BARRIERS TO HUMAN PAPILLOMAVIRUS (HPV) VACCINATION OF ADOLESCENTS SCHOOLGIRLS IN MOROGORO MUNICIPALITY

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MMED Obstetrics and Gynaecology Dissertation

The Muhimbili University of Health and Allied Sciences

October, 2021

Muhimbili University of Health and Allied Sciences

Department of Obstetrics and Gynaecology

Barriers to Human Papillomavirus (HPV) Vaccination of Adolescent Schoolgirls in Morogoro Municipality

By

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A Dissertation Submitted in Partial Fulfilment of the Requirements for the Degree of Master Medicine in Obstetrics and Gynaecology of

The Muhimbili University of Health and Allied Sciences

October, 2021

CERTIFICATION

The undersigned certify that they have read and hereby recommend for examination of the dissertation entitled ***"Barriers to human papillomavirus (HPV) vaccination of adolescent schoolgirls in Morogoro municipality"*** in partial fulfillment of the requirements for the degree of Master of Medicine in Obstetrics and Gynaecology of Muhimbili University of Health and Allied Sciences.

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Date

DECLARATION AND COPYRIGHT

I, **IKRAH ABDALLAH,** declare that this **dissertation** is my original work and that has not been presented and will not be presented to any other University for a similar or any other degree award.

Signature _____ Date _____

ACKNOWLEDGEMENT

First and foremost, thanks to the Almighty God who gave me health and the ability to develop and accomplish this dissertation.

I would like to convey my sincere gratitude to my supervisors Dr.Belinda Balandya and Dr. Mughwira Mwangu for their tireless support and guidance in correcting and providing positive contributions in the making of this document.

I thank my beloved husband and all members of the family for every day's encouragement and support.

I am also grateful to all members of the academic staff in the Department of Obstetrics and Gynaecology at Muhimbili University of Health and Allied Sciences (MUHAS) for their valuable inputs that greatly improved my dissertation.

I would like to thank the PO-RALG specifically Dr. Ntuli Kapologwe, the Regional Administrative Secretary (RAS) for Morogoro Region, Municipal Director of Morogoro Municipal council for facilitating me to conduct this study.

Last but not least, I would like to thank the Council Health Management Team (CHMT) for Morogoro Municipal Council, school teachers, parents, and students for their participation in this study. May Almighty God bless them all.

DEDICATION

This dissertation is dedicated to the loving memory of my mother, the late Farida Sudi for the unconditional love and upbringing which shaped me into who I am today. May Almighty God have mercy on her soul.

ABSTRACT

Background

In Tanzania, cervical cancer is the major cause of morbidity and mortality in women. Human papillomavirus (HPV) infection is responsible for virtually all cases of cervical cancer. Tanzania launched HPV vaccination for girls aged 14 years in the year 2018. However, coverage is still a problem especially for the second dose of the vaccine. There are limited published studies on HPV vaccination done in Tanzania.

Objective

To determine Barriers to human papillomavirus (HPV) vaccination of adolescent schoolgirls in Morogoro municipality.

Methods: An analytical cross-sectional mixed-method study involving schoolgirls aged 14-16 years, their parents/guardians, and CHMT in Morogoro Municipal Council was conducted.

A multistage stratified sampling technique was used to select the sample for the quantitative part. A sample size of 416 schoolgirls was given self-administered structured questionnaires. Data were analyzed by SPSS version 23. The Wilcoxon rank-sum test was used to compare the knowledge on HPV between vaccinated and unvaccinated groups of schoolgirls. For the qualitative part, purposive sampling was used. Four FGDs involving parents and three IDIs were conducted. The thematic data analysis method was used.

Results: The proportion of study participants who completed doses of the HPV vaccine was111 (27%). The level of knowledge on HPV was statistically significantly associated with HPV vaccine uptake on *the Wilcoxon rank-sum test*. Myths and misconceptions, fear of infertility, religious beliefs, traditions and customs, and poor community awareness of HPV vaccine were expressed by participants of FGDs as barriers to HPV vaccination.

Conclusion and Recommendations: The proportion of the participants who completed the HPV vaccine was very low. Knowledge of HPV was significantly associated with the uptake of the HPV vaccine. Socio-cultural factors were the main barrier to HPV vaccine uptake. The government should improve community sensitization. Future studies are needed to assess the most effective approaches for the HPV vaccine awareness creation programs in Tanzania.

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ABBREVIATIONS

AIDS	Acquired Immune Deficiency Syndrome
ANOVA	Analysis of variance
CI	Confidence interval
DF	Degree of freedom
EPI	Expanded Program of Immunization
FBO	Faith-Based Organizations
GAVI	Global Alliance of Vaccine and Immunizations
HIV	Human Immunodeficiency Virus
HPV	Human Papillomavirus
ICO	Information Center on HPV and Cancer
MIVO	Municipal Immunization and Vaccination Officer
MMOH	Municipal Medical Officer of Health
MoHCDGEC	Ministry of Health, Community Development, Gender, Elderly and Children
MRCHCo	Municipal Reproductive and Child Health Coordinator
MUHAS	The Muhimbili University of Health and Allied Sciences
PO-RALG	President Office Regional Administration and Local Government.
OOSCC	Oral and Oropharyngeal Squamous Cell Carcinoma
RCH	Reproductive and Child Health
SPSS	Statistical Package for Social Sciences
SSA	Sub Saharan Africa
STD	Sexually Transmitted Disease

STI	Sexually Transmitted Infection
VIA	Visual Inspection using Acetic Acid
VIMS	Vaccine Information Management System
WHO	World Health Organization

DEFINITION OF TERMS

For this study, the following terms were used as defined below

Human Papillomavirus (HPV): Human Papillomavirus (HPV) is a name given to a group of more than 200 sexually transmitted viruses spread through skin-to-skin contact during sexual activity. HPV causes cervical cancer and the HPV vaccine is used to prevent it.

Vaccine: A vaccine is a biological preparation that improves immunity to a particular disease, it stimulates the body's immune system to recognize the agent as foreign, destroy it, and "remember" it so that the body immune system can quickly recognize and destroy any of these microorganisms that it later encounters.

Adolescent: The WHO (2009:6, 7) refers to young persons aged 10 to 19 years as adolescents. In this study, the adolescent schoolgirls aged between 14 and 16 years old were included, this is because this study also tried to determine HPV vaccination coverage and for this to be possible it needed to include this age range.

Uptake: Uptake means "the number of people who use a service or accept something that is offered" (Longman Dictionary of Contemporary English 2011:1935). In this study, uptake was referred to the number of adolescent schoolgirls aged 14 – 16 years who received two or three doses of the HPV vaccine. (Those infected with HIV/AIDS get 3 doses).

Knowledge: Information and understanding about a subject which a person has, or which all people have.

Knowledge for HPV infection: Having information and understanding about the existence of HPV infection, its risk factors, mode of transmission, its complications as well as preventive measures. In this study, those who scored 50% and above on HPV knowledge test questions were considered knowledgeable.

1.0 INTRODUCTION

1.1 Background

Cervical cancer is the third commonest cancer among women worldwide and is a major cause of female mortality(1). In 2018, it was estimated that there were about 569,847 new cases of cervical cancer with 311,365 deaths annually (2). The majority of new cases and deaths (approximately 85% and 90% respectively emanate from developing countries(3,4).

In Sub-Saharan Africa, Cervical cancer is the leading cause of female cancer-related deaths (5). East Africa has the highest incidence and mortality from cancer of the cervix and it is the most common cancer in women in eastern Africa(4). In Tanzania, it is the number one cause of cancer in women aged 15-44 years, with an annual incidence and mortality of about 9,772 and 6,695 respectively(6).

Human Papillomavirus (HPV) infection is responsible for nearly all cervical cancer cases as well as the cause of other anogenital cancers (anus, vulva, vagina, and penis) as well as head and neck cancers (6). In a study done in Mwanza-Tanzania, prevalence and incidence of HPV infection in a cohort of healthy young African female subjects aged 15-25 years were 74% and 76 per 100 person-years respectively (7).

With the advent of oral sex, studies have shown a strong causal association between HPV infection and oral and oropharyngeal squamous cell carcinoma (OOSCC) (8)(9). HPV types 16 and 18 are responsible for about 70% of all cervical cancer cases worldwide (6).

Chronic infection with high-risk HPV genotypes seems to be a precondition for the development of cervical cancer and its premalignant lesions(10)(6). The majority of these infections (over 90%) are usually cleared by the body immunity within two years of its acquisition and only about 10% become persistent and progress to cervical pre-malignant lesions (3,11). The advent of HIV and AIDS has changed the clinical progression of cancer of the cervix, with new incidences of cancer occurring in relatively young people (8).

The human papillomavirus (HPV) vaccine has the potential to significantly reduce the incidence of cervical cancer (7). The World Health Organization recommends offering the HPV vaccine to girls at ages 9-14 years, before sexual debut, since the vaccine is highly effective before the acquisition of HPV infection (2). Three types of HPV vaccines are

currently available worldwide for use in both females and males from the age of 9 years for the prevention of premalignant lesions and cancers affecting the cervix uteri, vagina, vulva, and anus caused by high-risk HPV types(3). The HPV vaccines are recombinant vaccines that consist of virus-like particles (VLPs), therefore they are not infectious because they do not contain viral DNA(3).

There is bivalent vaccine that targets HPV-16 and HPV-18, a quadrivalent vaccine targeting HPV-6, HPV-11, HPV-16 and HPV-18, also a nonavalent vaccine targeting HPV types 6, 11,16,18,31,33,45,52 and 58. The quadrivalent and nonavalent HPV vaccines target anogenital warts caused by HPV 6 and 11 in addition to the above-mentioned malignant and premalignant lesions (3).

A two-dose schedule (0.5ml at 0 and 5-13 months) is recommended for girls and boys aged 9-14 years. For those aged 15years and above, and for immunocompromised patients regardless of age, they are recommended to receive a total of three doses of HPV vaccine (0.5ml at 0, 1, 6 months) (12).

HPV vaccines are more than 90% effective against infection with HPV genotypes 16 and 18 in women who complete two doses of vaccine (13)(14).

As a strategy to curb the unbearably high morbidity and mortality from cervical cancer, Tanzania launched HPV vaccination for girls aged 14 years in the year 2018. The vaccination is done in schools for easy accessibility. Vaccinators and school administrators jointly prepare schedules for monthly vaccination dates where vaccinators visit schools education on HPV vaccine is briefly given and those who secured prior consent from parents/guardians receive the jab.

Before the launch of the HPV vaccine, community advocacy and sensitization were done at all levels. HPV education was delivered on Televisions and Radios at the National level while at Morogoro Municipal Council like other councils; health teachers from secondary and primary schools were trained on HPV vaccine who inturn would transfer knowledge to pupils and their co-workers and cooperate to set schedules for vaccination of the eligible pupils. Further, Primary Health Committee (PHC) meetings involving the District

commissioner, religious leaders and influential people were convinced. These leaders were expected to deliver knowledge to the communities and the faith communities.

Since the launch of the HPV vaccination in 2018, low coverage remains a major problem especially for the second dose of the vaccine. According to unpublished data from the web-based Vaccine Information Management System (VIMS), National HPV vaccine coverage for the first and second dose is 80% and 51.4% respectively (VIMS accessed in December 2019). In Morogoro Municipality, coverage of the first and second dose of HPV is 84% and 48% respectively (VIMS accessed in December 2019). This low coverage especially of the second HPV vaccine dose has implications for young women's future reproductive health, and therefore it calls for a detailed analysis of the barriers to the uptake of this newly introduced vaccine.

Many previous studies had focused on the knowledge, attitudes, and acceptability of the HPV vaccine in Mwanza-Tanzania, SSA, Kenya, Zanzibar-Tanzania, Zimbabwe, and Botswana(15–20). Limited studies done in African contexts had focused on the barriers to HPV vaccination after HPV vaccine introduction and its integration in the routine immunization schedule. This study is done based on limited research in Tanzania on the barriers to the HPV vaccination after licensure of HPV vaccine in the routine immunization program.

