FACTORS INFLUENCING TUBERCULOSIS (TB) AMONG THE ELDERLY PEOPLE FROM THE AGE OF 65 AND ABOVE IN WAJIR COUNTY REFERRALS HOSPITAL

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A RESEARCH PROJECT SUBMITTED TO THE SCHOOL OF MANAGEMENT AND LEADERSHIP IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF THE AWARD OF THE DIPLOMA IN COMMUNITY HEALTH AND DEVELOPMENT OF THE MANAGEMENT UNIVERSITY OF AFRICA

MAY, 2023

DECLARATION

DECLARATION BY STUDENT

This research project is entirely unique with no submissions made for a degree at any other school.

SIGNATURE…… **DATE……**

SOFIA AHAT

DHD/11/00052/1/22

DECLARATION BY SUPERVISOR

With my consent as the University Supervisor, this project has been submitted for review.

SIGNATURE ……. **DATE……**

JOHNSON MUTEKE

Management University of Africa

DEDICATION

I devote this research work to all my family in appreciation of their encouragement and support during my education years. Be blessed.

ACKNOWLEDGEMENTS

I want to start by thanking Allah for His protection and care during my academic career. I owe a huge debt of gratitude to Johnson Muteke, my supervisor, for his unwavering encouragement and assistance in getting this project done.

ABSTRACT

The primary goal of this research was to examine the factors influencing tuberculosis (TB) among the elderly persons from 65 years and above in Wajir County Referrals Hospital. Specific objectives included: To determine the effect of Sociodemographic characteristics on tuberculosis among the elderly people in Wajir County Referrals Hospital, to determine the effect of diabetes mellitus (DM) on tuberculosis among the elderly people in Wajir County Referrals Hospital and to determine the effect of malnutrition on tuberculosis among the elderly people in Wajir County Referrals Hospital. The study used descriptive research design. The study population included registered elderlies with TB infections on treatment in the Wajir County Referrals Hospital facility. Primary data was collected by questionnaire and secondary data was congregated from past studies. The Statistical Package for Social Sciences version 24 was used for statistical analysis of the data. The results were presented using figures and tables. The study came to the conclusion that individuals with diabetes mellitus had a significant risk of developing tuberculosis. Statistics showed a statistically significant relationship between socio-demographic factors and TB. The study discovered that a significant contributing factor to the TB illness in Wajir county is malnutrition among the elderly. Males make up a majority of the TB patients at the Wajir County Referral Hospital. In conclusion, to put them (health facilities) closer to the people, fully functional health facilities should be distributed across the area. Mobile units that provide TB testing and treatment services should be established to serve the remote nomads in order to support access to health care. The governments should develop educational initiatives to inform the public about the causes of TB and its treatment. The government should develop strategies to raise literacy rates since education is thought to improve information receptivity. The community will be able to afford healthcare services and other essentials if marketplaces and roads are opened up for business. The study finally recommended that to determine whether the same findings would be obtained, a similar research might be conducted in other counties at various locations.

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ABBREVIATIONS AND ACRONYMS

COPD **:** Chronic obstructive pulmonary disease

DM **:** Cardiovascular diseases, diabetes mellitus

EM **:** Explanatory Model

NCDs **:** Non-communicable diseases

NTLLDP **:** National Tuberculosis, Leprosy and Lung Disease Program

TB **:** Tuberculosis

OPERATIONAL DEFINATION OF TERMS

Diabetes mellitus **:** A state in which the body's ability to produce or respond to the hormonal insulin is hampered, causing incorrect metabolism of carbohydrates and elevated blood glucose levels.

Malnutrition **:** Lack of enough nutrition brought by not eating enough, not the correct foods, or not being able to use the food that is consumed.

Sociodemographic characteristics **:** A mix of social and demographic characteristics that characterize members of a certain group or population are referred to as socio-demographics.

CHAPTER ONE

INTRODUCTION TO THE STUDY

1.0 Introduction

In this chapter, the study's background, problem statement, aims, research questions, importance, and study scope are explored.

1.1 Background of the study

Tuberculosis (TB) is a common and frequently fatal infectious illness caused by Mycobacterium tuberculosis. Tuberculosis, one of the oldest illnesses known to humans, is a leading cause of mortality across the world. The lungs are commonly affected by this disease, which is caused by germs from the Mycobacterium tuberculosis complex, although other organs are implicated in up to one-third of cases. Tuberculosis caused by drug-susceptible strains is almost always curable if appropriately treated. If left untreated in HIV-negative people, the condition can be deadly within 5 years in 50-65% of instances (Natarajan, Beena, Devnikar & Mali, 2020).

Typically, infected pulmonary TB patients develop droplet nuclei that are distributed through the air, resulting in transmission (Abdul, Ker, Yusuf, Hanafi, & Wong, 2014). An estimated nine (9) million persons contracted TB in 2013, of whom 360 000 would have HIV, and 1.5 million died from the illness (World Health Organization, 2014). More over half (56%) of the estimated 9 million persons who contracted TB in 2013 lived in South-East Asia and the Western Pacific. Also, 25% will be in Africa, which similarly had the greatest rates of infections and fatalities in proportion to population (World Health Organization, 2014). Kenya saw a dramatic decrease in TB cases over the same time period, with a total of 89,760 cases reported, a 9.48% decrease from the 99,159 cases reported in 2012 (NTLLDP, 2014). There will be a general drop in all TB kinds and categories, with a total of 81,283 new cases and 8,477 patients who have already received treatment (NTLLDP, 2014).

Whereas transmissible illnesses have accounted for most of the overall cost of disease in nations that are developing for a significant portion of the last century, the number of cases of many non-communicable conditions (NCDs) is rising in countries with low or middle incomes as well as in some populations in high-income countries. These NCDs include diabetes mellitus (DM), those

associated with smoking and alcohol abuse, chronic obstructive pulmonary disorder (COPD), and mental illness.

This demographic change increases the burden of infectious illnesses already present in these communities, resulting in a dual burden of communicable diseases and NCDs (Chen, et al., 2014). There is a popular belief that NCDs mostly afflict non-poor people and that they are illnesses of development (Jakovljevic & Milovanovic 2015).

The majority of NCDs, like the majority of infectious illnesses, are more prevalent in lower socioeconomic categories, nevertheless. This is undoubtedly true in high-income nations, but it is becoming increasingly true in middle- and low-income nations (World Health Organization, 2015). Because of this, the twin burden of NCDs and communicable illnesses is most severe among the poor, which is further supported by the causal relationships between them. An increasing body of research has shown associations between tuberculosis (TB) and a variety of NCDs and associated risk factors, including diabetes mellitus (DM), diseases linked to alcohol and smoking, COPD, mental illness, and malnutrition (Bates, Marais, & Zumla, 2015).

The impoverished have long been plagued by TB. A disease that caused one in every seven fatalities in late 19th-century Europe and still causes a great deal of pain today is a result of crowded living circumstances and immune systems that are weakened by factors like undernutrition. Despite the fact that affordable and widely accessible TB treatment has saved many lives over the past several decades, TB still ranks first among infectious illnesses in terms of burden and mortality due to the spread of DOTS as a global management approach (Ratjen, F, et al 2020).

TB incidence is decreasing globally, although at a moderate rate (World Health Organization, 2014). To hasten the decrease, more work is required. For long-term TB control and eradication, improved TB diagnosis and treatment will be necessary, supported by poverty reduction and general socioeconomic development. A number of significant TB risk factors and comorbidities must also be addressed, though (Raviglione, M et al 2015).

Wajir County Referrals Hospital

Wajir Referral Hospital, a level 5 public hospital, is located in Wagberi Ward, Wajir East Constituency, and Wajir County. The facility offers both inpatient and outpatient services. The

hospital is a good choice for our study since it serves both residents of Wajir county and people from surrounding communities.

