

**PREVALENCE OF HEPATITIS B VACCINE AND FACTORS ASSOCIATED WITH
VACCINE UPTAKE AMONG HEALTHCARE WORKERS IN MTHARA
MUNICIPALITY HEALTH CENTERS, TANZANIA**

BY

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**A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
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SCHOOL OF PUBLIC HEALTH AND COMMUNITY DEVELOPMENT

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DECLARATION

I, Mhina Juma Majembe, declare that the work presented in this thesis is my own original work, and that it has not been submitted or presented in any other form to another university. Where use has been made of any work done by other persons it has been duly acknowledged and referenced in the thesis.

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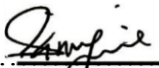
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DEDICATION

This work is dedicated to Tanzania National Institute for Medical Research, Ministry of Health and Public Health Officers, and administrator of Mtwara Municipality Health Facilities.

ABSTRACT

Hepatitis B infection is a serious but preventable blood-borne disease of the liver caused by the hepatitis B virus (HBV). It is the leading cause of liver cancer and cirrhosis. The risk of acquiring hepatitis B virus due to a needle-stick injury or an unsafe injection range from 6% to 30%. The potential for transmission of hepatitis B between clients and healthcare workers (HCWs) is a major public health concern. Tanzania's Ministry of Health reported that in 2017 about 10% only of its physicians knew the correct management of chronic viral hepatitis including HBV. Whereas the national Health guideline requires all HCWs to attain complete HBV immunization, it is not mandatory, and uptake is erratic. The prevalence of vaccine uptake data by healthcare workers as well as their factors associated with vaccine uptake is sporadic. The broad objective of this study was to explore prevalence of HB vaccine and factors associated with vaccine uptake among HCWs in Mtwara Municipality Health Centers, Tanzania. Specifically, it determines Hepatitis B vaccine prevalence; awareness of Hepatitis B on transmission and prevention; identified HCW perception towards uptake and; determine access factors associated with uptake of HB vaccine among HCW's. Descriptive cross-sectional design was used, and data collected from (N=149) HCWs through self-administered questionnaire. The prevalence of HBV vaccine uptake was 53.7% which is higher than most of the studies in the country. In addition, vaccination was higher among the clinical cadres relative to non-clinical ones(60.5% versus 26.7%; $P<0.001$). Significantly more participants trained at Diploma level and above had taken the vaccine (58.9%; $P<0.001$); Vaccine uptake was comparable between female and male HCWs ($P=0.304$). Generally, non-clinical HCW had significantly lower awareness with only 36.7% who correctly identified the transmission mode of HBV as well as prevention methods such as use of PEP and vaccines for prevention of HBV. Access, availability of vaccine and high cost of vaccine for HCW were mentioned as barriers to uptake, perception factors such as perceived risk of working in high-risk environment (80.6%) attributed toward completion of HBV vaccine doses. With only about half of healthcare workers having been vaccinated coupled with low awareness of HBV prevention and barriers towards access factors of the vaccine, the group remain considerably susceptible to HBV infection and likely to be infective to patients. There is urgent need to augment personal protection, uptake of prevention behaviors and promote access and use of Hepatitis B vaccine. Understanding further the health prevention behaviors among these healthcare workers is critical for planning health promotion interventions.

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LIST OF ABBREVIATION AND ACRONYMS

AHO	Africa Health Observatory
BBI	Blood Borne Infection
CHB	Chronic Hepatitis B
CME	Continuing Medical Education
DNA	Deoxyribonucleic acid
GPRM	Global Price Reporting Mechanism
GHSS	Global Health Sector Strategy (on viral hepatitis)
HB	Hepatitis B
HBcAg	Hepatitis B core antigen
HBeAg	Hepatitis B e antigen
HBsAg	Hepatitis B surface antigen
HBV	Hepatitis B Virus
HC	Health Centers
HCC	Hepatocellular carcinoma
HCWs	Health Care Workers
HIV	Human Immune Deficiency Virus
ID	Identification
IgM	Immunoglobulin M
IPC	Infection Prevention and Control
KII	Key Informant Interviews
MOH	Ministry of Health
NatHREC	National Health Research Ethics Committee
NBTS	National Blood Transfusion Service
NGO	Non-Governmental Organization
NIMR	National Institute for Medical Research
PEP	Post-exposure prophylaxis
PPE	Personal Protective Equipment
PPS	Probability Proportion to Size
RMO	Regional Medical Officer
MOHCDGEC	Ministry of Health, Community Development, Gender, Elderly And Children
SPSS	Statistical Package for Social Scientist
TNBTS	Tanzania National Blood Transfusion Services
TTI	Transfusion Transmitted Infection
UPs	Universal precautions
WHO	World Health Organization

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CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Viral hepatitis is a major cause of morbidity and mortality globally. Hepatitis B infection is caused by the hepatitis B virus (HBV), an enveloped DNA virus that infects the liver, causing hepatocellular necrosis and inflammation. Hepatitis B prevalence is highest in the WHO Western Pacific Region and the WHO African Region, where 6.2% and 6.1% of the adult population is infected respectively. The African and Western Pacific regions accounted for 67% of those living with HBV (WHO, 2021a). Tanzania Health Information System (THIS) in 2017 found prevalence of 3.5% among adult of 15 years and older from the sample of 1,310. Prior to THIS, there was no national data on the burden of viral hepatitis in Tanzania. However, sub-population studies in different parts of the country showed the prevalence of HBV to range between 4.4-11.2% (NBS, 2018; TACAIDS, 2018).

The major public health concern is the potential transmission of hepatitis B to clients or health care providers. Previous studies have indicated that the risk of acquiring hepatitis B virus due to a needle-stick (sharps) injury or an unsafe injection was 6% to 30%, compared to 0.5% for hepatitis C virus infection and 0.3–0.6% for HIV (that is, the transmission of three-six times of HIV infections for every 1000 such injuries) (Pépin, Abou Chakra, Pépin, Nault, & Valiquette, 2014; WHO, 2018). In Tanzania, nearly half of the HCWs have experienced at least one occupational injury in 12-month period, that put them in a very high-risk of acquiring Blood-Borne Infections (BBIs) (Mueller et al., 2015).

The risk of HBV infection is greatly reduced by implementing standard precautions recommended for the prevention and control of transmission of the infection. It is critical that health care workers adhere to recommended practices for preventing infection to protect their patients (clients), themselves, and other health care workers from exposure to hepatitis B virus, hepatitis C virus, HIV, and other infections (Loveday et al., 2014). In general, if measures taken are sufficient to prevent hepatitis B virus transmission, they will also prevent all other blood borne infections, including hepatitis C virus and HIV. HCWs were targeted for this study because of their duties in offering treatment, prevention to the community, and support to patients. Unsafe injections within healthcare, community settings and transfusion of contaminated blood and blood products continue to be important modes of HBV transmission. Infection prevention by improving blood safety and instituting universal safe injection practices are core interventions in the Global Health Sector Strategy (on viral

hepatitis) (GHSS) for control of viral hepatitis(WHO, 2021b). WHO recommends the use of sterile single-use needles and syringes for all medical injections and has published guidance on standard procedures for effective sterilization and decontamination of medical devices(WHO, 2021b). Disease control by preventive strategy is more effective than a curative one. Vaccination of health care workers against hepatitis B virus protects staff and their clients and should be implemented routinely. Tanzania has in place an active national strategy(MOHCDGEC, 2018) to eliminate Hepatitis B virus infection in line with the 2030 global goal of Hepatitis B infection elimination goals (World Health, 2017).

Studies have revealed gaps in awareness of the HBV infection transmission and uptake of prevention and control interventions. In 2017, the Tanzania Ministry of health reported that less than 10% of the general population in Tanzania were aware of the chronic viral hepatitis and its sequel. About 10% of physicians knew the correct management of chronic viral hepatitis(MOHCDGEC, 2018). A study conducted in Muhimbili National Hospital in Dar es Salaam that involved 348 HCWs showed that 41.3% (60) of the 145 HCWs that provided the reason for not received the vaccine blamed low level of awareness regarding the availability of the hepatitis B vaccine (Aaron, Nagu, Rwegasha, & Komba, 2017). Another study conducted in the two Northern Tanzania hospital that involved 114 HCWs showed 89% (102) of HCWs reported not to have received any HBV vaccine, the main reason being unawareness of the vaccine 34% (27 of the 79 that provided the reasons) (Debes, Kayandabila, & Pogemiller, 2016).

There is currently no prevalence data on vaccination among the HCWs, the available data is localized to sub-samples of health facilities and mostly targeting clinicians. In 2012, a study was conducted in Mwanza referral hospital that involved 598 HCWs showed the vaccine prevalence of 48.8% (292)(Mueller et al., 2015), three years later (2015) another study was done at Muhimbili National hospital that involved 348 HCWs, the data revealed that only about 33.6% (117) of HCWs interviewed had received the mandatory HBV vaccination (Aaron et al., 2017). In the same time period another study done at Kilimanjaro Christian Medical Centre (KCMC) in Moshi, Tanzania where a total of 442 HCWs participated showed the vaccine prevalence rate of 67.4% (295 out of the 438 valid response) (Shao et al., 2018). This study was a replica to previous studies conducted at other facilities in the country. The study validated other study findings. It strengthens the evidence of previous research findings, and corrects limitations.

1.2 Statement of the Problem

The prevalence of hepatitis B vaccine in Tanzania varies and depend on range of variables such as location (urban or rural), type of Health facility (referral, health center, or dispensaries), type of cadre (clinical or non-clinical) among others. HBV infection is largely preventable by vaccination (WHO, 2017). There is no national prevalence rate of vaccine among the general population neither the HCWs who are at most risk. The Tanzania strategic plan on prevention and control of workplace on HIV, TB and HBV for Health Workers direct all HCWs to be vaccinated free of charge; however, there is no policy enforcement (MOHCDGEC, 2018).

Similarly, the awareness on transmission and prevention of hepatitis B influence prevention and promote uptake for the vaccine. Awareness and practices of the standard measures (Safety devices, PPE and PEP) for prevention and control of transmission of hepatitis B infection is critical in attaining the global goal (Reducing new Hepatitis B infections by 90% and mortality by 65%) (World Health, 2017). There was need to establish HCW vaccination prevalence, awareness, and other underlying factors for uptake to provide basis for the intervention in supporting the Tanzania strategic plan for the control of viral hepatitis by 2023.

1.3 Research Objectives

The following objectives were addressed by the study.

1.3.1 General Objective

To explore the prevalence of hepatitis b vaccine and factors associated with vaccine uptake among healthcare workers in Mtwara Municipality health centers, Tanzania.

1.3.2 Specific Objectives

The specific objectives were to:

- i. Determine the prevalence of hepatitis B vaccine among the HCWs in Mtwara Municipality Health Centers in Tanzania
- ii. Establish awareness of Hepatitis B transmission and prevention of HCWs in Mtwara Municipality Health Centers in Tanzania
- iii. Identify perception of HCW about uptake of HB vaccine in Mtwara Municipality Health Centers in Tanzania.
- iv. Determine access factors associated with uptake of HB vaccine among the HCWs in Mtwara Municipality Health Centers in Tanzania.

1.4 Research Questions

- i. What is the prevalence of the Hepatitis B vaccine among the HCWs in Mtwara Municipality Health Centers, Tanzania?
- ii. What is the awareness of Hepatitis B transmission and prevention among the HCWs in Mtwara Municipality Health Centers in Tanzania?
- iii. What is the perception of HCW about uptake of HB vaccine in Mtwara Municipality Health Centers in Tanzania?
- iv. What are the access factors associated with uptake of HB vaccine among the HCWs in Mtwara Municipality Health Centers, Tanzania?

1.5 Significance of the Study

This study added information on the vaccine prevalence rate, level of awareness, HCWs perception of vaccine and access factors for the vaccine, which are key determinants for the HB eradication. Prevention against any disease is largely influenced by the awareness level of the general population as well as those who are medically trained.

The current study supplements the country effort in implementing national strategic plan for the control of viral hepatitis by 2023 and the Global Health Sector Strategy (GHSS) on viral hepatitis. The global target is to reduce the incidence rate by 95% and mortality by 65% coming 2030(WHO, 2021b).This target can be achieved through evidence that are driven from research.

The results can also be used for planning information and messaging for advocacy with government agencies and other stakeholders. Additionally, the result of this study can help health policy makers and development planners to design and develop appropriate strategies and programs that can help address the low uptake of hepatitis B vaccine by health care workers.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

A review of related literature helped to identify what other researchers have done and reported on the research problem. It also helped to identify areas of controversy or disagreement and discover gaps in existing knowledge in the problem area. In this chapter, a review of the literature relating to HBV and its prevention is presented. Firstly, the public health epidemiology and significance of the problem is presented by a review of literature on HBV, this was followed by a review of literature on vaccination prevalence and uptake factors of HBV by healthcare providers in other parts of the world, sub-Saharan Africa, as well as Tanzania., then finally a review of literature on HBV transmission prevention awareness.

2.2 Pathology of HBV

Hepatitis B virus (HBV) is a small partially double-stranded circular Deoxyribonucleic acid (DNA) virus that belongs to the family Hepadnaviridae. The infectious HBV virion has a spherical, double-shelled structure of about 42nm in diameter, consisting of a lipid envelope containing Hepatitis B surface antigen (HBsAg). This envelope surrounds an inner nucleocapsid composed of Hepatitis B core antigen (HBcAg) complexed the viral DNA genome (Kilonzo, Gunda, Mpondo, Bakshi, & Jaka, 2018).

HBV infection can be either acute or chronic, and the associated illness ranges in severity from asymptomatic to symptomatic, progressive disease. Chronic hepatitis B virus (HBV) infection has been identified as a major risk factor in **hepatocellular** carcinoma (HCC), which is one of the most common cancers worldwide. It is estimated that, close to one million people die due to cirrhosis and liver cancer every year (Abdulai, Baiden, Adjei, & Owusu-Agyei, 2016). The hepatitis B virus can survive outside the body for at least 7 days. During this time, the virus can still cause infection if it enters the body of a person who is not protected by the vaccine. The incubation period of the hepatitis B virus is 75 days on average but can vary from 30 to 180 days (Kilonzo et al., 2018). The virus may be detected within 30 to 60 days after infection and can persist and develop into chronic hepatitis B (CHB). WHO estimates about 325 million people worldwide are living with chronic hepatitis B virus (HBV) (WHO, 2017)

Hepatitis B is spread by percutaneous or mucosal exposure to infected blood and various body fluids, as well as through saliva, menstrual, vaginal, and seminal fluids. Sexual transmission of hepatitis B may occur, particularly in unvaccinated men who have sex with men and heterosexual persons with multiple sex partners or contact with sex workers. Infection in adulthood leads to chronic hepatitis in less than 5% of cases. Transmission of the virus may also occur through the reuse of needles and syringes either in health-care settings or among persons who inject drugs. In addition, the infection can occur during medical, surgical, and dental procedures, through tattooing, or through the use of razors and similar objects that are contaminated with infected blood (WHO, 2015).

2.3 Prevalence of HBV Infection

The World Health Organization (WHO) estimates that in 2019, 296 million persons, or 3.8% of the population, were living with chronic hepatitis B virus (HBV) infection in the world. The African and Western Pacific regions accounted for 67% of those living with HBV (WHO, 2021b). In Africa, all countries in the region consider viral hepatitis an urgent public health issue. The prevalence of hepatitis B is estimated at 5-7% in Central, Eastern and Southern Africa (MOHCDGEC, 2018). Studies on chronic hepatitis B among HCWs from other sub-Saharan African countries have shown varied HBV prevalence, ranging from 2.9 % (Kateera et al., 2015) to 7.4% among the rural HCWs and 5.6% among the urban HCWs (Mueller et al., 2015). In health care settings, a high prevalence may be due in part to the lack of sufficient knowledge and preventive measures by the health-care personnel (Fufore, Cook, & Kirfi, 2016)

Tanzania is regarded to be a higher-endemic country. Tanzania Health Information System (THIS) in 2017 found prevalence of 3.5% among adult of 15 years and older from the sample of 1,310 (TACAIDS, 2018)

2.4 HBV Vaccination and Vaccination Prevalence

Chronic hepatitis B infection can be treated with medicines, including oral antiviral agents. In most people, however, the treatment does not cure hepatitis B infection, but only suppresses the replication of the virus. Therefore, most people who start hepatitis B treatment must continue it for life. There are no national recommendations or vaccination program against HBV for entire population in Tanzania. However, in 2002 Tanzania implemented the WHO policy of general HBV vaccination for children as part of the expanded program on immunization (known as EPI). According to notified data, vaccination coverage of 91% of 1-year-old children was achieved in 2013 (UNICEF, 2019). As a preventive measure, HBV

vaccine is also recommended in other high-risk population groups like HCWs, people who inject with drugs, Hepatitis C Virus-infected patients, and sex workers (in low infant immunization coverage areas). A routine vaccination to these groups has not been on effect in Tanzania (Kilonzo et al., 2018).

A study conducted by (Aaron et al., 2017) that focused on vaccination by the Health Care Workers (348) in Muhimbili National Hospital (Tanzania) found out on the reasons for non-vaccination among HCWs as follows; 65.3% reported that they had not been offered the vaccine, 46.7% observed standard precautions to ensure infection prevention and 41.3% blamed a low level of awareness regarding the availability of the hepatitis B vaccine (Aaron et al., 2017). Hepatitis B vaccination for healthcare workers (HCWs) is a key component of the WHO Hepatitis B Elimination Strategy by 2030. Data on current hepatitis B vaccine coverage among health care workers in Sub-Saharan Africa and especially Tanzania are scarce, but these data are vital for effective programming (Aaron et al., 2017).

2.5 Health Care Workers Awareness on HBV Vaccine

Similar to HIV/AIDS, HBV can be prevented in various ways however, few people and especially the literate including HCWs have low awareness with regard to prevention methods. A study conducted by Aslam that involved 252 of health and sport science students reveals low awareness regarding vaccination and other prevention measures, only 52% (131) students knew that there was a vaccination for HBV, also 16% (40) of students surveyed knew that with HBV vaccine can confer lifelong immunity. Only 32% (81) believed that wearing gloves can protect against HBV, similarly, 32% (81) were not aware that safe disposal of hospital waste is important against the spread of infection (Aslam Ghouri 2013).

HCWs occupational increased risk of contracting HBV, screening, and vaccination to all HCWs to maintain an anti-Hepatitis B surface > 10 International Units Per Milliliter (IU/mL) are recommended and for those who are Hepatitis B surface antigen-positive, a potent antiviral agent should be provided to maintain the HBV-DNA < 2000 (IU/mL) (Kilonzo et al., 2018). In addition, post-exposure prophylaxis of Hepatitis B Immune Globulin (HBIG) with active vaccination (in nonimmune) must be commenced immediately following an occupational hazard (Sarin et al., 2016).

2.6 Health Care Workers Awareness on Prevention, and Transmission of HBV

For the effective prevention of HBV in the healthcare setting; it is very important that HCWs have a good knowledge regarding the risk of contracting HBV. They are supposed to know about the availability and usefulness of the HBV vaccine, PEP, and Universal Precautions (UPs). Most importantly they should put into practice their knowledge and adhere to safe practices such as pre-exposure vaccination, Universal Precautions including safe injection practices, and Post-exposure prophylaxis PEP if they happen to be accidentally exposed (Machiya, 2010).

Several studies reviewed from around the globe have found awareness about PEP to vary, with most HCWs knowing about PEP and most HCW not knowing about PEP in different settings. For example, the level of nurses' awareness on occupational post-exposure to hepatitis B infection in the Tamale metropolis in Ghana that involved 108 nurses revealed that, about 23.4% were able to mention all the key elements of the post-exposure management with 12.1% having adequate knowledge on post-exposure prophylactic treatment against HBV, these results show low-level of awareness on the PEP (Konlan, Aarah-Bapuah, Kombat, & Wuffele, 2017). Also, 76.3% of Iranian medical students (1,509) were not aware of PEP for HBV (Khan, Sheikh, Khalid, Siddiqui, & Merchant, 2010). Nurses are aware of their risk of occupational exposure to hepatitis B but lack the requisite knowledge on post-exposure management as well as measures that reduce the exposure (Konlan et al., 2017). The proposed study has tested the awareness of HCWs on whether HBV can be prevented with PEP during exposure.

