6	8	5	19
	Moderate	0	4	10	50	20	84
	Agree	3	3	14	54	64	138
	Strongly agree	0	1	13	24	28	66
Total		3	8	45	145	148	349

Table 4.16 demonstrates that the participants (138) agreed that community members shared knowledge about malaria vector control project which demonstrated project ownership driven by perceived project benefits, 66 respondents strongly agreed with the statements while 61 were of contrary views. This implied that implementation of malaria vector control project was fully supported by community members who shared knowledge about it.

The study evaluated the extent to which information gathering affected project implementation of malaria vector control projects

Table 4.17: Information gathering and project implementation of malaria vector control projects

		Project implementation of malaria vector control projects					
		SD	D	N	A	SA	Total
To what extent would you agree that the community members take part in information gathering in the malaria vector control project	Strongly Disagree	23	0	8	0	1	32
	Disagree	15	1	5	4	1	26
	Moderate	29	15	13	7	2	66
	Agree	49	39	34	28	17	167
	Strongly agree	21	16	6	8	9	60
Total		137	71	66	47	30	351

From Table 4.17 the study results indicate that the participants (167) agreed that community members were involved in taking part in information gathering. Results also showed that 60 respondents strongly agreed with the statements while 66 were of moderate views while 58 disagreed. This implied that community members' involvement in information gathering was linked with project implementation of malaria vector control projects.

CHAPTER FIVE

SUMMARY OF THE FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

The chapter provides a summation of the study outcomes built on the objectives. The chapter also covers the conclusion, recommendations of the study and suggestions for further research.

5.1 Summary of the findings

5.1.1 Project Administration and Implementation of Malaria vector control projects

Results assessing the influence of community participation in project administration, on the implementation of malaria vector control projects in Bobirwa district, Botswana revealed that community members contributed in kind to the vector control project, however results showed that community members were not actively involved in drawing up of project budget. Further results also showed that project administration influenced the implementation of malaria vector control projects. To foster greater community confidence, it is essential to include the community to a greater magnitude in decision-making in projects and that when communities participate in projects administration, transparency and accountability of the leaders escalate leading to projects of excellence standards. Descriptive results show that community members in Bobirwa district contributed labour for the vector control project and that community members were involved in the recruitment of community field workers.

5.1.2 Project Capacity Building and Implementation of Malaria Vector control projects

In accordance to the second objective, the study recognized that community members were moderately involved in the selection of training participants for the training; however, the community members at Bobirwa district were not involved in setting training objectives and in setting training schedules. The results show that the participation of the community members

in capacity building has an influence in the implementation of malaria vector control projects in Bobirwa district. Community capacity building in malaria vector control focuses on empowering the members of the community, in particular, the underprivileged to acquire competencies and skills to actively contribute to societal development.

5.1.3 Project Communication and Implementation of Malaria Vector control projects

Quantitative results showed that participation by community members in project communication had an effect on the implementation of malaria vector control projects. Consequently, the study established that information distribution on the planned project activities should be undertaken as part of community engagement in the implementation of the project needs and should be incessantly improved so that activities can run efficiently since communication is sustained. Further, the study established that there were structured communications channels that allowed community members to participate in the malaria vector control project in Bobirwa district and that data collected in the malaria vector control project was stored for the sake of community members. The study established that there was knowledge sharing with the community members in the malaria vector control project in Bobirwa district and that information was normally disseminated to the community members.

5.1.4 Project Monitoring and Evaluation and implementation of Malaria Vector control projects

In respect to the fourth objective, the study established that M&E influenced the implementation of malaria vector control projects. This implied that for health interventions to emerge successfully, community participation in the M&E process was key. This helps members to learn skills that will help them improve their local capacity for activities including resource management and planning, issue resolution, and collaborative decision-making.

M&E helps members have a better grasp of the internal and external aspects that influence project dynamics, such as successes, failures, potential solutions, and alternative actions.

Additionally, the research established that community members in Bobirwa district are engaged in monitoring of activities in the malaria vector control project, however, respondents moderately agreed that community members are engaged in evaluation the malaria vector control project. The study further proved that community members in Bobirwa district partook in information gathering and that community members were involved in reporting in the malaria vector control project.

5.2 Conclusions

This study resolved that community participation in project administration enhanced the implementation of malaria vector control projects in Bobirwa district, Botswana, when communities participate in projects administration, transparency and accountability of the leaders escalate leading to projects of excellence standards and that community participation in project administration is fundamental since it builds consciousness amongst stakeholders on fund utilization and the community gets an opportunity to decide on their welfare.