1.2 Statement of the Problem

The burden of non-communicable diseases (NCDs) is now higher than average in nations with low or middle incomes, and it overlaps with the unfinished business of communicable diseases. Both categories of disease share the risk factors for alcohol addiction, cigarette use, poor lifestyle choices, and unemployment (Devi & Subramaniam, 2020). With an estimated 43 tuberculosis cases per 100,000 people and an estimated prevalence of diabetes of 3.6%, Wajir is still one of the counties with a high burden of the disease (World Health Organization, 2014). In 2015, in Kenya, NCD were responsible for 40% of Disability Adjusted Life Years, whereas TB accounted for 1.57%. (Institute of Health Metrics and Evaluation, 2017).

In locations where tuberculosis is widespread, the increased incidence of DM and other NCDs may have a negative impact on tuberculosis control. In order to treat DM and other risk factors that enhance a person's susceptibility to TB, it is necessary to accelerate the diagnostic, therapeutic, and preventative services. Clarifying potential connections with TB is crucial as the incidence of diabetes rises worldwide so that the TB control plan may be focused appropriately. It's crucial to fill the knowledge gap with local authorities (World Health Organization, 2016).

Significant demographic and lifestyle changes have resulted in an increase in non-communicable illnesses, according to recent statistics from the global burden of disease study (Marais, et al., 2013). In the past, attempts to prevent communicable and non-communicable diseases tended to highlight differences rather than commonalities and had little in common (Kasera, G. K, 2018). While being contagious, chronic infectious diseases like TB are managed and controlled differently from acute communicable diseases than they are with non-communicable diseases (Marais, et al., 2013). The possibility that the epidemic will continue in the community as well as individual susceptibility to illness are both made worse by non-communicable diseases' interaction with TB (Kasera, G. K, 2018).

Thus, there was need to investigate other factors influencing tuberculosis among the elderly individuals from 65 years of age and above in Wajir County Referrals Hospital.

1.3 Objectives

1.3.1 General objective

The key aim of this investigation was to investigate the factors influencing tuberculosis (TB) among the elderly people from 65 years of age and above in Wajir County Referrals Hospital.

1.3.2 Specific objectives

I. To determine the effect of Sociodemographic characteristics on tuberculosis among the elderly people in Wajir County Referrals Hospital
II. To determine the effect of diabetes mellitus on tuberculosis among the elderly people in Wajir County Referrals Hospital
III. To determine the effect of malnutrition on tuberculosis among the elderly people in Wajir County Referrals Hospital

1.4 Research questions

I. What is the effect of Sociodemographic characteristics on tuberculosis among the elderly people in Wajir County Referrals Hospital?
II. What is the effect of diabetes mellitus on tuberculosis among the elderly people in Wajir County Referrals Hospital?
III. What is the effect of malnutrition on tuberculosis among the elderly people in Wajir County Referrals Hospital?

1.5 Significance of the Study

The findings of this study might be used as a guide for policymakers and will add to the pool of information on the association between persistent infectious illnesses like tuberculosis and non-communicable diseases in Kenya. The study's findings will be released in Kenya at a good time, since the country's efforts to gauge the incidence of NCDs, standardize clinical practices, and offer outreach programs have gained steam. Also, the Kenyan government will benefit from this study's findings as it develops public healthcare policies, initiatives, and strategies that would support long-term socioeconomic growth and the achievement of Vision 2030.

1.6 Scope of the Study

The chief aim of this research study was to study the factors influencing tuberculosis (TB) among the elderly people from the age of 65 and above in Wajir County Referrals Hospital. The research took place at Wajir Referral hospital between the month of March and April 2023. The employees of Wajir Referral hospital were the main respondents of the study.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

The empirical and theoretical literature reviews, overview and research gaps, conceptual framework, and variable operationalization are all covered in this chapter.

2.1 Theoretical Literature Review

This research study is theoretically rooted on the Social Learning Theory and Explanatory Model.

2.1.1 Social Learning Theory

Founded in 1977 by Bandura, social learning theory serves as the foundation for this investigation. According to the hypothesis, humans might pick up new habits by seeing how others behave (Allan, 2017). Community members can gain knowledge by witnessing events that occur in the environment where they reside. Community members can get knowledge about infectious illnesses like TB by interacting with one another (Allan, J. 2017). If community people interact with medical professionals, they are more likely to learn about TB prevention, causes, and treatments. The adoption of TB screening among community members can progressively grow if health clinicians and non-governmental organizations employ proper communication channels (Njiru, M. 2021).

According to Casucci, (2015), community people would have a favorable attitude regarding TB yelling if they have sufficient understanding of contagious diseases like TB and vice versa. Moreover, Mohamed et al. (2013) contend that if patients with TB illnesses are not stigmatized, community members are more likely to favorably urge others toward TB screening. Health professionals' capacity to inform the public on the origins, prognosis, and prevention of tuberculosis infections is closely related to their familiarity with and expertise in handling situations of a similar nature. Health professionals will find it simpler to persuade people of the community to volunteer for TB screening if they are highly motivated and have the necessary skills (Wandeba et al. 2015). The methods used by the ministry of health to educate the public about TB infections will have a big impact on how often people are screened. Social marketing elements including community mobilization, advocacy, and awareness are thought to have an impact on how many people in the community choose to get screened for TB (Casucci, 2015).

According to Kandel et al. (2014), a community's willingness to participate in TB screening is influenced by demographic parameters such as education level, age, and income. The adoption of

TB screening can be ascribed to the education level of community people. Also, it is thought that the mentality of community members' ages influences their commitment to TB therapy. On the other hand, it is believed that income level affects whether or not individuals of the community adhere to TB screening and take the proper precautions in avoiding and treating TB illnesses. Thus, it is believed that demographic parameters in the population, such as income, age, and education level, have an impact on the uptake of community TB screening (Kirakoya-Samadoulougou, Jean, & Maheu-Giroux, 2017).

According to Cherkaoui et al. (2014), if appropriate measures are not implemented, ignorance of the populace and poverty may directly or indirectly lead to a rise in TB infections. In a similar vein, compliance with treatment and preventative measures is also thought to be influenced by an individual's age in order to stop further transmissions. Those under the age of 25 are seen as breaking the rules governing TB treatment, as opposed to people over 25, who are more likely to follow the rules since they are able to comprehend the repercussions of not following the therapy. Inability to finish the recommended TB dose and maintaining contact with persons who work in high-risk settings including hospitals, refugee camps, and recreational facilities are two factors that contribute to multi-drug resistance in TB patients. In light of the role that health workers play in encouraging community members to enhance TB screening uptake, which in turn leads to TB prevention and control, this idea is relevant to this study (Njiru, M. 2021).

2.1.2 Explanatory Model

Founded in 1980, the Explanatory Model (EM), which Arthur Kleinman proposed as a means of examining the process by which sickness is patterned, understood, and treated, also served as the study's main conceptual framework. The Explanatory Model refers to the viewpoints about a particular sickness episode and its management that are held by everyone involved in the therapeutic process. EM gives explanations of sickness and treatment, and assists individuals to make decisions about available therapeutic alternatives and helps patients to give meaning to the experience of illness. Explanatory models offer explanations for the actual manifestations of sickness, such as its etiology or source, the onset of symptoms, physiological alterations, prognosis, and course of therapy. They may merely have the causes, prognosis, and therapy; they might not always contain all the components (Robertson, 2021).

The explanatory models frequently relate to a particular health system, differ between cultures, and occasionally overlap. According to Kleinman, there are several health sectors within society, including the mainstream, traditional, and professional sectors. These sectors don't exist separately but rather interact with one another. People will always have an explanation for what they are experiencing, and as a result, they have their own explanatory model (EM) that is distinct from the EM of the healthcare professional. In order to categorize, explain, and treat sickness, explanation models are utilized. The severity of a condition is influenced by a number of variables, including the patient's capacity to pay for treatment and the explanations that people have for the illness's cause. The sort of therapy that patients can afford for their illnesses, as well as whether it occurs in the popular, folk, or professional sectors, will depend on their social and financial circumstances (Mayston, Frissa, Tekola, Hanlon, Prince, & Fekadu, 2020).