Blood Transfusion: Median overall risk of becoming infected with HBV from blood transfusions in sub-Saharan Africa is estimated to be 4.3 per 1000 units of blood. This is largely contributed by an incomplete screening of Transfusion Transmitted Infection (TTI) in transfused blood (Jayaraman, Chalabi, Perel, Guerriero, & Roberts, 2010). The blood safety standards include a collection of blood from voluntary non-remunerated blood donors from low-risk populations of TTI in a nationally coordinated blood transfusion service and screening of donated blood for all TTIs. Before the establishment of Tanzania National Blood Transfusion Service in the country in 2004, family donation was the significant source of the transfused blood that was mostly used for replacement purposes (Kilonzo et al., 2018). To date, about one-third of the blood that is being transfused is being issued by NBTS blood banks, which is usually rigorously screened and tested for all TTIs including Hepatitis B

(Drammeh et al., 2018). Despite having substantial number of HCWs who are at risk of acquiring occupational HBV infection, most of these preventive measures are not in place in the country. A formal vaccine for HBV is being offered to the infants as mandatory but HCWs are not taken seriously despite the directive provided by the Ministry of Health. This study explored the gap between awareness and access factors for vaccine uptake.

Safe injection practices, eliminating unnecessary and unsafe injections, can be effective strategies to protect against HBV transmission. Unsafe injections decreased from 39% in 2000 to 5% in 2010 worldwide. Furthermore, safer sex practices, including minimizing the number of partners and using barrier protective measures (condoms), also protect against transmission (WHO, 2015). Tanzania Ministry of Health, community development, gender, elderly and children has published several guidelines on infection prevention and control (IPC) in which extensive instructions on proper hand washing, surgical hand preparations, use of gloves, injection safety, safe cleaning of equipment, and sharps disposal have been provided (Kilonzo et al., 2018). In spite of this, the knowledge and practice of these safety measures among HCWs vary considerably in the country with excellent performances being observed in some areas, while others exhibit substandard practice (Kuchibanda & Mayo, 2015). All in all, to achieve consistently safe practices, continuous training on IPC in HCWs is required and thus the prevention of HBV can be attained.

A study conducted in Nigeria at Obafemi Awolowo University Teaching Hospitals among 382 HCWs, their awareness of other body fluids as a source of infection was found to vary among respondents by cadre. For instance, doctors had a reasonably good knowledge of saliva as a medium of infection (59%) compared to other professionals. On the other hand, only doctors had low levels of awareness that vaginal/seminal fluid could be a source of infection (27%) (Adekanle, 2015).

Unlike HIV/AIDS, tuberculosis, and malaria, health education activities on HBV are extremely limited. Given a low awareness level and a corresponding low HBV vaccination coverage among the HCWs, this group is highly vulnerable and a likely source for perpetuating the infection transmission. A study conducted in Iran among 91 medical students found that 41% of the medical student knew that inactive HBV carriers do not need treatment, while 58% had the wrong answer of HBV carrier's treatments. The same study revealed that, only 29% of the medical students knew about the medicine that treats HBV (Karimi-Sari, Tajik, Bayatpoor, Sharafi, & Alavian, 2017). This shows the magnitude of the

problem and its similar case in Tanzania where it was shown that less than 10% of physicians knew the correct management of CHB. Another study conducted by (Aslam Ghouri 2013) on knowledge and awareness of hepatitis B among students at a public-sector university found out that, students had more information about basic knowledge than a mode of transmission, treatment, and prevention of hepatitis B. In the same study, it was found 66% of students knew that there was a treatment for HBV while 34% did not know that there is a treatment (Aslam Ghouri 2013). This study also focused in investigating different cadre of HCWs awareness of HBV. HBV can be prevented in various ways; however, due to lack of awareness regarding prevention, the problem persists. The same study on mode of transmission, the bulk of the respondents (78%) knew that blood transfusion and reuse of syringes were important sources of transmitting these infections. But a large group (62%) did not consider sexual contact as a source of transmission. Sharing room with a hepatitis B infected person was acceptable to only (30%) respondents and a reasonable number of students (32%) thought hepatitis B could spread through cough and sneeze of a patient. Visit a barber (66%) and dental and surgical procedures (48%) were stated to be the major source of infection (Aslam Ghouri 2013).

Further, it has been shown that medical student had low awareness on the route of transmission, only 21% had a correct statement with regard to the route of transmission. The same study also showed 40% of the medical students knew that hepatitis B patient can marry without transmitting it to his/her spouse. On the same study, 31% of medical students did not know that women with hepatitis B become pregnant and give birth to a healthy baby (Karimi-Sari et al., 2017)

2.7 Health Care Workers' Perception and Underlying Factors for HB Vaccine Uptake

There are several myths around challenges of HBV vaccine uptake, some of these reasons according to literature are lack of strong policies in the health care settings, inadequate knowledge of vaccine, type of profession, availability of the vaccine, cost of the vaccine, cultural belief, fear for side effect among others. A study conducted in Tripoli Libya among the 2,705 HCWs at the tertiary hospital revealed that, all tertiary hospitals had policies requiring staff to be vaccinated against HBV free of charge. The challenge investigated was that free HBV vaccination was not routinely offered to staff despite the policy in place, in that 65% (1,758) of those that received partial vaccination had not been vaccinated for the past 5–10 years and 17% (460) had not been vaccinated at all (Ziglam, El-Hattab, Shingheer, Zorgani, & Elahmer, 2013). This shows vaccine uptake is erratic despite having policies in

place. Another determinant factor is the willingness to receive the vaccine, a study conducted in Nigeria among the 209 HCWs of the specialist hospital found out that, all HCWs who perceived self to be at high risk of contracting HBV were willing to receive the vaccine compared with those with a low perception of risk. Equally too, almost all HCWs (99.2%) with adequate awareness of HBV were willing to receive the vaccine compared to those with low awareness level. HCWs who had secondary education and above (98.9%) were more willing to receive the vaccine ($p < 0.001$). The older HCWs were also more willing to receive vaccine than the younger HCWs. In conclusion, awareness, education levels and age were motives factors for vaccine uptake (Ogundele et al., 2017). It is noteworthy that senior cadres of doctors, those with longer work experience, and those with prior training were more likely to be vaccinated than other HCWs.

A study was done in Tripoli plausible that, younger HCWs have poorer vaccine uptake probably due to their lower access to HBV vaccine or poorer awareness of the need for HBV vaccination. The results on uptake further indicated that, the senior cadres of HCWs with more years of professional experience were less likely to complete HBV vaccination. In the study, it was realized that motivation, access to vaccines, cost implications, and risk perception are some of the variables that determined vaccine completion rates (Ziglam et al., 2013). Another study conducted in Younde Cameroon involved 100 HCWs, HCWs felt that vaccination against HBV should be compulsory for all health care workers to be vaccinated, this will eliminate all other barriers for uptake. In the study, only 19 % had received at least one dose of the vaccine. Of those who never had any dose of the HBV vaccine, the reasons for not being vaccinated were lack of sufficient information on the vaccine (49.4 %), lack of money to pay for the vaccine (33.3 %), lack of time (12.3 %) and lack of motivation (4.9 %). All the HCWs were willing to receive the vaccine if mentioned barriers are eliminated (Tatsilong et al., 2016).

2.8 Awareness Level Cut-off Point Scores

The measurement of awareness level is ambiguity; different researchers have analyzed questions related to awareness differently. A study on Hepatitis B awareness and associated factors among people with chronic hepatitis B in Australian and New Zealand (Hajarizadeh, 2015) used a cut-off point of equal or greater to 75 for high awareness and below that was considered as poor awareness. Another study on awareness about Hepatitis B Infection among undergraduate Medical and Health College Students, Baghdad used the cutoff point of percent score categorized as students who had scored less than 60% as poor, 60-70% as fair,

while those with 70-79% were considered as good, 80%-89% as very good and 90%-100% as excellent (Alnaser, 2019). There is no “gold standard” for setting passing scores. Usually, the choice of the standard-setting method is based on the available resources and the practical realities of the educational environment. (Tekian & Norcini, 2015). This study measured 26 sets of questions with percent score set from 0 – 100. In this study, the percent score of greater or equal to 70 was used to separate those with poor awareness and those with high awareness. The article by Biddle, 1993 on how to set cutoff scores for knowledge tests used in promotion, training, certification, and licensing insist that the score of 70% has been widely used as passing mark throughout elementary school, high school and college and it has been used for long, this score separates those who pass from those who did not, however, the score has also been challenged (Biddle, 1993).

2.9 Operational Framework

The study looked at various types of variables that comprise of independent factors such as awareness of HBV prevention and transmission, type of HCW occupation cadre, their decision and perception such as fear of side effect of vaccine. The study also looked at factors such as availability, accessibility, affordability, and policy in place that would influence other access barriers. All these factors have influence towards HB vaccine uptake, and significantly attribute to the global goal of eliminating viral hepatitis as a public health threat by 2030 (reducing new infections by 90% and mortality by 65%) that Tanzania aspires to achieve is pre-determined by those factors.

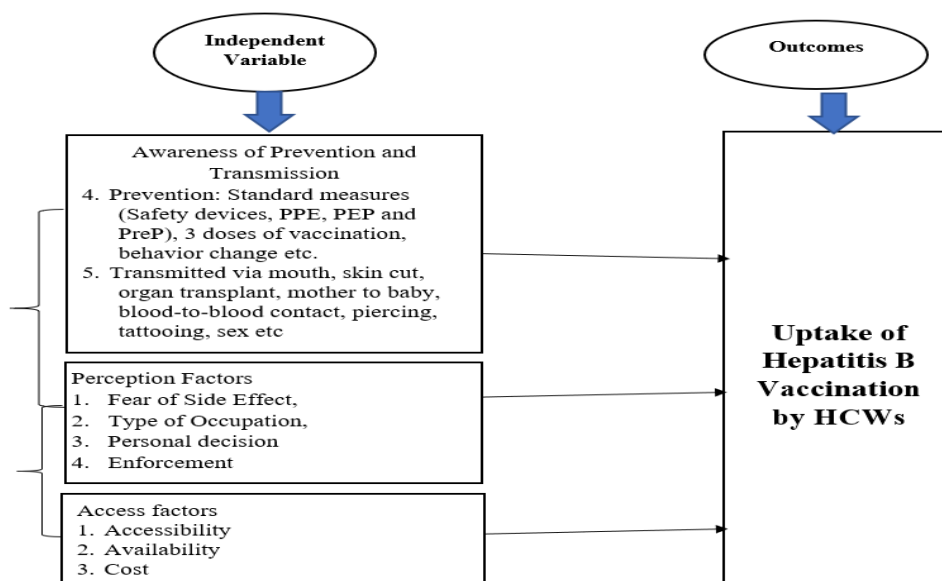


Figure 2.1: Operational framework showing the relationship of variables.

2.10 Summary of Literature

Most of the HBV studies on awareness have been conducted in health facilities, schools\institutes, and barracks. HCWs have been the most targeted group due to their occupation that exposes them to the risk. Majority of the studies that focused on HCWs vaccine prevalence and their associated factors towards uptake do not include all set of cadres within the health facilities such as cleaners, cooks, drivers who their activity involve contact with patients or with blood or other body fluids from patients in healthcare, laboratory, or public-safety setting. In this study, all the sets of cadres using the PPS method were surveyed hence provide a wide range of information among HCWs in the selected health centers.

The literature has shown there is still a lack of awareness among the HCWs on HBV prevention and transmission modes however the awareness and enabling factors for the uptake of the vaccine varies widely among cadres e.g., doctors were found to be aware of the mode of transmission compared to nurses, pharmacist, etc. hence spark the need for the current study to assess other sets of lower-level cadres. Studies have revealed that there is a gap in vaccination status among HCWs, there was no significant finding that shows a certain group of cadres has undergone a full vaccination program. The reasons for not undergone fully vaccination varied from awareness to the availability of vaccines. Most studies did not focus on the policies of the vaccination program and how they were enforced, in Tanzania, there is a policy that all HCWs should be vaccinated for free however there no data on its implementation and enforcement(MOHCDGEC, 2018). This study dived into assessing access factors and HCW perception of vaccine uptake alongside their prevalence.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter consists of a description of the study setting, study design, the methods that were used, data source, variables measurement, area of the study, sampling techniques, sample size, data processing, and analysis.

3.2 Study Area

The study setting was in Mtwara Region at Mtwara Municipality. Mtwara is bordered to the North by the Lindi Region, to the East by the Indian Ocean, and to the South and West by the Mtwara Rural District. According to the 2012 Tanzania National Census, the population of the Mtwara is 1.271 million. Mtwara is in the remote southern part of Tanzania about 500km from Dar es Salaam. Mtwara Region has five (5) districts (Nanyumbu, Mtwara Municipality, Masasi, Mtwara rural, and Newala) (Appendix I). The study took place in Mtwara Municipality Health Centers. According to the Tanzania Health Open Data center, Mtwara Municipality has 19¹ public Health facilities which include 1 referral Hospital, 2 Health Centers, and 16 dispensaries. Public hospitals (1) and Health centers (2) constitute the first sampling unit, this was because the centers have HCWs of all professions, who provide a higher level of care, unlike the dispensaries. The two facilities selected have a similar distribution of healthcare cadres. However, the Ligula referral health facility has an additional infrastructure for advanced medical care including medical specialists, advanced medical equipment, higher bed capacity, and ultimately many numbers of supporting staff such as cleaners.

3.3 Research Design

In this study, a cross-sectional design was used, adopted both qualitative and quantitative methods.

3.4 Target population

The target population is Health Care Workers who work at the selected facilities (Two Health centers and 1 Referral hospital).

¹http://health.opendata.go.tz/#/dash/districts/facilities/?_k=gmlqbj

3.5 Study Population

The study included all healthcare workers in the selected health centers in Mtwara Municipality. They included the nurses, clinical officers, laboratory technicians, medical doctors, administrative officers, cooks, cleaners, guards, and volunteers.

3.6 Inclusion and Exclusion Criteria

3.6.1 Inclusion criteria

All the HCWs of all type of cadre who were working in the selected health facilities (employees, volunteers, sub contracted service providers and community-based facilitators) were included in the study.

3.6.2 Exclusion criteria

HCWs who were unwilling to give consent for study, those that did not return the questionnaire and those that submitted incomplete questionnaire were excluded.

3.7 Sample Size Determination

Individual HCWs in Mtwara regional Municipality public health centers and a hospital constituted the basic sampling unit. In other words, the study population was the HCWs.

The sample size was determined based on Krejcie and Morgan's (1970) Estimation of sample size using the following formula:

n = required sample size

X^2 = the table value of chi-square for one degree of freedom (=95% confidence level, the margin of error is 5%)

N = the population size

P = the population proportion (assumed to be 0.5 since this would provide the maximum sample size)

d = the degree of accuracy expressed as a proportion (0.1)

This sample size is reflected in the table below, the table was published by Krejcie and Morgan's (1970) in the article "Determining Sample Size for Research Activities" (*Educational and Psychological Measurement*, #30, pp. 607-610)

$$n = \frac{X^2NP(1 - P)}{d^2(N - 1) + X^2P(1 - P)}$$

Table 3.1: Table for Determining Sample Size from a Given Population

<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>
10	1	2	14	1200	291
15	1	2	14	1300	297
20	1	2	14	1400	302
25	2	2	15	1500	306
30	2	2	15	1600	310
35	3	2	15	1700	313
40	3	2	16	1800	317
45	4	2	16	1900	320
50	4	3	16	2000	322

***N* is population size.**

***S* is the sample size.**

The study population was 245 which is close to 250 hence our sampling was 152 HCWs in all the 3 Health Centers and Hospital However, 170 questionnaires were distributed to take care of attrition. A total of **149** were analyzed after checking for completeness and coding.

3.8 Sampling frame and sampling procedures

Sampling frames constituted of healthcare providers working in all departments, including trained nurses, medical attendants, and clinicians – both surgical and medical-related specialties, laboratory technicians, supporting staff such as cleaners, cooks, drivers were sampled. In these two facilities (3 centers) according to hospital records, there are about 245 HCWs, the study did not manage to establish the actual figures from the hospital records.

Table 3.2: Number of Health Care Workers by Different Levels of Cadres in the Study Health Centers/Hospital

HCWs Cadres	Total ²	Ligula Hospital	Likombe Health Centre	Mkindani Health Centre
Medical officer/doctor	25	19	3	3
Assistant Medical Officer	6	5	1	0
Clinical officer	37	28	5	4
Assistant Clinical Officer	10	4	3	3
Registered nurse/nurse midwife/Enrolled nurse	135	123	6	6
Dentist	3	3	0	0
Laboratory Technician	2	2	0	0
Pharmacist	8	4	2	2
Other	19	10	5	4
Total	245	198	25	22

Source: Hospital and Health Centers Administrative Records of 2015/2016 (Note: The Numbers are not Static and did not Reflect 2020 Figures)

In determining the selected sample unit, a list of available HCWs for each day during the week of data collection was generated on-site per facility stratified by their cadres after obtaining approval from the facility manager. Then probability proportion to size sampling from each stratum (facility and cadre) was performed to select individual participants. Simple random sampling was used to select individuals from each cadre per facility using a random number table.

²<http://health.opendata.go.tz/dataset/idadi-ya-wafanyakazi-wa-afya-kwa-mikoa/resource/9645f79d-8860-4379-82d2-5ff626727f14>

Table 3.3: Probability Proportion to Size Calculation for the Hospital and Health Centers by Number, Proportion, and Sample Selected for Different Cadres of HCWs

	Total	Ligula Hospital	LikombeHC	MikindaniHC	Total		Ligula Hospital		Likombe HC		Mikindani HC	
					p̂	N	p̂	N	p̂	N	p̂	n
Medical officer/doctor	25	19	3	3	0.10	16	0.10	12	0.12	2	0.14	2
Assistant Medical Officer	6	5	1	0	0.02	4	0.03	3	0.04	1	0.00	0
Clinical officer	37	28	5	4	0.15	23	0.14	17	0.20	3	0.18	2
Assistant Clinical Officer	10	4	3	3	0.04	6	0.02	2	0.12	2	0.14	2
Registered nurse/nurse midwife/Enrolled nurse	135	123	6	6	0.55	84	0.62	76	0.24	4	0.27	4
Dentist	3	3	0	0	0.01	2	0.02	2	0.00	0	0.00	0
Laboratory Technician	2	2	0	0	0.01	1	0.01	1	0.00	0	0.00	0
Pharmacist	8	4	2	2	0.03	5	0.02	2	0.08	1	0.09	1
Other	19	10	5	4	0.08	12	0.05	6	0.20	3	0.18	2
Total Population	245	198	25	22	1.00	152	1.00	123	1.00	16	1.00	14
Sample Size	152	123	16	14								

Note: $p̂$ is proportion = type of cadre divide (/) by the total population

n is population sample = proportion ($p̂$) * required sample size

Key Informants

Key informants were purposively selected. They included medical officer in charge of referral hospital and a supervisor of health center. Also, the head of vaccination program at the referral hospital and program officer at the Mtwara National Blood Transfusion Service were interviewed. These key informants were the main focal persons in exploring issues around HCWs vaccination program and other dynamics around vaccine uptake.

3.9 Variables measurements

Two types of variables were measured: independent and dependent variables.

Independent variables.

1. Profession type (HCWs cadre) – this means a cadre that the HCWs belong and that include Doctors, Dentists, Pharmacists, and Pharmaceutical Technologists, Nursing Officers, Clinical Officers, Public health Officers/Public Health Technicians, Cleaners, Cooks, Volunteer, Driver, or Others whose work activities involve contact with patients or with blood or other body fluids from patients in healthcare, laboratory, or public-safety setting.