This study tried to answer the question of why low uptake of the HPV vaccine, it explored the role of socio-cultural factors on HPV vaccine uptake, factors like myths and misconceptions, religious beliefs, traditions and customs, fear of side effects, concerns over future fertility, conspiracies. In Addition, other factors such as knowledge on the HPV vaccine, socio-demographic factors, and community empowerment all converge into the uptake of HPV vaccines. Understanding barriers to the HPV vaccination of adolescent schoolgirls is critical for mounting effective interventions to improve the coverage of HPV vaccinations in Tanzania.

1.2 LITERATURE REVIEW

Persistent infection with HPV is a well-established cause of cervical cancer and other precancerous lesions(10)(6). The HPV vaccine that prevents HPV-16 and HPV-18 genotypes is now available and has the potential to reduce the incidence of cervical and other anogenital and head and neck cancers (5). Owing to the high prevalence and incidence of cancer of the cervix and the associated mortality and morbidity (5)(7), Tanzania introduced a quadrivalent HPV vaccine in the routine immunization for the girls aged 14 years in the year 2018. The vaccine is delivered in school settings. However, the HPV vaccine coverage for the first and second dose is 80% and 51.4% respectively which is very low compared to other routine vaccines offered in Tanzania (VIMS accessed in December 2019).

Several factors operate to facilitate or hinder the uptake of the HPV vaccine. Knowledge of HPV infection and the perceived risk of developing cervical cancer are theoretically thought to compel an individual to actively reach out for a vaccine that would protect her from infection. Conversely, a person who doesn't see the connection between HPV infection and the development of the cancer of the cervix will not see a reason to have the shot of the HPV vaccine. A significant number of studies have found an association between the level of knowledge of HPV infection and cervical cancer with greater uptake of the HPV vaccine. In a case-control study done in Tanzania, titled *reasons for receiving or not receiving HPV vaccination in primary schools in Tanzania*, it was found that not knowing whether the vaccine could prevent cervical cancer was associated with not receiving a vaccine (19). In another study, done in Ghana, it was found that significant barriers to vaccine acceptance were women's lack of knowledge about the gravity of cervical cancer(21).

In a study done in Zimbabwe to explore the *Knowledge, attitude, and practice of young people in Zimbabwe on cervical cancer and HPV, Current screening methods, and vaccination*, it was found that only 13% of high school respondents and 14% of the University respondents scored about 50% on the risk factors knowledge proficiency score (≥13 out of 26)(17). Also, in a study done in Uganda, it was found that 52.3% of adolescents cited a lack of awareness about the HPV vaccine as a major reason for not

receiving it (22). Knowledge of HPV was associated with HPV vaccine uptake in other studies done in Kenya and Tanzania (18,23–25).

Socio-demographic factors such as socio-economic status (SES), level of education of parents, and age of the parents have been shown to influence the uptake of the vaccine. In a study done in Germany on *Factors influencing uptake of HPV vaccination among girls*, it was found that education of the mother was significantly associated with being vaccinated, similar findings were also found with medium and higher SES (26)(27). In another study done in Germany on HPV vaccination coverage among women aged 18–20 years; three years after the recommendation of HPV vaccination for adolescent girls, it was found that the high educational status of the parents was independently associated with HPV vaccination (28).In a case-control study done in Tanzania, it was found that advanced parental age and owning little household properties were associated with not receiving the vaccine (19). In another study done by Alice Yuen Loke et al, maternal level of education was positively associated with vaccine uptake(29). The same findings were found in other studies (16, 17&19).

Socio-cultural practices have also been found to affect HPV uptake in many studies. In a systematic review by Lisa et al titled *self-reported barriers and facilitators to preventive HPV vaccination among adolescent girls and young women*, it was found that 70% of the participants were unvaccinated due to concerns regarding the safety of the vaccine (30). Myths, misconceptions, and conspiracy theories that are rampant in many communities are strong determinants of the success of vaccination programs. In *a case-control study* titled *reasons for receiving and not receiving HPV vaccination in primary school girls in Tanzania*, done in Mwanza region, it was found that parental concerns about side effects and infertility were the reasons for actively refusing vaccination(19). Similar findings were found in a study done by Jennah Wigle et al and Alice Yuen Loke et al(25,29).

Social norms and beliefs concerning sexual activities have been shown to affect the uptake of the Human Papillomavirus vaccine in various communities. A study done by Alice Yuen et al, on the uptake of HPV vaccination and its associated factors among adolescents shows that one of the barriers to uptake of HPV vaccine is parental concern that their

children are not sexually active and hence no need for the HPV vaccine (29). In another study done by Dawn M. on barriers to HPV vaccination among the USA, adolescents show that some parents perceived that HPV vaccination will make their girls involve in sexual activity much as they will be protected against the virus (31)

A study done in Germany titled *factors influencing familial decision making regarding human papillomavirus vaccination*, it was shown that poor perception of different beliefs concerning the HPV vaccine in society and communication with adolescents regarding sexual topics influence HPV vaccination outcome (32).

Community empowerment which entails sensitizations, healthcare providers' guidance and recommendations of the vaccine, the use of mass and social media, and involvement of stakeholders are important dynamics in the equation of HPV uptake. Doctors' recommendation on HPV vaccination has shown to influence its uptake. Studies by Sarah L Guerry et al, Jacquiline A Bartlett et al and Lisa Rambout et al have shown doctors' recommendation is the key factor. This is because most parents do not have clear needed information to help them decide (33)(34)(30). Parents' strong conviction that vaccines would prevent cervical cancer and those who got concrete recommendations from healthcare providers were more likely to join the vaccination program (35). In a study titled *uptake of human Papillomavirus vaccination in Hong Kong: facilitators and barriers among adolescent girls and their parents*, it showed that delivery of HPV vaccine with high uptake is strongly associated with the engagement of the key stakeholders including community physicians, school administrators, and teachers (36)

In a qualitative study done in Soweto South Africa, it was shown that support and guidance from health care providers and peers were the main drivers of the vaccine uptake(37).

1.3 PROBLEM STATEMENT

Globally, cancer of the cervix is the third leading cancer and the second cause of cancer deaths in women(6). It is estimated that about 500, 000 new cases of cancer occur each year, of which 86% emanate from developing countries (6)(38). In Sub-Saharan Africa (SSA), cancer of the cervix is the number one cause of cancer deaths in women(6)(4). In Tanzania, cervical cancer is the most prevalent form of cancer in women with an annual incidence and mortality of 9,772 and 6, 695 respectively(2)(5).

HPV vaccines are more than 90% effective against infection with HPV genotypes 16 and 18 in women who got a completed dose of vaccine (13)(14).

As a strategy to curb the unbearably high mortality from cervical cancer, Tanzania launched HPV vaccination initially for girls aged 14 years in the year 2018, though the eligible age range is 9 to 14 years due to constraints of vaccines availability and affordability at that time.

However, coverage is still a problem especially for the second dose of the vaccine. According to unpublished official data from MoHCDGEC in the web-based Vaccine Information Management system (VIMS: Nov/2019), National HPV vaccine coverage for the first and second dose is 80% and 51.4% respectively. In Morogoro Municipality, coverage of the first and second dose of HPV is 84% and 48% respectively (VIMS: Nov/2019). Apart from low coverage, Morogoro Municipality with an urban-rural mix of settings, with some hard-to-reach areas, would be as representative as possible to other councils of Tanzania. This low coverage especially of the second HPV vaccine dose has implications for young women's future sexual, physical, and reproductive health, and therefore it calls for a detailed analysis of barriers to the uptake of this newly introduced vaccine. Few studies done in African contexts had focused on the barriers to HPV vaccination especially after HPV vaccine introduction and its integration in the routine immunization schedule.

Understanding the barriers to HPV vaccination of adolescent girls is very important so that effective interventions can be developed and hence improve the success of health promotion strategies

1.4 RATIONALE

High coverage of human papillomavirus (HPV) vaccination programs has the potential to reduce substantially cervical cancer incidence and mortality.

The findings of this study on barriers to human papillomavirus (HPV) vaccination of adolescent schoolgirls will contribute toward addressing the identified barriers thereby translating into improved HPV vaccination coverage and ultimately reducing cervical cancer morbidity and mortality in Morogoro municipal and Tanzania as a whole.

The reduction in morbidity and mortality related to cervical cancer resulting from successful vaccination coverage will translate into increased productivity, increased life expectancy, and save government resources that would otherwise be allocated for the treatment of cancers.

1.5 CONCEPTUAL FRAMEWORK

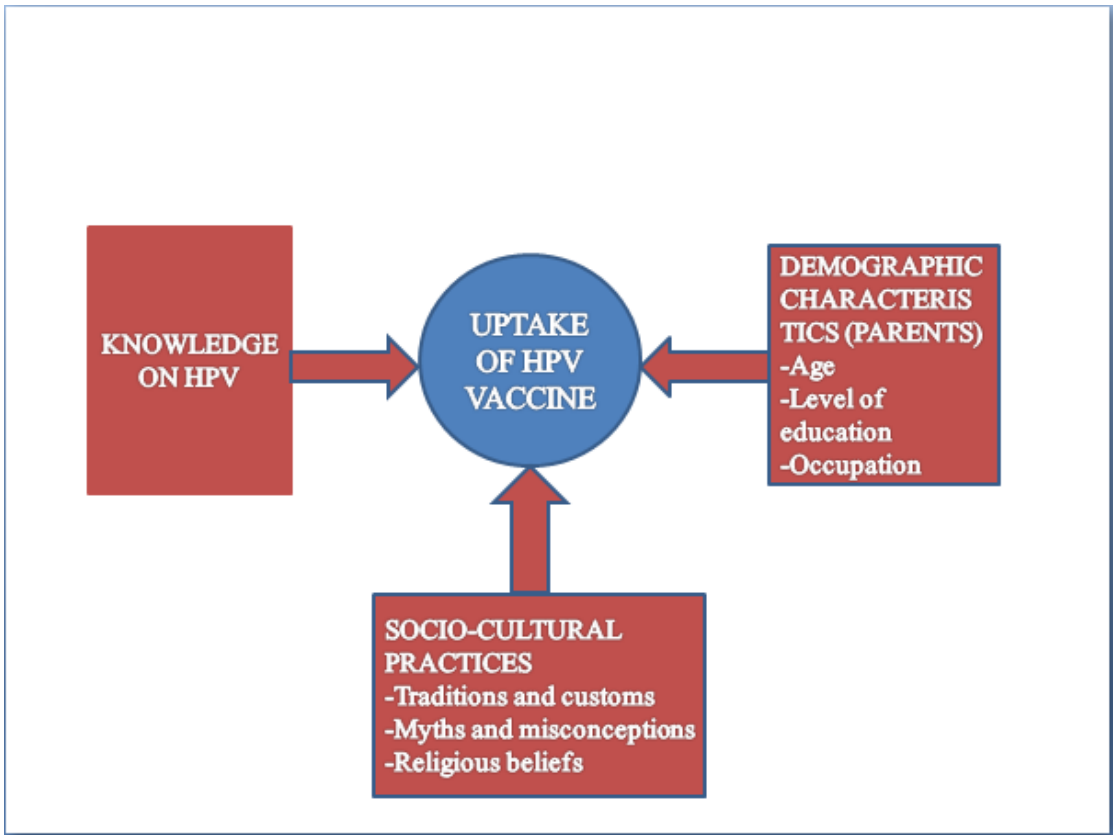


Figure 1: Conceptual framework showing the association between independent variables and uptake of human papillomavirus (HPV) vaccine.

DESCRIPTION OF THE CONCEPTUAL FRAMEWORK

This conceptual framework shows how the independent variables interact with the dependent variable ‘’HPV vaccine uptake’’. The independent variables have been grouped into three categories namely; socio-cultural practices which constitute, traditions and customs, myths and misconceptions, and religious beliefs, knowledge of HPV and its connection with cancer of the cervix, Social Demographic Characteristics (SDCs) consisting of parental age, level of education and occupation.

1.6 RESEARCH QUESTIONS

1.6.1 Main research question

What are the barriers to the HPV vaccination of adolescent schoolgirls aged between 14-16 years?

1.7 OBJECTIVES

1.7.1 Broad Objective

To determine the barriers to HPV vaccination of adolescent secondary schoolgirls aged 14 – 16 years in Morogoro Municipality.