The most significant feature of EM is that it takes culture into account as a key factor in determining how people behave. People in a community share a culture that is a way of life. It affects how people organize themselves for therapy and how they interpret sickness. People's responses to disease are primarily determined by the meaning they attribute to those ailments, regardless of whether they are caused by supernatural powers or are natural. Depending on how you feel, you'll decide whether to seek professional medical care, natural remedies, spiritual healing, or self-care. It is obvious that the EM's hypotheses are accurate and congruent with this research. This makes it pertinent (Van Brakel, et al, 2019).

2.2 Empirical Literature Review

2.2.1 Sociodemographic characteristics and tuberculosis among the elderly people

Malinga (2019) did a study at the University of Kentucky on tuberculosis (TB) screening compliance rates and treatment completion among overseas students. The study discovered no significant difference between male and female screening rates ($p=0.495$) when screening rates were examined by gender. When screening rates were analyzed by study program, there was a significant difference ($p=0.002$). Screening rates were higher in programs with fewer students; for example, the college of communication and information only had two students in total and both were 100% compliant with screening, whereas programs with a large number of students tend to have lower screening rates. Despite the fact that ninety-one students were tested, the college of engineering earned 67% since they were a large group (Malinga, 2019).

According to Jewett et al. (2016), there is a danger of contracting TB in a variety of settings, including hospitals, jails, and shelter homes. TB exposure can increase for students when they volunteer, conduct research, and travel (Jewett et al., 2016). It is crucial to highlight that the following material is provided solely for educational reasons. Gender has a significant impact in TB management, as evidenced by the fact that males do better than women in certain countries and the opposite in others (UNAIDS and Stop TB, 2016). In high TB and HIV-endemic regions, early detection and treatment of patients are the main global priorities in TB management (WHO,2016). Nonetheless, low TB detection rates and an increase in multi-drug resistance strains have been a problem (WHO, 2016).

According to a study conducted by Esmael Ali et al (2014) on the evaluation of patients' understanding, mindset, and behavior concerning pulmonary tuberculosis in the eastern Amhara regional state of Ethiopia, 65.4% to 98.8% of the population had misunderstandings about the etiology of TB, signs, spread, and ways to prevent it. There has been information that factors influencing TB knowledge, attitude, and behaviors (KAP) include literacy status, socio-cultural disparities, gender, and geographic variances (Adane, K et al. 2017).

2.2.2 Diabetes mellitus and tuberculosis among the elderly people

In reference to the excessive urination that is a sign of these disorders, the name "diabetes" comes from the Greek diabanein, which meaning to pass through. Moreover, the name "diabetes" is frequently used to refer to DM, which is approximately translated to "excessively sweet urine" (known as "glycosuria"). Diabetes is also the name of a few uncommon diseases. The most prevalent of these is diabetes insidious, which causes huge volumes of unappetizing urine to be generated (polyuria; the Latin word insidious means "without flavor") (Negin, Abimbola, & Marais, 2015).

Diabetes mellitus is defined as a fasting glucose level greater than 125 mg/dL, a blood glucose level greater than 200 mg/dL within two hours following consuming 79 g of glucose, or two unconnected blood sugar levels higher than 210 mg/dL with signs of hyperglycemia [thirst, polydipsia, polyuria, or recurrent infections] (Samaras, 2012). It appears that diabetes mellitus was a death sentence in the past. Hippocrates doesn't address it, which may be a sign that he believed the illness was terminal. While Aerates tried to cure it, he was unable to provide a positive prognosis; he said that "life (with diabetes) is short, nasty, and unpleasant" (Magee, et al. 2015).

Recent research revealed that diabetes increases the incidence of pneumonia in diabetics by 25–75% and that high blood glucose levels affect the innate immune system. Hong Kong's most recent population-based cohort study (Erener, S. 2020).

Several investigations have provided strong scientific justification for the connection between DM and weakened host immunity to TB (Kasera, G. 2018). Regardless of how M. tuberculosis was inoculated, studies in animal models have shown that diabetic mice experimentally infected with the disease have larger bacterial burdens than glycemic animals (Kasera, G. 2018). Chronically diabetic mice also produced significantly less interferon-c (IFN-c), interleukin-12 (IL-12), early in the progression of M. tuberculosis infection, and M. tb antigen (ESAT-5)-responsive T cells compared to glycemic mice, indicating a lessened T helper 1 adaptive invulnerability, which is essential for TB infection control. High insulin levels have been demonstrated to encourage a decline in Th1 immunity through a drop in the th1 chamber to th2 cell proportion and the IFN-c to IL-4 ratio in experiments using human plasma cells. Moreover, nonspecific IFN-c levels were considerably lower in patients with diabetes compared to controls without diabetes, according to an ex vivo comparative investigation of Th1 cytokine production (Beukes, A. 2019).

Another study found a dose-response association between IFN-c levels and HbA1c levels, a marker of changes in human blood glucose levels over time. Leukocyte bactericidal activity was decreased in patients with diabetes, particularly in those with poor glucose control, and diabetic neutrophils showed lower chemotaxis and oxidative killing capacity than nondiabetic controls. Together, these findings provide compelling evidence that DM directly inhibits the innate and adaptive immune responses required to thwart the spread of TB (Castañeda-Delgado, et al. 2021).

2.2.3 Malnutrition and tuberculosis among the elderly people

Both over nutrition and undernutrition have a negative impact on nations in epidemiological transition. Micronutrient deficiency and moderate to severe underweight both increase a person's risk of developing TB, while the evidence for the harmful effects of milder nutrient deficits is less convincing. Data from the National Health and Nutritional Assessment Survey in the United States collected in 1971–75 and linked to TB outcomes in 1982–92 underwent a reanalysis (Dandona, Let al. 2017).

Among those of normal weight, disease rates were 24.7 per 100 000 person-years (95% CI 13.0-36.3). The modified risk ratios for underweight, overweight, and obese people were 14.4, 0.4, and

0.20, correspondingly, after adjusting for demographic, socioeconomic, and medical factors (Demaio, A. 2020). Malnutrition has a significant contribution to the attributable risk for TB since it is so prevalent in many places of the world. The effects of malnutrition, especially during pregnancy and the early years of life, also have a significant negative impact on later-life obesity, diabetes, hypertension, and heart disease, contributing to the double burden of disease in underdeveloped nations as well as among disadvantaged populations of wealthier countries (Wells, J. et al. 2020).

Many studies have been conducted on the impact of various diets on TB patients, and a wide range of contradicting and varied assertions have been made. The effect of other variables on infection presents a challenge in the interpretation of these research. Men who were at least 10% underweight at baseline had a roughly four-fold greater chance of developing TB than men who were at least 10% overweight, according to U.S. navy recruits with tuberculin skin test positive results. The relative risk of tuberculosis among individuals in the lowest BMI group was over five times greater than the highest group in the highest BMI category in a study among Norwegians after intake into a radiographic screening program, and it was independent of sex, age, and radiographic findings (Mave, V. et al. 2017).

Another London-based study discovered that Hindu Asians were more susceptible to developing TB than Muslims. When adjusting for vegetarianism, religion had no independent impact (common among Hindu Asians). With less frequent ingestion of meat or fish, there was a tendency for the risk of TB to rise. Comparing lacto vegetarians to regular meat/fish eaters, the risk was 8.5 times higher. A vegetarian diet may lower immunological function, which might lead to more mycobacterial reactivation. One risk factor for the reactivation of TB in individuals who have had gastrectomy is poor nutrition. According to previous research, malnourished persons had an extremely high prevalence of TB (Poruthiyil, P. 2021).