The profession was then dichotomized into medical\clinical cadre and a non-medical\clinical cadre. Clinical HCW were those that their work involved making direct contact with patients for the purpose of diagnosis, treatment, and ongoing care whereas Non-clinical HCW were those that do not provide any type of medical care, treatment or testing e.g., medical billers, human resources, IT, cooks, cleaners, administrative assistants. This category was analyzed across other independent variables.

2. Sex –Male or female.
3. Age – this was collected in a categorical variable into five (5) age group 18- 24, 25-30, 31-35, 36-40, 41 or greater - this was later classified as younger age (18 -30), middle-age (31 - 40) and upper age (41+)
4. Duration of professional practice – cumulative number of years the HCWs worked in any given health facilities. This was then grouped into 5 categories.
 - a. (Less than a year <1) – Entry-level
 - b. (1 – 3) – Junior level
 - c. (4 – 7) – Middle level
 - d. (8 – 10) – Intermediate level
 - e. (More than 10 years)– Senior-level
5. Highest level of professional training- Certificate, Diploma, Higher Diploma, Bachelor's Masters, and higher and not attended/completed primary. Note: level of education was referred to years of completion

Dependent Variable: Uptake of Hepatitis B Vaccine among Health Care Workers through completion of Hepatitis B vaccine doses.

3.10 Data collection Tools

Quantitative and qualitative data collection methods were used to collect data relevant to answer the research questions. These were questionnaire (Appendix IV) and key informant interview guides (Appendix V) respectively.

Questionnaire: The questionnaire was the main tool used to collect data for this study. The tool consisted largely of closed-ended questions and a few open-ended questions. The questions were adopted from the WHO 2015 Guidelines for the prevention, care and treatment of persons with chronic hepatitis B infection (WHO, 2015). The content included was sectioned according to the specific objectives, namely: vaccine prevalence among HCWs, awareness of Hepatitis B prevention, transmission, perception, and access factors associated with uptake of vaccine.

Demographic information was the first section in the questionnaire followed by general awareness of Hepatitis B, section three was on awareness on mode of transmission of HBV Infection. Section four of the questionnaire consisted of awareness on prevention of HBV Infection, section five comprises of awareness on treatment, while section six was about prevalence of vaccination uptake and awareness of HBV Vaccine. The last section was section five that explored challenges for uptake Hepatitis B Vaccination.

Key informant guides: The content of the KI guide was based on the objectives related to the access factors of the vaccine within Mtwara and health facilities. It also explored available policy or guideline for the HCWs vaccine program, availability of vaccine, cost, accessibility among others.

Study Team: Four enumerators were recruited and trained on the applicability of questionnaire including the meaning of each question for clarity in case respondent asked. Recruited Enumerators had the following composition and merits; one enumerator was Clinical officer - Intern at the Mikindani health center, two were data clerk at the Ligula hospital and Likombe Health Center and one was formerly data officer at Ligula hospital. Three of the enumerators had a diploma level certificate and one with certificate. Additionally, data entry enumerator was recruited to support with data entry.

3.10.1 Data Collection procedures

Data collection was done from May 25th to June 9th, 2020.

Questionnaire administration: The paper-based questionnaires were distributed to 170 respondents for self-administration. Due to the COVID-19 outbreak self-administered questionnaire was the best mode of data collection to minimize contact with participants in adherence to the public health guidelines.

Questionnaire Coding: All health facilities were listed and assigned code starting from 100 with an interval of 100 i.e. 100, 200, 300, etc. All participants were given code 001 to the last participant after being selected from the sampling frame. The code of research assistance started from 10 with an interval of 10 i.e. 10, 20, 30. Healthcare workers were identified through the hospital administration and heads of departments. The questionnaires were collected by appointment from the healthcare workers upon completion.

Key Informant Interviews: face-to-face interviews using an interview guide were conducted. all COVID-19 protocol were including wearing of surgical masks for both participants and physical distance during interview.

3.10.2 Reliability and Validity

The reliability of the questionnaire was assessed by administering it to a small sample of 5 HCWs from Ligula Referral hospital. The reliability ratio was measured using reliability analysis in the SPSS software. Cronbach's alpha test result was 0.723. This alpha is greater than the recommended alpha for the item less than 10 where the alpha should be greater than 0.5. The objective of the exercise was to assist in detecting the clarity of questions, usability, and logistics of administration, and the necessary adjustments were done using this information. The participants who were used for reliability and validity checks were excluded from the final research.

3.11 Data management Plan

3.11.1 Data Entry

Questionnaire data were hosted on the web and mobile platforms. The self-administered questionnaires were retrieved from the respondents and entered in the mobile device and uploaded in the cloud to google forms. Double entry was done using different Google accounts to check any deviance of the information. Data was then retrieved from the server through the Excel format and transferred to SPSS (version 26) software for analysis. EPI Info and access were used to check any deviance of the information entered.

3.11.2 Data Coding

Interview data was entered in Excel, using grounded theory approach emerging themes and sub-themes were coded, analyzed thematically and findings presented as per the objective.

3.11.3 Data Storage

Quantitative and qualitative data were stored automatically in a Microsoft Share Point site and One Drive after being retrieved from the mobile device.

3.12 Data Analysis

Data analysis was done using SPSS version 26 (IBM SPSS Inc., Chicago, IL, USA).

Specific Objective 1: Prevalence of HBV vaccine uptake: Differences in the proportions of those who had taken the full vaccine(≥ 3 doses) and those who had not or completed full dose was determined, Pearson Chi-square (χ^2) test to determine the association. The strength of association was assessed using odds ratio. Specific Objective 2: Awareness of HBV prevention and transmission modes was determined using descriptive statistics. Statistical significance was determined at P-value ≤ 0.05 . Healthcare worker's awareness was computed through a 5-point Likert scale. The responses were transformed to correct answers as one question was inversely framed, that question is found in table 4.7 which state that; HBV can be prevented via treatment of infected person. The variables were recoded to arrive at YES meaning they were aware and NO meaning they were not aware. The data was then presented through descriptive statistics. Later awareness variables were transformed into scores. The study done by (Biddle, 1993) on how to set up cut off scores provided the base for setting up the score, in this study the 70% cutoff score was set to separate those with high levels of awareness from those that are not.

Question's value "1" was assigned for correct answers (High) and "0" was assigned to all other answers (Low), see appendix x. In total there 26 sets of questions on awareness, transmission awareness had 16 questions, and prevention awareness had 8 questions while questions on treatment were 2. To get the total score the number of responses was divided by total questions and multiplied by 100 percent, the scores were then transformed into high awareness for scores greater or equal to 70% and Low awareness for scores less than 70%. The data was then presented through descriptive statistics. Specific Objective 3& 4: HCW perception and access factors associated with vaccine uptake were analyzed, some of the questions were open-ended thus coding, sub-theme, and the theme were generated through excel. The themes were transformed into categories and presented through descriptive statistics.

Qualitative data analysis: Interview data were coded, sub-theme, and the theme was generated through excel. The themes were transformed into categories and presented through descriptive statistics. Key informant interview findings were coded and presented in the narrative to support findings for all the objectives.

3.13 Ethical Consideration

Maseno University School of Graduate Studies granted clearance to conduct the research prior to ethical review under reference number EL/MED/00022/16 (See Appendix XI). Ethical approval to conduct this research was obtained from the Ethical Review Board - National Health Research Ethics Committee (NathREC) of Tanzania on 23rd January 2020 with reference number NIMR/HQ/R.8a/Vol. IX/3322 (See Appendix XII).

3.13.1 Informed Consent

The participants were given informed consent so as to make a decision whether to participate in the study or not. Each participant had the right to decline or discontinues participating in the research at any time and at will (Appendix VIII).

3.13.2 Anonymity

Individual data has not been reported but only aggregate and summary reports have been communicated. Names of HCWs were not used to safeguard the privacy of the participants but only relevant demographic information, in doing so a unique code number was assigned to participants to ensure confidentiality.

3.13.3 Confidentiality

The HCWs were guaranteed that there was protection of information given and the data collected was treated with total confidentiality. No information that reveals identity of any participant was released or published without participant consent.

3.13.4 Potential Benefits and Risks

The HCWs did not benefit directly by participating in this study. However, the information obtained was to be used by the public health actors, researchers, and government to improve vaccine prevalence and the general level of awareness on HBV among HCWs.

3.13.5 Participation and Respect for persons

Participation in this study was voluntary. No individual was forced to participate in this study. Maintenance of the autonomy through signing of the consent form of the participants was adhered such as voluntary participation, Informed consent, Information of the benefits of the study, dissemination of findings to the participants if they wish

CHAPTER FOUR

RESULTS

4.1 Introduction

This section presents the analysis of univariate variables whereby background characteristics of respondents are discussed. Frequency tables are generated for variables such as age, sex, health facility, profession experience, and education level.

4.2 Socio-demographic characteristics of the respondents

Response Rate: A total of 149 respondents out of 152 of which 56.4% female and 43.6% male were interviewed. This was equivalent to 98% of the targeted sample size. Ligula Health center had most respondents 72.5%, Mikindani 16.8% and Likombe Health Centre 10.7% ($X^2=103.584$; $df = 2$; $p < 0.001$). A significant proportion (30.2%) were aged over 40 years old ($X^2 = 21.168$; $df = 4$; $p < 0.001$) (Table 4.2).

Nursing cadre comprised the highest proportion (45.6%; $n = 68$) compared to others ($X^2=330.779$; $df = 12$; $p < 0.001$). By work experience, at least 30.9% had been working in a health care facility for a duration of 4 -7 years followed by those who had worked for more than 10 years (25.5%) ($X^2=17.879$; $df = 4$; $p = 0.001$). Only 20.8% had attended continuing medical education within the last 12 months while at least 38% had never ($X^2=2.960$; $df = 1$; $p = 0.085$) (table 4.1).

Table 4.1: Socio-Demographic Characteristics

Variable	Frequency	Percentage	X^2	df	P
Sex of Respondent			2.423	1	0.120
Male	65	43.6			
Female	84	56.4			
Age of the Respondent					
18-24	15	10.1	21.168	4	<0.001
25 -30	39	26.2			
31 – 35	30	20.1			
36 – 40	20	13.4			
41 or greater	45	30.2			
Cadres of the Respondent					
Doctor	20	13.4	330.779	12	<0.001
Pharmacists and Pharmaceutical Technologists	2	1.3			
Nursing Officers	68	45.6			
Clinical Officers	10	6.7			
Radiologist	1	.7			
Environmental officer	3	2.0			
Laboratory technician	8	5.4			
Cleaner	10	6.7			
Driver	2	1.3			
Others	10	6.7			
Medical attendants	8	5.4			
Data Clerks	5	3.4			
Accountants	2	1.3			
Highest level of professional training			42.913	4	<0.001
Certificate	53	35.6			
Diploma	45	30.2			
Higher diploma	14	9.4			
Bachelor's Degree and higher	14	9.4			
No Certificate - attended\completed primary	20	13.4			
Total	149	100.0			

Table legend: Data are presented as frequencies (percentages) unless otherwise stated. Analysis was done using frequency distributions and non-parametric test chi-square for independent variable.

Table 4.2: Other Socio-Demographic Characteristics

Variable	Frequency	Percentage	χ^2	df	P
Name of Health Facility					
Mikindani Health Centre	25	16.8	103.584	2	<0.001
Likombe Health Centre	16	10.7			
Ligula Hospital	108	72.5			
Profession Cadre					
Clinical HCW	119	79.9	53.161	1	<0.001
Non-Clinical HCW	30	20.1			
Work Duration Category					
Entry-level	23	15.4	17.879	4	<0.001
Junior level	22	14.8			
Middle level	46	30.9			
Intermediate level	20	13.4			
Senior-level	38	25.5			
Last Attended Continuing Medical Education (CME) on infection prevention and control					
Within the last 12 months	31	20.8	70.826	5	<0.001
In the last 2 years	24	16.1			
In the last 3 – 5 years	21	14.1			
More than 6 years ago	9	6.0			
Never attended	58	38.9			
I have recently been employed	6	4.0			
Aggregated (CME) on infection prevention and control					
Ever attended CME	85	57.0	2.960	1	0.085
Never attended CME	64	43.0			
Total	149	100.0			

Table legend: Data are presented as frequencies (percentages) unless otherwise stated. Analysis was done using frequency distributions and non-parametric test chi-square for independent variable.

4.3 Prevalence of hepatitis B vaccine uptake among the HCWs in Mtwara Municipality Health Centers in Tanzania

To determine the prevalence of HBV vaccine uptake by HCW at Mtwara Municipality Health Centers in Tanzania, the participants were categorized into two groups i.e., those who had taken the full dose Hepatitis B vaccine (≥ 3 doses) and those who had not completed the full dose (< 3 doses). The current study revealed that there were 53.7% (n=80) who had taken the full dose. The age difference between those who had taken and those who had not was not statistically different ($p=0.113$). Of the HCW who did not have any formal medical training but only had primary school certificate, 23.2% (n = 16) had taken the full dose.

Table 4.3: Socio-demographic characteristics and the prevalence of hepatitis B vaccine uptake among the HCWs in Mtwara Municipality Health Centers in Tanzania

Characteristic	Uptake of Vaccine		P-Value
	Complete dose (≥3) n=80	Incomplete dose (<3) n=69	
Sex			
Male	38 (47.5)	27 (39.1)	0.304 ^a
Female	42 (52.5)	42 (60.9)	
Age of respondents (years)			
Young age (18-30)	23 (28.7)	31 (44.9)	0.113 ^a
Middle age (31-40)	31 (38.8)	19 (27.5)	
Old age (41 and above)	26 (32.5)	19 (27.5)	
Highest level of Professional training			
No certificate	4 (5.0)	16 (23.2)	<0.009^a
Certificate	29 (36.3)	24 (34.8)	
Diploma	38 (47.6)	21 (30.4)	
Bachelors and above	9 (11.3)	8 (11.6)	
Work duration (years)			
Entry-level	7 (8.8)	16 (23.2)	0.016^b
Junior level	9 (11.3)	13 (18.8)	
Middle level	24 (30.0)	22 (31.9)	
Intermediate level	13 (16.3)	7 (10.1)	
Senior-level	27 (33.8)	11 (15.9)	
Cadres			
Doctor	12 (15.0)	8 (11.6)	0.031^a
Pharmacists	1 (1.3)	1 (1.4)	
Nursing Officers	43 (53.8)	25 (36.2)	
Clinical Officers	5 (6.3)	5 (7.2)	
Laboratory Technologists	6 (7.5)	2 (2.9)	
Others health workers	13 (16.3)	28 (40.6)	
Profession Cadre			
Clinical HCW	72 (90.0)	47 (68.1)	0.001^b
Non-Clinical HCW	8 (10.0)	22 (31.9)	
Attended CME			
Ever attended	52 (65.0)	33 (47.8)	0.035^a
Never attended	28 (35.0)	36 (52.2)	

Table legend: Data are presented as proportions of N (percentages) unless otherwise stated. Data is categorized into those who had received the full dose (≥3 doses n=80) and incomplete dose (< 3 doses n=69). ^aStatistical analysis was performed using Chi-square test and ^b statistical analysis done using the Man-Whiney U test. Statistically significant was based at P≤0.05. Significant P-values are in bolded.

Among the diploma and higher diploma levels of education level holders (a total of 59), 21 (30.4%) had taken the HBV vaccine. Bachelor's degree holders and above were 17 of which 11.6% (n=8) had taken the full vaccine dose ($p=0.009$). Analysis of the uptake of HBV vaccine based on their carder revealed that 15.0% (n =12) of the medical doctors had taken the full dose of HBV compared to 53.8% (n =43)of the nurses who had taken the full dose;

other HCW which included radiologist, cleaners, environmental officers, data clerks and drivers and accountants revealed that 16.3% (n=13) had got the full vaccine ($p=0.031$). These results are summarized in table 4.3 as shown above.

4.3.1 Factors associated with vaccine uptake

Binary regression analysis model was used to determine the factors that were associated with uptake of the full dose of the HBV vaccine in this study. The analysis revealed there was significantly high uptake of the full vaccine dose by the trained HCWs; certificate holders (OR=4.78, 95%CI=1.05-19.23, $P=0.042$), diploma holders and higher diploma (OR=4.83, 95%CI=2.14-24.48, $P=0.001$) and bachelors and above (OR=4.83, 95%CI=1.42-16.40, $P=0.011$). When the study participants were stratified by clinical and non-clinical cadre, the regression analysis revealed a higher propensity to take the HBV vaccine compared to the non-clinical cadres (OR=4.21, 95%CI=1.73-10.25, $P=0.002$). Further analysis of the association between HBV vaccine uptake based on cadre revealed that both the intermediate (OR=4.25, 95%CI=1.18-15.24, $P=0.027$) and senior level (OR=5.16, 95%CI=1.81-17.40, $P=0.003$) nearly equally likely to take the vaccine. These results are summarized in table 4. 4.

Table 4.4 Factors associated with uptake of full dose of the HBV vaccine.

Uptake of Full dose (≥ 3 doses)				
Factors		OR	95% CI	P value
Sex	Males	Ref	-	-
	Females	0.71	0.37-1.36	0.305
Education levels	No certificate	Ref	-	-
	Certificate training	4.78	1.05-19.23	0.042
	Diploma and higher diploma	7.24	2.14-24.48	0.001
	Bachelors and above	4.83	1.42-16.40	0.011
Professional Cadre	Non-Clinical HCW	Ref	-	-
	Clinical HCW	4.21	1.73-10.25	0.002
Cadre Category – Work duration	Entry Level	Ref		
	Junior Level	1.58	0.46-5.41	0.464
	Middle level	2.50	0.86-7.20	0.091
	Intermediate Level	4.25	1.18-15.24	0.027
	Senior level	5.61	1.81-17.40	0.003

Table legend: Data analysis was performed using bivariate regression analysis. OR; odds ratio, CI; confidence interval and P-value in bold is statistically significant at $P \leq 0.05$.

4.3.2 HCW vaccine status by cadre and socio-demographic variables

Data reveal that clinical HCW who had worked for long had higher chances of receiving full vaccine doses compared to those at early stages of their carrier. Those that had more than 10

years of work duration (n= 23; 31.9%) had received the full dose of vaccine compared to only 8.3% (n=6) at entry level (less than a year) and Junior level (1 -3 years of practice) 8 (11.1%)($P<0.001$). Similarly, among those that ever-attended CME 66.7% (n=48)($P=0.005$) had received full vaccine dose (table 4.5). Non-clinical HCW (table 4.6) data shows work experience also attributed to non-vaccination or completion of vaccine, Non-clinical HCW with less years of experience did not take up vaccine $P=0.076$ Entry-level <1 year 13.6% (n=3), Junior level (1 – 3) 40.9% (n=9), and Middle level (4 – 7 years) 27.3%(n=6). Also, its notably that non-clinical HCW with no education level had higher chances of not receiving the vaccine 59.1% (n=13) $P=0.003$. Half of the younger age (18-30) 50.0% (n=11) have not received the vaccine $P=0.244$. see table 4.6.

Table 4.5: Clinical HCW and the prevalence of hepatitis B vaccine uptake among the HCWs in Mtwara Municipality Health Centers in Tanzania

Characteristic	Clinical HCW - Uptake of Vaccine			
	Complete dose (n=72)		Incomplete dose (<3) n=47	
	Count/%	P-Value	Count/%	P-Value
Sex				
Male	35 (48.6)	0.814	15 (31.9)	0.013
Female	37 (51.4)		32 (68.1)	
Age of respondents (years)				
Young age (18-30)	22 (30.6)	0.747	20 (42.6)	0.401
Middle age (31-40)	27 (37.5)		13 (27.7)	
Old age (41 and above)	23 (31.9)		14 (29.8)	
Highest level of Professional training				
No certificate	2 (2.8)	<0.001	3 (6.4)	<0.001
Certificate	26 (36.1)		20 (42.6)	
Diploma	38 (52.8)		18 (38.3)	
Bachelors and above	6 (8.3)		6 (12.8)	
Work duration (years)				
Entry-level <1 year	6 (8.3)	<0.001	13 (27.7)	0.024
Junior level (1 – 3)	8 (11.1)		4 (8.5)	
Middle level (4 – 7)	24 (33.3)		16 (34.0)	
Intermediate level (8 – 10)	11 (15.3)		5 (10.6)	
Senior-level – 10>	23 (31.9)		9 (19.1)	
Attended CME				
Ever attended	48 (66.7)	0.005	26 (55.3)	0.466
Never attended	24 (33.3)		21 (44.7)	

Table legend: Data are presented as proportions of N (percentages) unless otherwise stated. Data is categorized into those who had received the full dose (≥ 3 doses n=72) and incomplete dose (< 3 doses n=47). ^a Statistical analysis was performed using Chi-square test and ^b statistical analysis done using the Man-Whiney U test. Statistically significant was based at $P\leq 0.05$. Significant P-values are in bolded.