1.7.2 Specific Objectives

1. To determine the proportion of adolescent secondary schoolgirls aged between 14 - 16 years who have been vaccinated.
2. To determine the association between knowledge on HPV and the uptake of the HPV vaccine.
3. To explore socio-cultural practices of the parents/guardians of the secondary schoolgirls that affect HPV vaccination.

2.0 MATERIALS AND METHODS.

2.1 STUDY DESIGN

An analytical cross-sectional mixed-method study was used to investigate the barriers to HPV vaccination of adolescent girls in Morogoro Municipal Council. The study sought to explore deep core opinions behind low HPV vaccination coverage; therefore it was an explanatory design of the mix-method study, where the quantitative part started followed by the qualitative part to explore reasons for the low vaccination coverage. The mixed-method approach has been employed to power the findings of the study.

2.2 STUDY POPULATION

The study population was secondary schoolgirls aged between 14-16 years, their parents/guardians, and Council Health Management Team (CHMT) in Morogoro Municipal Council. Secondary school girls participated in the quantitative part whiles their parents/guardians and CHMT were involved in the qualitative part of this study.

Three populations were used because each population is a factor in the equation of vaccine uptake. Across many studies, adolescent girls, probably in connection with peer influence, have shown autonomy in the decision to take vaccines. Adolescents' awareness, knowledge as well as beliefs on the HPV vaccine influence the decision to take the vaccine. Understanding the connection between HPV infection and cancer of the cervix is likely to trigger an active search for the vaccine. Inclusion of the adolescents is meant to get the proportion of those vaccinated. We also gathered information on adolescents' knowledge on HPV and factors that facilitate and hinder uptake of the HPV vaccine.

Parents/guardians are the ones who give consent for their daughters to get vaccinated and therefore they are the main determinant of HPV vaccine coverage. Exploring social-cultural practices regarding the HPV vaccine is critical for future interventions to improve uptake. Parents/guardians through FGDs generated information on awareness on HPV and its connection with cervical cancer, myths and misconceptions traditions and customs, and religious beliefs towards the HPV vaccine.

The Council Health Management Team's involvement in this study was important to generate their opinions on issues of logistics of vaccine availability, their conduct of the vaccination exercise, and their experience on what affects HPV vaccine coverage.

2.3 STUDY AREA

This study was conducted in Morogoro Municipal Council. The Council lies at the base of the Uluguru Mountains. The study area was chosen based on the low coverage of HPV vaccination in which the first and second HPV doses were 84% and 48% respectively in the year 2019 (VIMS accessed on November 2019). Apart from low coverage, Morogoro Municipality with an urban-rural mix of settings, with some hard-to-reach areas, would be as representative as possible to other councils of Tanzania.

Morogoro Municipal Council is one of the 9 Councils in the Morogoro Region of Tanzania. The Council borders Mvomero district to the north and west and Morogoro district council to the east and south. Morogoro Municipal Council is administratively divided into 29 wards and 294 streets.

The municipality has a population of 386,118 (2012 population housing and census and its 2019 projections), among which females are 201,361. Main economic activities include primary and secondary level industries, subsistence and commercial farming, small-scale enterprises, and commercial retail and wholesale. The average income of a person per year is estimated at Tshs 539,375. The population growth rate is 4.7%

The Council has 50 secondary schools whereby private owned schools are 27 and government-owned are 23.

The Municipal Council has **63** health facilities of which **22** are government-owned, **14** Faith-Based Organizations (FBO), **16** are privately owned and **11** are owned by other government institutions (Parastatal). Of the 22 health facilities owned by Morogoro Municipal Council (MMC), 4 are health centres and the remaining 18 are dispensaries. A total of 47 health facilities (25 government-owned and 22 private and Faith-Based Organizations) provide Reproductive and Child Health and vaccination services per EPI.

Morogoro Municipal council like the rest of Tanzania launched HVP vaccination to school-age children aged 14 years in 2018. The vaccine has been integrated into the Expanded Programme of Immunization (EPI).

The HPV vaccination services is mainly a school-based program whereby every vaccinating health facility is assigned to several catchment schools determined based on closeness to that facility. School health teachers who got training before launching of HPV vaccine identify and prepare a monthly schedule of vaccination-eligible girls based on their date of births. In collaboration with vaccinators from catchment health facilities, they jointly set vaccination dates every month. One day before vaccination, eligible students are informed to seek verbal consent from their parents/guardians for vaccination the next day. Upon consenting of the parents, they are given HPV vaccine; the vaccination takes place at the school premises. Those who for various reasons miss the vaccine at the scheduled dates have a chance to obtain it from the health facility of their choice or during the subsequent school visit provided that they are still eligible.

2.4 SAMPLE SIZE

The sample size in the quantitative part was calculated to obtain the heterogeneous characteristics of the sample. Therefore the sample size was obtained from the following formula;

$$n = \frac{z^2\, p\,(1-p)}{\varepsilon^2}$$

Where;

n = Number of minimum sample size.

Z = The level of significant set up at the level of 95% confidence interval

P = Proportion of National HPV vaccine coverage, which is 51.4% for the second dose.

Ɛ = Maximum likely error between the means which was estimated (0.05 was used as the margin of error)

$$n = \frac{z^2\, p\,(1-p)}{\varepsilon^2}$$

$$= \frac{1.96^2 * 0.514\ (1-0.514)}{0.05^2}$$

Therefore, **n = 384**

From the above formula the minimum sample size of the study was**384** adolescents. To cater to non-respondents, 10% of the sample size was added. Therefore the sample size for the study was estimated to be **422** adolescent girls.

2.5 SAMPLING TECHNIQUE

A Multistage stratified sampling technique was used to get the required sample size (n=422) for adolescent schoolgirls aged 14-16.

First, all 29 wards of Morogoro Municipality were enumerated; the wards were stratified into 17 urban and 12 semi-urban in collaboration with Municipal Secondary Education Department. From each stratum (urban and semi-urban), all public secondary schools were listed and from each of the stratum, 5 schools were selected by simple random sampling (lottery method). Of the ten randomly selected schools, 42 students were recruited. To suit the target age group only form one, two, and three students were included. From each class 14 students were selected by a simple random method totaling 42 students per school. A sample size of 422 schoolgirls was obtained. Participants were given self-administered structured questionnaires.

For the qualitative part of the study, purposive sampling was used to recruit the participants. The participants of the FGDs were the parents/guardians of the adolescent schoolgirls. Parents/guardians were invited via their daughters where sixty adolescent schoolgirls who participated in the quantitative study (Half HPV vaccinated and another half unvaccinated) were purposively selected and given letters to invite one of their parents/guardians to participate in the FGDs. Students who agreed that their parents/guardians would enthusiastically love to participate or had a history of participating on similar occasions were given invitation letters. Phone communication was done with the same parents/guardians to foster their participation by answering questions, clearing their doubts, and setting logistics for transport costs.

In qualitative studies we seek variations in opinions, views, or thoughts, once no more insights are coming out then saturation is reached and you may consider terminating further FGDs.

The involvement of CHMT in this study was important to generate their opinions and experience on what affects HPV vaccine coverage. Three in-depth interviews (IDIs) with key informants from the CHMT were conducted, involving the Municipal Medical Officer of Health (MMOH), Municipal Immunization and Vaccination Officer (MIVO), and Municipal Reproductive and Child Health Coordinator (MRCHCo). The place for IDI was conveniently chosen by participants which were in their offices, the IDIs were done after working hours.

Data were analyzed after every FGD and IDI to pick any emerging themes and identify signs of saturation.

2.6 INCLUSION AND EXCLUSION CRITERIA

2.6.1 Inclusion Criteria

i. Secondary schoolgirls aged between 14-16 years.

ii. Parents/guardians of secondary schoolgirls aged 14-16 years.

iii. CHMT members coordinate vaccination programs (MMOH, MIVO, and MRCHCo).

2.6.2 Exclusion criteria

i. Schoolgirls who were absent during the data collection period e.g.; those who were on examination sessions or assigned other important tasks on the day of the interview.

ii. Parents/guardians who were unable to communicate well with the researcher i.e. having a hearing disability or any sickness.

iii. CHMT members were unavailable for some reason during the interview period.

2.7 DATA COLLECTION

2.7.1 Data collection tools and procedure

The primary data collection method for the quantitative part involved structured questionnaires and for the qualitative part, FGD and IDI interview guides/questions were used.

Structured questionnaires were used to collect data for the quantitative part. Schoolgirls recruited into the study were given self-administered structured questionnaires. The questionnaire addressed the following particulars; the first section assessed the demographic characteristics of respondents that were age, level of education, and household characteristics which involved age, level of education, and employment of parents/guardians. The second part tested awareness and knowledge on HPV infection and HPV vaccine, the third part enquired about HPV vaccination status and its associated factors.

For a qualitative part, FGD and IDI guides were used to solicit answers to various research questions. They were prepared in English and translated to Kiswahili to ease communication with respondents. The guides were prepared to suit the objectives of the study in consideration of the previous studies FGD and IDI guides.

FGD and IDI were audio-recorded and permission was sought to do so. The researcher defined key concepts of the study so as participants to be aware of the study. For the FGDs, the discussion lasted approximately 1 to 2 hours and was conducted at the school compound. A researcher and research assistant led FGDs and took some notes on the important issues. The researcher introduced the topic of discussion, together with the FGDs participants laid down ground rules (norms) that guided manners of conduct of the discussion.

The participants were provided with a bus fare and refreshments were served.

2.7.2 Recruitment and training of research assistants

Two research assistants were recruited and trained on how to use research instruments and the easier way of collecting data from respondents. They were trained for a day, introduced to research ethics and all other relevant information before the commencement of data collection. Further, they were trained on the recording of FGDs and how to lead the discussions and navigate between sub-topics.

2.7.3 Pre-testing of research tools

The Swahili version questionnaires and guides for focused group discussion (FGD) and IDI were pre-tested in the field to know if they were relevant and clearly understood by the study participants.

Mji mpya secondary school, a non-participating school was picked up for piloting of the study. Forty female adolescent students were selected for the piloting of the study. 8 parents/guardians were recruited for piloting on FGD. IDI guide was piloted at the nearby Mvomero district council for the CHMT.

The research assistants used this opportunity to get used to the research tools and gain more interview skills. Moreover, the tools were tested to check whether they generate the intended data. Errors were noted in the pre-test exercise and were corrected before actual data collection. Both the FGD and IDI guides were revised accordingly based on the pre-test results.

2.8 DATA PROCESSING AND ANALYSIS.

Filled questionnaires checked for completeness at the end of each data collection day within the field to identify any missing data. At the end of each data collection day, all filled questionnaires were handed to the principal investigator for safe storage.

A review of the data collection was done daily and new experiences and challenges were discussed. The quantitative data were checked and coded. The level of knowledge among schoolgirls was determined by using a knowledge test on HPV through a set of 18 questions which were used in other similar studies, covering aspects of awareness, risk factors for HPV infection, modes of transmission, and prevention against HPV infection(15,39,40). A score of 50% or above was considered good knowledge while a

score of less than 50% was considered poor. Knowledge on HPV infection was compared with HPV vaccine uptake to see the association between knowledge and HPV vaccination uptake. The student's HPV vaccination status was determined by self-reporting.

Analysis was done by using SPSS computer software version 23. Variables were cross-tabulated to show their relationships. The Wilcoxon rank-sum test was used to compare the knowledge on HPV between vaccinated and unvaccinated groups of schoolgirls.

For the qualitative part, the thematic data analysis method was used (using Braun and Clarke approach). It involved reading and familiarization of the data which included verbatim transcription, changing Kiswahili language to English, then data coding was done where initial codes were created and interesting features were identified. Subsequently, patterns were identified (themes and sub-themes were created out of codes) then themes were reviewed. Finally, defining and naming themes and report writing were done.

Trustworthiness in this study was fostered through triangulation were multiple sources of evidence corroborated each other. Further, the use of multiple schools at different localities increased the credibility of the findings. A detailed description of the methodology has been done to enable future replication. Triangulation in data sources, study settings, study participants enable confirmability. In addition, FGDs and IDI guide questions had been crafted in a manner that avoids influencing participants to the desires of the researcher.