2.3 Summary and Research gaps

The available evidence leads to the conclusion that several aspects of the healthcare system can have an impact on elderly TB cases. Notwithstanding substantial research that has been done on a global, regional, and local level, it is important to emphasize that the variables in this study were only partially and singly explored, leaving conceptual gaps that this study fills.

2.4 Conceptual Framework

A diagram depicts the dependent and independent variables of the study in the conceptual framework.

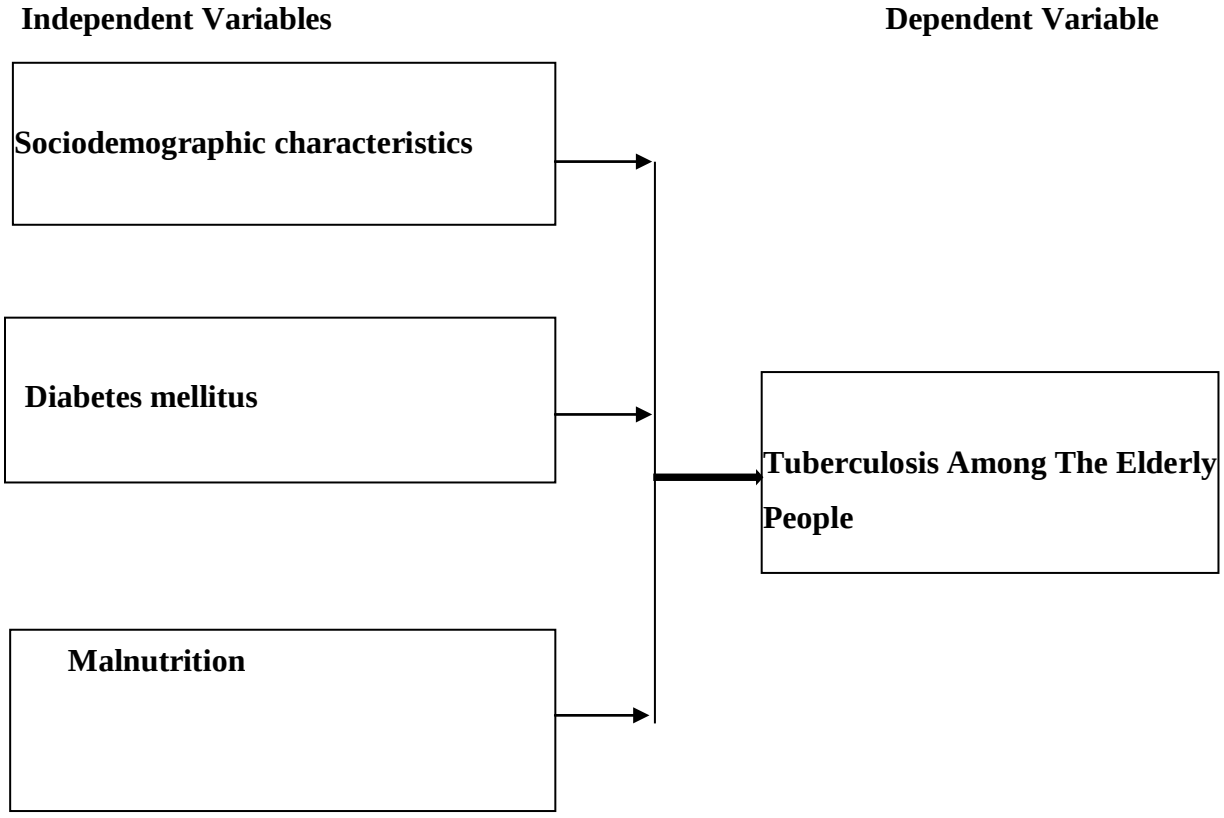

Figure 2. 1 Showing Conceptual framework

2.5 Operationalization of Variables

Table 2. 1 Operationalization of Variables

Variable	**Indicators**	**Measurement**
Sociodemographic characteristics	• Age • Sex • Education • Employment	1 = Strongly agree to 5 = Strongly disagree
Diabetes mellitus	• Hemoptysis	1 = Strongly agree to 5 = Strongly disagree
Malnutrition	• Underweight • Wasting • Stunting	1 = Strongly agree to 5 = Strongly disagree

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.0 Introduction

The section covers the following topics: research design, population to be studied, sampling, tools, pilot study, data collecting technique, data analysis and presentation, and ethical issues.

3.1 Research design

According to Mugenda & Mugenda (2019) a research design is a collection of techniques and processes for gathering and interpreting data on the variables stated in the research challenge. According to Ragab, & Arisha, (2018), a research design is a set of guidelines for data collection and analysis that aims to balance relevance to the study purpose with technical efficacy. The investigation was carried out using a descriptive research strategy in this study. A descriptive research design is a methodology that entails gathering data, describing a specific phenomenon, and organizing, describing, and analyzing the data gathered for the study using graphs and charts to help readers visualize the study's findings and better understand how the data was distributed (Ragab, & Arisha, 2018).

3.2 Target Population

In the field of study, all the objects under consideration constitute a population (Rai, N., & Thapa, B. 2015). The Wajir County Referrals Hospital facility's registered elderly patients 65 years of age and over who have active tuberculosis infections and the residents of their catchment area made up the research population.

3.3 Sample and sampling technique

The primary goal of census sampling all population is reached and fairly represented (Mugenda and Mugenda, 2019). A sample is a part of the entire population. A sample in this study is a segment of the study's intended audience. Sampling is carried out to obtain a representative sample that will enable the investigator to gain extra information about a population. As there are not many people, a census was conducted. Saunders et al. (2015) define a census as the collection and assessment of data from each possible case or group member within a population.

3.4 Instruments

While secondary data was gained from earlier research, primary data was collected utilizing a semi-structured questionnaire. The data was gathered through a self-administered survey delivered

to respondents at their convenience. This is due to the fact that they are simple to administer and provide prompt, precise statistics when a big number of respondents are involved. Because it allows respondents enough time to provide thoughtful responses, the researcher employed a self-administered questionnaire.

3.5 Pilot Study

Eldridge (2016) describes pilot studies as scaled-down versions of larger investigations and specialized pre-testing of a certain research tool, such a questionnaire or interview schedule. With four participants, representing 10% of the target population, a pilot research was carried out. To guarantee that the instrument measures what it was designed to measure, the results were utilized to adjust it as necessary (Saunders et al., 2015).

3.5.1 Validity

The researcher ensured that the questions support the objectives of the study. Gay recommended that quality specialists be recruited to evaluate the questions' relevancy, style, and clarity.

3.5.1 Reliability

The reliability of this study was ensured by use of Cronbach's alpha factor of internal consistency, which provides a separate quantitative assessment of the scale's internal consistency (Scherer, L. D. 2016). Cooper and Schindler (2017) state that for an instrument to be regarded as reliable, the coefficient must be more than 0. 7.

3.6 Data Collection Procedure

Before starting the study, the researcher must first have Management University of Africa's approval. To ensure their commitment to implementing the findings, the researcher arranged a meeting with the administration of the Wajir Hospital. The researcher gave the respondents a briefing before beginning data collecting. The purpose and limitations of the study was covered in detail throughout the process. A letter of introduction was also sent with the surveys to highlight the objectives and limitations of the study. This experiment's goal is to boost responders' confidence in the researcher. The respondents were then given questionnaires to complete, which was then collected and analyzed later.

3.7 Data Analysis and Presentation

Longnecker (2015) defines data analysis as the act of gathering, modeling, and modifying data with the goal of emphasizing relevant information, proposing hypotheses, and aiding in decision-making. The purpose of data analysis, on the other hand, is to convert raw data into intelligible models. Tables, charts, frequencies, and percentages, as well as the SPSS (Statistical Package for Social Sciences), were used to statistically evaluate the data. Because the data was qualitative, these comparison strategies are regarded to be the best. Tables and figures was used to present data.

