

**IMPLEMENTATION OF THE SECOND DOSE OF HUMAN
PAPILLOMAVIRUS VACCINE IN ILALA MUNICIPALITY
DAR ES SALAAM, TANZANIA.**

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**Master of Science in Project management Monitoring and evaluation in
Health of the Muhimbili University of Health and Allied Sciences.**

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Department of Development Studies



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By

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**A Dissertation submitted in (partial) Fulfilment of the Requirements for the
Degree of Master of Science in Project management Monitoring and evaluation in
Health of the Muhimbili University of Health and Allied Sciences**

October, 2021.

CERTIFICATION

The undersigned certifies that he has read and hereby recommends for acceptance by Muhimbili University of Health and Allied Sciences a dissertation entitled **“Implementation of the second dose of human papillomavirus vaccine in Ilala Municipality-Dar es Salaam, Tanzania”**, in (partial) fulfillment of the requirements for the degree of Masters of Science (Project Management, Monitoring and Evaluation in Health) of Muhimbili University of Health and Allied Sciences.

Prof. Bruno Sunguya
(Supervisor)

Date

DECLARATION AND COPYRIGHT

I, Nchang’wa Nhumba, declare that this dissertation is my own original work and that it has not been presented and will not be presented to any other University for a similar or any other degree award

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TABLE OF CONTENTS

CERTIFICATION	i
DECLARATION AND COPYRIGHT.....	ii
LIST OF TABLES	vi
LIST OF FIGURE.....	vii
LIST OF ABBREVIATIONS.....	viii
ACKNOWLEDGEMENT	ix
ABSTRACT.....	x
Background	x
DEFINITION OF KEY TERMS	xii
CHAPTER ONE.....	1
1 INTRODUCTION.....	1
1.1 Background	1
1.2 Problem Statement	3
1.3 Conceptual Framework	4
1.4 Rationale.....	7
1.5 Research Questions	7
1.5.1 Main research question.	7
1.5.2 Specific questions.	8
1.6 Objectives.....	8
1.6.1 Broad objective.	8
1.6.2 Specific objectives.	8
CHAPTER TWO	9
2 LITERATURE REVIEW	9
2.1 Facilitating factors for implementation of the second dose of HPV vaccine.....	9
2.2 Barriers for implementation of the second dose of HPV vaccine.....	10
2.2.1 The individual and family level.	10
2.2.2 The community and societal level.	12
2.2.3 The policy and health system level.....	13

2.3	Resources for implementation of the second dose of HPV vaccine.	14
CHAPTER THREE		17
3	METHODOLOGY.....	17
3.1	Study design.....	17
3.2	Study area.....	17
3.3	Sampling technique.....	17
3.3.1	Quantitative sample.....	17
3.3.2	Qualitative sample	18
3.4	Sample size.....	18
3.4.1	Quantitative approach.....	18
3.4.2	Qualitative approach.....	18
3.5	Study population.....	19
3.6	Data collection methods.....	19
3.7	Inclusion criteria.....	20
3.8	Exclusion criteria.....	20
3.9	Variables.....	20
3.9.1	Independent variables	20
3.9.2	Dependent variable	21
3.10	Data management and analysis.....	21
3.11	Ethical consideration.....	23
3.12	Limitation and mitigations of the study.....	23
3.12.1	Limitation.....	23
CHAPTER FOUR.....		24
4	RESULTS	24
CHAPTER FIVE		39
5	DISCUSSION.....	39
5.1	Discussion	39
CHAPTER SIX.....		46
6	CONCLUSION AND RECOMMENDATION	46

6.1	Conclusion.....	46
6.2	Recommendations	46
	REFERENCES.	47
	APPENDICES	56
	APPENDIX I: INFORMED CONSENT FORM (ENGLISH VERSION).....	56
	APPENDIX II: CONSENT FORM (KISWAHILI VERSION).	59
	APPENDIX III: QUESTIONNAIRES FOR SCHOOL CHILDREN	62
	(ENGLISH VERSION)	62
	APPENDIX IV: QUESTIONNAIRES FOR SCHOOL CHILDREN (KISWAHILI	69
	VERSION).....	69
	APPENDIX V: INTERVIEW GUIDES.....	76
	INTERVIEW GUIDE FOR HEALTH SERVICE PROVIDERS (ENGLISH VERSION).....	76
	APPENDIX VI: INTERVIEW GUIDE FOR HEALTH SERVICE PROVIDERS	
	(KISWAHILI VERSION)	78
	INTERVIEW GUIDE FOR DMO, RCH COORDINATOR AND OTHER OFFICIALS	
	(ENGLISH VERSION)	80
	INTERVIEW GUIDE FOR DMO, RCH COORDINATOR AND OTHER OFFICIALS	
	(KISWAHILI VERSION)	83
	APPENDIX VI: ETHICAL CLEARANCE LETTER	86
	APPENDIX VII: INTRODUCTION LETTER	88
	APPENDIX VIII: PERMISSION LETTER	89