2.9 ETHICAL CONSIDERATIONS

Ethical approval from the Muhimbili University of Health and Allied Sciences (MUHAS) Research and Publications Committee was obtained for the study. Permission to do research was sought from Morogoro Regional authorities and Morogoro Municipality.

The purpose of the study and the right to withdraw from the interview were explained to participants of the study. Written informed consent was obtained from parents/guardians for the involvement of their daughters in the study. Before data collection, written informed assent was sought from the schoolgirls because they are mature minors. Also, permission for the study was obtained from the headmaster/headmistress for the involvement of selected secondary schools in the study.

For FGDs and IDI the participants were given a written informed consent form to sign upon accepting to participate in the study. Permission to audiotape the FDGs and IDI was sought before the start of interviews and discussions. Participants of FGDs were identified by numbers instead of their real names during recording and transcription.

To foster privacy and confidentiality, all interviews and discussions were anonymous and kept confidential. The identity of the respondents and study subjects were not disclosed anywhere during data collection and report writing. Only numbers were assigned to participants. The information recorded was not shared with any third party except for research purposes only and without exposing the identity of the respondents. Finally, recorded information was discarded after transcription.

3.0 RESULTS

The quantitative part of this study involved secondary schoolgirls aged 14 to 16 years in Morogoro Municipality. A total of 416 out of 422 students participated in this study giving a response rate of 98.6%. Non-responses were due to interferences in which six students left class before filling the questionnaire.

The mean age of the schoolgirls was 14.9(SD ± 0.85) years. Nearly two-thirds of the participants were form one and form two which collectively made 309(74.3%). Christians were slightly higher 233(52.5%) compared to Muslim students. Most of the households had family members between 1 to 5 people 345(82.9%). The majority of the participants lived with their parents 77.2%.

Table 1: Socio-demographic characteristics of the schoolgirls (N= 416)

Variable	N (%)
Class	
Form one	154(37.0)
Form Two	155(37.3)
Form Three	107(25.7)
Religion	
Muslim	211(47.5)
Christian	233(52.5)
Age (years)	
14	146(35.1)
15	141(33.9)
16	129(31.0)
Family members	
1 to 5	345(82.9)
6 to 10	64(15.4**)**
>10	7(1.7)
Living With	
Parents	321 (77.2)
Guardian	94(22.6)
Others	1(0.2)

The parents/guardians characteristics as reported by schoolgirls

Most of the female parents/guardians had ages between 30 to 40 years (64.2%) while males were aged between 41 to 50 years (42.5%). The majority of males and female guardians/parents had primary education 193(46.4%) and 249(59.8%) respectively. Most of the males and female guardians/parents were self-employed, 295(70.9%) and 318(76.4%) respectively.

Table 2: Socio-demographic characteristics of the parents/guardians (N=416)

Variable	N (%)
Female age group	
<30	8(1.9)
30-40	267(64.2)
41-50	108(25.9)
>50	30(7.2)
*Not applicable	3(0.7)
Male age group	
<30	3(0.7)
30-40	109(26.2)
41-50	177(42.5)
>50	109(26.2)
*Not applicable	18(4.3)
Female Education level	
No formal education	12(2.8)
Primary education	249(59.8)
Secondary Education	120(28.8)
College education	32(7.6)
*Not applicable	3(0.7)
Male Education level	
No formal education	5(1.2)
Primary education	193(46.4)
Secondary education	133(31.9)
College education	67(16.1)
*Not applicable	18(4.3)
Male Occupation	
Unemployed	3(0.7)
Self-employed	295(70.9)
Employed	100(24.0)
*Not applicable	18(4.3)
Female Occupation	
Unemployed	62(14.9)
Self-employed	318(76.4)
Employed	33(7.9)
*Not applicable	3(0.7)

*Not applicable= the parent/guardian is dead or unknown.

The qualitative part of this study involved FGD and IDI. IDI involved three participants who were CHMT members (MMOH, MIVO and MRCHCo), all were females except MMOH and all were university graduates.

FGDs involved a total of 34 parents/guardians of secondary schoolgirls aged 14-16 years (Table 3). The majority of the FGD participants were females 29 (85.3%). The mean age of the participants was 40.1 years. Half of the participants had standard seven education 17(50%) while 14 (32.4%) were university graduates.

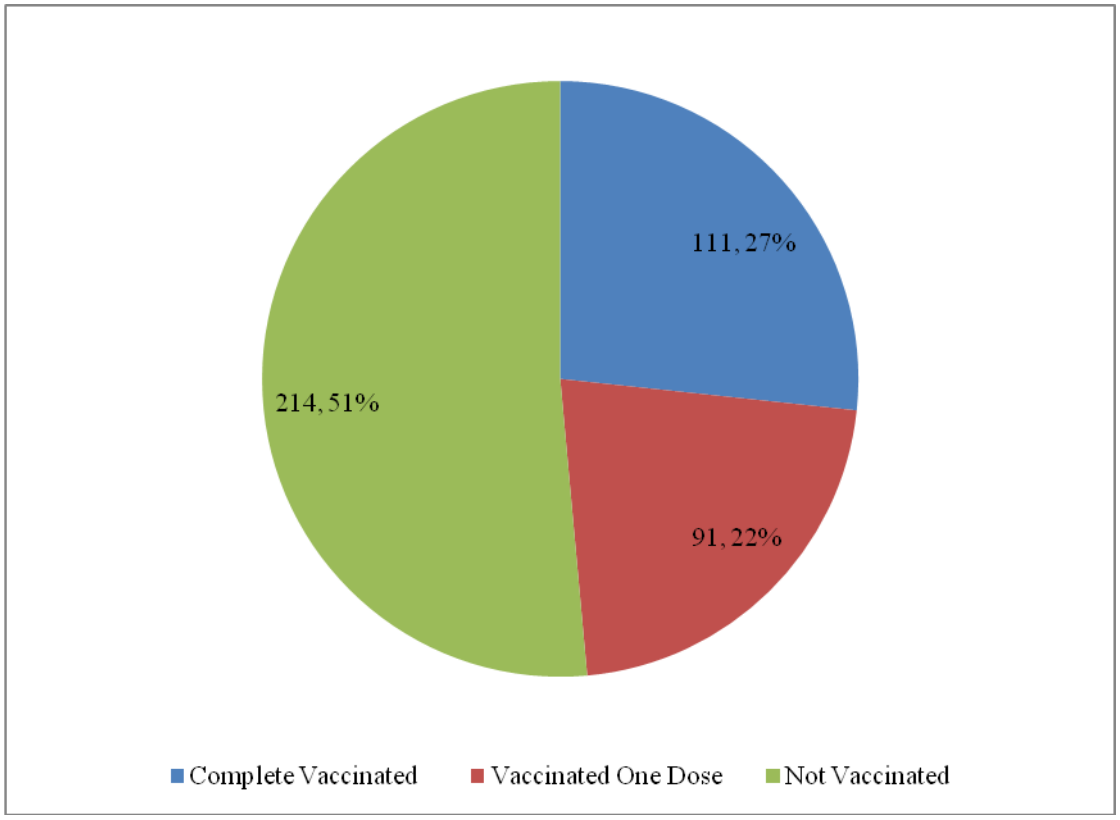
Table 3: Sociodemographic characteristics of respondents of FGDs in Morogoro Municipal Council, Eastern Tanzania

Demographic characteristics	**Frequency N=34 (%)**
Age (years)	
<20	1(2.9)
20-29	3(8.8)
30-39	11(32.4)
40-49	12(35.3)
50-59	6(17.6)
>60	1(2.9)
Sex	
Male	5(14.7)
Female	29(85.3)
Education Level	
Standard seven	17(50)
Form four	3(8.8)
Diploma	3(8.8)
University degree	14(32.4)

The proportion of adolescent girls aged between 14 -16 years who have been vaccinated.

The proportion of students who received the complete dose of HPV vaccine were 111(27%) while 91(22%) received only one dose. More than half of the participants 214(51%) did not receive the HPV vaccine at all.

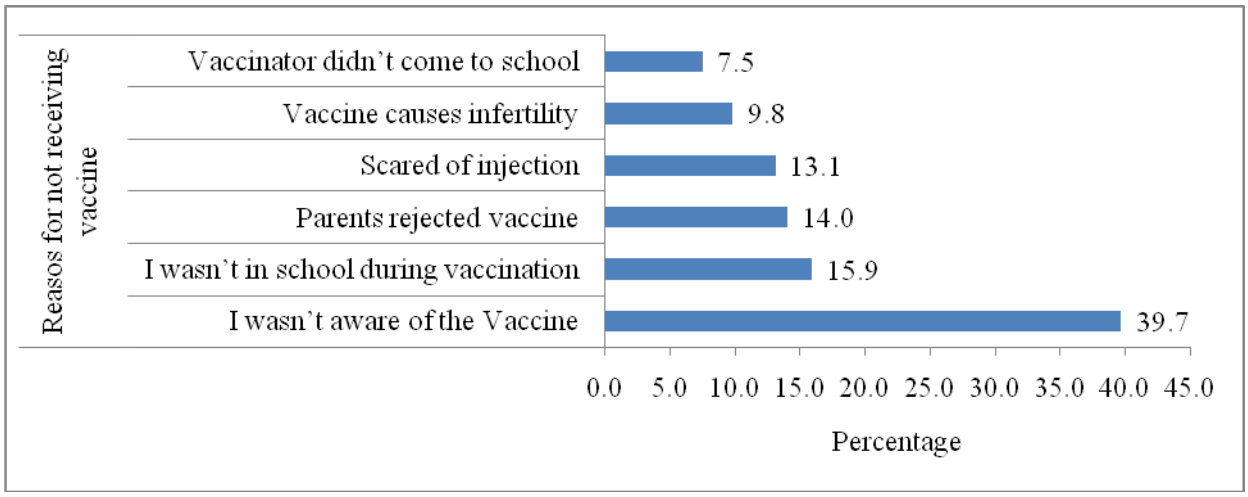
Figure 2: The pie chart showing the participant's HPV vaccine status.



Complete vaccination was defined as receiving two or three doses of the HPV vaccine (those infected with HIV/AIDS get 3 doses).

Among those who did not receive the HPV vaccine 214(51%), majority of the 39.7% said they were not aware of the vaccine while others were absent from school during vaccination day 15.9% and 14% said their parents rejected it the vaccine (Figure 3).

Figure 3: The bar chart showing reasons for not receiving the HPV vaccine (n=214)



Reasons for low uptake of HPV vaccine were explored by the inclusion of a qualitative part to gain a deep understanding of the socio-cultural practices that influence vaccine uptake where selected parents/guardians were involved in FGDs and three CHMT members participated in IDI. In the Tanzanian context, parents/guardians should give consent for their daughters to get vaccinated, and therefore they are the main determinant of HPV vaccine coverage.