Table 4.6: Non HCW Socio-demographic characteristics and the prevalence of hepatitis B vaccine uptake among the HCWs in Mtwara Municipality Health Centers in Tanzania

Characteristic	Non-Clinical HCW - Uptake of Vaccine			
	Complete dose (≥ 3) (n=8)		Incomplete dose (<3) n=22	
	Count/%	P-Value	Count/%	P-Value
Sex				
Male	3 (37.5)	0.480	12 (54.5)	0.670
Female	5 (62.5)		10 (45.5)	
Age of respondents (years)				
Young age (18-30)	1 (12.5)	0.417	11 (50.0)	0.244
Middle age (31-40)	4 (50.0)		6 (27.3)	
Old age (41 and above)	3 (37.5)		5 (22.7)	
Highest level of Professional training				
No certificate	2 (25.0)	0.882	13 (59.1)	0.003
Certificate	3 (37.5)		4 (18.2)	
Diploma	0 (0.0)		3 (13.6)	
Bachelors and above	3 (37.5)		2 (9.1)	
Work duration (years)				
Entry-level <1 year	1 (12.5)	0.392	3 (13.6)	0.076
Junior level (1 – 3)	1 (12.5)		9 (40.9)	
Middle level (4 – 7)	0 (0.0)		6 (27.3)	
Intermediate level (8 – 10)	2 (25.0)		2 (9.1)	
Senior-level – 10>	4 (50.0)		2 (9.1)	
Attended CME				
Ever attended	4 (50.0)	1.000	7 (31.8)	0.088
Never attended	4 (50.0)		15 (68.2)	

Table legend: Data are presented as proportions of N (percentages) unless otherwise stated. Data is categorized into those who had received the full dose (≥ 3 doses n=8) and incomplete dose (< 3 doses n=22). ^a Statistical analysis was performed using Chi-square test and ^b statistical analysis done using the Man-Whiney U test. Statistically significant was based at $P \leq 0.05$. Significant P-values are in bolded.

4.4 Awareness of Hepatitis B transmission and prevention of HCWs in Mtwara Municipality Health Centers in Tanzania

4.4.1 Awareness of healthcare workers (HCW) on HBV transmission

From the analysis, 65.1% (n=97) $P=0.278$ correctly identified that it is transmitted through the mouth. Among the Clinical HCW 67.2% (n=80) $P=<0.001$ were able to identify it correctly while among the non-clinical HCW more than half 56.7% (n=17) $P=0.465$ were able to identify it correctly. Transmission through a cut was identified by 78.5% (n=117) $P=0.006$ of the participants as mode of transmission. Clinical HCW had higher score of awareness through skin cut 83.2% (n=99) $P=<0.001$, Non- Clinical HCW had relatively lower awareness score

60.0% (n=18) $P < 0.273$. Organ transplant was correctly identified by 69.1% (n=103) $P = 0.011$ of the HCWs, Clinical HCW had fairly good awareness of it 73.9% (n=88) $P < 0.001$, half of the Non-clinical HCW were not aware of the transmission through organ transplant 50.0% (n=15). When the clinical HCW were asked whether mother to baby transmission was a mode of transmission, 75.6% (n=90) $P < 0.001$ gave correct response, however 43.3% (n=13) $P = 0.465$ of non-clinical HCW were not aware of this transmission, further blood to blood contact was also correctly identified by 89.3% (n=133) $P < 0.001$ of the participants however among the non-clinical HCW 30.0% (n=9) $P = 0.028$ were not aware of the transmission mode. Transmission via unprotected sex was identified by 64.4% (n=96) $P = 0.007$ of all the HCWs as a mode of HBV transmission, 56.7% (n=17) $P = 0.465$ of non-clinical were not aware of this mode (Table 4.7).

Table 4.7: Awareness of healthcare workers on transmission of HBV

Awareness of HBV Transmission							
Questions	Clinical HCW			Non-Clinical HCW		Total	
	Response	Count (%)	<i>P value</i>	Count (%)	<i>P value</i>	Count (%)	<i>P value</i>
HBV can be transmitted via mouth	YES	80 (67.2)	<0.001	17 (56.7)	0.465	97 (65.1)	0.278
	No	39 (32.8)		13 (43.3)		52 (34.9)	
HBV can be transmitted to Human through Cut on the skin	YES	99 (83.2)	<0.001	18 (60.0)	0.273	117 (78.5)	0.006
	No	20 (16.8)		12 (40.0)		32 (21.5)	
HBV can be transmitted through organ transplant?	YES	88 (73.9)	<0.001	15 (50.0)	1.000	103 (69.1)	0.011
	No	31 (26.1)		15 (50.0)		46 (30.9)	
HBV can be transmitted through mother to baby from infected mother	YES	90 (75.6)	<0.001	17 (56.7)	0.465	107 (71.8)	0.039
	No	29 (24.4)		13 (43.3)		42 (28.2)	
HBV can be transmitted through blood-to-blood contact	YES	112 (94.1)	<0.001	21 (70.0)	0.028	133 (89.3)	<0.001
	No	7 (5.9)		9 (30.0)		16 (10.7)	
HBV can be transmitted through piercing, tattooing using contaminated objects	YES	100 (84.0)	<0.001	18 (60.0)	0.273	118 (79.2)	0.004
	No	19 (16.0)		12 (40.0)		31 (20.8)	
HBV can be transmitted through unprotected sex with infected individual	YES	83 (69.7)	<0.001	13 (43.3)	0.465	96 (64.4)	0.007
	No	36 (30.3)		17 (56.7)		53 (35.6)	

Table legend: Data analysis was performed using Chi-square to determine awareness of HCW on mode of transmission. Column percentage were calculated to measure awareness within the same group of HCW. Row percentage was calculated for total column.

4.4.2 Awareness of healthcare workers on prevention of HBV

To assess the awareness on prevention, HCW were asked a series of questions, data shows HBV prevention by post exposure prophylaxis (PEP) was identified by 68.5% (n=102) P=0.046 of all the HCWs as a prevention for HBV, this awareness was correct identified by 72.3%

(n=86) P =<0.001 of Clinical HCW while 53.3%(n=16) P =0.715 was correct mentioned among the group of non-Clinical cadre. Further, HBV prevention via behavior change through avoiding multiple sexual partners was correctly identified by 64.4% (n=96) P =0.115 however among the non-clinical HCW 46.7% (n=14) P =0.465 did not agree that avoiding multiple sexual partners can prevent HBV whereas only 32.8% (n=39) P =<0.001 of Clinical cadre did not agree. A very low level of awareness was recorded at 12.1% (n=18) P =0.969 when asked if treating infected person can prevent spread of HBV, the scores were relatively comparable among a group of clinical cadres and that of non-clinical cadre 12.6% (n=15) P =<0.001 and 3 (10.0) P =<0.001, respectively (table 4.8).

Table 4.8: Awareness of healthcare workers on prevention of HBV

Awareness of HBV Prevention							
Questions	Clinical HCW (N - 119)			Non-Clinical HCW (N- 30)		Total (N - 149)	
	Response	Count (%)	<i>P value</i>	Count (%)	<i>P value</i>	Count (%)	<i>P value</i>
HBV can be prevented by PEP following exposure	YES	86 (72.3)	<0.001	16 (53.3)	0.715	102 (68.5)	0.046
	NO	33 (27.7)		14 (46.7)		47 (31.5)	
HBV can be prevented through behavior change by avoiding multiple sexual partners	YES	80 (67.2)	<0.001	16 (53.3)	0.715	96 (64.4)	0.115
	NO	39 (32.8)		14 (46.7)		53 (35.6)	
PrEP (Pre-Exposure Prophylaxis) must be taken for at least 7 days to reach optimal levels of protection against HBV before exposure.	YES	66 (55.5)	0.233	17 (56.7)	0.465	83 (55.7)	0.906
	NO	53 (44.5)		13 (43.3)		66 (44.3)	
HBV can be prevented via treatment of infected person	YES	15 (12.6)	<0.001	3 (10.0)	<0.001	18 (12.1)	0.969
	NO	104 (87.4)		27 (90.0)		131 (87.9)	
Hepatitis B can be effectively prevented through 3 doses of vaccination	YES	113 (95.0)	<0.001	25 (83.3)	<0.001	138 (92.6)	0.030
	NO	6 (5.0)		5 (16.7)		11 (7.4)	

Table legend: Data analysis was performed using Chi-square to determine awareness of HCW on prevention. Column percentage were calculated to measure awareness within the same group of HCW. Row percentage was calculated for total column.

4.4.3 Awareness level Score based on Cutoff Point

The general awareness of HCWs was across 26 questions was low as the majority 43.6% (n =65) $P=0.120$ had a recorded higher level of awareness, however the difference is not significant. Awareness on transmission modes was higher among the Clinical 50.4% (n=60) $P=0.927$ than the non-clinical 36.7%(n=11) $P=0.144$. HCWs have extremely low level of awareness on prevention 10.1% (n=15)($\chi^2= 95.040^a$; df = 1; P = 0.000), among the Clinical HCW only 8.4% (10) $P=<0.001$ had identified correctly 70% and greater of the questions on prevention whereas among non-clinical HCW 16.7% (n=5) $P=<0.001$. (See table 4.9)

Table4.9: Level of awareness on Hepatitis B transmission, and prevention of HCWs in Mtwara Urban Health Centers in Tanzania based on Cut-off score

Scores	Clinical HCW			Non- clinical HCW			Total Awareness levels		
	High Level	Low Level	P- Value	High Level	Low Level	P- Value	High Level	Low Level	P- Value
Overall awareness Level	46.2% (55)	53.8% (64)	0.409	33.3% (10)	66.7% (20)	0.068	43.6% (65)	56.4% (84)	0.120
Awareness on transmission	50.4% (60)	49.6% (59)	0.927	36.7% (11)	63.3% (19)	0.144	47.7% (71)	52.3% (78)	0.566
Awareness on prevention	8.4% (10)	91.6% (109)	<0.001	16.7% (5)	83.3% (25)	<0.001	10.1% (15)	89.9% (134)	<0.001
Awareness on treatment	69.7% (83)	30.3% (36)	<0.001	50.0% (15)	50.0% (15)	<0.001	65.8% (98)	34.2% (51)	<0.001

Table legend: Based on Biddle, 1993 on how to set up cut off scores. A cut off point of $\geq 70\%$ was used in this study to separate those with high levels of awareness from those that are not i.e. those that have identified correct response to questions. Data are presented as frequencies (percentages) unless otherwise stated. Chi-square for independence variable was computed.

4.5 Perception of HCW about uptake of HB vaccine in Mtwara Municipality Health Centers in Tanzania

The study also investigated those that had undergone all the 3 doses of HB vaccine and their motivation perception that led to taking up all the 3 doses. Of the 80 respondents that undergone 3 doses, 80% (64) HCWs perceived their working environment risk has contributed largely to taking up the vaccine, another second large group 13.8% (11) said it was compulsory for HCWs to undergo the vaccine hence they had to go for it. The KII interview has confirmed that all the HCWs were required to be vaccinated free of charge for clinical HCW however this was not compulsory hence continued to remain an option. Both Clinical and Non-Clinical HCW mostly were pushed by the need to take the vaccine because of perceived working risky environment 80.6% (n=58) and 75.0% (n=6) respectively.

Table 4.10: Perception of HCW on reasons for undergone complete 3 doses of vaccine

Responses	Clinical HCW (n=72)	Non-Clinical HCW (n=8)	Total
It was compulsory Am working in a high-risk unit hence feared to be infected	10 (13.9) 58 (80.6%)	1 (12.5) 6 (75.0%)	11 (13.8) 64 (80.0)
Want to protect My-self	1 (1.4%)	0 (0.0%)	1 (1.3)
It's because you have to complete the doses to get full immunity	2 (2.8%)	0 (0.0%)	2 (2.5)
It's important because Hepatitis B is a killer disease	0 (0.0%)	1 (12.5%)	1 (1.3)
Missing	1 (1.4%)	0 (0.0%)	1 (1.3)
Total			80 (100.0)

Other reasons that motivated HCWs to take up the 3 doses of vaccine were; need to acquire full immunity 2.5% (n=2), felt the need to protect themselves 1.3% (n=1), fear for Hepatitis B as it a killer disease 1.3% (n=1).

Among those that have not received vaccine, 85.5% (n=59) were willing to take the vaccine when made available, 7.2% (n=5) were not willing while 5.8% (n=4) were not sure whether to get it or not.

Table 4.11: Perception of HCW on the planning to receive vaccine if made available

Responses	Clinical HCW (n=47)	Non-Clinical HCW (n=22)	Total (n=69)
Yes	41 (87.2)	18 (81.8)	59 (85.5)
No	4 (8.5)	1 (4.5)	5 (7.2)
Not Sure	1 (2.1)	3 (13.6)	4 (5.8)
Missing	1 (2.1)	0 (0.0)	1 (1.4)

Those that did not want to receive the vaccine or not sure to take (9) if made available in the next 3 months, 44.4% (n=4) of the HCWs claim that they were not working in the risk occupation hence they do not need the vaccine, similar percentage is observed for those that said they fear of side effect 44.4% (n=4). The reasons are similar for both HCWs cadre.

Table 4.12: Perception of HCWs that were not willing or sure to receive HBV vaccine in the next 3 months and the reasons for denial

Response	Clinical HCW (n=5)	Non-Clinical HCW (n=4)	Total (n=9)
Fear about the side effects	2 (40.0)	2 (50.0)	4 (44.4)
Am not working in the risk occupation hence I do not need the vaccine	2 (40.0)	2 (50.0)	4 (44.4)
Missing	1 (20.0)	0 (0.0)	1(11.1)

4.6 Access factors associated with uptake of HB vaccine among the HCWs in Mtwara Municipality Health Centers in Tanzania

Of the valid response from those that did not take the vaccine or completed the dose, availability of vaccine was the reason for not undergone the vaccination 67.4% (n=29) followed by low levels of knowledge of the disease 14.0% (n=6), 9.3% (n=4) mentioned that the vaccine is expensive, equal percentage 2.3% (n=1) were waiting for the due date to accomplish and the other had no reason for taking the vaccine. Both clinical and non-clinical mostly mentioned availability of vaccine as the main access barrier to uptake 72.7% (n=24) and 50.0%(n=5)respectively, low awareness level was mentioned mostly by non-clinical HCW 30.0% (n=3). See table 4.13.

Table 4.13: HCWs response to poor HBV uptake

Response	Clinical HCW (n=33)	Non-Clinical HCW (n=10)	Total n=43 (%)
Availability of Vaccine	24 (72.7)	5 (50.0)	29 (67.4)
No\Low levels of awareness of disease	3 (9.1)	3 (30.0)	6 (14.0)
Vaccine Is Expensive	3 (9.1)	1 (10.0)	4 (9.3)
Others	2(6.1)	0 (0.0)	2 (4.7)
Waiting for my schedule due	1 (3.0)	0 (0.0)	1 (2.3)
I just have no reason	0 (0.0)	1 (10.0)	1 (2.3)
Total	33	10	43 (100.0)

4.6.1 In-depth Interview

An in-depth interview was conducted with four (4) Key Informant, the study found out that awareness varied among the HCW profession cadre, there are various non-profit organization and government that schedule training for HCWs that focuses on prevention and control measures for infectious diseases especially HIV. For the past 2 years the government has organized workshop, training and seminars, the majority of HCWs targeted were nurses and clinicians. Other professions such as non-medical HCWs have not been part of the programs mostly thus clinical cadre had more exposure to awareness compared to their counterpart.

Most medical professional cadres that have gone to health institutes, schools, and universities are trained on HBV, however, cadres such as medical attendants do not learn the HBV disease chain mode hence awareness presumed to be low. Similarly, those in other cadre professions have not learned about the diseases, and its highly likely that they first heard in the hospital environment, media, or other means.

HBV magnitude is huge in Mtwara Municipality, the recent estimates of 2019 show of every 10 blood donors one is infected with the virus, and since the majority of them do not carry any symptoms, then the turn out to the hospital is when it has reached an advanced stage. Vaccination for non-healthcare workers is not free and the cost is a bit high, the government has issued the policy guideline that requires all the HCWs to be vaccinated however this has remained an option.

“Some people do not want to use the chance to get a vaccination and I don’t know what the reason is, however, we do continue sensitizing and push them”

Children that were born after the year 2008, HB vaccination is part of their routine vaccination program, there still no clue as to when the government will make the vaccine free to the public.

CHAPTER FIVE

DISCUSSION OF RESULTS

5.1 Introduction

This chapter consists of a discussion of the study findings as per the study objectives. The interpreted findings are then compared with published work of other scientists on awareness of HBV transmission, perceptions of vaccine, and access factors. First, is the discussion on the prevalence of HBV.

5.2 Prevalence of hepatitis B vaccine among the HCWs

It is tempting to assume that Health Workers will likely show a high level of compliance with regards to beneficial health. In this study, it appeared that the proportion of healthcare workers who received full doses of hepatitis B vaccine was on average range (53.7% (n=80)). This finding is in the range of 33% -60% reported in different studies. A study done in Ethiopia among the HCWs shows close range of complete vaccine prevalence rate at 44.5% (n=99) (Akibu, Nurgi, Tadese, & Tsega, 2018). WHO estimated that only about 18–39% of healthcare workers in low- and middle-income countries received the vaccine (Akibu et al., 2018). Tanzania Ministry of Health require all HCWs to be vaccinated however the vaccine prevalence rate for this study shows low trend.

A comparative study that was done in Mwanza Hospital Tanzania that involved all type of HCWs cadres shows poor vaccination status with only 48.8% of the HCWs reporting to have received 3 doses (Mueller et al., 2015). Another study that was conducted in 2017 at Muhimbili National Hospital in Tanzania involving all cadres of HCWs revealed a vaccine prevalence rate of 33.6% (n=117).

The result for this study is relatively higher compared to the findings reported in other countries. A study done Yaoundé, Cameroon among the HCWs shows relatively low uptake of the vaccine uptake, only 19% (n=19 of 100 participants) had received at least one dose of the vaccine of which 12% (n=12) received complete dose of vaccine (Tatsilong et al., 2016). Another study that involved 410 HCWs in Ethiopia showed complete vaccine prevalence of 12.9% (n= 53) (Abebaw, Aderaw, & Gebremichael, 2017) and in Rwanda of the 378 HCWs only 0.8% (n=3) had receive complete dose of vaccine (Kateera et al., 2015). Recent study done in Juba South Sudan among HCWs shows fully vaccine prevalence of 22.1% (n=34) (Alege, Gulom, Ochom, & Kaku, 2020)

This study results revealed that complete vaccination had not been achieved by over half of the HCWs. However, those that received complete dose of vaccine among the determinant factor was years of work experience. This was important factor that influenced the complete vaccination status of healthcare workers. Other studies showed that there was an increased chance to get full vaccination with increasing number of years of work experience (Abebaw et al., 2017)&(Akibu et al., 2018). This might be because healthcare workers who joined the institutions later might not have benefited from vaccination because of sporadic availability of the vaccine through government channels. Likewise, increased length of work years would result in higher rate of exposure to various risky behaviors, which in turn leads to increased perceived threat of acquiring the disease (Akibu et al., 2018).