The study concluded that the participation of the community in capacity building enhanced the implementation of malaria vector control projects in Bobirwa district. Community members in Bobirwa district were involved in the selection of training participants for the training, however, they were not involved in setting training objectives and the capacity-building strategy aimed to lower dependence on external sources of information, solutions and resources for community issues.

The study concluded that there were structured channels of communication community to take part in the malaria vector control project, there was knowledge sharing with the community members in the malaria vector control project in Bobirwa district and that their involvement in project communication enhanced the implementation of malaria vector control projects in Bobirwa district, Botswana.

The study concluded that the involvement of community members in M&E enhanced the implementation of malaria vector control projects in Bobirwa district, Botswana. Community members in Bobirwa district took part in information gathering in the malaria vector control project and that involving the community in M&E of projects boosted the development of their specialized and administrative abilities, consequently increasing their employment openings.

5.3 Recommendations

The study gave recommendations based on each objective as outlined below.

The project implementation committee needs to ensure that project beneficiaries especially the communities fully partake in the management process which is critical in fostering project embracement and ownership which yielded to project implementation success.

The project implementation committee should continue laying metrics that unearth the potential and foster capacity development specially to project beneficiaries. This will encourage the local community to act on issues that foster positive development in the society.

The project implementation committee continually ensures that communities participate in project communication. Reliable communication channels should be put in place to ensure seamless communication between all the stakeholders involved in the project.

An efficient framework must be put in place to ensure that the community actively participates in M&E of malaria vector control projects. A joint M&E system permits sharing of project targets and intensifies stakeholders' obligation to the project and broadens the comprehension of the project's evolution and assessment exercises.

5.4 Suggestions for Further Research

The study sought to determine the influence of community participation on the implementation of malaria vector control projects in Bobirwa district in Botswana, parallel research may be undertaken in Kenya, and results from two countries compared.

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APPENDICES

Appendix 1: Letter of transmittal

Rose Muthoni Marubu
University of Nairobi,
P.O Box 35384-00100,
Nairobi.

Tel: +254727968543

Dear Respondent,

I am a scholar pursuing my studies at the University of Nairobi. I am currently conducting my studies to accomplish the requirement for the award of Master of Art degree in Project Planning and Management on the “community participation and implementation of malaria vector control projects: a case of Bobirwa district, Botswana”.

I am humbly inviting you to complete the affixed questionnaire. Please fill all the questions wholly, precisely, and truthfully. Your feedback will be handled with outmost discretion and will only be used for educational uses to improve learning in the arena of project planning and management.

Thank you for your time and support.

Yours sincerely

Rose Muthoni Marubu

Appendix II: Questionnaire

Instructions: Kindly fill out this questionnaire as genuinely and accurately as possible. Mark (√) your choices in the suitable box and write in the empty sections afforded for queries where expounded responses are needed. Kindly utilize the space at the backside of this questionnaire if you require additional space for your answers. The answers you provide will be handled with maximum ultimate discretion.

Section A: Socio-demographic Information

1. your gender?

Male []

Female []

2. What is your age bracket?

Below 25 years []

26-35 years []

36-45 years []

46-55 years []

Above 55 years []

3. What is your highest academic qualification?

O-Level []

Diploma []

Graduate

Degree []

Postgraduate []

Other (specify)

4. What is your occupation?

Employed by the government []

Employed in private sector []

Self-employed []

Unemployed []

Student []

Any other (specify)

Section B: Implementation of Malaria vector control projects. In the table below, kindly rate the statements in regard to malaria vector control project. Kindly pick a response that honestly reflects your view.

Statement	Strongly Disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly Agree <u>5</u>
1. Malaria vector control services are readily accessible by the community.					
2. Most of the community members in Bobirwa district have adopted the available malaria vector control tools offered by the project.					
3. To what extent would you agree that the project implementation is efficient?					
4. To what extent would you agree that the project implementation is satisfactory to the stakeholders?					

5. Suggest ways in which community participation in project implementation would be enhanced.

.....

Section C: Community participation in Project Administration

In the table below, kindly rate the statements in regard to project administration. Kindly pick a response that honestly reflects your view.

Statement	Strongly Disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly Agree <u>5</u>
6. Community members are involved in the recruitment of community field workers.					
7. Community members contribute labour for the vector control project.					
8. Community members contribute in kind to the vector control project.					
9. Community members are involved in drawing up of project budget					

10. In your opinion, does community participation in project administration influence the implementation of malaria vector control projects?