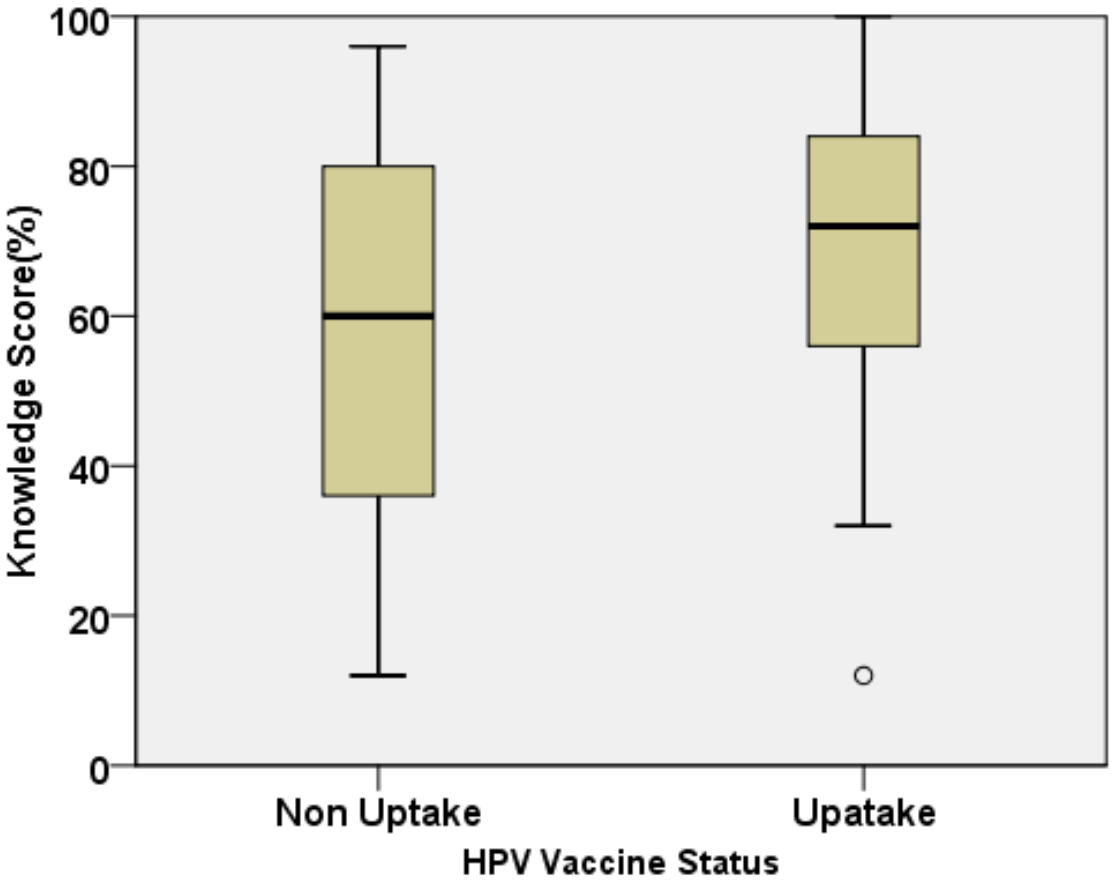
The association between knowledge on HPV and the uptake of HPV vaccine

Adolescent schoolgirls responded to 18 standard knowledge test questions on aspects of HPV and the HPV vaccine. Overall, two-thirds of the respondents 275(66.1%) had good knowledge of HPV. The majority of the respondents had heard about Human Papillomavirus (HPV) and HPV vaccine 285(68.5%) and 355(85.3%) respectively. Nearly three-quarter 306(73.6%) of the respondents knew that the HPV vaccine prevents cervical cancer. Further, about 145(34.86%) did not know the recommended doses of the HPV vaccine while nearly half of the respondents 204(49.04%) knew the targeted age group for the HPV vaccine. However, the majority of the participants 252 (60.6%) did not know that early sexual debut was a risk factor for HPV infection.

Vaccinated students were more knowledgeable on the HPV vaccine compared to their unvaccinated counterparts.

The median score of knowledge was 72% (IQR56 – 84) for students who received the HPV vaccine while it was 60% (IQR 36 – 80) for those who did not receive the HPV vaccine.

Figure 4: The median scores of knowledge on HPV between the vaccinated and unvaccinated students in Morogoro Municipality.



The results from *Wilcoxon rank-sum test* shows there is a statistically significant difference between the knowledge of the students who received the HPV vaccine and those who didn't receive the vaccine ($p<0.001$).

This study has found a significant association between knowledge and uptake of the HPV vaccine. Further, adolescent secondary schoolgirls had relatively good knowledge of HPV and HPV vaccine, however, the uptake of the vaccine was painfully low. This could be due

to other factors in the equation of the HPV vaccine uptake such as parental rejection of the vaccine as a result of low parental awareness of HPV and HPV vaccine as expressed by participants of FGDs and IDIs.

Socio-cultural practices of the parents/guardians of the secondary schoolgirls that affect HPV vaccination.

A total of four FGDs with 34 participants were conducted. Three FGDs had 8 participants each and one had 10 participants. Each FGD involved both male and female parents/guardians where there were a total of five males and 29 female participants. The fifth FGD wasn't done due to the saturation of opinion. In this study, participants of FGDs parents/guardians had rampant myths and misconceptions, social beliefs, traditions and customs, and religious beliefs that interfere with the uptake of HPV vaccine by secondary schoolgirls in Morogoro Municipality.

Theme 1: Myths and misconceptions.

The majority of participants of FGDs expressed mistrust over the HPV vaccine citing the conspiracy of the whites to reduce fertility among Africans. This was fuelled by the fact that the timing of the jab virtually coincided with the sexual maturation of their daughters. One respondent remarked;

''In my perception the community rejects this vaccine (HPV) and the major reason for their rejection is the belief that it affects the fertility of the Africans, therefore parents find no reason to send their daughters for vaccination which will later make them infertile.''(FGDs-K05)

Yet other participants had misconceptions that whites want to experiment with the vaccine (HPV) away from their homes. One participant lamented;

''They say, whites are clever, they don't do any experiments that they are unsure of its hazards at their soil, they want to experiment it to us'' (FGDs-K01)

Theme2: Traditions and customs

This study revealed that some traditions, customs, and cultural norms hinder effective communication between parents and their children especially on issues related to sexuality which in turn affects the uptake of the HPV vaccine. Most of the parents were generally reluctant to talk openly about the matters related to sexual health with their daughters citing fear that they might perceive permitted to sex and incite promiscuity. This led to ineffective communication to discuss the HPV vaccination with their daughters. One participant said;

"Our traditions and customs are that discussing anything related to sexual intercourse is indulging the community into modernization (uzungu) so it sounds as if their daughters are allowed to engage in sex or seems to be promiscuous. So if someone accepts her daughter to get the vaccine it creates a feeling that she has started engaging in sexual acts, so they reject the vaccine to show that their daughters are innocent. Similarly, this happens to HIV/AIDS issues" (FGDs-K01)

Theme 3: Religious beliefs

Religious beliefs influenced the decision-making process on uptake of the HPV vaccine, with religion being exaggerated by some participants as protection against fornication and therefore negating the need for vaccination.

Devout religious parents felt that their daughters were saints, having risen in religiously rich settings, they couldn't commit fornication so there was no genuine reason to justify HPV vaccination forgetting that peer pressures and the social world were powerful influencers than the religious message. One participant said;

''...my daughter was raised in a God-fearing setting, in religious ethics and she is a saved Christian (Mlokole), she can't approach any sinful things so how do you tell me that she needs that vaccine, what for?'' (FGDs-K01)

HPV vaccine stock out wasn't a challenge as affirmed by the participants of the IDI who also aired some challenges related to logistics to reach out for hard-to-reach areas. He narrates;

''*We never had stock out of HPV vaccine unlike some other vaccines; however,* there were *transportation challenges especially during rain seasons it becomes very difficult to do outreach to the hard to reach mountainous areas like Luhungo, Kibwe, and Towero''... (IDI- 01)*

During FGDs and IDIs, we noticed persistent findings appearing virtually in all groups of FGDs such as;

Poor community awareness on HPV infection and HPV vaccine

The majority of the participants of FGDs were completely unaware of the existence of HPV infection and its link with cancer of the cervix. One participant narrates;

"The truth is that most of the people in our community do not know about HPV infection and importance of HPV vaccine, only a few numbers of people know about cervical cancer and HPV vaccine as its preventive measure…" *(FGDs-K01)*

Though a sizeable number of participants of FGDs admitted to having heard of cancer of the cervix or some had a relative succumbed to it, however, virtually all participants were completely unaware that an effective vaccine against cancer of the cervix existed.

''I ever heard of cancer of the cervix, and I know it mostly afflicts women but regarding the vaccine and where I can find it and who are the eligible persons, that I'm completely unaware''. (FGDs-U01)

Low awareness of the parents was cited as one of the reasons for the non-completion of the second dose by the eligible female schoolgirls. Parents who were not aware of the vaccine and its role in the prevention of cervical cancer were less likely to actively reach out for the missed dose of the HPV vaccine for their daughters. One participant said;

''...but Parents who are aware of this vaccine are very few, that's why very few parents bring their girls who miss the second dose at health facilities for completion of the vaccination dosage''. (IDI- 03)

Recommendations to improve HPV vaccine uptake

The majority of participants of FGD proposed that education should be provided starting at the national level and trickle down to the streets and villages; one participant narrates;

"...Ministry of health should provide education and trickle-down towards, villages, and streets so that every member of the family should know of cervical cancer and HPV and in turn, kids vaccinated"... (FGD- K 02)

Yet some other participants advocated the use of key stakeholders who can avidly influence the community. One participant remarks;

...The mass media, musicians, and artists should be used to deliver the message of HPV and cervical cancer just like it was during the corona pandemic if at all the problem is worth it... (FGDs-U 07)

Some participants of FGD explained that some schoolgirls displayed autonomy in decision to receive HPV vaccination despite parental rejection; one participant narrates;

…some few students, upon healthcare explanation of the role of the HPV vaccine, autonomously decide to take the vaccine even when their parents rejected it, this is a good thing. (IDI-02)

4.0 DISCUSSION

This study aimed to investigate factors that hinder the HPV vaccination of adolescent schoolgirls in Morogoro Municipality.

Our study has found that uptake of the HPV vaccine was very low. Socio-cultural practices such as myths and misconceptions, religious beliefs, traditions and customs were cited as the underlying causes for the low uptake of the HPV vaccine. The knowledge on HPV was statistically significantly associated with the uptake of the vaccine (Figure 4)

The high rate of myths and misconceptions over the HPV vaccine dubbed "a conspiracy to reduce fertility" coupled with low community awareness were linked to parental rejection of HPV vaccine to their daughters and lack of drive to actively ensure their daughters are vaccinated. This, therefore, means that the goal to reduce morbidity and mortality of cervical cancer through HPV vaccination will only be sparingly realized if actions to address low awareness are not taken.

The proportion of adolescent girls aged between 14-16 years who were vaccinated

The proportion of schoolgirls who completed doses of HPV vaccination (defined as uptake of two doses or three for those with HIV/AIDS) was very low (27%). This rate is well below the recommended coverage of 80% required for the elimination of HPV serotypes 16, 18, 6, and 11 in adolescents(41).

This finding is similar to a recent study done in Lira and Mbale Districts in Uganda, where the uptake of HPV vaccine (defined by receipt of three doses) was very low (42)(22). These two studies were similar to our study; both were mixed methods, done in similar settings of east Africa, and involved adolescent girls. In this study, the proportion of HPV uptake was slightly higher compared to the above two Ugandan studies probably due to differences in study settings whereby our study was school-based while the other two studies were community-based.

A study done in Italy by Restivo et al (27) found higher proportion of unvaccinated than in our study. This is probably due to differences in study settings and selection of the participants.

This study also correlates with another study done in the USA(43). However, in the American study, the dose completion rate was higher compared to our study probably due to cultural differences, misconceptions, and even awareness between the two countries, also the difference in a study design whereby the America was an observational study.

Association between knowledge on HPV and the uptake of the HPV vaccine,

In this study, respondents had good knowledge about HPV. This finding is contrary to the findings of other studies where the level of knowledge was low (18)(21,24,25,39,40,44). The difference could be due to ongoing school-based HPV vaccination programs where health care providers give health education on the vaccine before administration.

Our study demonstrated that students who were vaccinated had a higher median score of knowledge on HPV compared to their unvaccinated counterparts. The level of knowledge on HPV was statistically significantly associated with HPV vaccine uptake (figure 4). Therefore level of knowledge was a strong predictor of HPV vaccine uptake in this study. Our findings echo the findings of a study done in Greece by Donadiki et al who found that being vaccinated was positively and significantly associated with a high level of knowledge among the total sample(45). Further, in a Kenyan study by Mabeya et al, it was found that HPV knowledge was a strong predictor of completion of HPV vaccine(23).

However, some studies found no correlation between adolescent or parental high HPV and HPV vaccine knowledge and HPV vaccination coverage, Nickel et al, found that across all three countries (US, UK, and Australia), Participants with both very low and very high knowledge scores on HPV knowledge and HPV vaccination specific knowledge questions were less likely to have vaccinated their daughters(46). Santos et al (40) also found no correlation between high knowledge and uptake of the HPV vaccine. This may be contributed by differences in the study setting and cultural differences.