LIST OF TABLES

Table 1: Socio-demographic characteristics.	26
Table 2: Uptake of the first and second dose of HPV vaccine.....	25
Table 3: Demographic characteristics associated with uptake of HPV-2 uptake	27
Table 4: Univariate Logistic regression for the factors associated with HPV-2 uptake..	29
Table 5: Multivariate Logistic regression for the factors associated with HPV-2 uptake	31
Table 6: Demographic characteristics of key informants	32
Table 7: Summary of codes and themes on qualitative analysis plan.....	33

LIST OF FIGURE

Figure 1: Coceptual frame work6

LIST OF ABBREVIATIONS

CHMT	Council Health Management Team
DHIS2	District Health Information System software –version 2.
DRCHCo	Distric reproductive and child health coordinator
FGDs	Focused Group Discussions.
HCPs	Health Care Providers.
HPV	Human Papilloma Virus.
HPV-1	Human Papillomavirus Vaccine –first dose.
HPV-2	Human Papillomavirus Vaccine- second dose.
IDIs	In-Depth Interviews.
IEC	Information Education Communication.
KIs	Key Informants.
LMICs	Low Middle Income Countries.
MUHAS	Muhimbili University of Health and Allied Science.
WHO	World Health Organization

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ABSTRACT

Background.

Cervical cancer represents the most common neoplastic pathology among women and accounts for 83% of HPV attributable cancer with an estimated 500,000 diagnosed cases each year, resulting in more than 250,000 deaths globally. The highest incidence rates of cervical cancer worldwide occur in eastern, western and southern Africa, with age-standardized rates of 34.5, 33.7 and 26.8 cases per 100,000 populations respectively. Cervical cancer is strongly associated with Human Papilloma Virus (HPV) infections, Serotype 16 and 18 of HPV being responsible for approximately 70% of invasive cervical cancer cases worldwide while serotypes 6 and 11 are responsible for 90% of anogenital warts cases.

Vaccination against HPV which requires two doses together with cervical cancer screening are the major public health strategies for preventing cervical cancer in the general population. However, the second dose has been noted to have low coverage compared to the first dose in both high income and developing countries including Tanzania which had only 50% coverage of the second dose compared to 79% of the first dose in 2019.

Aim of the study.

The aim of the study was to assess the factors associated with implementation and uptake of the second dose of HPV vaccine in Ilala municipality – Dar es Salaam, Tanzania.

Methods and Materials.

A cross sectional study using a mixed method was conducted, data were collected from participants by using structured questionnaire and interview guide for quantitative and qualitative data respectively. Quantitative data were analyzed using SPSS software after being cleaned and checked for consistency and quality. Multivariate Logistic regression was conducted to determine factors independently associated with uptake of the second dose of HPV vaccine.

Qualitative data were analyzed by using Thematic Content Analysis. Triangulation of both qualitative and quantitative was conducted to address the specific objectives for this study.

Results.

Findings from this study showed that, out of 389 respondents participating in the study, only 83 respondents received the second dose of HPV vaccine, equivalent to 21.3% level of uptake compared to the first dose which was 35.2% level of uptake. A total of 306 respondents equivalent to 78.7% did not receive the second HPV vaccine shot.

Multivariate analysis done revealed that, school girls aged 12-13 years old were 86% less likely to receiving HPV-2 vaccine compared to their reference age group (14 years or above) (AOR: 0.14; 95% CI: 0.03-0.59), P-value=0.008. Those with positive attitude towards HPV-2 vaccine were 2.04 times more likely to receiving HPV-2 vaccine compared to those with negative attitude (AOR: 2.04; 95% CI: 1.10-3.76), P-value=0.023. Respondents with awareness about HPV vaccine second dose, were 9.16 times more likely to receiving HPV-2 vaccine compared to the group without awareness (AOR: 9.16; 95% CI: 2.11-39.85), P-value=0.003. Shortage of health care providers as well as inconsistency provision of transport to health care providers to reach vaccination sites were one of the factors that set back implementation and uptake of the second dose of HPV vaccine.