Other cofounding factors that other studies have found to be the determinant of the vaccine uptake is sex of HCW (Abebaw et al., 2017). This contradict with this study where sex of HCW was never a determinant, the evidence was also supported by the study done in Nigeria where male sex was a key determinant of the vaccine uptake (Adekanle, 2015).

5.3 Awareness of hepatitis B among the HCWs

This study identified gaps in hepatitis B awareness of transmission and prevention among HCWs as an influence factor for vaccine uptake, the study found out that, the general awareness of HCWs on HBV was generally low 43.6% (n= 65). Awareness of Hepatitis B is a key component of the WHO Hepatitis B Elimination Strategy (WHO, 2021b). The level of awareness was similar with the study done in Cameroon where only 47% (n=47) of HCWs were aware of the infectious modes (Tatsilong et al., 2016). Another study in Ethiopia showed 52.0% (n=104) had good awareness (Gebremeskel et al., 2020). However, this is lower compared to the study done in Ethiopia that involved 240 HCWs which shows overall a good range of awareness and knowledge (73.9%) (Hebo, Gameda, & Abdusemed, 2019). In this study awareness among clinical and non-clinical was drawn, overall clinical cadres were more aware of various routes of transmission and prevention measures. It has been difficult to establish a distinct comparison between type of cadres and level of awareness with other studies. This is because data from other studies are not segregated by type of cadre while other studies focused mostly on clinical cadres.

HCWs who work in non-clinical department such as cleaners, cooks, drivers, hospital admins are a lot more disadvantage compared to those who work in clinical department. This is because they lack access to information compared to their counterparts. Generally, it is

easy to assume that HCWs should have adequate awareness about diseases and other health conditions, by virtue of their training and proximity to health facilities however this study has proven that this is not the case. It is expected that clinical cadre would have understood that HBV can be transmitted through unprotected sex with infected individual, however 69.7% (n=83) were aware while among the non-clinical HCW only 43.3% (n=13) were aware and this shows how lack of awareness can increase risk of infection.

Other studies have seen improved awareness, a similar study done in Younde Cameroon, 96% (n=96) of HCWs knew that HBV can be transmitted through unsafe sex (Tatsilong et al., 2016). This is also seen in the study involved HCWs in Ethiopia where 92.2% (n= 212) were aware of the transmission through unsafe sex (Hebo et al., 2019).

5.4 Perception of HCW about uptake of HB vaccine in Mtwara Municipality Health Centers in Tanzania

HCW perception of the disease plays critical role toward prevention of the disease. In this study, perceived risk of working in the risk environment outweighed all other factors. The majority 80% (n=64) HCWs perceived their working environment risk has contributed largely to take up the vaccine, this is supported by the study done in Nigeria among HCWs where 62.7% (n=131) were willing to receive the vaccine due to their perceived factors of working in high risk environment (Ogundele et al., 2017). High proportion of both clinical and non-clinical cadres who completed the vaccine, the main factor was perceived risk of working in high-risk environment. This is supported by the study in Nigeria where both clinical and non-clinical HCWs presented high proportion of willingness to uptake vaccine due to perceived risk of working in the high risk environment (Ogundele et al., 2017)

Second largest group reveal that they were enforced to get vaccination, this is seconded by the study conducted in Younde Cameroon where majority HCWs perceived that vaccination against HBV should be compulsory, this will eliminate all other barriers for uptake. All HCWs in that study were willing to receive the vaccine if mentioned barriers were to be eliminated (Tatsilong et al., 2016).

This study proves that the reason for HB vaccine uptake is real subjective and the reasons are individually different, thus a lot of effort is needed beside just making the vaccine available to public whether free or at affordable rate. A study done in Ethiopia shows among HCW who have not received the vaccine, 8% feared of side effect (Akibu et al., 2018), this was similar to the current study findings. The major finding in this study is that non-clinical cadre

and clinical cadre share the same perception that led to uptake. The key finding for this study are different from the study done previous within the country at Muhimbili National Hospital, HCWs who did not take the vaccine felt that they were very careful and observe all standard precaution 46.7% (n=70) thus they did not need to be vaccinated(Aaron et al., 2017)

5.5 Access factors associated with uptake of HB vaccine among the HCWs in Mtwara Municipality Health Centers in Tanzania

In Tanzania Ministry of Health require all the HCWs to be vaccinated (MOHCDGEC, 2018). The unavailability of vaccine 67.4% (n=29) was the reason for not undergoing the vaccination. A study in Muhimbili National Hospital (Tanzania) found out the reasons for non-vaccination among HCW where 65.3% reported that they had not been offered the vaccine, and 41.3% blamed a low level of awareness regarding the availability of the hepatitis B vaccine (Aaron et al., 2017). The reasons provided in this study have been cited in most of developing countries such as a study done in Ethiopia among the health care profession where the majority of the KIIs stressed the unavailability of the vaccine in their hospital and cost of the vaccine in private facilities as important factors for vaccination against HBV among HCWs (Afework, 2015). Availability of vaccine was a strong attribution factor towards uptake ($p < 0.005$) in the study done in Sudan (Alege et al., 2020).

Other access factors were limited doses available and accessibility of the doses which have been the factors hindering vaccine uptake. Another key factor was low levels of awareness of the disease hence the awareness about the vaccine was low. In this study it was found that vaccination has been made public; however, very few hospitals have the service but also it's very expensive. Other similar findings have been found in the study done in Cameroon which reveal the reasons for HCWs not being vaccinated; lack of sufficient information on the vaccine 49.4 % (n=40), and lack of money to pay for the vaccine 33.3 % (n= 27) (Tatsilong et al., 2016). Similarly, other studies cited the main reasons for non-vaccination as high cost of HBV vaccines (55.2%), and unavailability of the vaccine (46.1%) (Alege et al., 2020).

The access factors for uptake for this study are different from other non-African countries such as Bangladesh where availability and cost were not the factor, in that study, of those that did not take the vaccine, most of them 32% (n=105) did not take vaccine due to lack of free time, 23% (n=74) told that they have never thought for vaccination, 18% (n=57) did not take due to lack of feeling of necessity, and 15% (n=48) for fear of injection (Afrin, 2017).

CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

6.1.1 Prevalence of HBV among HCW

Half of the HCWs in Mtwara Municipality health centers have received complete doses of vaccine. There was a significant association where type of cadre, education of HCW and work experience have been linked to hepatitis B vaccination uptake. HCWs with higher level education of education and those who are in clinical cadre were mostly likely to undergo vaccination than the others, also HCWs who have worked for longer period were more likely to undergo vaccination.

6.1.2 Awareness on transmission, and prevention among HCW

The study revealed that awareness of Hepatitis B among the health care workers was generally low especially among the non-clinical cadre. Low awareness level with simultaneous sub-optimal uptake of HB vaccine increases individuals' risk for infection transmission among susceptible populations such as HCWs.

6.1.3 Perception of HCW about uptake of HB vaccine among the HCWs

HCW perception toward vaccine is key to eradicate any disease, in this study majority of HCW were positive of the vaccine however there was extremely very few HCW who perceived negative of the vaccine. Perceived risk of working in high-risk environment was the strong attribute towards uptake.

6.1.4 Access factors associated with uptake of HB vaccine among the HCWs

Availability of vaccine service was a major facilitator for poor uptake. The majority of HCWs who had not received the vaccine were willing to receive it if it were to be made available to them.

6.2 Recommendations

Based on the study findings, this study recommends the following.

6.2.1 Prevalence of HBV, HCW perception and access for hepatitis B vaccine uptake among HCW

1. The health policy should pay attention to non-clinical healthcare workers as they have the lowest uptake of vaccine. Yet they too are exposed to risk of infection
2. The study could serve as a stimulant for further research to assess vaccine uptake and awareness with various sample sizes.

6.2.2 Awareness on transmission, and prevention among HCW

1. Tanzania Ministry of Health, health institutes, NGOs involve in health, public health activists and other related organs should come up with measures to increase the awareness of hepatitis B. This includes develop exposure to regular trainings on infectious disease to both clinical and non-clinical HCWs. This study has seen that attending such trainings/seminars/workshops on infectious diseases on prevention, and transmission increases the awareness levels and thus facilitate uptake to HBV vaccine.
2. There is a need for health training institutes especially those that train the medical attendant to include curriculum on infectious disease, how viruses such as HB transmit, and how they can be prevented.

6.1.3 Perception of HCW about uptake of HB vaccine among the HCWs

HCWs especially those working in high-risk environments should be encouraged to take the HB vaccine, given the many advantages it has including the prevention of transmission of hepatitis B to their clients or the other health care providers.

6.1.4 Access factors associated with uptake of HB vaccine among the HCWs

The government and the health institutions should make the hepatitis B vaccine available for free or at a cost that most HCWs can afford. HCWs should be encouraged to get vaccinated and to take all the recommended doses. Availability of vaccine service was a major facilitator for poor uptake. The majority of HCWs who had not received the vaccine were willing to receive it if it were to be made available to them.

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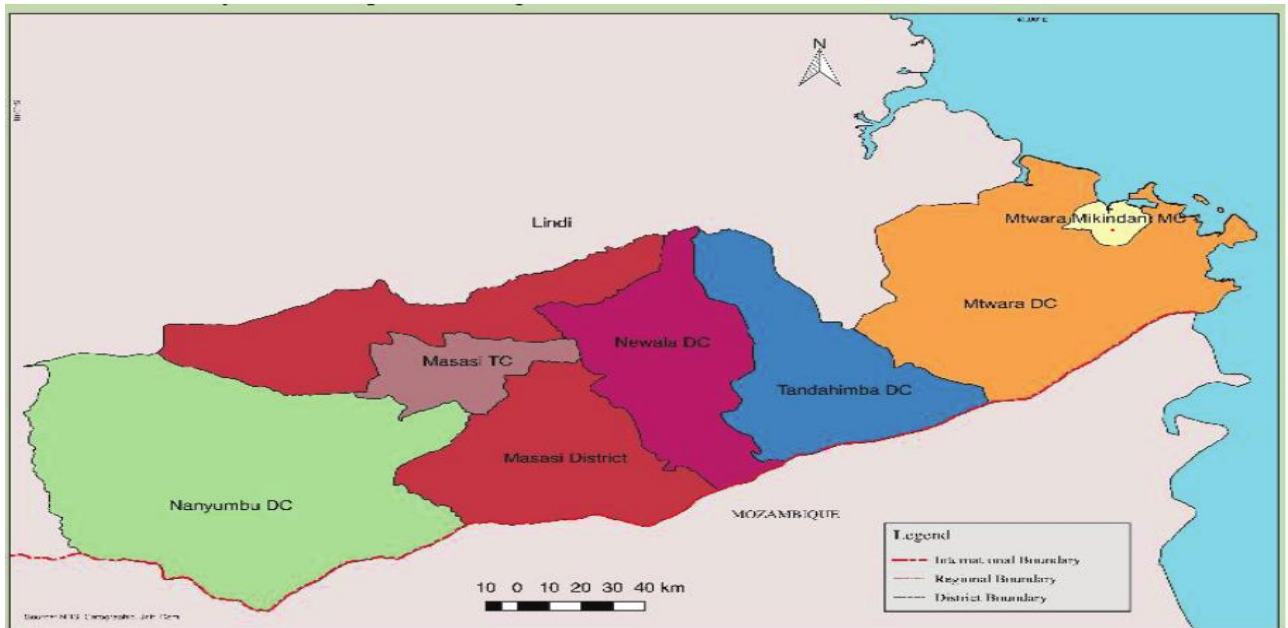
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APPENDICES

APPENDIX I: A Map Showing the Mtwara Mikindani Municipal Council - Study Area within Mtwara District



APPENDIX II: INFORMED CONSENT - ENGLISH

Consent no. 001

Informed Consent Form for the hospital individual IDIs Self-administered and Administered (English version)

Title: Uptake Of Hepatitis B Vaccine and Associated Factors Among Health Care Workers in Mtwara Municipality Health Centers, Tanzania

Study Location: Mtwara Municipality Center, Tanzania

Purpose of Research

You are kindly invited to take a part in a research study, and you are required to fill up a questionnaire regarding your knowledge about hepatitis B. Before making any decision whether or not to take part, please read the following information. If you are not clear about anything, please do not hesitate to contact the researcher. The contact details of the researcher are at the end of this participant information sheet. Please read this participant information sheet and then complete the consent form. Please read all the information in this participant information sheet carefully.

Description of the Research Study

This questionnaire is a part of my Master of Public Health (MPH) research project to assess the Hepatitis B Vaccination Coverage, Knowledge of Prevention, Control and Treatment among Health Care Workers in Mtwara Municipality Health Centers, Tanzania. The main aim of this study is to get an insight into the knowledge of HCWs in Mtwara Municipality

Health Facilities. The research questions are prepared in order to find answers to general questions about hepatitis B.

Who can be the Participants?

If you are the Health Care Worker in the 4 public Health Centers in Mtwara Municipality, then you can be the participant.

Why Participate?

Since the main aim of this study is to get an insight into the level of knowledge of hepatitis B among HCWs in Mtwara Municipality. If the researcher is able to get responses, this study will help to address general gap among the HCWs and the information will help the public health activist to come up with strategies to address some of the issues hence meeting the global goal of eliminating Hepatitis B virus by 2030.

How long will the Questionnaire Take?

The questionnaire that you will be handed has seven parts in total. Part I is about your demographic information, part II is on general awareness/knowledge regarding hepatitis B, part III is about knowledge on transmission, part IV is about knowledge on prevention, part V is about knowledge on treatment, part VI is about vaccination part VII is about vaccination uptake and willingness. This will take about 20 -30 minutes to answer all questions.

About Privacy and Confidentiality

The researcher will keep your personal information confidential. Only the researcher and the research supervisors will have access to your personal details. Your name and personal details will not appear on the research paper.

About Consent and Change of Mind to Withdraw from Participation

If you fill the questionnaire up and hand it back to the researcher, this would be taken as your consent for participation. To participate in this study is of voluntary nature and everyone has a right to freely take part or withdraw from the study at any time and can inform me about withdrawal from this study by sending me an email or phone call if you wish so.

Potential Discomforts, Inconvenience, Injuries, Harm or Risks

This doesn't mean to judge your intelligence levels or knowledge about hepatitis B. if you feel yourself distressed at any point of filling the questionnaire, the researcher recommends stopping filling in the questionnaire and handing it back to the researcher.

Who Developed the Questionnaire?

The questionnaire has been developed by Mhina Juma, pursuing master's in public health at University of Maseno located in Kisumu Kenya. The questionnaire has been reviewed by Dr. Dicken Aduda (Kabianga University) Dr. Louisa and the National Health Research Ethics Committee (NatHREC)

Incentives

You will not be provided with an incentive to take part in the research.

Who to Contact?

If you want to raise any concerns about this research study later, you can contact either Mhina Juma, at cell phone number 0784505072 or email address mhinaj@gmail.com

Research Supervisor:

Dr. Dickens Aduda from Jramogi Oginga Odinga University of Science and Technology (JOOUST). Email: omondisda@gmail.com.

Dr. Louisa Ndunyu from Maseno University. Email:gndunyu@gmail.com

For any questions pertaining to rights as a research participant, contact person is: The Secretary, National Health Research Ethics Committee (NatHREC), Telephone numbers: 0758587885; Email address: nimrethics@gmail.com

Please sign below if you agree to participate

Signature.....Date.....

Informed Consent Form for the KII Participants(English version)

Consent no. 002

Title: Uptake Of Hepatitis B Vaccine and Associated Factors Among Health Care Workers in Mtwara Municipality Health Centers, Tanzania

Study Location: Mtwara Municipality Center, Tanzania

Introduction

The researcher name is Mhina Juma, Helives in Dar es Salaam. He carries out this research study on Uptake of Hepatitis B Vaccine and Associated Factors among Health Care Workers in Mtwara Municipality Health Centers, Tanzania, the research will cover public health centers. I am inviting you to participate in the study, whose purpose is to Uptake Of Hepatitis B Vaccine and Associated Factors, the researcher would like to explain the purpose of the study, any risks to you and what is expected of you. Once you understand the study, and if you verbally agree to take part, you will sign on this form as confirmation to your approval. The researcher will also write a number on this form which He will use in the file, and not your name. You may have a copy of this form to keep if you wish.

Purpose of the Study

This study is motivated by the need to better understand the issues surrounding HCWs with regard to Hepatitis B as you are aware, the general population lack knowledge since the government has not fully engaged in the provision of awareness of HBV compared to other diseases such as HIV and therefore the study is seeking to explore the knowledge. The reason researcher chose you is that He believes you have some important information concerning these matters and you are in opposition to describe to me the relevant policies and general matters regarding the disease

Description of the Research Study

If you agree to join the study, the researcher shall discuss with you questions about health policies, training\education Curriculum in regard to HBV. The researcher has written down questions as a guide to the conversation, and, if you agree, the researcher shall take notes.Only a number will be used to label the information with out reference to any of your

personal details. If you do not wish to answer any of the questions posed during the interview, you may say so and the researcher will move onto the next question. The interview will take place in a private place of your choice where there will be no interruptions or any chance of anyone eaves dropping into our conversation. If your office can provide such an environment, then it can be our venue for discussion. No one else but you and the researcher will be present. The interview session may take about one hour of your time. The results of this study will be shared with you through a meeting after the completion of this study.

Risks and Discomforts

The researcher does understand that it is not easy to talk about certain issues related to policies and practices since it involves the government and entities within government organs, but this is merely the general knowledge that seeks and you're free to skip to any question if you find sensitized.

Benefits of the Study

By participating in this study and answering these questions, you will not receive any direct benefit however, you may feel free to discuss any of the status, challenges or and recommendations in regard to the topic. Your contribution will help increase understanding of the gap in supporting government effort to combat the spread of Hepatitis B virus

Incentives

You will not be provided with any incentive to take part in the research. If there is anything that is unclear, or you need further information, the researcher shall be delighted to provide it. **[Interviewer – as if the respondent has any questions and provides the necessary clarifications].**

Who to Contact

If you want to raise any concerns about this research study later, you can contact either Mhina Juma, at cell phone number 0784505072 or email address mhinaj@gmail.com

Research Supervisors:

Dr Dicken Aduda from Jramogi Oginga Odinga University of Science and Technology (JOUST). Email: omondisda@gmail.com.

Dr Louisa Ndunyu from Maseno University. Email:gndunyu@gmail.com

For any questions pertaining to rights as a research participant, contact person is: The Secretary, National Health Research Ethics Committee (NatHREC), Telephone numbers: 0758587885; Email address: nimrethics@gmail.com

Please sign below if you agree to participate

Signature _____ Date _____

Thank you so much for your co-operation

APPENDIX III: CONSENT FORM - SWAHILI



MASENO UNIVERSITY

SCHOOL OF PUBLIC HEALTH AND DEVELOPMENT

Fomu ya Ridhaa

Ridhaa no. 001

**Fomu ya Kuomba Ridhaa kwa kila mfanyakazi wa Hospitali
kwa Hii kwa utafiti wa kujaza binafsi na Utafiti wa njia ya
majadialiano) (Nakala ya Kiswahili)**

**Title: Hali ya Chanjo ya Homa ya ini na uelewa kuhusu kujilinda, kujikinga na kutibu
Homa ya ini kwa wafanyakazi na wakunga wa vituo vya afya vya Mtwara mjini,
Tanzania**

Mahali pa Utafiti:Manispaa ya Mtwara Mjini, Tanzania

Dhumuni la utafiti

Unakaribishwa kushiriki katika utafiti huu na unatakiwa kujaza dokezo hili ili kujua uelewa wako kuhusu homa ya ini. Kabla hujafanya maamuzi ya kushiriki ama kutoshiriki , tafadhali soma maelezo yafuatayo. Kama hujaelewa kuhusu chochote, tafadhali usisite kumuuliza ama kumtafuta mtafiti. Maelezo kuhusu mtafiti yanapatikana mwishoni na mwanzoni wa maelekezo haya. Tafadhali soma kwa umakini na jaza fomu ya kuwia radhi kufanya utafiti huu. Tafadhali soma kwa umakini.