Despite good HPV knowledge of the adolescent schoolgirls in this study, however, uptake of the HPV vaccine was still low due to rampant socio-cultural myths and doubts about the HPV vaccine that led parents to either not to consent for their daughters to be vaccinated or lack of drive to actively search for a missed HPV dose contributing to dropouts. Investing in knowledge and awareness creation has the potential to improve HPV vaccine coverage thereby reducing the morbidity and mortality of cervical cancer in Tanzania. This awareness creation can be achieved through the Ministry of Health, Community Development, Gender, Elderly, and Children in collaboration with PO-RALG strengthening health education programs concerning HPV infection, HPV vaccine, and cancer of the cervix from National to village levels through the involvement of various stakeholders such as political leaders, religious leaders, influencial people, and teachers.

Socio-cultural practices which affect HPV vaccination

In the qualitative part of our study, mistrust over the HPV vaccine as a conspiracy to reduce fertility was voiced by virtually all participants of FGDs. This finding is echoed by several other studies which found that infertility concerns were the main deterrent of the HPV vaccine uptake (19, 30,47).

Further, some parents expressed reluctance to talk about issues related to sexuality with their daughters due to cultural norms, traditions, and customs. This is similar to a study done in USA among East African immigrant mothers which found that discussions about sex with children were considered culturally unacceptable by mothers(48).

Yet some FGDs participants felt that consenting to vaccinate their daughters will create a sense of protection to them that may incite risky sexual behavior. The findings of this study are similar to other studies where participants felt that HPV vaccination would incite sexual behavior, create a sense that premarital sex is acceptable, or lead to promiscuity(36,49).

This study also found that religiously devout parents felt that their daughters were saints, having groomed in a religiously-rich family, wouldn't indulge in pre-marital sex so there was no need for HPV vaccination. This findings is similar to a study done in the UK

where religiously devout families perceived that they were at low risk of HPV infection and therefore HPV vaccination was unnecessary(50). Therefore the ongoing communi sensitization and awareness creation programes is very important in eradicating all misconceptions, norms, and customs and beliefs towards HPV vaccine and therefore improve uptake of the HPV vaccine.

STUDY STRENGTH AND LIMITATION

Being a mixed-method study with an explanatory design was strength because it enriched the quantitative part with deep opinions of the parents on the reasons for the low uptake of the HPV vaccine. Students' self-reported vaccination status might cause information bias, however, this was mitigated by repeated reassurance that the information given would be treated anonymously and that confidentiality would be maintained. Non-inclusion of the adolescent schoolgirls in the IDI or FGDs might have deprived us of the potential details for low HPV vaccine uptake. This study was done in urban settings; those from rural settings might show a different level of knowledge, awareness, and other characteristics. Future studies are needed to assess the most effective approaches for the HPV vaccine awareness creation programs in Tanzania.

5.0 CONCLUSION AND RECOMMENDATION

5.1 CONCLUSION

The uptake of the HPV vaccine in this study was low at 27%. This is much lower than the 80% National HPV vaccine coverage target.

Knowledge of HPV was significantly associated with the uptake of the HPV vaccine. Myths and misconceptions especially on the conspiracy to reduce future fertility were consistently found and were associated with low HPV vaccine uptake.

Therefore more efforts should be focused on awareness creation and sensitization of the community concerning HPV infection and its connection with cancer of the cervix to improve HPV vaccine uptake.

5.2 RECOMMENDATION

Morogoro Municipal Council should disseminate health education on the HPV and HPV vaccine to all wards and streets exploiting every opportunities of gathering so that it reaches to communities.

The government through the Ministry of Health, Community Development, Gender, Elderly, and Children in collaboration with PO-RALG should strengthen community health education programs concerning HPV infection, HPV vaccine, and cancer of the cervix from National to street and village levels; this can be done through the involvement of various stakeholders such as political leaders, religious leaders, celebrities, school teachers, health professionals, and the media. This will help alleviate misconceptions and create trust in the HPV vaccine hence improve the uptake of the HPV vaccine.

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APPENDICES

Appendix I: QUESTIONNAIRE (ENGLISH VERSION)
BARRIERS TO HUMAN PAPILLOMAVIRUS (HPV) VACCINATION OF ADOLESCENT GIRLS IN MOROGORO MUNICIPALITY.

This questionnaire is aimed at investigating factors which hinder the uptake of HPV vaccine by adolescent schoolgirls aged 14-16 years.

Please answer all questions of the questionnaire.

SOCIODEMOGRAPHIC CHARACTERISTICS

1. How old are you? ……
2. In which class are you ……..
3. Which is your religion
    a) Christian
    b) Muslim
    c) Others…..
4. How many children are in your family (include yourself)……
5. To whom do you live?
    a. Parents
    b. Guardian
    c. Others (specify)
6. How old are your parents/guardians?
    a) Mother / female guardian…….
    b) Father / male guardian……..
7. Level of education of your parents/ guardian …….
    a. Mother / female guardian…….
    b. Father / male guardian…….
8. Occupation of your parents/guardian……
    a) Mother / female guardian……..
    b) Father / male guardian……...

KNOWLEDGE ABOUT HPV

9. Have you ever heard about HPV?
    a) Yes
    b) No
10. From which source did you hear about HPV?.....
    a) Health care provider
    b) Media
    c) Family members
    d) Teachers
    e) Other sources (Mention)……

11. In your understanding, what is the mode of transmission of HPV?
    a) Blood transfusion `
    b) Sexual intercourse
    c) Coughing or sneezing
    d) I don't know
12. What does HPV infection cause?
    a) Cervical cancer
    b) Immune suppression
    c) Breast cancer
    d) I don't know

SN	Information	Yes	No	Don't know
13	What is the correct explanation regarding the risks of HPV infection?			
	a) Does early sexual debut increase the risk of contracting HPV infection?			
	b) Having multiple sexual partners increases the risk of HPV infection			
	c) Living in an environment with poor air circulation.			
14	What are the possible preventive measures against HPV infection?			
	a) The use of condoms			
	b) Abstinence			
	c) HPV vaccinations			
	d) To have a faithful sexual partner			
	e) The use of antibiotic			

AWARENESS AND KNOWLEDGE ON HPV VACCINE

15. Have you ever heard about the HPV vaccine?
    a) Yes
    b) No
16. From which source of information did you hear about the HPV vaccine?

    a) Health care providers
    b) Media
    c) Family members
    d) Teachers
    e) Other sources (mention)……..

17. In your understanding what does the HPV vaccine prevents?

    a) Breast cancer
    b) Cervical cancer
    c) Hepatitis
    d) I don't know
18. What is the target age group for the HPV vaccine In Tanzania?
    a) Above 18 years
    b) 9-14years
    c) 14years
    d) 15-18years
    e) All of the above
    f) I don't know
19. What is the recommended dosage of the HPV vaccine in Tanzania?
    a) One-shot
    b) Two shots
    c) Three shots
    d) I don't know
20. Do you know that the HPV vaccine is offered free by the Tanzania government?
    a) Yes
    b) No
21. Have you ever received the HPV vaccine?
    a) Yes
    b) No
22. How many doses of HPV vaccine have you received?
    a) zero
    b) 1 dose
    c) 2 doses
    d) 3 doses

23. Have you ever received recommendations from health care providers concerning the importance of HPV vaccination?
    a) Yes
    b) No
24. What is the main reason for not receiving HPV vaccine?
    a) Being absent from school during the day of vaccination
    b) Fear of injection
    c) Parent's refusal
    d) I knew nothing about this HPV vaccine
    e) Fear of infertility
    f) Vaccines were not brought in school
25. If you got the complete doses (two/three) of this vaccine, what is the main factor that compelled you to take the HPV vaccine?
    a) To protect myself from cervical cancer
    b) Counseling/recommendations from teachers
    c) Peer influences
    d) Receive education on HPV vaccine
    e) Insisted by parents/guardians.

THANK YOU FOR YOUR PARTICIPATION

APPENDIX II; QUESTIONNAIRE (SWAHILI VERSION)

Sababu zinazokwamisha utoaji wa chanjo dhidi ya virusi vya Papilloma (HPV) kwa wanafunzi wa kike wa Halmashauri ya Manispaa ya Morogoro.

Dhamira ya dodoso hili ni kujua sababu zinazokwamisha utoaji wa chanjo ya HPV. Naomba uzungushie duara/ tiki au jibu kadri swali linavyotaka katika dodoso hili.

SIFA ZA KIDEMOGRAFIA.

1. Je umri wako miaka mingapi? .....
2. Unasoma kidato cha ngapi? .....
3. Dini yako
    a) Muislam
    b) Mkristu
    c) Zenginezo (itaje)……
4. Mpo watoto wangapi katika familia yenu?.....
5. Unaishi na nani?
    a) Wazazi
    b) Walezi
    c) Wengineo (wataje)…….
6. Umri wa wazazi/walezi wako
    a) Mama/ mlezi wa kike …….
    b) Baba/ mlezi wa kiume …….
7. Wazazi/ walezi wako wamesoma hadi darasa la ngapi?
    a) Mama/ mlezi wa kike……
    b) Baba/ mlezi wa kiume……
8. Kazi ya wazazi/ walezi wako
    a) Mama/ mlezi wa kike…….
    b) Baba/ mlezi wa kiume…….

UFAHAMU/UELEWA JUU YA VIRUSI VYA HPV

9. Umeshawahi sikia kuhusu virusi vya HPV?
    a) Ndiyo
    b) Hapana
10. Ulisikia kuhusu virusi vya HVP kutoka wapi
    a) Mtoa huduma za afya
    b) Vyombo vya habari
    c) Wazazi/walezi/wana familia
    d) Walimu
    e) Kwingine (taja)…….
11. Kwa ufahamu wako, virusi vya HPV huambukizwa/ huenezwa kwa njia gani?
    a) Kuongezewa damu
    b) Kujamiiana/ Kushiriki ngono
    c) Kukohoa au kupiga chafya
    d) Sijui
12. Virusi vya HPV husababisha tatizo gani la kiafya?
    a) Saratani ya shingo/mlango wa kizazi
    b) Upungufu wa kinga mwilini
    c) Saratani ya matiti
    d) Sijui

SN	Maelezo	Ndiyo	hapana	Sijui
13	Yapi ni maneno sahihi kuhusu hatari ya maambukizi ya vituo vya HPV?			
	a) Kujamiina katika umri mdogo huepelekea hatari ya kupata virusi vya HPV?			
	b) Kuwa na wapenzi wengi wasio waaminifu huongeza hatari ya maambukizi ya Virusi vya HPV			
	c) Kuishi katika mazingira yenye mzunguko mdogo wa hewa.			
14	Zipi ni njia za kujikinga dhidi ya maambukizi ya virusi vya HPV?			
	a) Matumizi ya condom			
	b) Kuepuka ngono (abstinence)			
	c) Chanjo ya HPV			
	d) Kuwa na mpenzi mwaminifu			
	e) Matumizi ya dawa (antibiotics)			

UFAHAMU/ UELEWA JUU YA CHANJO YA HPV

15. Umeshawahi kusikia kuhusu chanjo ya HPV?
    a) Ndiyo
    b) Hapana
16. Wapi ulisikia kuhusu chanjo ya HPV?
    a) Mtoa huduma za afya
    b) Vyombo vya habari
    c) Wazazi/walezi/wana familia
    d) Walimu
    e) Kwingine (taja)…….
17. Kwa ufahamu wako, chanjo ya HPV huzuia/ hukinga dhidi ya nini?
    a) Saratani ya matiti
    b) Saratani ya shingo/mlango wa kizazi
    c) Homa ya ini.
    d) Sijui
18. Chanjo ya HPV Tanzania, imelengwa kwa wasichana wenye umri wa miaka mingapi?
    a) Zaidi ya miaka 18
    b) Miaka 9 – 14
    c) Miaka 14
    d) Miaka 15 – 18
    e) Yote tajwa hapo juu
    f) Sijui
19. Nchini Tanzani chanjo ya HPV ina jumla ya dozi ngapi?
    a) 1
    b) 2
    c) 3
    d) sijui
20. Je, unafahamu kuwa chanjo ya HPV hutolewa bure nchini Tanzania?
    a) Ndiyo
    b) Hapana

21. Je umepata chanjo ya HPV?
    a) Ndiyo
    b) Hapana
22. Umepata jumla ya dozi ngapi za chanjo ya HPV?
    a) Moja
    b) Mbili
    c) Tatu
23. Umeshawahi kupewa ushauri kutoka kwa Daktari au mtoa huduma za afya kuhusu umuhimu wa kupewa chanjo ya HPV?
    a) Ndiyo
    b) Hapana