Conclusion and recommendations:

The uptake of second dose of HPV vaccine among adolescent girls in Ilala municipality was low. Factors associated with second HPV vaccine uptake included young age group of adolescent girls, good attitude on HPV vaccine and awareness about HPV vaccine second dose. Adequate health care providers as well as consistent availability of HPV vaccines together with timely payment of transport allowances to health care providers to reach vaccination sites were resources that could enhance implementation of HPV-2 vaccine and its uptake.

Owing to the evidence gathered, it is recommended that, the Government of Tanzania through the Ministry of health, community development, gender, elderly and children to conduct HPV vaccination community sensitizations to build positive attitudes and change community negative perception on HPV vaccines that they cause cancer and infertility to their adolescent girls and strengthen HPV vaccination community outreaches

DEFINITION OF KEY TERMS

Cervarix™.	This is a type of HPV vaccine that prevent cervical infections against two serotypes of HPV known as HPV 16 & 18.
Cervical cancer.	This is a type of cancer that occurs in the cells of the cervix, a lower part of the uterus that connects to the vagina. It's commonly caused by human papillomavirus (HPV) which is a sexually transmitted infection (Small <i>et al.</i> , 2017)
Gardasil9™.	This is a type of HPV vaccine that prevent against nine HPV serotypes known as HPV serotypes 31, 33, 45, 52 & 58 in addition to HPV 6, 11, 16 & 18 that cause cancer of the cervix, vulva, vagina, anal, oropharyngeal and other head and neck cancers.
Gardasil™.	This is a type of HPV vaccine that prevents against four HPV serotypes known as HPV 6 & 11 in addition to HPV 16 & 18 that cause genital warts and cervical cancer respectively.
Genital warts.	These are small bumps on the genitals caused by human papillomavirus, a common sexually transmitted infection.
Human papillomavirus vaccine	Is a vaccine that prevents infection by certain types of human papillomavirus (HPV). Available vaccines protect against either two, four, or nine types of HPV (McClung <i>et al.</i> , 2019)
Implementation	Is the carrying out, execution, or practice of a plan, a method or any design, idea, model, specification, standard or policy for doing something.
Adolescence	Is the phase of life between childhood and adulthood, from age of 10 to 19 years.

CHAPTER ONE

1 INTRODUCTION

1.1 Background

Cervical cancer is one of the leading causes of cancer death among women and the fourth most frequently occurring malignancy among women globally (Small *et al.*, 2017). Cervical cancer has an incidence rate of 530,000 cases and causes about 270,000 deaths annually, majority of them in low- and middle-income countries (LMICs). For example, about 8 out of 10 cervical cancer deaths occur in LMICs, especially in Africa, South America, and parts of Asia (Alsbeih, 2018).

Worldwide, the highest incidence rates of cervical cancer occur in eastern, western and southern Africa, with age-standardized rates of 34.5, 33.7 and 26.8 cases per 100,000 population, respectively (Gatumo *et al.*, 2018). In sub-Saharan Africa (SSA), cervical cancer is the leading cause of female cancer deaths with 57,381 deaths reported in just 2012 (Black and Richmond, 2018).

East Africa has the highest age-standardized incidence rates for cervical cancer at 42.7 per 100,000 women per year. In Uganda, an estimated 33.6% of women in the general population harbor human papillomavirus, and 44 per 100,000 women develop the disease every year (Mukama *et al.*, 2017). Furthermore, cervical cancer is the leading cause of female cancer in Tanzania with a striking 9772 new cases and 6695 deaths each year (Runge *et al.*, 2019).

Cervical cancer is strongly associated with Human Papilloma Virus (HPV) infections. Serotype 16 and 18 of HPV are responsible for approximately 70% of invasive cervical cancer cases worldwide while serotypes 6 and 11 are responsible for 90% of ano-genital warts cases (Cunningham *et al.*, 2015). In Sub Saharan Africa, vulnerability is further escalated by low knowledge of cervical cancer risk factors among the population, and policymakers, limited access to high-quality health-care services, cervical screening

programs, and lack of functional referral systems when suspected or diagnosed (Mwaka *et al.*, 2016). It is noted that low access to screening, non-implementation of prevention programs, ineffective and inadequate treatment and poor sanitary conditions further predispose population to this preventable cancer (Momenimovahed and Salehiniya, 2017).