Yes

No

Please give at least one reason for your (Yes /No) answer.

.....
.....
.....

Section D: Community Participation in Project capacity building: In the following table, kindly rate the statements in regard to project capacity building. Kindly pick a response that honestly reflects your view.

Statement	Strongly Disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly Agree <u>5</u>
11. Community members are involved in the selection of training participants for the training.					
12. Community members are involved in setting training objectives					
13. Community members are involved in setting training schedules					

14. In your opinion, does community participation in capacity building influence the implementation of malaria vector control projects?

Yes

No

Please give at least one reason for your (Yes /No) answer.

.....

Section E: Community Participation in Project Communication: In the table below, kindly rate the statements in regard to project communication. Kindly pick a response that honestly reflects your view.

Statement	Strongly Disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly Agree <u>5</u>
15. There are structured channels of communication allowing the members of the community to take part in the malaria vector control project.					
16. There is knowledge sharing with the community members in the malaria vector control project.					
17. Information in the malaria vector control project is normally disseminated to the community members.					
18. Data collected in the malaria vector control project is stored for the sake of community members.					

19. In your opinion, does community participation in project communication influence the implementation of malaria vector control projects?

Yes

No

Please give at least one reason for your (Yes /No) answer.

.....

Section F: Community Participation in Project Monitoring and Evaluation: Kindly rate the statements in regard to project M&E. Kindly pick a response that honestly reflects your view.

Statement	Strongly Disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly Agree <u>5</u>
20. The community members are involved in gathering information in the malaria vector control project.					
21. The members of the community are engaged in reporting in the malaria vector control project.					
22. The members of the community monitor and evaluate the malaria vector control project.					

<p>23. The members of the community are engaged in evaluating progress of the malaria vector control project.</p>					
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24. In your opinion, does community participation in M&E influence the implementation of malaria vector control projects?

Yes

No

Please give at least one reason for your (Yes /No) answer.

.....

.....

.....

Appendix III: Interview schedule

I Opening

- a) **(Establish Rapport)** My name is _____
- b) **(Rationale)** I wish to ask you a few questions about your background, your education, your occupation, and some experiences you have had with Malaria vector control.
- c) **(Inspiration)** I hope to use this feedback to assist in investigating community participation and implementation of malaria vector control projects in Bobirwa district.
- d) **(Timeline)** The interview should take approximately 10 - 15 minutes. Are you available to answer to some questions now?

II Body

- a) (Topic) General Information on the respondent (as appropriate)
- b) (Topic) Research Questions
- c) Implementation of Malaria vector control projects
 - i. Accessibility of Malaria vector control services
 - ii. Adoption of malaria vector control tools
 - iii. Efficiency
 - iv. Stakeholders' satisfaction
- d) Questions on Project administration
 - i. Recruitment of community field workers
 - ii. Labour contribution to the vector control projects
 - iii. Time contribution to the vector control projects
 - iv. Material contribution to the vector control project
 - v. Drawing up project budget and financial reports
- e) Questions on capacity building
 - i. Selection of training participants for the training
 - ii. Setting training objectives

- iii. Setting of training schedule
- f) Questions on communication
 - i. Structured communication channels
 - ii. Knowledge sharing
 - iii. Information dissemination
 - iv. Data storage
- g) Questions on M&E
 - i. Information gathering
 - ii. Reporting
 - iii. Monitoring
 - iv. Evaluation

III Closing

- A. (Summarize)
 - i. You are professionally_____
 - ii. Your experiences in Malaria vector control are _____
 - iii. Your opinion on community participation and Malaria Vector control projects are _____.
- B (Maintain Rapport) I appreciate you taking the time to conduct this interview. Do you have any further information that you believe I should be aware of so that I can successfully execute this study?
- C (Action to be taken) I should have all the information I require. Would it be okay if I reached out to you again if I had any further queries or clarification?

Thank you.

Appendix IV: Community members Population in the 12 villages

**Data from AFRO II Project Social demographic survey
census (2019)**

(strata) villages	Population
Lepokole	955
Mathathane	2,672
Tsetsebje	4,393
Molalatau	2,396
Semolale	1,288
Robelela	829
Tshokwe	1,070
Lentswelemoriti	243
Gobajango	2,138
Mabolwe	701
Moletemane	1,664
Matlhabaneng	1,456
Total	19,805