24. Taja sababu moja kubwa ilopelekekea kutopata chanjo ya virusi vya Papilloma
    a) Kutohudhuria shuleni siku ambayo chanjo ilikua inatolewa
    b) Uoga wa kuchoma sindano
    c) Wazazi kutoridhia
    d) Kutokua na ufahamu wowote kuhusu chanjo hii.
    e) Chanjo hii husababisha ugumba kwa wasichana hivyo naogopa kuwa mgumba
    f) Chanjo hazikuletwa shuleni

25. Kama umepata dozi zote za chanjo hii kwa ukamilifu wake taja sababu kubwa moja ilopelekea wewe kuchanjwa
    a) Kuweza kujikinga na saratani ya mlango wa kizazi
    b) Kupata msisitizo kutoka kwa walimu shuleni
    c) Kushawishiwa na wanafunzi wenzangu
    d) Kupata elimu ya chanjo hii
    e) Kuhimizwa na wazazi/walezi

APPENDIX III; A GUIDE FOR FOCUS GROUP DISCUSSIONS (ENGLISH VERSION)

No.	Focus group question
1	What do you know about the HPV vaccine? What does it protect against? -Explore the link between HPV and cervical cancer.
2	Why do you think should adolescent girls be given the HPV vaccine? Explore the level of conviction that HPV causes cervical cancer.
3	Do you think that most parents in your area accept HPV vaccination for their daughters? If yes Why? And if no why? -What are the main worries that preclude uptake of the vaccine?
4	Are there situations your girls miss the HPV vaccine? And what does it take to get your girl vaccinated?
5	In your opinion, was the community adequately educated about the HPV vaccine and cervical cancer?
6	What can be done to improve awareness and uptake of HPV vaccine within the community

APPENDIX IV; A GUIDE FOR FOCUS GROUP DISCUSSION (SWAHILI VERSION)

Namba	Maswali muhimu ya mjadala
1	Mnajua nini kuhusu chanjo ya virusi vya Papiloma (HPV)? -walengwa -ridhaa ya kumchanja binti inatolewaje? -Inakinga nini? -Chimba kuhusu mahusiano kati ya virusi vya Papiloma na saratani ya shingo ya kizazi.
2	Mnafikiri ni kwanini mabinti zenu wanatakiwa kupata chanjo hii?
3	Hivi mnadhani wazazi/walezi wengi wa eneo hili wanaikubali chanjo ya HPV itolewe kwa mabinti zao? Kama jibu ni ndiyo au hapana…… Kama jibu ni hapana, ni sababu gani zinapelekea wazazi/walezi kuikataa chanjo ya HPV isitolewe kwa mabinti zao? **Chimba juu ya yafuatayo;** -mashaka juu ya kupunguza uwezo wa uzazi wa watoto wa kike -imani potofu;ugumba, depopulation, promiscuity, -Hofu juu ya madhara ya muda mfupi yanaoweza kutokea -mila, desturi au dini zinapingana na chanjo hii.
4	Endapo inatokea mabinti zenu wanakosa chanjo ya HPV, unachukua hatua gani?
5	Mnadhani jamii ina uelewa wa kutosha juu ya chanjo ya HPV?
6	Nini kifanyike ili kuleta uelewa wa pamoja na kuhakikisha chanjo ya HPV inawafikia walengwa wote katika jamii yetu?

APPENDIX V; A GUIDE FOR AN IN-DEPTH INTERVIEW (ENGLISH VERSION)

1. Give out an overview about the HPV vaccine, when was it launched in Morogoro Municipal, target groups?
2. What is the mode of delivery of the HPV vaccine to targeted groups?
   - What about those not in schools?
3. To what extent was the community involved in the education programs concerning the HPV vaccine?
   -Were teachers involved in training?
   -What is the level of support you receive from school administration during vaccination?
   -what is the level of compliance of the parents/guardians to vaccination of their girls?
4. What do you consider to be the cause of the low uptake of the HPV vaccine among adolescent schoolgirls?
5. What challenges are you facing during vaccination?
   -stock out of HPV vaccine and related supplies.
   -shortage of staff.
6. What are your recommendations on how best to address the observed challenges in HPV vaccination?
7. What are your opinions toward improving vaccine uptake to the targeted group?

THANK YOU FOR YOUR PARTICIPATION.

APPENDIX VI; A GUIDE FOR AN IN DEPTH INTERVIEW (SWAHILI VERSION)

1. Kwa muhtasari nipe ufahamu wako kuhusu chanjo ya virusi vya papilloma, ilianzishwa lini katika Manispaa ya Morogoro, walegwa?
2. Ni njia zipi zinatumika kutoa chanjo ya virusi vya papiloma kwenye makundi yaliyokusudiwa?
    - Je walio nje ya shule wanafikiwaje?
3. Ni kwa kiasi gani jamii ilishirikishwa katika kupewa elimu ya chanjo ya HVP?
    - Je walimu wa shule za msingi na sekondari walishirikishwa katika mafunzo?
    - Je wakuu wa shule wanatoa ushirikiano wakutosha katika kipindi cha utoaji chanjo kwa wanafunzi
    - Ni kwa kiasi gani wazazi/walezi wana afiki utolewaji wa chanjo ya HPVkwa mabinti zao?
4. Unadhani ni nini kinasababisha upokeaji wa chanjo ya virus vya papiloma kwa wasichana kuwa chini/duni
5. Ni changamoto gani mnazipata wakati wa uchanjaji?
   -upatikanaji wa chanjo ni shida?
   -Uchache wa watumishi?
6. Una mapendekezo gani juu ya namna nzuri ya kutatua changamoto zinazojitokeza wakati wa utoaji wa chanjo ya virus vya Papiloma (HPV)?
7. Nini kifanyike katika kuboresha huduma hii ya kutoa chanjo ya HPV kwa walengwa?

ASANTE KWA KUSHIRIKI

APPENDIX VII; CONSENT FORM

MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES

SCHOOL OF MEDICINE

CONSENT FORM (ENGLISH VERSION)
SCHOOL OF MEDICINE

DEPARTMENT OF OBSTETRICS AND GYNAECOLOGY

MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES (MUHAS)

CONSENT TO PARTICIPATE IN A BIOMEDICAL RESEARCH

Barriers to Human Papillomavirus (HPV) vaccination of schoolgirls in Morogoro Municipality.

.

PART I: INFORMATION

Dear headmaster/headmistress

My name is Ikrah Abdallah. I would like to invite you to participate in this research that intends to determine barriers to HPV vaccination among 14 and 16 years old girls attending your school.

Participation: Principal investigator with the help of the school health education teacher, after you have assented to participate, will interview the selected girls by using structured questionnaires. If any clarification arises, the team will be more than happy to assist.

Confidentiality: All the information obtained will be kept confidential and will only be used for the intended study aim. The name or identity of the student will not appear in any write-up or any publication.

Withdrawal right: Your participation in this study is voluntary and you may get out of the study any moment you wish after you have consented with no consequence.

Benefits: There is no financial incentive upon your participation in this study. The findings of the study will be used as evidence-based information to suggest strategies and review policies and standards on sensitization that may promote reproductive health and alerting

all involved stakeholders and policymakers on the determinants of the HPV vaccination uptake in the country and promote better understanding and gain an outcome of the program.

Injury/Harm: The study does not intend to affect any school plan and management. We do not expect any harm to you as a result of your participation in this study.

Who to contact: For any inquiry regarding this study please do not hesitate to contact Dr. Ikrah Abdallah, a resident doctor in Obstetrics and Gynecology Department at Muhimbili University of Health and Allied Sciences (MUHAS), the principal investigator of this study; P.O Box 65001, Dar es Salaam, mobile +255 713 086253.

For any questions about rights as a research participant, contact Dr. Bruno Sunguya, the Director of Research and Publications Committee at MUHAS; P.O. Box 65001, Dar es Salaam, Tel: +255 222 150 302-6/2152489.

PART II: CERTIFICATE OF CONSENT

I, _____ have read the above information/it has been read to me. I have had the opportunity to ask questions about it and any questions I asked have been answered to my satisfaction. I give assent as the school headteacher, for the 14 - 16 years old girls, in the school to be part of this study.

Signature of the Headmaster/mistress _____

Signature of researcher _____

Date of signed consent _____

MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES

SCHOOL OF MEDICINE

CONSENT FORM (ENGLISH VERSION)
SCHOOL OF MEDICINE

DEPARTMENT OF OBSTETRICS AND GYNAECOLOGY

MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES (MUHAS)

CONSENT TO PARTICIPATE IN A BIOMEDICAL RESEARCH

Barriers to Human Papillomavirus (HPV) vaccination of schoolgirls in Morogoro Municipality.

PART I: INFORMATION

Dear participant

My name is Ikrah Abdallah. I would like to invite you to participate in this research that intends to determine the barriers to HPV vaccination among 14 and 16-years-old girls attending your school.

Participation: Principal investigator with the help of the school health education teacher, after you have consented to participate, will conduct focus group discussions (FGDs) and in-depth interviews (IDIs) by using guides for FGD and IDI respectively. If any clarification arises, the team will be more than happy to assist.

Confidentiality: All the information obtained will be kept confidential and will only be used for the intended study aim. The name or identity of the participant will not appear in any write-up or any publication.

Withdrawal right: Your participation in this study is voluntary and you may get out of the study any moment you wish after you have consented with no consequence.

Benefits: There is no financial incentive upon your participation in this study. The findings of the study will be used as evidence-based information to suggest strategies and review policies and standards on sensitization that may promote reproductive health and alerting all involved stakeholders and policymakers on the determinants of the HPV vaccination

uptake in the country and promote better understanding and gain an outcome of the program.

Injury/Harm: The study does not intend to affect any school plan and management. We do not expect any harm to you as a result of your participation in this study.

Who to contact: For any inquiry regarding this study please do not hesitate to contact Dr. Ikrah Abdallah, a resident doctor in Obstetrics and Gynecology Department at Muhimbili University of Health and Allied Sciences (MUHAS), the principal investigator of this study; P.O Box 65001, Dar es Salaam, mobile +255 713 086253.

For any questions about rights as a research participant, contact Dr. Bruno Sunguya, the Director of Research and Publications at MUHAS; P.O. Box 65001, Dar es Salaam, Tel: +255 222 150 302-6/2152489.

PART II: CERTIFICATE OF CONSENT

I, _____ have read the above information/it has been read to me. I have had the opportunity to ask questions about it and all have been answered to my satisfaction. I do hereby, freely and without pressure, consent to participate in this study.

Signature of the participant _____

Signature of researcher _____

Date of signed consent _____

MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES

SCHOOL OF MEDICINE

CONSENT FORM (SWAHILI VERSION)

SHULE YA UTABIBU

IDARA YA UZAZI NA MAGONJWA YA WANAWAKE

CHUO KIKUU CHA AFYA NA SAYANSI SHIRIKISHI MUHIMBILI

FOMU YA RIDHAA KUSHIRIKI KATIKA UTAFITI WA DAWA TIBA

Sababu zinazo kwamisha utoaji wa chanjo ya saratani ya shingo ya kizazi kwa wanafunzi wa kike wa Halmashauri ya Manispaa ya Morogoro.

SEHEMU YA I: TAARIFA

Ndugu Mkuu wa shule

Naitwa Dkt. Ikrah Abdallah. Napenda kukushukuru kwa kushiriki kwenye mahojiano haya. Ninafanya utafiti kuhusu, sababu zinazo kwamisha utoaji wa chanjo ya saratani ya shingo ya kizazi kwa wanafunzi wakike katika Halmashauri ya Manispaa ya Morogoro

Lengo: Kufanya tathmini juu ya sababu zinazo kwamisha utoaji wa chanjo ya saratani ya shingo ya kizazi kwa wanafunzi wa kike wa Halmashauri ya Morogoro, ili mwisho wa siku kuweza saidia Wizara ya Afya, maendeleo ya Jamii, Jinsia, Wazee na Watoto, katika uboreshaji huduma katika kuelimisha na kuhamasisha, katika zoezi zima linaloendelea kutolewa nchi nzima la utowaji wa chanjo hiyo.