3.8 Ethical Considerations

3.8.1 Informed Consent

Applying the norm of knowing assent (Oliver, 2014), the researcher guaranteed that the participants are free of tensions caused by a lack of explicit test expectations. As Oliver stresses, some respondents may be overwhelmed by the expert's difficulty or by the terminology utilized in the research and may wish to participate despite not having a clear knowledge of the topic.

3.8.2 Voluntary Participation

Respondents were picked at random and under no duress. All responders were informed of the test's purpose and reasoning. This assured that all members of the investigation were prepared to participate in the test without being pressured.

3.8.3 Confidentiality

This study was alleviated any concerns about confidentiality. Respondents were shielded from individuals whose interests clashed with the interviewee's by not exposing their true identities, and from people whose goals clashed with the interviewee's by not revealing their identity.

3.8.4 Privacy

To safeguard the safety of the members, the information gathered was processed in such a way that the data is not linked to the individual.

3.8.5 Anonymity

Because respondents may not want their names published, they remained anonymous.

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSION

4.0 Introduction

This chapter discusses the presentation of research findings as well as the study's limitations.

4.1 Presentation of Research Findings

4.1.1 Response rate

As shown on Figure 4.1, a total of 40 questionnaires were given out, and 35 of them were returned, yielding an 87.5% response rate. A response rate of 50% is considered sufficient, 60% and above good, and over 70% extremely good, according to Mugenda & Mugenda (2019). Furthermore, according to Kothari (2004), a response rate of 50% is regarded as ordinary, a rate of 60–70% as sufficient, and a rate of more than 70% as exceptional.

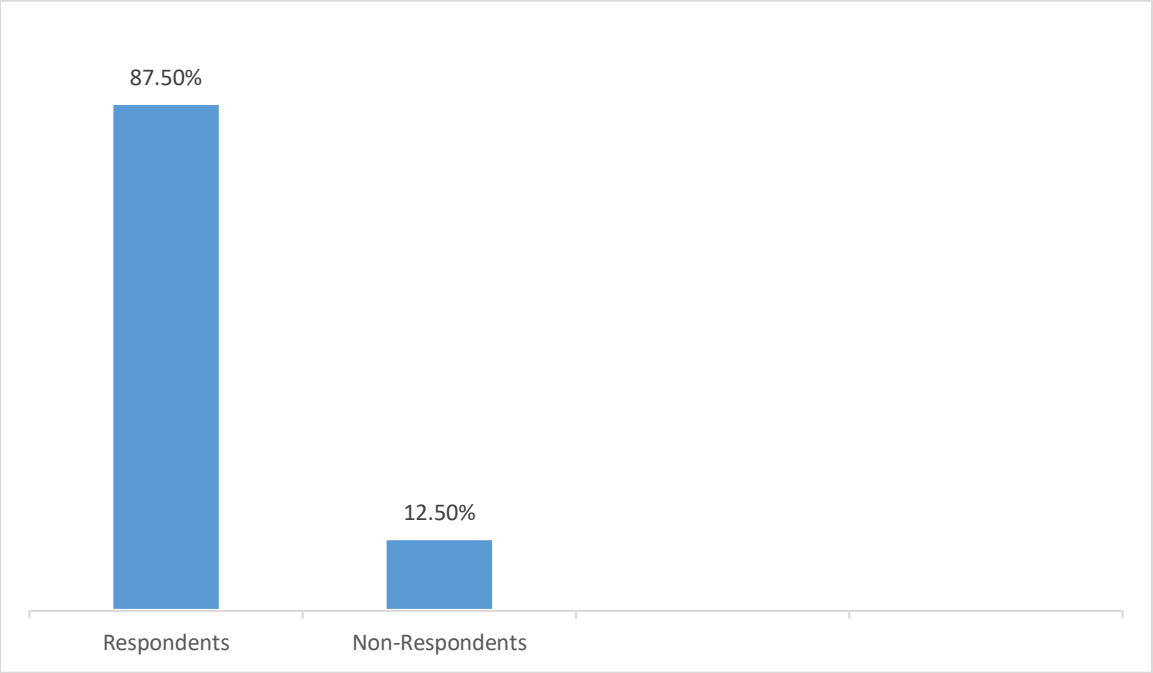

Figure 4. 1 Response rate

4.1 2 Gender

According to Figure 4.2, males were represented by a frequency of 20 (or 57.1%), while females were represented by a frequency of 15, or 42.9%. This demonstrates that men were more impacted by Tb than women were.

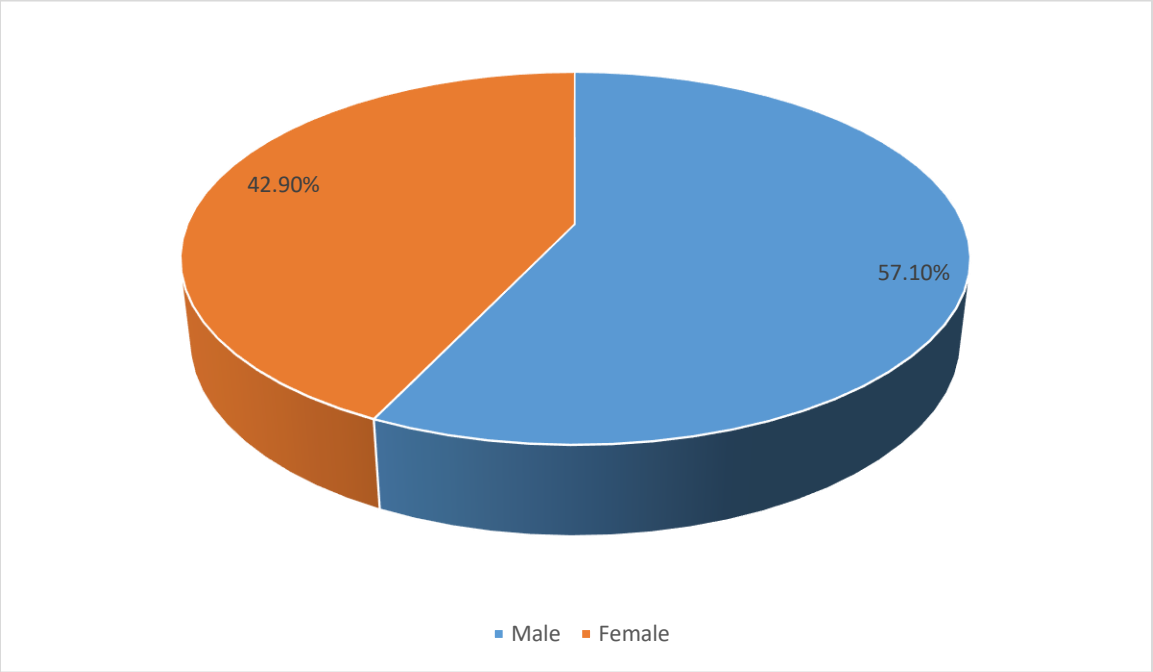

Figure 4. 2 Gender

4.1.3 Age bracket

As indicated on Table 4.1 and Figure 4.3, the respondents indicate their age. 25.7% were aged 65-70 year, 34.3% were aged 71-75 years and 40% were aged 76 And Above Years.