Upambanuzi kuhusu utafiti

Dodoso hili ni sehemu ya masomo yangu ya shahada ya uzamivu inayohusu utafiti wa Hali ya Chanjo ya Homa ya ini na uelewa kuhusu kujilinda na kujikinga na Homa ya ini kwa wahudumu na wakunga wa vituo vya afya vya Mtwara mjini, Tanzania. Lengo kuu la hii tafiti ni kupata uelewa wa kina kunusu wahudumu na wakunga wa vituo vya afya vya manispaa ya Mtwara mjini. Dodoso hili limeandaliwa ili kupata majibu ya pamoja kuhusu homa ya ini.

Nani anatakiwa kushiriki?

Kama wewe ni mtoa huduma ama mkunga wa vituo vinne vya afya vya serikali vya Manispaa ya Mtwara mjini, basi unahusika kushiriki.

Kwa nini Ushiriki?

Kwa vile lengo kuu la utafiti huu ni kudadavua kiundani kuhusu viwango vya uelewa wa homa ya ini kwa wahudumu na wakunga wa vituo vya afya wa manispaa ya Mtwara Mjini. Iwapo mtafiti atapata majibu, utafiti huu utasaidia kujua pengo lililopo kwa watoa huduma za afya na maelezo yatawasaidia wakereketwa\watafiti wa maswala ya afya kuja na mipango

mahususi ya kuyakabili ama kuyaendeleza nah apo itasaidia kufikia lengo la kidunia la kuondoa homa ya ini ifikapo mwaka 2030.

Ni muda gani dodoso hili litachukua?

Dodoso linasehemu saba kwa ujumla. Sehemu ya kwanza linahusu utambuzi wako, sehemu ya pili ni uelewa kuhusu homa ya ini, sehemu ya tatu inahusu maambukizi ya homa ya ini, Sehemu ya mne inahusu uelewa kuhusu kujikinga na homa ya ini, sehemu ya tano ni uelewa kuhusu tiba, sehemu ya sita ni chanjo na sehemu ya saba ni hamasa kuhusu chanjo na kukubalika kwa chanjo. Hii itachukua kati ya dakika 20 hadi nusu saa kujibu maswali yote.

Kuhusu Unyeti na Usiri wa taarifa:

Mtafiti ataweka taarifa zako binafsi kama siri, jina lako halitachukuliwa. Ni mtafiti tu na wasimamizi wake ndio watapata kujua kuhusu taarifa binafsi. Si jina lako wala taarifa zako zitatokea kwenye majumuisho ya utafiti huu.

Kuhusu radhi ya kushiriki na kufikiria kubadili nia na kujiondoa kushiriki.

Kama utajaza fomu na kumkabidhi mtafiti, hii itachukuliwa kama umekubali kushiriki. Kushiriki kwenye huu utafiti ni kwa mapendekezo binafsi na kila mtu kwa uhuru kabisa ana haki ya kujiondoa\kukataa kwenye utafiti muda wowote na anaweza pia kunijua kwa kunitumia barua pepe ama kunipigia simu ukipendezwa.

Ikitokea hujisikii vizuri, Unakereka, Ajali, Kudhulika ama Kujihatarisha:

Hii haimaanishi nitatoa maamuzi ya kiwango cha uelewa wako au uelewa kuhusu homa ya ini. Kama utaona hujisikii huru\vizuri muda wowote ukiwa unajaza dodoso hili, mtafiti anashauri uache kujaza na urudishe dodoso kwa mtafiti.

Nani ameandaa dodoso hili?

Hili dodoso limeandaliwa na Mhina Juma, anafanya shahada ya uzamivu ya maswala ya afya katika chuo cha Maseno University kilichopo Kisumu nchini Kenya. Dodoso limepitwa na kuharirirwa na Daktari Dicken Aduda (Chuo kikuu cha Kabianga) Daktari Louisa kutoka chuo kikuu cha Maseno na pia taasisi ya taifa ya utafiti wa magonjwa ya binadamu (kururgenzi ya kuratibu na kukuza utafiti Tanzania) (NIMR)

Bahshishi/Zawadi/Malipo

Hakuna zawadi au malipo ya aina yoyote ukiamua kuwa miongoni mwa washiriki wa utafiti huu.

Nani wa kuwasiliana naye?

Kama unapenda kusema jambo lolote, kushauri ama kutoa malalamiko kuhusu utafiti huu, unaweza kuwasiliana na Mhina Juma, kwenye simu namba 0784505072 ama kwa barua pepe mhinaj@gmail.com

Watafiti wasimamizi:

Dr. Dickens Aduda kutoka Chuo kikuu cha Kabianga. Barua pepe: omondisda@gmail.com

Dr. Louisa Ndunyu kutoka Chuo kikuu cha Maseno. Barua pepe: gndunyu@gmail.com

Kwa swali lolote ama malalamiko kuhusu haki kama mshiriki, wasiliana na taasisi ya taifa ya utafiti kamati ya maudhui (NatHREC), simu namba: 0758587885; Barua pepe: nimrethics@gmail.com

Tafadhali weka sahihi kama umekubali kushiriki

Sahihi _____ Tarehe _____



MASENO UNIVERSITY
SCHOOL OF PUBLIC HEALTH AND COMMUNITY
DEVELOPMENT

Fomu ya kuomba ridhaa kwa Mshiriki mashughuli (Nakala ya Kiswahili)

Fomu ya ridhaa no. 002

Mada: Hali ya Chanjo ya Homa ya ini na uelewa kuhusu kujilinda, kujikinga na kutibu Homa ya ini kwa wafanyakazi na wakunga wa vituo vya afya vya Mtwara mjini, Tanzania

Mahali pa Utafiti: Manispaa ya Mtwara Mjini, Tanzania

Utambuzi:

Naitwa Mhina Juma, naishi Dar es Salaam. Nafanya utafiti kuhusu Hali ya Chanjo ya Homa ya ini na uelewa kuhusu kujilinda na kujikinga na Homa ya ini kwa wafanyakazi na wakunga wa vituo vya afya vya Manispaa ya Mtwara mjini, Tanzania uelewa wa homa ya ini, utafiti wangu utahusisha hospitali za serikali

Nakualika kushiriki kwenye utafiti huu ambao lengo lake kubwa ni kuangalia uelewa wa homa ya ini, kujilinda na kujikinga na hali ya sasa ya chanjo, ningependa nikuulezee umuhimu wa utafiti huu na kama kun madhara yoyote kwako, nini nakitarajia kwako. Pindi utakapo elewa, na unakubaliana kushiriki utanisainia fomu ya kukubali kushiriki. Nitaandika namba ya fomu na si jina lako. Unaweza pia kupata nakala hii kama unapenda.

Umuhimu wa Utafiti Huu

Utafiti huu unavutiwa na uhitaji wa uelewa unaowazunguka wafanyakazi na wakunga wa afya kuhusiana na homa ya ini. Kama unavyofahamu, watu wengi wa kawaida hawana uelewa na serikali haijakita Zaidi kutoa hamasa ya kutosha kuhusu homa ya ini kama ilivyo kwenye magonjwa mengine kama Ukimwi hivyo basi naamini ni mtu sahihi wa kunipatia taarifa sahihi kuhusu hili jambo na upo kwenye nafasi ya kuelezea kuhusu sera na mambo mengine kuhusu homa ya ini.

Upambanuzi kuhusu utafiti

Kama utakubali kushiriki utafiti huu, nitashirikiana maswali kuhusu sera za afya, mafunzo kuhusu homa ya ini. Nimeandaa maswali kama muongozo kwenye mazungumzo yet una kama utakubali basi nitakuwa naandika maongezi yetu. Sitaandika jina lako wala taarifa zako. Kama hutopenda kujibu swali lolote kwenye majadiliano yetu basi usisite kunambia nami nitaruka na kuendelea na maswali mengine. Mahojiano yetu yatakuwa sehemu ya udhuru ambapo hakuna muingiliano wa watu au vitu vingine. Kama ofisi yako inahayo mazingira basi tutatumia kama eneo la mazungumzo, Hakuna mtu mwingine bali mimi na wewe ndo tutashiriki. Majadiliano yetu yatachukua muda wa saa moja.

Nitakupatia matokeo ya utafiti huu kwa njia ya mkutano kama hivi pindi nitakapo maliza utafiti huu.

Ikitokea hujisikii vizuri, Unakereka, Ajali, Kudhulika ama Kujihatarisha:

Ninafahamu kuwa si rahisi kuongelea baadhi ya maswala ambayo yanahusisha sera na utekelezaji wake kwani zinahusisha serikali na taasisi zake ndani ya serikali, ingawaje hii inahusisha taarifa za ujumla na upo huru kutokujibu swali ambalo unaona ni la kugofya.

Faida za utafiti huu

Ukishiriki katika utafiti huu na kujibu maswali, hutopatiwa kitu chochote cha moja kwa moja kwa kushiriki ila jisikie huru kuzungumzia kitu chochote kinachoendelea kwa sasa, changamoto au na mapendekezo kuhusiana na mada hii. Mchango wako utawezesha kuongeza uelewa kuhusu tatizo na kuisaidia juhudi za serikali katika mapambano zidi ya virusi vya homa ya ini.

Bahshishi\Zawadi\Malipo

Hakuna zawadi au malipo ya aina yoyote ukiamua kuwa miongoni mwa washiriki wa utafiti huu. Kama kuna kitu hujakielewa au unahitaji kujuzwa Zaidi, nitafurahi kufanya hivyo na kukujiza.

Nani wa kuwasiliana naye?

Kama unapenda kusema jambo lolote, kushauri ama kutoa malalamiko kuhusu utafiti huu, unaweza kuwasiliana na Mhina Juma, kwenye simu namba 0784505072 ama kwa barua pepe mhinaj@gmail.com

Watafiti wasimamizi:

Dr. Dicken Aduda kutoka Chuo kikuu cha Kabianga. Barua pepe: omondisda@gmail.com.

Dr. Louisa Nduonyu kutoka Chuo kikuu cha Maseno. Barua pepe: gndunyu@gmail.com

Kwa swali lolote ama malalamiko kuhusu haki kama mshiriki, wasiliana na taasisi ya taifa ya utafiti kamati ya maudhui (NatHREC), simu namba: 0758587885; Barua pepe: nimrethics@gmail.com

Tafadhali weka sahihi kama umekubali kushiriki

Sahihi _____ Tarehe _____

Asante Sana kwa Ushirikiano wako

APPENDIX IV: QUESTIONNAIRE - ENGLISH

UPTAKE OF HEPATITIS B VACCINE AND ASSOCIATED FACTORS AMONG HEALTH CARE WORKERS IN MTWARA MUNICIPALITY HEALTH CENTRES, TANZANIA

The aim of this survey is to examine HCWs knowledge on hepatitis B and identify those who have received HBV vaccine. Your participation is voluntary to answer the following questions. Your answer will be confidential. The result will be used to publicize awareness regarding the virus to the government and other relevant public health agencies.

Please answer every question in the questionnaire by indicating corresponding number for your response.

Part 1: Demographic Characteristics

Name of Health Facility: _____		Code of Facility: ____ / ____
Code of Participant: ____ / ____ / ____		Code of Research Assistant: ____ / ____ / ____
No	Question	Coding (tick appropriate box)
1	Age?	1. 18- 24 <input type="checkbox"/> 2. 25-30 <input type="checkbox"/> 3. 31-35. <input type="checkbox"/> 4. 36-40. <input type="checkbox"/> 5. 41 or greater <input type="checkbox"/>
2	Sex of Respondent?	1. Male <input type="checkbox"/> 2. Female <input type="checkbox"/>
3	Which of the cadres identified do you belong? <i>*Read and select once answer</i>	1. Doctor <input type="checkbox"/> 2. Pharmacists and Pharmaceutical Technologists <input type="checkbox"/> 3. Nursing Officers <input type="checkbox"/> 4. Clinical Officers <input type="checkbox"/> 5. Radiologist <input type="checkbox"/> 6. Environmental officer <input type="checkbox"/> 7. Laboratory technician <input type="checkbox"/> 8. Cleaner <input type="checkbox"/> 9. Cooks <input type="checkbox"/> 10. Driver <input type="checkbox"/> 11. Others <input type="checkbox"/> If answer is 11, specify _____
4	How long have you been working as Health Care Worker?	State number of days, weeks, months or years _____ (if less than 3 months – End the interview and thank the respondent – explain the reason for ending the interview)
5	Highest level of professional training?	1. Certificate <input type="checkbox"/> 2. Diploma <input type="checkbox"/> 3. Higher diploma <input type="checkbox"/> 4. Bachelors <input type="checkbox"/> 5. Masters and higher <input type="checkbox"/> 6. No Certificate – attended/completed primary <input type="checkbox"/>

6	When was the last time you attended Continuing Medical Education (CME) on infection prevention and control?	1. Within the last 12 months <input type="checkbox"/> 2. In the last 2 years <input type="checkbox"/> 3. In the last 3 – 5 years <input type="checkbox"/> 4. More than 6 years ago <input type="checkbox"/> 5. Never attended <input type="checkbox"/> 6. I have recently been employed <input type="checkbox"/>
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Part II: General Awareness of Hepatitis B

No	Question	Coding (tick appropriate box)
1	Have you heard about the hepatitis B virus (HBV)?	1. Yes <input type="checkbox"/> 2. No <input type="checkbox"/>
2	What was your source of information regarding Hepatitis B?	1. At medical School <input type="checkbox"/> 2. When I went to Hospital for medication <input type="checkbox"/> 3. Newspaper <input type="checkbox"/> 4. Television/radio <input type="checkbox"/> 5. Workplace <input type="checkbox"/> 6. Others specify _____ If answer is 6 specify _____ If
3	What causes Hepatitis B? (identify the Infectious Agent)	1. Virus <input type="checkbox"/> 2. Bacteria <input type="checkbox"/> 3. Fungal <input type="checkbox"/> 4. Cancer <input type="checkbox"/> 5. Don't know/Not sure <input type="checkbox"/> 6. Others specify <input type="checkbox"/> If answer is 6 specify _____

Part III: Awareness on Mode of Transmission of HBV Infection

No	Question	Coding (tick appropriate box)
Reservoir		
1	Hepatitis B can survive in human and animals	1. Strongly Agree <input type="checkbox"/> 2. Agree <input type="checkbox"/> 3. Undecided\Not Sure <input type="checkbox"/> 4. Disagree <input type="checkbox"/> 5. Strongly Disagree <input type="checkbox"/>
2	Depending on one's immunity, hepatitis B can persist in the human tissues once a person is infected?	1. Strongly Agree <input type="checkbox"/> 2. Agree <input type="checkbox"/> 3. Undecided\Not Sure <input type="checkbox"/> 4. Disagree <input type="checkbox"/> 5. Strongly Disagree <input type="checkbox"/>
3	Hepatitis B virus can survive outside the body at least 7 days. During that time, the virus can still cause infection if it enters the body of a person who is not infected?	1. Strongly Agree <input type="checkbox"/> 2. Agree <input type="checkbox"/> 3. Undecided\Not Sure <input type="checkbox"/> 4. Disagree <input type="checkbox"/> 5. Strongly Disagree <input type="checkbox"/>
Mode of Exit		
4	Hepatitis B virus can be transmitted to Human through which one of these: a. Mouth, b. Nose or	a. Mouth 1. Strongly Agree <input type="checkbox"/> 2. Agree <input type="checkbox"/> 3. Undecided\Not Sure <input type="checkbox"/>

	c. Cut on the skin Select single answer on each source (a – d)	4. Disagree <input type="checkbox"/> 5. Strongly Disagree <input type="checkbox"/> b. Nose 1. Strongly Agree <input type="checkbox"/> 2. Agree <input type="checkbox"/> 3. Undecided\Not Sure <input type="checkbox"/> 4. Disagree <input type="checkbox"/> 5. Strongly Disagree <input type="checkbox"/> c. Cut on the skin 1. Strongly Agree <input type="checkbox"/> 2. Agree <input type="checkbox"/> 3. Undecided\Not Sure <input type="checkbox"/> 4. Disagree <input type="checkbox"/> 5. Strongly Disagree <input type="checkbox"/>
Mode of transmission		
5	Hepatitis B can be transmitted through unprotected sex?	1. Strongly Agree <input type="checkbox"/> 2. Agree <input type="checkbox"/> 3. Undecided\Not Sure <input type="checkbox"/> 4. Disagree <input type="checkbox"/> 5. Strongly Disagree <input type="checkbox"/>
6	Hepatitis B can be transmitted through organ and tissue transplant?	1. Strongly Agree <input type="checkbox"/> 2. Agree <input type="checkbox"/> 3. Undecided\Not Sure <input type="checkbox"/> 4. Disagree <input type="checkbox"/> 5. Strongly Disagree <input type="checkbox"/>
7	Hepatitis B can be transmitted through mother to baby at birth for an infected mother?	1. Strongly Agree <input type="checkbox"/> 2. Agree <input type="checkbox"/> 3. Undecided\Not Sure <input type="checkbox"/> 4. Disagree <input type="checkbox"/> 5. Strongly Disagree <input type="checkbox"/>
8	Hepatitis B can be transmitted through blood to blood contact	1. Strongly Agree <input type="checkbox"/> 2. Agree <input type="checkbox"/> 3. Undecided\Not Sure <input type="checkbox"/> 4. Disagree <input type="checkbox"/> 5. Strongly Disagree <input type="checkbox"/>
9	Body piercing, tattooing with contaminated instruments can also lead to Hepatitis B infection	1. Strongly Agree <input type="checkbox"/> 2. Agree <input type="checkbox"/> 3. Undecided\Not Sure <input type="checkbox"/> 4. Disagree <input type="checkbox"/> 5. Strongly Disagree <input type="checkbox"/>
10	HBV can be transmitted through drinking contaminated water	1. Strongly Agree <input type="checkbox"/> 2. Agree <input type="checkbox"/> 3. Undecided\Not Sure <input type="checkbox"/> 4. Disagree <input type="checkbox"/> 5. Strongly Disagree <input type="checkbox"/>
11	HBV can be transmitted by handshake or hugging an infected person	1. Strongly Agree <input type="checkbox"/> 2. Agree <input type="checkbox"/> 3. Undecided\Not Sure <input type="checkbox"/> 4. Disagree <input type="checkbox"/> 5. Strongly Disagree <input type="checkbox"/>
Host		

12	Host for Hepatitis B like the reservoirs are human	1. Strongly Agree <input type="checkbox"/> 2. Agree <input type="checkbox"/> 3. Undecided\Not Sure <input type="checkbox"/> 4. Disagree <input type="checkbox"/> 5. Strongly Disagree <input type="checkbox"/>
13	HBV multiply itself within the human host before it is transmitted to another susceptible host upon exposure	1. Strongly Agree <input type="checkbox"/> 2. Agree <input type="checkbox"/> 3. Undecided\Not Sure <input type="checkbox"/> 4. Disagree <input type="checkbox"/> 5. Strongly Disagree <input type="checkbox"/>
14	If the HBV exist in one's body for more than 6 months, then the person becomes a chronic carrier of HBV?	1. Strongly Agree <input type="checkbox"/> 2. Agree <input type="checkbox"/> 3. Undecided\Not Sure <input type="checkbox"/> 4. Disagree <input type="checkbox"/> 5. Strongly Disagree <input type="checkbox"/>