Ushiriki: Mtafiti mkuu/mwalimu wa afya, watatoa dodoso la maswali kwa washiriki, ambao ni wanafunzi waliochaguliwa.

Usiri: Taarifa zote zitakazopatikana zitahifadhiwa kwa usiri na zitatumika kwa ajili ya lengo la utafiti tu. Jina lako au utambulisho wako hautatokea kwenye maandishi au machapisho yoyote ya utafiti huu.

Haki ya kujitoa: Ushiriki kwenye utafiti huu ni wa hiari na washiriki wanaweza kujitoa kwenye utafiti huu wakati wowote baada ya kukubali.

Faida: Hakuna motisha ya kifedha juu ya ushiriki kwenye utafiti huu; hata hivyo ushiriki wa wanafunzi ni muhimu katika kutimiza lengo la utafiti, kwa kuwa, utasaidia katika kuelimisha na kuhamasisha jamii, haswa wanafunzi wafikapo umri husika, ili waweze jikinga na saratani ya shingo ya kizazi.

Kuumia/Madhara: Utafiti huu hautaathiri upatikanaji wa huduma za kiafya kwako. Hautaleta madhara yoyote kwako, au kwa familia yako, au kwa wasaidizi wako kutokana na kushiriki katika utafiti huu.

Kwa mawasiliano: Endapo utakua na swali lolote linalohusu utafiti huu, wasiliana na wafuatao: Dkt. Ikrah Abdallah (Mtafiti mkuu), mwanafunzi wa Shahada ya Uzamili Idara ya Uzazi na Magonjwa ya Wanawake, Chuo Kikuu cha Afya na Sayansi Shirikishi Muhimbili, S.L.P.65001, Dares Salaam. Simu +255 713 086 253.

Kwa maswali kuhusu haki zako kama mshiriki, unaweza kuwasiliana na **Dkt. Bruno Sunguya**, Mwenyekiti wa Kitengo cha Utafiti, Chuo Kikuu cha Afya na Sayansi Shirikishi Muhimbili, P.O.Box 65001, Dar es Salaam. Simu: +255 222 150 302-6/2152489.

SEHEMU YA II: CHETI CHA RIDHAA

Mimi ……. nimesoma (nimesomewa) taarifa hii kama ilivyoelezwa hapo juu. Nimepata nafasi ya kuuliza maswali na nimejibiwa na nimeridhika. Nimeelewa dhumuni la utafiti huu. Ninakubali/ninaridhia kwa hiari yangu wanafunzi wa shule yangu kushiriki katika utafiti huu .

Sahihi ya Mkuu wa Shule_____

Sahihi ya mtafiti_____

Tarehe _____

MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES

SCHOOL OF MEDICINE

CONSENT FORM (SWAHILI VERSION)

SHULE YA UTABIBU

IDARA YA UZAZI NA MAGONJWA YA WANAWAKE

CHUO KIKUU CHA AFYA NA SAYANSI SHIRIKISHI MUHIMBILI

FOMU YA RIDHAA KUSHIRIKI KATIKA UTAFITI WA DAWA TIBA

Sababu zinazo kwamisha utoaji wa chanjo ya saratani ya shingo ya kizazi kwa wanafunzi wa kike wa Halmashauri ya Manispaa ya Morogoro.

SEHEMU YA I: TAARIFA

Ndugu mshiriki…….

Naitwa Dkt. Ikrah Abdallah. Napenda kukushukuru kwa kushiriki kwenye mahojiano haya. Ninafanya utafiti kuhusu, sababu zinazo athiri utoaji wa chanjo ya saratani ya shingo ya kizazi kwa wanafunzi wakike katika Halmashauri ya Manispaa ya Morogoro

Lengo: Kufanya tathmini juu ya sababu zinazo kwamisha utolewaji wa chanjo ya saratani ya shingo ya kizazi kwa wanafunzi wa Halmashauri ya Morogoro, ili mwisho wa siku kuweza saidia Wizara ya Afya, maendeleo ya Jamii, Jinsia, Wazee na Watoto, katika uboreshaji huduma katika kuelimisha na kuhamasisha, katika zoezi zima linaloendelea kutolewa nchi nzima la utowaji wa chanjo hiyo.

Ushiriki: Mtafiti mkuu/mwalimu wa afya, wataongoza mahojiano na majadiliano kwa washiriki.

Usiri: Taarifa zote zitakazopatikana zitahifadhiwa kwa usiri na zitatumika kwa ajili ya lengo la utafiti tu. Jina lako au utambulisho wako hautatokea kwenye maandishi au machapisho yoyote ya utafiti huu.

Haki ya kujitoa: Ushiriki kwenye utafiti huu ni wa hiari na washiriki wanaweza kujitoa kwenye utafiti huu wakati wowote baada ya kukubali.

Faida: Hakuna motisha ya kifedha juu ya ushiriki kwenye utafiti huu; hata hivyo ushiriki wa huu ni muhimu katika kutimiza lengo la utafiti, kwa kuwa, utasaidia katika kuelimisha na kuhamasisha jamii, haswa wanafunzi wafikapo umri husika, ili waweze jikinga na saratani ya shingo ya kizazi.

Kuumia/Madhara: Utafiti huu hautaathiri upatikanaji huduma za kiafya kwako. Hautaleta madhara yoyote kwako, au kwa familia yako, au kwa wasaidizi wako kutokana na kushiriki katika utafiti huu.

Kwa mawasiliano: Endapo utakua na swali lolote linalohusu utafiti huu, wasiliana na wafuatao: Dkt. Ikrah Abdallah (Mtafiti mkuu), mwanafunzi wa Shahada ya Uzamili Idara ya Uzazi na Magonjwa ya Wanawake, Chuo Kikuu cha Afya na Sayansi Shirikishi Muhimbili, S.L.P.65001, Dares Salaam. Simu +255 713 086 253.

Kwa maswali kuhusu haki zako kama mshiriki, unaweza kuwasiliana na **Dkt. Bruno Sunguya**, Mwenyekiti wa Kitengo cha Utafiti, Chuo Kikuu cha Afya na Sayansi Shirikishi Muhimbili, P.O.Box 65001, Dar es Salaam. Simu: +255 222 150 302-6/2152489.

SEHEMU YA II: CHETI CHA RIDHAA

Mimi …… nimesoma (nimesomewa) taarifa hii kama ilivyoelezwa hapo juu. Nimepata nafasi ya kuuliza maswali na nimejibiwa na nimeridhika. Nimeelewa dhumuni la utafiti huu. Ninakubali/ninaridhia kwa hiari yangu kushiriki katika utafiti huu.

Sahihi ya mshiriki_____

Sahihi ya mtafiti_____

Tarehe kusaini ridhaa ya ushiriki _____

APPENDIX VIII; ASSENT FORM

MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES
SCHOOL OF MEDICINE

ASSENT FORM (ENGLISH VERSION)
SCHOOL OF MEDICINE

DEPARTMENT OF OBSTETRICS AND GYNAECOLOGY

MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES (MUHAS)

ASSENT TO PARTICIPATE IN A BIOMEDICAL RESEARCH

Barriers to Human Papillomavirus (HPV) vaccination of schoolgirls in Morogoro Municipality.

PART I: INFORMATION

Dear student

My name is Ikrah Abdallah. I would like to invite you to participate in this research that intends to determine the barriers to HPV vaccination among 14 and 16 years old girls attending your school.

Participation: Principal investigator with the help of the school health education teacher, after you have assented to participate, will interview the selected schoolgirls by using structured questionnaires. If any clarification arises, the team will be more than happy to assist.

Confidentiality: All the information obtained will be kept confidential and will only be used for the intended study aim. The name or identity of the student will not appear in any write-up or any publication.

Withdrawal right: Your participation in this study is voluntary and you may get out of the study any moment you wish after you have consented with no consequence.

Benefits: There is no financial incentive upon your participation in this study. The findings of the study will be used as evidence-based information to suggest strategies and review policies and standards on sensitization that may promote reproductive health and alerting all involved stakeholders and policymakers on the determinants of the HPV vaccination

uptake in the country and promote better understanding and gain an outcome of the program.

Injury/Harm: The study does not intend to affect any school plan and management. We do not expect any harm to you as a result of your participation in this study.

Who to contact: For any inquiry regarding this study please do not hesitate to contact Dr. Ikrah Abdallah, a resident doctor in Obstetrics and Gynecology Department at Muhimbili University of Health and Allied Sciences (MUHAS), the principal investigator of this study; P.O Box 65001, Dar es Salaam, mobile +255 713 086253.

For any questions about rights as a research participant, contact Dr. Bruno Sunguya, the Director of Research and Publications Committee at MUHAS; P.O. Box 65001, Dar es Salaam, Tel: +255 222 150 302-6/2152489.

PART II: CERTIFICATE OF CONSENT

I, _____ have read the above information/it has been read to me. I have had the opportunity to ask questions about it and any questions I asked have been answered to my satisfaction. I give an assent to be part of this study.

Signature of the student _____

Signature of researcher _____

Date of signed assent _____

MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES

SCHOOL OF MEDICINE

ASSENT FORM (SWAHILI VERSION)

SHULE YA UTABIBU

IDARA YA UZAZI NA MAGONJWA YA WANAWAKE

CHUO KIKUU CHA AFYA NA SAYANSI SHIRIKISHI MUHIMBILI

FOMU YA RIDHAA KUSHIRIKI KATIKA UTAFITI WA DAWA TIBA

Sababu zinazo kwamisha utoaji wa chanjo ya saratani ya shingo ya kizazi kwa wanafunzi wa kike wa Halmashauri ya Manispaa ya Morogoro.

SEHEMU YA I: TAARIFA

Ndugu Mwanafunzi

Naitwa Dkt. Ikrah Abdallah. Napenda kukushukuru kwa kushiriki kwenye mahojiano haya. Ninafanya utafiti kuhusu, sababu zinazo kwamisha utoaji wa chanjo ya saratani ya shingo ya kizazi kwa wanafunzi wakike katika Halmashauri ya Manispaa ya Morogoro

Lengo: Kufanya tathmini juu ya sababu zinazokwamisha utoaji wa chanjo ya saratani ya shingo ya kizazi kwa wanafunzi wa kike wa Halmashauri ya Manispaa ya Morogoro, ili mwisho wa siku kuweza saidia Wizara ya Afya, maendeleo ya Jamii, Jinsia, Wazee na Watoto, katika uboreshaji huduma katika kuelimisha na kuhamasisha, katika zoezi zima linaloendelea kutolewa nchi nzima la utowaji wa chanjo hiyo.

Ushiriki: Mtafiti mkuu/mwalimu wa afya, watatoa dodoso la maswali kwa washiriki, ambao ni wanafunzi waliochaguliwa.

Usiri: Taarifa zote zitakazopatikana zitahifadhiwa kwa usiri na zitatumika kwa ajili ya lengo la utafiti tu. Jina lako au utambulisho wako hautatokea kwenye maandishi au machapisho yoyote ya utafiti huu.

Haki ya kujitoa: Ushiriki kwenye utafiti huu ni wa hiari na washiriki wanaweza kujitoa kwenye utafiti huu wakati wowote baada ya kukubali.

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Kwa mawasiliano: Endapo utakua na swali lolote linalohusu utafiti huu, wasiliana na wafuatao: Dkt. Ikrah Abdallah (Mtafiti mkuu), mwanafunzi wa Shahada ya Uzamili Idara ya Uzazi na Magonjwa ya Wanawake, Chuo Kikuu cha Afya na Sayansi Shirikishi Muhimbili, S.L.P.65001, Dares Salaam. Simu +255 713 086 253.

Kwa maswali kuhusu haki zako kama mshiriki, unaweza kuwasiliana na **Dkt. Bruno Sunguya**, Mwenyekiti wa Kitengo cha Utafiti, Chuo Kikuu cha Afya na Sayansi Shirikishi Muhimbili, P.O.Box 65001, Dar es Salaam. Simu: +255 222 150 302-6/2152489.

SEHEMU YA II: CHETI CHA RIDHAA

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Sahihi ya Mwanafunzi_____

Sahihi ya mtafiti_____

Tarehe _____