Table 4. 1 Age bracket

Category	Frequency	Percentage
65-70 Years	9	25.7
71-75 Years	12	34.3
76 And Above Years	14	40

Total	**35**	**100**

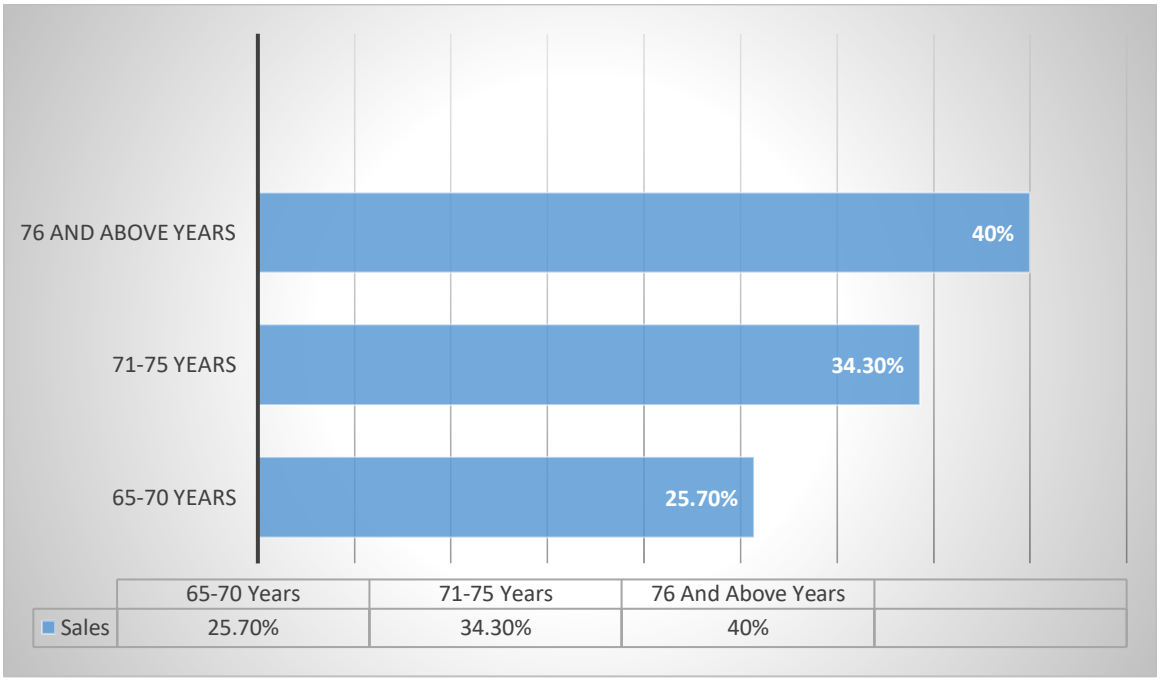

Figure 4. 3 Age bracket

4.1.4 Level of education

As shown in Table 4.2 and Figure 4.4, the research found that 51.4% of respondents had completed O Levels, 22.9% had certificates, 20 % had diplomas, and 5.70 % had university degrees. This suggests that the majority of respondents had relatively high levels of education, making it possible for them to reply to surveys successfully.

Table 4. 2 Level of education

Category	**Frequency**	**Percentage**
O Level	18	51.4
Certificate	8	22.9
diploma	7	20
Undergraduate	2	5.7
Total	**35**	**100**

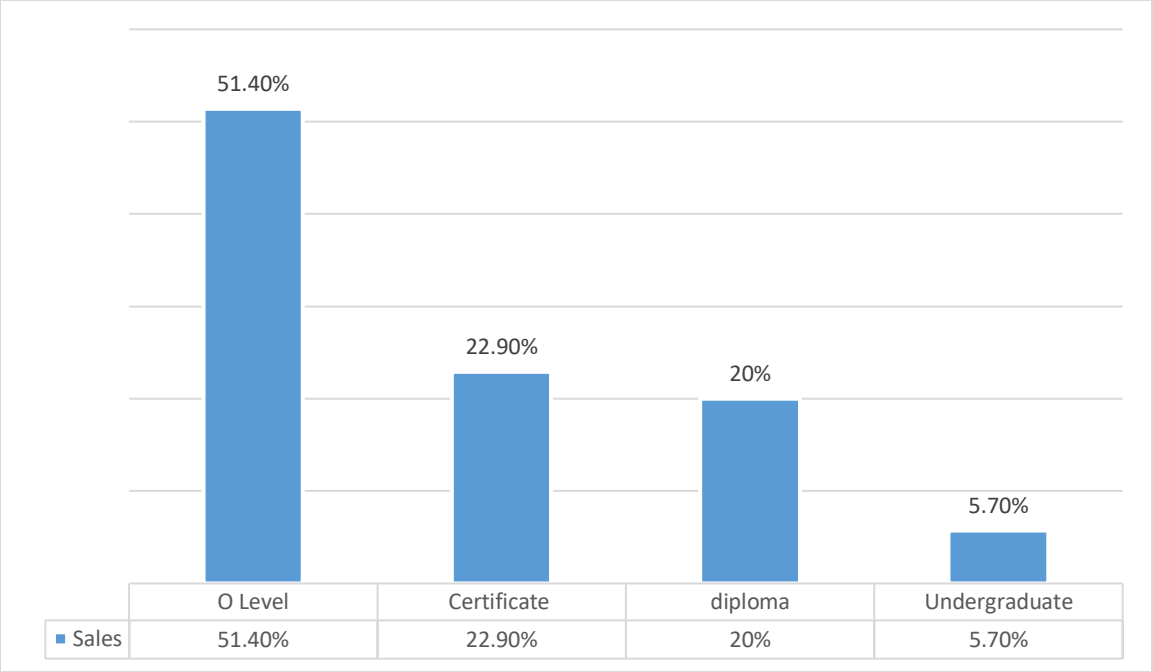

Figure 4. 4 Level of education

4.1.5 Patients who are diabetic mellitus have high chances to contact TB

According to the majority of respondents (80%) as indicated on Figure 4.5, individuals with diabetes mellitus have a high risk of getting tuberculosis.

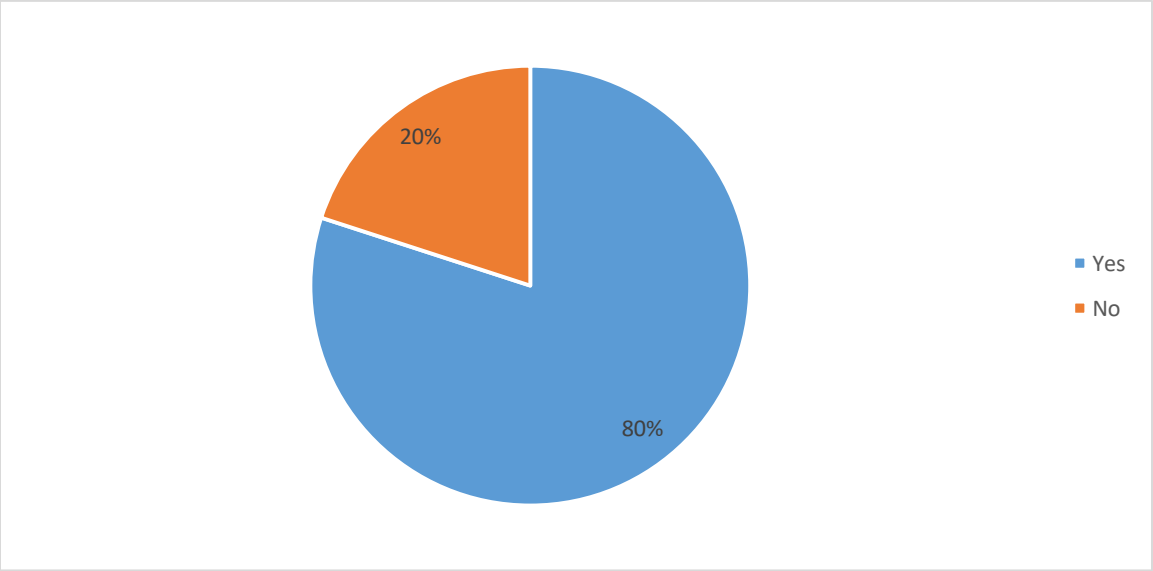

Figure 4. 5 Patients who are diabetic mellitus have high chances to contact TB

4.1.6 Patients who are Malnutrition have high chances to contact TB

According to Figure 4.6, the majority of respondents believed that people with malnutrition conditions have a higher likelihood of contracting tuberculosis.