Part IV: Awareness on Prevention of HBV Infection

No	Question	Coding (tick appropriate box)
1	Hepatitis B can be effectively prevented through 3 doses of vaccination.	1. Strongly Agree <input type="checkbox"/> 2. Agree <input type="checkbox"/> 3. Undecided\Not Sure <input type="checkbox"/> 4. Disagree <input type="checkbox"/> 5. Strongly Disagree <input type="checkbox"/>
2	Vaccine for HB is available but Is not effective?	1. Strongly Agree <input type="checkbox"/> 2. Agree <input type="checkbox"/> 3. Undecided\Not Sure <input type="checkbox"/> 4. Disagree <input type="checkbox"/> 5. Strongly Disagree <input type="checkbox"/>
3	Hepatitis B can be prevented by PEP (Post Exposure Prophylaxis) following exposure. *PEP – After HBV exposure	1. Strongly Agree <input type="checkbox"/> 1. Agree <input type="checkbox"/> 2. Undecided\Not Sure <input type="checkbox"/> 3. Disagree <input type="checkbox"/> 4. Strongly Disagree <input type="checkbox"/>
4	PrEP(Pre-Exposure Prophylaxis) must be taken for at least 7 days to reach optimal levels of protection against HBV before exposure. *PrEP – Before HBV exposure	1. Strongly Agree <input type="checkbox"/> 2. Agree <input type="checkbox"/> 3. Undecided\Not Sure <input type="checkbox"/> 4. Disagree <input type="checkbox"/> 5. Strongly Disagree <input type="checkbox"/>
5	PEP must be started within 72 hours after HBV exposure *PEP – After HBV exposure	1. Strongly Agree <input type="checkbox"/> 2. Agree <input type="checkbox"/> 3. Undecided\Not Sure <input type="checkbox"/> 4. Disagree <input type="checkbox"/> 5. Strongly Disagree <input type="checkbox"/>
6	PreP is for people who don't have HBV and have a partner who is HBV positive, have partners whose HBV status unknown.	1. Strongly Agree <input type="checkbox"/> 2. Agree <input type="checkbox"/> 3. Undecided\Not Sure <input type="checkbox"/> 4. Disagree <input type="checkbox"/> 5. Strongly Disagree <input type="checkbox"/>
7	PEP can prevent HBV infection when taken correctly, but it's always not effective	1. Strongly Agree <input type="checkbox"/> 2. Agree <input type="checkbox"/> 3. Undecided\Not Sure <input type="checkbox"/>

		4. Disagree <input type="checkbox"/>
		5. Strongly Disagree <input type="checkbox"/>
8	HBV can be prevented through behavior change by avoiding multiple sexual partners.	1. Strongly Agree <input type="checkbox"/> 2. Agree <input type="checkbox"/> 3. Undecided\Not Sure <input type="checkbox"/> 4. Disagree <input type="checkbox"/> 5. Strongly Disagree <input type="checkbox"/>
9	HBV can be prevented through treatment of the infected person.	1. Strongly Agree <input type="checkbox"/> 2. Agree <input type="checkbox"/> 3. Undecided\Not Sure <input type="checkbox"/> 4. Disagree <input type="checkbox"/> 5. Strongly Disagree <input type="checkbox"/>

Part V: Awareness on treatment

No	Question	Coding (tick appropriate box)
1	Hepatitis B has no cure however there is a vaccine for it?	1. Strongly Agree <input type="checkbox"/> 2. Agree <input type="checkbox"/> 3. Undecided\Not Sure <input type="checkbox"/> 4. Disagree <input type="checkbox"/> 5. Strongly Disagree <input type="checkbox"/>
2	Chronic Hepatitis B can be treated by taking antiviral treatments such as tenofovir however it only slows its ability to damage your liver	1. Strongly Agree <input type="checkbox"/> 2. Agree <input type="checkbox"/> 3. Undecided\Not Sure <input type="checkbox"/> 4. Disagree <input type="checkbox"/> 5. Strongly Disagree <input type="checkbox"/>

Part VI: Uptake of Vaccine and Awareness of HBV Vaccine.

No	Question	Coding (tick appropriate box)
1	Have you ever got the hepatitis B vaccinations?	1. Yes <input type="checkbox"/> 2. No <input type="checkbox"/> 3. Not Sure <input type="checkbox"/> If 2 and 3 skip to the next section part VI
DO NOT ANSWER BELOW QUESTIONS IF YOU HAVE ANSWERED 2 OR 3 ABOVE AND GO TO SECTION VI, CONTINUE IF YOUR ANSWER IS ONE (1) ABOVE		
2	Number of doses received ...	1. One time <input type="checkbox"/> 2. Two times <input type="checkbox"/> 3. Three times <input type="checkbox"/> 4. Above 3 times <input type="checkbox"/> 5. Don't remember <input type="checkbox"/>
3	What were the Intervals between the doses?	1. 0 to 1 month then between 1-12 months later <input type="checkbox"/> 2. 0 to 3 months then between 6 – 12 later <input type="checkbox"/> 3. 0 to 6 months then 6 months later <input type="checkbox"/> 4. Don't know <input type="checkbox"/> 5. Don't remember <input type="checkbox"/> 6. Others (specify) _____ <input type="checkbox"/>
4	Some people have immunity that can prevent them from reaching chronic	1. True <input type="checkbox"/> 2. False <input type="checkbox"/>

	stage of Hepatitis B infection.	3. Do not know <input type="checkbox"/>
5	If you have undergone all the 3 doses of HB vaccination, what was the motivation or rather what made you take all the 3 doses?	Multiple response allowed 1. It was compulsory <input type="checkbox"/> 2. Am working in a high-risk unit hence feared to be infected <input type="checkbox"/> 3. Others, please <input type="checkbox"/> Specify _____ _____
Thanks Very Much for your responses, your opinions will remain confidential. Tick below if you would wish to get the feedback\Result of this survey <input type="checkbox"/>		

Part VII: Challenges to Uptake Hepatitis B Vaccination Among HCWs

No	Question	Coding (tick appropriate box)
1	What was the reason for not getting the HB vaccination or complete the vaccination doses?	<input type="text"/>
2	Are you planning to receive Hepatitis B vaccine in the next 3 months if available?	1. Yes <input type="checkbox"/> 2. No <input type="checkbox"/> 3. Not Sure <input type="checkbox"/> If 1 skip the next question and thank the respondent
3	If you're not planning or unsure to take vaccination in the next 3 months, what are the reasons?	Multiple response allowed 1. Fear about the side effects <input type="checkbox"/> 2. HBV is not serious condition therefore not worth vaccinating <input type="checkbox"/> 3. Am already HBV positive <input type="checkbox"/> 4. I have other complication hence am not allowed to take the shot <input type="checkbox"/> 5. Am not working in the risk occupation hence I do not need vaccine <input type="checkbox"/> 6. I don't like needled <input type="checkbox"/> 7. Other reasons <input type="checkbox"/> If 7, specify _____
Thanks Very Much for your responses, your opinions will remain confidential. Tick below if you would wish to get the feedback\Result of this survey <input type="checkbox"/>		

APPENDIXV: Key Informant Interview Guides

Key Informant Interview Guides– for Government Officials (Regional Medical Officers & Ministry of Health Representatives)(English version)

Start within formed consent (IC)

Name of government department: _____ . Code of department: ____/____		
Code of participant: ____/____/____ . Code of research assistant: ____/____/____		
#	Questions	Probe
1.	Please tell me about Mtwara Municipality Health Care Workers general awareness of HBV?	To the best of your knowledge, what is the proportion of health workers who are aware of HBV? Y__ N__ Teaching Curriculum, does it cover HBV prevention and control? Y__ N__ Exposure to seminars and trainings for HCWs on infectious disease such as HBV. Describe what plans exist and how they are

		implemented:
2	Please tell me what you know about Mtwara Municipality Health Care Workers with regard to their risk of exposure to HBV?	Access to information on HBV, where do they get informed
3	What is the estimated magnitude of HBV prevalence in terms of count or proportion of the overall population in Mtwara Municipality Hospitals over the last 12 months?	Magnitude of disease
4	What is the vaccination coverage among the HCWs in Mtwara Municipality public hospitals and health centers?	
5	Are there any government policies in place concerning HBV vaccine? Where and How do the health care workers access them? How do you monitor compliance?	Policies on vaccination for HBV among HCW Enforcement, optional
6	What are the challenges associated with HBV prevention and control program in Mtwara Municipality?	clarify any specific challenges facing HCW in relation to Knowledge and vaccine
7	If there any challenges, how is government addressing these challenges?	
8	Do you have any other comment to add	Statistics of HBV in Mtwara Prevention mechanism in place undertaken by government
Thanks Very Much for your responses, your opinions will remain confidential. Tick below if you would wish to get the feedback\Result of this survey <input type="checkbox"/>		

<https://forms.gle/qZPaVuA5TVx4zK376>.

END

APPENDIX VI: QUESTIONNAIRE - SWAHILI



MASENO UNIVERSITY SCHOOL OF PUBLIC HEALTH AND COMMUNITY DEVELOPMENT

APPENDIX VI: Dodoso

HALI YA CHANJO YA HOMA YA INI NA UELEWA KUHUSU KUJILINDANA KUTIBU HOMA YA INI KWA WAFANYAKAZI NA WAKUNGA WA VITUO VYA AFYA VYA MTWARA MJINI, TANZANIA

Lengo la huu utafiti ni kupima uelewa wa watoa huduma za afya kuhusu homa ya ini na kujua waliopata chanjo ya homa ya ini. Ushiriki wako ni wa hiari kwenye kujibu maswali yafuatayo. Majibu yako yatabaki kuwa siri. Matokeo ya utafiti huu yatatumika kutoa hamasa kuhusu uelewa wa virusi hivi kwa serikali na washirika wengine wa maswala ya afya.

Tafadhali jibu kila swali kwenye dodoso kwa kuchagua namba ya jibu una kujaza kwenye kisanduku husika.

Sehemu 1: Taarifa Binafsi

Jina la kituo cha afya: _____		No. kituo cha Afya: ____/____/____	
Namba ya Mshiriki: ____/____/____.		Namba ya mtafiti msaidizi: ____/____/____	
No	Swali	Majibu (weka alama ya vyema kwenye jibu sahihi)	
1	Umri wako?	1. 18- 24	<input type="checkbox"/>
		2. 25-30	<input type="checkbox"/>
		3. 31-35.	<input type="checkbox"/>
		4. 36-40.	<input type="checkbox"/>
		5. 41 au Zaidi	<input type="checkbox"/>
2	Jinsia yako?	1. Mwanamke	<input type="checkbox"/>
		2. Mwanaume	<input type="checkbox"/>
3	Ni ipi kati ya kazi hizi unahusika nayo? *soma na chagua jibu moja tu	12. Daktari	<input type="checkbox"/>
		13. Mfamasia au mtaalam wa ufamasi	<input type="checkbox"/>
		14. Afisa Muunguzi (Nurse)	<input type="checkbox"/>
		15. Tabibu (clinical officer)	<input type="checkbox"/>
		16. Mteknolojia Mionzi (Radiologist)	<input type="checkbox"/>
		17. Afisa afya mazingira	<input type="checkbox"/>
		18. Mteknolojia Maabara	<input type="checkbox"/>
		19. Wafanya Usafi (Cleaner)	<input type="checkbox"/>
		20. Wapishi	<input type="checkbox"/>
		21. Dereva	<input type="checkbox"/>
		22. Nyinginezo	<input type="checkbox"/>
		Kama jibu ni 11, taja kada uliyopo _____	
4	Ni kwa muda gani umekuwa ukifanya kazi kama mfanyakazi ama mkunga katika hospitali ama kituo cha afya?	Taja idadi ya siku, wiki, miezi au mwaka _____	

5	Elimu yako ya juu ni kiwango gani?	7. Certificate (Astashahada) <input type="checkbox"/> 8. Diploma (Stashahada) <input type="checkbox"/> 9. Higher diploma (Stashahada ya juu) <input type="checkbox"/> 10. Bachelors (Shahada) <input type="checkbox"/> 11. Masters and higher (Shahada uzamili na kuendelea) <input type="checkbox"/> 12. Huna cheti au umemaliza elimu ya msingi tu <input type="checkbox"/>
6	Ni lini mara ya mwisho ulihudhuria mafunzo endelevu yanayohusisha kujilinda na kujikinga na maambukizi?	7. Ndani ya miezi 12 iliyopita <input type="checkbox"/> 8. Miaka 2 iliyopita <input type="checkbox"/> 9. Miaka 3 hadi 5 iliyopita <input type="checkbox"/> 10. Zaidi ya miaka 6 iliyopita <input type="checkbox"/> 11. Sijawahi hudhuria <input type="checkbox"/> 12. Nimeajiriwa hivi karibuni <input type="checkbox"/>

Sehemu II: Uelewa kuhusu Homa ya Ini

No	Swali	Jibu (weka alama ya vyema kwenye jibu sahihi)
1	Ulishawahi kusikia kuhusu virusi vya homa ya Ini (Hepatitis B Virus)?	1. Ndio <input type="checkbox"/> 2. Hapana <input type="checkbox"/>
2	Ni kipi kilikuwa chanzo cha sehemu uliyopata taarifa kuhusu Homa ya ini (chanzo cha taarifa)?	7. Shule\Chuo cha utabibu <input type="checkbox"/> 8. Nilipoenda hospitali kutibiwa <input type="checkbox"/> 9. Kwenye Magazeti <input type="checkbox"/> 10. Kwenye TV na Redio <input type="checkbox"/> 11. Sehemu ya kazi <input type="checkbox"/> 12. Nyinginezo, Taja <input type="checkbox"/> Kama jibu ni 6 taja _____
3	Ni nini kinachosababisha homa ya ini? (chagua kisababishi ambukizi)	1. Kirusi <input type="checkbox"/> 2. Bacteria <input type="checkbox"/> 3. Fangasi <input type="checkbox"/> 4. Kansa <input type="checkbox"/> 5. Sijui/sina hakika <input type="checkbox"/> 6. Nyinginezo, taja <input type="checkbox"/> Kama jibu ni 6 taja _____

Sehemu III: Uelewa kuhusu maambukizi ya Virusi vya Homa ya ini

No	Swali	Jibu (weka alama ya vyema kwenye jibu sahihi)
Makazi		
1	Homa ya Ini inaweza kuishi kwa binadamu na Wanyama?	6. Ni sahihi kabisa <input type="checkbox"/> 7. Sahihi <input type="checkbox"/> 8. Sina Uhakika\Sina jibu <input type="checkbox"/> 9. Si sahihi <input type="checkbox"/> 10. Si sahihi kabisa <input type="checkbox"/>
2	Kutegemea na kinga ya mtu, Homa ya ini inaweza kuendelea kuwepo mwilini pindi tu alipoambukizwa?	6. Ni sahihi kabisa <input type="checkbox"/> 7. Sahihi <input type="checkbox"/> 8. Sina Uhakika\Sina jibu <input type="checkbox"/> 9. Si sahihi <input type="checkbox"/> 10. Si sahihi kabisa <input type="checkbox"/>

3	Virusi vya homa ya ini vinaweza ishi nje ya mwili wa binadamu kwa angalau siku saba. Katika kipindi hiki, virusi vinaweza kusababisha maambukizi kama vitaingia katika mwili wa mtu ambaye hajaambukizwa?	6. Ni sahihi kabisa <input type="checkbox"/> 7. Sahihi <input type="checkbox"/> 8. Sina Uhakika\Sina jibu <input type="checkbox"/> 9. Si sahihi <input type="checkbox"/> 10. Si sahihi kabisa <input type="checkbox"/>
Njia ya Kutoka		
4	Virusi vya Homa ya ini vinaweza kuambukizwa kwa binadamu kwa njia gani kati ya hizi? d. Mdomo, e. Pua or f. Ngozi iliyowazi Chagua jibu moja kwenye kila kipengele (a – d)	a. Kwa mdomo 6. Ni sahihi kabisa <input type="checkbox"/> 7. Sahihi <input type="checkbox"/> 8. Sina Uhakika\Sina jibu <input type="checkbox"/> 9. Si sahihi <input type="checkbox"/> 10. Si sahihi kabisa <input type="checkbox"/> b. Kwa Pua 6. Ni sahihi kabisa <input type="checkbox"/> 7. Sahihi <input type="checkbox"/> 8. Sina Uhakika\Sina jibu <input type="checkbox"/> 9. Si sahihi <input type="checkbox"/> 10. Si sahihi kabisa <input type="checkbox"/> c. Kupitia Ngozi iliyokatika\iliyowazi 6. Ni sahihi kabisa <input type="checkbox"/> 7. Sahihi <input type="checkbox"/> 8. Sina Uhakika\Sina jibu <input type="checkbox"/> 9. Si sahihi <input type="checkbox"/> 10. Si sahihi kabisa <input type="checkbox"/>
Njia ya Maambukizi		
5	Homa ya Ini inaweza kuambukizwa kwa kufanya Ngoni zembe\ Bila kutumia kinga?	1. Ni sahihi kabisa <input type="checkbox"/> 2. Sahihi <input type="checkbox"/> 3. Sina Uhakika\Sina jibu <input type="checkbox"/> 4. Si sahihi <input type="checkbox"/> 5. Si sahihi kabisa <input type="checkbox"/>
6	Homa ya Ini inaweza kuambukizwa kwa njia kupandikiza viungo vya mwili?	6. Ni sahihi kabisa <input type="checkbox"/> 7. Sahihi <input type="checkbox"/> 8. Sina Uhakika\Sina jibu <input type="checkbox"/> 9. Si sahihi <input type="checkbox"/> 10. Si sahihi kabisa <input type="checkbox"/>
7	Homa ya Ini inaweza kuambukizwa kupitia mama kwenda kwa mtoto wakati wa kuzaliwa kama mama ana maambukizi.	6. Ni sahihi kabisa <input type="checkbox"/> 7. Sahihi <input type="checkbox"/> 8. Sina Uhakika\Sina jibu <input type="checkbox"/> 9. Si sahihi <input type="checkbox"/> 10. Si sahihi kabisa <input type="checkbox"/>
8	Homa ya ini inaweza kuambukizwa kupitia mwingiliano kati ya dam una damu.	6. Ni sahihi kabisa <input type="checkbox"/> 7. Sahihi <input type="checkbox"/> 8. Sina Uhakika\Sina jibu <input type="checkbox"/> 9. Si sahihi <input type="checkbox"/> 10. Si sahihi kabisa <input type="checkbox"/>
9	Kujitoboa mwili, kujiweka michoro mwilini (tattoo) na vifaa visivyo salama inaweza kupelekea kuambukizwa Homa ya Ini	6. Ni sahihi kabisa <input type="checkbox"/> 7. Sahihi <input type="checkbox"/> 8. Sina Uhakika\Sina jibu <input type="checkbox"/> 9. Si sahihi <input type="checkbox"/> 10. Si sahihi kabisa <input type="checkbox"/>

10	Homa ya Ini inaweza kuambukizwa kwa kunywa maji yenye maambukizi	6. Ni sahihi kabisa <input type="checkbox"/> 7. Sahihi <input type="checkbox"/> 8. Sina Uhakika\Sina jibu <input type="checkbox"/> 9. Si sahihi <input type="checkbox"/> 10. Si sahihi kabisa <input type="checkbox"/>
11	Homa ya Ini inaweza kuambukizwa kwa kushikana mikono au kukumbatiana na mtu aliyeathirika	6. Ni sahihi kabisa <input type="checkbox"/> 7. Sahihi <input type="checkbox"/> 8. Sina Uhakika\Sina jibu <input type="checkbox"/> 9. Si sahihi <input type="checkbox"/> 10. Si sahihi kabisa <input type="checkbox"/>
Host		
12	Anayetunza\lea homa ya ini kama ilivyo makazi ya virusi vyake ni binadamu	6. Ni sahihi kabisa <input type="checkbox"/> 7. Sahihi <input type="checkbox"/> 8. Sina Uhakika\Sina jibu <input type="checkbox"/> 9. Si sahihi <input type="checkbox"/> 10. Si sahihi kabisa <input type="checkbox"/>
13	Virusi vya Homa ya ini vinazaliana vyenye kwenye mwili wa binadamu kabla havijaambukiza kwa mtu mwingine aliye kwenye mtego wa kuambukizwa	6. Ni sahihi kabisa <input type="checkbox"/> 7. Sahihi <input type="checkbox"/> 8. Sina Uhakika\Sina jibu <input type="checkbox"/> 9. Si sahihi <input type="checkbox"/> 10. Si sahihi kabisa <input type="checkbox"/>
14	Kama virusi vya Homa ya Ini vinaishi kwenye mwili wa binadamu kwa Zaidi ya miezi 6, basi mtu huyo ni mbebaji Dhahiri\timilifu wa virusi vya homa ya ini	6. Ni sahihi kabisa <input type="checkbox"/> 7. Sahihi <input type="checkbox"/> 8. Sina Uhakika\Sina jibu <input type="checkbox"/> 9. Si sahihi <input type="checkbox"/> 10. Si sahihi kabisa <input type="checkbox"/>