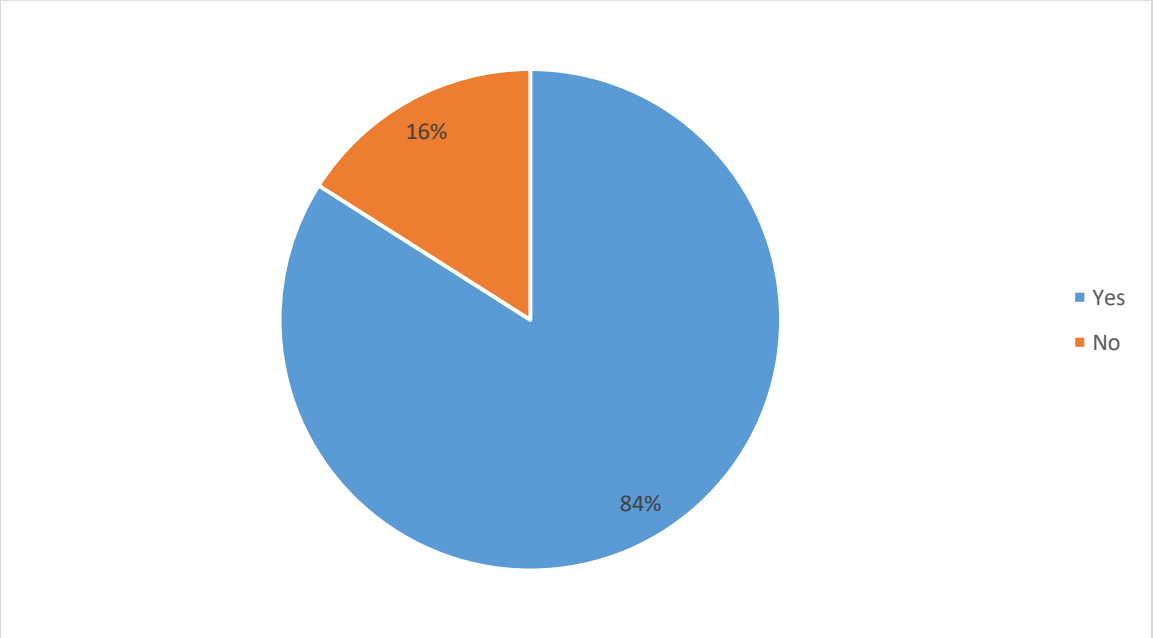

Figure 4. 6 Patients who are Malnutrition have high chances to contact TB

4.1.7 To what extent does the following factors contributing to TB among the elderly in Wajir County.

Table 4. 3 extent to which the following factors contributing to TB

Factor	Very high extent	High extent	Moderate extent	Low extent	Very low extent
Sociodemographic characteristics	40%	42%	4%	8%	6%
Diabetes	37%	45%	5%	8%	5%
Malnutrition	50%	35%	5%	10%	0%

As indicated on Table 4.3, 42% of the respondents indicated that sociodemographic characteristics at a high extent, contributes to TB among the elderly in Wajir County. Diabetes, to high extent (45%) contributes to TB among the elderly in Wajir County. Finally, Malnutrition contributes to TB among the elderly in Wajir County as indicated by 50% of the respondents at a very high extent.

4.1.8 Sociodemographic characteristics

Table 4. 4 Sociodemographic characteristics

	Strongly agree	**Agree**	**Moderately disagree**	**Disagree**	**Strongly disagree**
Age influence tuberculosis among the elderly people	30%	40%	10%	12%	8%
Sex influence tuberculosis among the elderly people	30%	25%	10%	35%	0%
Education level influence tuberculosis among the elderly people	26%	36%	17%	10%	11%
Employment status influence tuberculosis among the elderly people	22%	35%	11%	20%	12%

As indicated on Table 4.4, majority of the respondents agreed (40%) age influence tuberculosis among the elderly people and 35% disagreed that sex influences tuberculosis among the elderly people. Also, as per the majority of the respondents, education level influence tuberculosis among the elderly people as agreed by 36% and finally 35% agreed that employment status influence tuberculosis among the elderly people.

4.2 Limitations of the Study

Due of how delicate the issue was, a few responders were hesitant to share or be truthful with it. The researcher promised the respondents in writing that the information they supplied would be kept in strict confidence and would only be used for academic purposes. As they were not obligated to reveal their identities, the respondents' identities were kept a secret.

CHAPTER FIVE

SUMMARY, RECOMMENDATIONS AND CONCLUSIONS

5.0 Introduction

The chapter summarizes the findings from Chapter 4, as well as the research's conclusions and suggestions based on the primary goals of the investigation.

5.1 Summary of Findings

The study discovered a statistically significant relation between socio-demographic factors (sex, age, and monthly income) and TB. This suggests that the Wajir community's members' monthly income and religion have a significant impact on TB patients. According to 42% of respondents, TB among the elderly in Wajir County is greatly influenced by sociodemographic factors.

The research found that 51.4% of respondents had completed O Levels, 22.9% had certificates, 20 % had diplomas, and 5.70 % had university degrees. In Wajir County, diabetes has a significant (45%) impact on TB in the older population. 50% of respondents reported that malnutrition had a very significant impact on TB among senior people in Wajir County.

The majority of respondents (40%) agreed that age impacts elderly TB, whereas 35% disputed that sex influences senior tuberculosis. In addition, 36% of respondents agreed that education level influences TB among old persons, and 35% said that work position influences tuberculosis among senior people.

The majority of respondents (80%) stated that people with diabetes mellitus had a greater risk of getting tuberculosis. Also, the majority of respondents believed that patients who are malnourished had a higher risk of contracting TB.

5.2 Conclusion

Statistics showed a statistically significant relationship between socio-demographic factors and TB. Males make up a majority of the TB patients at the Wajir County Referral Hospital, with a rate of 57.1%. Patients with TB made up the majority of the population between the ages of 76 and Above Years. The study also found that older males in Wajir county are more susceptible to TB than older women.

The study came to the conclusion that individuals with diabetes mellitus had a significant risk of developing tuberculosis because of their weakened immune systems. This is due to a shortage of diabetes management resources.

The study discovered that a significant contributing factor to the TB illness in Wajir county is malnutrition among the elderly. The elderly's access to food is impacted by a lack of sufficient food supply in Wajir County, a protracted drought, and a lack of pertinent infrastructure.

5.3 Recommendations

To put them closer to the people, fully functional health facilities should be distributed across the area. Mobile units that provide TB testing and treatment services should be established to serve the remote nomads in order to support access to health care. To assist in raising awareness of the causes and risk factors for TB transmission, community mobilization should be conducted in collaboration with the organizations in the Wajir County.

The governments should develop educational initiatives to inform the public about the causes of TB and its treatment. This can help with development of a good perception of community members' expertise. In order to help the Wajir community members understand how to deal with the TB issue and the elements that contribute to its transmission, the suggested program should be employed to safeguard risk factors that can contribute to TB manifestation. The study suggests that the Ministry of Health in Kenya launch and carry out integrated public health campaigns that target all age groups, social classes, and levels of literacy in the Wajir community in order to raise awareness of TB issues. These campaigns should be led by health managers at lower administrative levels.

Education and economic empowerment of the community are both necessary. The government should develop strategies to raise literacy rates since education is thought to improve information receptivity. The community will be able to afford healthcare services and other essentials if marketplaces and roads are opened up for business. The government should also develop a program to assist community members who have diabetes mellitus in lowering their risk of contracting TB. To reduce the danger of malnutrition, the government should also prepare to give food to the poor households.

5.3.1 Suggestions for Further Research

To determine whether the same findings would be obtained, a similar research might be conducted in other counties at various locations. This would allow for the drawing of broad conclusions and the formulation of essential next steps.