Sehemu IV: Uelewa kuhusu Kujikinga na Maambukizi ya Homa ya Ini

No	Swali	Jibu (weka alama ya vyema kwenye jibu sahihi)
1	Homa ya Ini inaweza kudhibitiwa\kukabiliwa kwa kupata dozi kamili ya chanjo 3.	6. Ni sahihi kabisa <input type="checkbox"/> 7. Sahihi <input type="checkbox"/> 8. Sina Uhakika\Sina jibu <input type="checkbox"/> 9. Si sahihi <input type="checkbox"/> 10. Si sahihi kabisa <input type="checkbox"/>
2	Chanjo ya Homa ya ini ipo lakini haifanyi kazi ipasavyo	1. Ni sahihi kabisa <input type="checkbox"/> 2. Sahihi <input type="checkbox"/> 3. Sina Uhakika\Sina jibu <input type="checkbox"/> 4. Si sahihi <input type="checkbox"/> 5. Si sahihi kabisa <input type="checkbox"/>
3	Homa ya Ini inaweza kudhibitiwa\kukabiliwa kwa (PEP) dawa ya kujikinga na maambukizi mara baada ya kuingiliwa na hali hatarishi <i>*Hali hatarishi ni wakati maji maji ya mwili ya mgonjwa yanaingia kwa mwingine kupitia mdomo, macho, au sehemu iliyowazi\katika*</i> PEP – Ni kwa watu wasio na maambukizi ila wanakadiriwa\dhaniwa kuwa wamepata maambukizi	2. Ni sahihi kabisa <input type="checkbox"/> 3. Sahihi <input type="checkbox"/> 4. Sina Uhakika\Sina jibu <input type="checkbox"/> 5. Si sahihi <input type="checkbox"/> 6. Si sahihi kabisa <input type="checkbox"/>

4	<p>Dawa inayotumiwa wakati mtu yupo kwenye mazingira hatarishi (PreP) inatakiwa itumiwe angalau kwa siku saba (7) mfululizo kufikia kiwango cha kukuinga na maambukizi ya homa ya Ini kabla hajafikiwa na hatari</p> <p><i>*Mazingira hatarishi ni wakati mtu hana maambukizi ila yupo kwenye hali ya hatari kwa wakati wowote kukumbana na maambukizi*</i></p> <p>PreP – Ni kwa watu wasio na maambukizi ila wanaishi kwenye hatari ya kupata maambukizi</p>	<p>6. Ni sahihi kabisa <input type="checkbox"/></p> <p>7. Sahihi <input type="checkbox"/></p> <p>8. Sina Uhakika\Sina jibu <input type="checkbox"/></p> <p>9. Si sahihi <input type="checkbox"/></p> <p>10. Si sahihi kabisa <input type="checkbox"/></p>
5	<p>Dawa ya kuzuia maambukizi (PEP) mara baada ya kukutana na hali hatarishi inatakiwa ianze kumezwa ndani ya masaa 72 toka alipokumbana na hatari ya homa ya ini.</p> <p>PEP– Ni dawa kwa watu wasio na maambukizi ila wanakadiriwa\dhaniwa kuwa wamepata maambukizi</p>	<p>6. Ni sahihi kabisa <input type="checkbox"/></p> <p>7. Sahihi <input type="checkbox"/></p> <p>8. Sina Uhakika\Sina jibu <input type="checkbox"/></p> <p>9. Si sahihi <input type="checkbox"/></p> <p>10. Si sahihi kabisa <input type="checkbox"/></p>
6	<p>Dawa inayotumiwa wakati mtu yupo kwenye mazingira hatarishi (PreP) ni kwa watu wasio na Homa ya ini ila wana wapenzi wenye Homa ya ini, na wapenzi wengine ambao hali yao haijulikani.</p>	<p>6. Ni sahihi kabisa <input type="checkbox"/></p> <p>7. Sahihi <input type="checkbox"/></p> <p>8. Sina Uhakika\Sina jibu <input type="checkbox"/></p> <p>9. Si sahihi <input type="checkbox"/></p> <p>10. Si sahihi kabisa <input type="checkbox"/></p>
7	<p>PEP inaweza kuzuia maambukizi ya homa ya ini inapotumiwa sahihi, ila si ya kuitegemea</p> <p>PEP– Ni dawa kwa watu wasio na maambukizi ila wanakadiriwa\dhaniwa kuwa wamepata maambukizi</p>	<p>6. Ni sahihi kabisa <input type="checkbox"/></p> <p>7. Sahihi <input type="checkbox"/></p> <p>8. Sina Uhakika\Sina jibu <input type="checkbox"/></p> <p>9. Si sahihi <input type="checkbox"/></p> <p>10. Si sahihi kabisa <input type="checkbox"/></p>
8	<p>Homa ya ini inaweza kuzuiwa kwa kubadili tabia kwa kujiepusha na kuwa na wapenzi wengi</p>	<p>1. Ni sahihi kabisa <input type="checkbox"/></p> <p>2. Sahihi <input type="checkbox"/></p> <p>3. Sina Uhakika\Sina jibu <input type="checkbox"/></p> <p>4. Si sahihi <input type="checkbox"/></p> <p>5. Si sahihi kabisa <input type="checkbox"/></p>
9	<p>Homa ya ini inaweza kudhibitiwa\kujilinda kwa kumtibu mtu mwenye maambukizi.</p>	<p>6. Ni sahihi kabisa <input type="checkbox"/></p> <p>7. Sahihi <input type="checkbox"/></p> <p>8. Sina Uhakika\Sina jibu <input type="checkbox"/></p> <p>9. Si sahihi <input type="checkbox"/></p> <p>10. Si sahihi kabisa <input type="checkbox"/></p>

Sehemu V: Uelewa kuhusu Tiba ya homa ya ini

No	Swali	Jibu (weka alama ya vyema kwenye jibu sahihi)
1	Homa ya Ini haina tiba ingawaje kuna chanjo?	<p>1. Ni sahihi kabisa <input type="checkbox"/></p> <p>2. Sahihi <input type="checkbox"/></p> <p>3. Sina Uhakika\Sina jibu <input type="checkbox"/></p> <p>4. Si sahihi <input type="checkbox"/></p> <p>5. Si sahihi kabisa <input type="checkbox"/></p>

2	Homa ya Ini inaweza kutibiwa kwa kutumia dawa za kudhibiti virusi kama vile tenofovir ingawaje inasaidia kupunguza kasi ya ini kuharibiwa tu?	6. Ni sahihi kabisa <input type="checkbox"/> 7. Sahihi <input type="checkbox"/> 8. Sina Uhakika\Sina jibu <input type="checkbox"/> 9. Si sahihi <input type="checkbox"/> 10. Si sahihi kabisa <input type="checkbox"/>
Asante sana kwa majibu yako, maoni yako yatabaki kuwa siri. Weka alama ya vyema kama ungependa kupokea mrejesho\matokeo ya utafiti huu <input type="checkbox"/>		

Sehemu VI: Hali ilivyo kuhusu chanjo na uelewa kuhusu chanjo ya homa ya ini

No	Swali	Jibu (weka alama ya vyema kwenye jibu sahihi)
1	Ulishawahi kupata chanjo ya homa ya ini?	1. Ndio <input type="checkbox"/> 2. Hapana <input type="checkbox"/> 3. Sina hakika <input type="checkbox"/> Kama jibu ni 2 au 3 ruka usijibu maswali yafuatayo na nenda kipengele cha VII
USIJIBU MASWALI YAFUATAYO KAMA UMEJIBU 2 (Hapana) AU 3 (Sina hakika) HAPO JUU NA NENDA SEHEMU VI, ENDELEA KAMA UMECHAGUA NAMBA 1 HAPO JUU		
2	Ni idadi ngapi ya chanjo za Homa ya Ini ulipata\ulichoma?	1. Mara Moja <input type="checkbox"/> 2. Mara Mbili <input type="checkbox"/> 3. Mara Tatu <input type="checkbox"/> 4. Zaidi ya Mara Tatu <input type="checkbox"/> 5. Sikumbuki <input type="checkbox"/>
3	Kati ya chanjo na chanjo kulikuwa kuna tofauti ya muda gani?	7. Chanjo ya kwanza, halafu baada ya mwezi mmoja (1) chanjo ya pili, chanjo ya tatu ni ndani ya mwezi mmoja (1) hadi miezi 12 baadae <input type="checkbox"/> 8. Chanjo ya kwanza, halafu baada ya miezi mitatu (3) chanjo ya pili, chanjo ya tatu ni ndani ya miezi sita (6) hadi miezi 12 baadae <input type="checkbox"/> 9. Chanjo ya kwanza, halafu baada ya miezi sita (6) chanjo ya pili, chanjo ya tatu ni miezi sita (6) baadae <input type="checkbox"/> 10. Sijui <input type="checkbox"/> 11. Sikumbuki <input type="checkbox"/> 12. Mengineyo (taja) <input type="checkbox"/>
4	Baadhi ya watu wanakinga inayowazuia kuingia kuwa wamebaji sugu wa virusi vya maambukizi ya homa ya ini.	4. Ndio <input type="checkbox"/> 5. Hapana <input type="checkbox"/> 6. Sijui\Sina Hakika <input type="checkbox"/>
5	Kama ulipata dozi tatu za chanjo, ni kipi kilikusukuma kupata dozi zote 3 za chanjo?	Kuchagua jibu Zaidi ya moja linaruhusiwa 1. Tulilazimishwa\ilikuwa ni lazima <input type="checkbox"/> 2. Nafanya kazi kwenye kitengo hatarishi na naogopa kuathirika <input type="checkbox"/> 3. Mengineyo, taja <input type="checkbox"/> _____ _____
Asante sana kwa majibu yako, maoni yako yatabaki kuwa siri. Weka alama ya vyema kama ungependa kupokea mrejesho\matokeo ya utafiti huu <input type="checkbox"/>		

Sehemu VII: Changamoto kwenye kupokea chanjo ya Homa ya ini kwa wahudumu, wafanyakazi na wakunga wa vituo vya afya

No	Swali	Jibu (<i>weka alama ya vyema kwenye jibu sahihi</i>)
1	Ni sababu gani zilikupelekea usipate chanjo au kukamilisha dozi ya homa ya ini?	_____
2	Je unampango wa kupiga chanjo ya homa ya ini kwenye miezi mitatu ijayo kama inapatikana?	1. Ndio <input type="checkbox"/> 2. Hapana <input type="checkbox"/> 3. Sina Uhakika <input type="checkbox"/> Kama jibu lako ni Ndio, ruka swali la tatu (3) na nenda kwenye maneno ya shukrani
3	Kama huna mpango au huna uhakika wa kupiga chanjo katika miezi mitatu (3) ijayo, ni zipi sababu zinazokupelekea kutopiga chanjo?	<p style="text-align: center;">Jibu Zaidi ya moja linaruhusiwa</p> 8. Naogopa madhara ya chanjo <input type="checkbox"/> 9. Homa ya ini si ugonjwa wa kuogopesha kwahiyo halina umuhimu wa kupiga chanjo <input type="checkbox"/> 10. Tayari mimi nina homa ya ini <input type="checkbox"/> 11. Nina matatizo mengine hivyo siruhusiwi kupata chanjo <input type="checkbox"/> 12. Sifanyi kazi kwenye maeneo hatarishi hivyo sihitaji chanjo <input type="checkbox"/> 13. Huwa sipendi sindano <input type="checkbox"/> 14. Nina sababu nyingine <input type="checkbox"/> Kama jibu (7), taja _____
<p style="text-align: center;">Asante sana kwa majibu yako, maoni yako yatabaki kuwa siri. Weka alama ya vyema kama ungependa kupokea mrejesho\matokeo ya utafiti huu <input type="checkbox"/></p>		

APPENDIX VII: Expected Correct Response

Questions	Expected Answer	Expected Codes
Hepatitis B can survive in human and animals	Strong Agree\Agree	1 Or 2
Depending on one's immunity, hepatitis B can persist in the human tissues once a person is infected?	Strong Agree\Agree	1 Or 2
Hepatitis B virus can survive outside the body for at least 7 days. During that time, the virus can still cause infection if it enters the body of a person who is not infected?	Strong Agree\Agree	1 Or 2
Mode of Exit		
Hepatitis B virus can be transmitted to Human through Mouth	Strong Agree\Agree	1 Or 2
Hepatitis B virus can be transmitted to Human through Nose	Strong Agree\Agree	1 Or 2
Hepatitis B virus can be transmitted to Human through Cut on the skin	Strong Agree\Agree	1 Or 2
Mode of transmission		
Hepatitis B can be transmitted through unprotected sex?	Strong Agree\Agree	1 Or 2
Hepatitis B can be transmitted through organ Or tissue transplants?	Strong Agree\Agree	1 Or 2
Hepatitis B can be transmitted through mother to baby at birth for an infected mother?	Strong Agree\Agree	1 Or 2
Hepatitis B can be transmitted through blood to blood contact	Strong Agree\Agree	1 Or 2
Body piercing, tattooing with contaminated instruments can also lead to Hepatitis B infection	Strong Agree\Agree	1 Or 2
HBV can be transmitted through drinking contaminated water	Strong Disagree\Disagree	4 Or 5
HBV can be transmitted by a handshake or hugging an infected person	Strong Disagree\Disagree	4 Or 5
Host		
Host for Hepatitis B like the reservoirs are human	Strong Agree\Agree	1 Or 2
HBV multiply itself within the human host before it is transmitted to another susceptible host upon exposure	Strong Agree\Agree	1 Or 2
If the HBV exist in one's body for more than 6 months, then the person becomes a chronic carrier of HBV?	Strong Agree\Agree	1 Or 2
Prevention		
Hepatitis B can be effectively prevented through 3 doses of vaccination.	Strong Agree\Agree	1 Or 2
Vaccine for HB is available but Is not effective?	Strong Disagree\Disagree	4 Or 5
Hepatitis B can be prevented by PEP (Post Exposure Prophylaxis) following exposure.	Strong Agree\Agree	1 Or 2
PrEP (Pre-Exposure Prophylaxis) must be	Strong Agree\Agree	1 Or 2

Questions	Expected Answer	Expected Codes
taken for at least 7 days to reach optimal levels of protection against HBV before exposure.		
PreP is for people who do not have HBV Or have a partner who is HBV positive, have partners whose HBV status unknown.	Strong Agree\Agree	1 Or 2
PEP can prevent HBV infection when taken correctly, but it's always not effective	Strong Disagree\Disagree	4 Or 5
HBV can be prevented through behavior change by avoiding multiple sexual partners.	Strong Agree\Agree	1 Or 2
HBV can be prevented through the treatment of the infected person.	Strong Disagree\Disagree	4 Or 5
Treatment		
Hepatitis B has no cure however there is a vaccine for it	Strong Agree\Agree	1 Or 2
Chronic Hepatitis B can be treated by taking antiviral treatments such as tenofovir however it only slows its ability to damage your liver	Strong Agree\Agree	1 Or 2

APPENDIX VIII: Table for Determining Sample Size from a Given Population by Krejcie and Morgan's (1970)

<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>
10	10	2	14	12	291
15	14	2	14	13	297
20	19	2	14	14	302
25	24	2	15	15	306
30	28	2	15	16	310
35	32	2	15	17	313
40	36	2	16	18	317
45	40	2	16	19	320
50	44	3	16	20	322
55	48	3	17	22	327
60	52	3	18	24	331
65	56	3	18	26	335
70	59	3	19	28	338
75	63	4	19	30	341
80	66	4	20	35	346
85	70	4	20	40	351
90	73	4	21	45	354
95	76	4	21	50	357
100	80	5	21	60	361
110	86	5	22	70	364
120	92	6	23	80	367
130	97	6	24	90	368
140	103	7	24	100	370
150	108	7	25	150	375
160	113	8	26	200	377
170	118	8	26	300	379
180	123	9	26	400	380
190	127	9	27	500	381
200	132	10	27	750	382
210	136	11	28	10000	384

Note.—*N* is population size whereby in the situation where population size is known, the sample size is respective determined bases on already calculated formula at 95% Confidence Interval. *S* is sample size.

APPENDIX X: Cut off Score Awareness Level

A correct answer was given 1 score and 0 score for wrong answer. The scores vary from 0-26 points and were classified into 2 levels as follows.

Scores	Descriptions
18.2 – 26 (70% - 100%)	High levels
0 – 18.1 (0 – 69.9%)	Low levels

APPENDIX XI: Ethical Review Approval



THE UNITED REPUBLIC OF TANZANIA



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Ministry of Health, Community
Development, Gender, Elderly & Children
University of Dodoma, College of
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NIMR/HQ/R.8a/Vol. IX/3322

23rd January 2020

Mhina Juma Majembe,
MEDA Tanzania,
P. O. Box 10817,
Dar es Salaam,
Tanzania

RE: ETHICAL CLEARANCE CERTIFICATE FOR CONDUCTING MEDICAL RESEARCH IN TANZANIA

This is to certify that the research entitled: "Hepatitis B vaccination coverage, knowledge of prevention, control and treatment among health care workers in Mtwara urban health centers, Tanzania." (Majembe MJ. et al), has been granted ethical clearance to be conducted in Tanzania.

The Principal Investigator of the study must ensure that the following conditions are fulfilled:


1. Progress report is submitted to the Ministry of Health, Community Development, Gender, Elderly & Children and the National Institute for Medical Research, Regional and District Medical Officers after every six months.
2. Permission to publish the results is obtained from National Institute for Medical Research.
3. Copies of final publications are made available to the Ministry of Health, Community Development, Gender, Elderly & Children and the National Institute for Medical Research.
4. Any researcher, who contravenes or fails to comply with these conditions, shall be guilty of an offence and shall be liable on conviction to a fine as per NIMR Act No. 23 of 1979, PART III Section 10(2).
5. Sites: Mtwara urban health centers.

Approval is valid for one year: 23rd January 2020 to 22nd January 2021.

Name: Prof. Yunus Daud Mgaya

Name: Prof. Muhammad Bakari Kambi


Signature
CHAIRPERSON
MEDICAL RESEARCH
COORDINATING COMMITTEE


Signature
CHIEF MEDICAL OFFICER
MINISTRY OF HEALTH, COMMUNITY
DEVELOPMENT, GENDER, ELDERLY &
CHILDREN

CC: Director, Health Services-TAMISEMI, Dodoma
* RMO of Mtwara region.
DMO/DED of respective districts.

APPENDIX XII: School Of Graduate Studies Approval



MASENO UNIVERSITY **SCHOOL OF GRADUATE STUDIES**

Office of the Dean

Our Ref: MED/ED/00022/16

Private Bag, MASENO, KENYA
Tel:(057)351 22/351008/351011
FAX: 254-057-351153/351221
Email: sgs@maseno.ac.ke

Date: 15th October, 2019

TO WHOM IT MAY CONCERN

**RE: PROPOSAL APPROVAL FOR MHINA JUMA MAJEMBE —
EL/ESM/00837/014**

The above named is registered in the Master of Public Health E in the School of Public Health and Community Development, Maseno University. This is to confirm that his research proposal titled "*Prevalence of Hepatitis B Vaccine and Knowledge of Prevention and Control among Health Care Workers in Mtwara Urban Health Centres, Tanzania.*" has been approved for conduct of research subject to obtaining all other permissions/clearances that may be required beforehand.


Prof. J.O. Agure
DEAN, SCHOOL OF GRADUATE STUDIES



Maseno University

ISO 9001:2008 Certified