REFERENCES

Adane, K., Spigt, M., Johanna, L., Noortje, D., Abera, S. F., & Dinant, G. J. (2017). Tuberculosis knowledge, attitudes, and practices among northern Ethiopian prisoners: Implications for TB control efforts. *PloS one*, *12*(3), e0174692.

Allan, J. (2017). *An analysis of Albert Bandura's aggression: A social learning analysis*. CRC Press.

Bates, M., Marais, B. J., & Zumla, A. (2015). Tuberculosis comorbidity with communicable and noncommunicable diseases. *Cold Spring Harbor perspectives in medicine*, *5*(11), a017889.

Bell, S. C., Mall, M. A., Gutierrez, H., Macek, M., Madge, S., Davies, J. C., ... & Ratjen, F. (2020). The future of cystic fibrosis care: a global perspective. *The Lancet Respiratory Medicine*, *8*(1), 65-124.

Beukes, A. (2019). *Impact of diabetes on the treatment of TB patients in Khomas region, Namibia* (Doctoral dissertation, Namibia University of Science and Technology).

Casucci, B. A. (2015). *A Cold Wind: Local Maasai Perceptions of the Common Health Landscape in Narok South*. Case Western Reserve University.

Dandona, L., Dandona, R., Kumar, G. A., Shukla, D. K., Paul, V. K., Balakrishnan, K., ... & Thakur, J. S. (2017). Nations within a nation: variations in epidemiological transition across the states of India, 1990–2016 in the Global Burden of Disease Study. *The Lancet*, *390*(10111), 2437-2460.

de Lourdes Ochoa-González, F., González-Curiel, I. E., Cervantes-Villagrana, A. R., Fernández-Ruiz, J. C., & Castañeda-Delgado, J. E. (2021). Innate immunity alterations in type 2 diabetes mellitus: understanding infection susceptibility. *Current Molecular Medicine*, *21*(4), 318-331.

Devi, R., Kanitkar, K., Narendhar, R., Sehmi, K., & Subramaniam, K. (2020). A narrative review of the patient journey through the lens of non-communicable diseases in low-and middle-income countries. *Advances in Therapy*, *37*(12), 4808-4830.

Erener, S. (2020). Diabetes, infection risk and COVID-19. *Molecular metabolism*, *39*, 101044.

Jakovljevic, M. B., & Milovanovic, O. (2015). Growing burden of non-communicable diseases in the emerging health markets: the case of BRICS. *Frontiers in public health*, *3*, 65.

Kasera, G. K. (2018). *Factors Associated with Tuberculosis in Kisii County: A Case Control Study* (Doctoral dissertation, COHES-JKUAT).

Kasera, G. K. (2018). *Factors Associated with Tuberculosis in Kisii County: A Case Control Study* (Doctoral dissertation, COHES-JKUAT).

Kirakoya-Samadoulougou, F., Jean, K., & Maheu-Giroux, M. (2017). Uptake of HIV testing in Burkina Faso: an assessment of individual and community-level determinants. *BMC public health*, *17*(1), 1-11.

Kraemer, K., Cordaro, J. B., Fanzo, J., Gibney, M., Kennedy, E., Labrique, A., ... & Eggersdorfer, M. (2016). Diet and non-communicable diseases: an urgent need for new paradigms. In *Good nutrition: Perspectives for the 21st century* (pp. 105-118). Karger Publishers.

Lönnroth, K., Migliori, G. B., Abubakar, I., D'Ambrosio, L., De Vries, G., Diel, R., ... & Raviglione, M. C. (2015). Towards tuberculosis elimination: an action framework for low-incidence countries. *European Respiratory Journal*, *45*(4), 928-952.

Magee, M. J., Kempker, R. R., Kipiani, M., Gandhi, N. R., Darchia, L., Tukvadze, N., ... & Blumberg, H. M. (2015). Diabetes mellitus is associated with cavities, smear grade, and multidrug-resistant tuberculosis in Georgia. *The International Journal of Tuberculosis and Lung Disease*, *19*(6), 685-692.

Mave, V., Meshram, S., Lokhande, R., Kadam, D., Dharmshale, S., Bharadwaj, R., ... & Golub, J. E. (2017). Prevalence of dysglycemia and clinical presentation of pulmonary tuberculosis in Western India. *The International Journal of Tuberculosis and Lung Disease*, *21*(12), 1280-1287.

Mayston, R., Frissa, S., Tekola, B., Hanlon, C., Prince, M., & Fekadu, A. (2020). Explanatory models of depression in sub-Saharan Africa: Synthesis of qualitative evidence. *Social science & medicine*, *246*, 112760.

Natarajan, A., Beena, P. M., Devnikar, A. V., & Mali, S. (2020). A systemic review on tuberculosis. *Indian Journal of Tuberculosis*, *67*(3), 295-311.

Negin, J., Abimbola, S., & Marais, B. J. (2015). Tuberculosis among older adults–time to take notice. *International Journal of Infectious Diseases*, *32*, 135-137.

Njiru, m. N. (2021). Uptake of tuberculosis screening among the community members in Meru county, Kenya.

Poruthiyil, P. V. (2021). Big business and fascism: a dangerous collusion. *Journal of Business Ethics*, *168*, 121-135.

Robertson, G. U. (2021). Explanatory Models of Autism in Nigeria: Exploring Sociocultural Beliefs to Inform Systems of Care.

Van Brakel, W. H., Cataldo, J., Grover, S., Kohrt, B. A., Nyblade, L., Stockton, M., ... & Yang, L. H. (2019). Out of the silos: identifying cross-cutting features of health-related stigma to advance measurement and intervention. *BMC medicine*, *17*, 1-17.

Wells, J. C., Sawaya, A. L., Wibaek, R., Mwangome, M., Poullas, M. S., Yajnik, C. S., & Demaio, A. (2020). The double burden of malnutrition: aetiological pathways and consequences for health. *The Lancet*, *395*(10217), 75-88.

World Health Organization. (2016). *Chest radiography in tuberculosis detection: summary of current WHO recommendations and guidance on programmatic approaches* (No. WHO/HTM/TB/2016.20). World Health Organization.

APPENDIX I: INTRODUCTION LETTER

20th March 2023

To whom it may concern,

RE: RESEARCH PROJECT.

I am a student at the Management University of Africa and I am conducting out a study research on the **FACTORS INFLUENCING TUBERCULOSIS (TB) AMONG THE ELDERLY PEOPLE FROM 65 YEARS AND ABOVE IN WAJIR COUNTY REFERRALS HOSPITAL.** This is a key requirement in partial fulfillment for the requirement for the award. I am required to gather data from you and provide recommendations that will be useful to the healthcare sector.

You were chosen as a respondent in this study after completing the accompanying questionnaire. Please provide the most accurate answers possible to the questionnaire's questions.

Thank you in advance for your interest in taking part in this vital research.

Yours Faithfully,

SOFIA AHAT

APPENDIX II: QUESTIONNAIRE

Tick where appropriate.

1. Indicate your gender

Male ( ) Female ( )

2. Indicate your age bracket?

65-70 ( ) 71-75 ( ) 76 And Above ( )

3. What is your Level of education?

0 Level ( ) Certificate ( )

diploma ( ) Undergraduate ( )

4. Patients who are diabetic mellitus have high chances to contact TB

Yes ( )

No ( )

5. Patients who are Malnutrition have high chances to contact TB

Yes ( )

No ( )

6. To what extent does the following factors contributing to TB among the elderly in Wajir County.

Factor	Very high extent	High extent	Moderate extent	Low extent	Very low extent
Sociodemographic characteristics					
Diabetes					
Malnutrition					

7. Sociodemographic characteristics

	Strongly agree	Agree	Moderately disagree	Disagree	Strongly disagree
Age influence tuberculosis among the elderly people					
Sex influence tuberculosis among the elderly people					
Education level influence tuberculosis among the elderly people					
Employment status influence tuberculosis among the elderly people					

THE END

THANK YOU