Cervical cancer screening and vaccination against HPV are the major public health strategies for preventing cervical cancer in the general population. Currently, two types of HPV vaccines targeting HPV 16 & 18 and HPV 6 & 11 are available. These are a bivalent vaccine (Cervarix™) targeting HPV types 16 and 18, and a quadrivalent vaccine (Gardasil™) targeting HPV 16 and 18 and HPV 6 and 11 (which cause genital warts). Additionally, a 9-valent HPV vaccine (Gardasil 9™) targeting HPV types 31, 33, 45, 52 and 58 in addition to HPV types 6, 11, 16 and 18 is also available (Orenstein *et al.*, 2016; Sankaranarayanan *et al.*, 2018)

HPV vaccine requires two doses for fully protection as per world health organization (WHO) recommendation with a six months interval from the first dose. However, the first dose has been noted to have higher coverage compared to the second dose. Without duo doses, the complete prevention and protection against future cancers remains a challenges. Such poor coverage has been noted in both high income and developing countries (Cartmell *et al.*, 2018).

Reasons for low uptake of the second dose varies with contexts and regions. In Tanzania, the HPV vaccine was first introduced in 2018 and the target was 616,734 adolescent girls aged 14 years to be vaccinated. The overall target in 2019 was 661,575 vaccinated girls aged 14 years and below, however, only 79% of the targeted population received the first dose (HPV-1) while merely 50% received the second dose (HPV-2). January to September 2020 data suggested that coverage of the first dose (HPV-1) increased to 90% and that of the second dose (HPV-2) jumped to 60%. Such increment is small and also varies from one region to another within the country.

In Dar es Salaam's municipalities, basing on the data from DHIS2, the target for HPV vaccine as from January to September 2020 was 9898, 7227, 10088, 6970 and 1381 for Ilala, Kinondoni, Temeke, Ubungo and Kigamboni respectively. The coverage was 75% first dose (HPV-1) and 49% second dose (HPV-2) for Ilala, 110% first dose (HPV-1) and 101% second dose (HPV-2) for Kinondoni, 144% first dose (HPV-1) and 122% second dose (HPV-2) for Temeke, 89% first dose (HPV-1) and 83% second dose (HPV-2) for Ubungo and 110% first dose (HPV-1) and 78% second dose (HPV-2) for Kigamboni. The data shows a low coverage of the second dose of HPV vaccine in Dar es Salaam, with Ilala municipality having the lowest coverage in the region. Factors for such low indicators remain unknown. Such evidence discrepancies pause a challenge for policy and planning to provide targeted interventions for the cervical cancer prevention in Dar es Salaam and Tanzania at large. Despite the introduction and implementation of a number of cancer control strategies by the Tanzanian government, including National cervical cancer prevention and control strategy of 2011-2015, implementation of the second dose of HPV vaccine has not achieved a significant success as compared to the first dose of HPV vaccine. This study therefore aimed to assessing how the second dose of HPV vaccine was implemented in Ilala municipality.

1.2 Problem Statement

Cervical cancer is the leading cause of cancer related morbidity and mortality in women in Tanzania. Tanzania suffers one of the highest cervical cancer burdens in the world and the highest in Eastern Africa, with an age-standardized incidence rate (ASR) of 50.9 cases per 100,000 women, and an age-standardized mortality rate of 37.5 per 100,000 women. One-tenth of the estimated 72 000 new cases and 56 000 cervical cancer deaths in Sub-Saharan African countries in the year 2000 occurred in Tanzania. Furthermore, 80% of patients diagnosed with cervical cancer die within 5 years of diagnosis (Welfare, 2015). This low survival is mainly due to advanced stage of disease at presentation and limited access to cervical cancer screening, diagnosis and treatment services.

Despite the high burden of disease, the majority of women do not have access to cervical cancer prevention services in the country. A comprehensive approach to prevention, including vaccination, screening and treatment will lead to reduction in the incidence and the mortality rate from this preventable disease.

Regardless of such potent and effective interventions, the HPV vaccine coverage is still a challenge Worldwide, including low income countries like Tanzania. Only 50% of girls under 14 years are covered with the second dose of HPV vaccine as compared to 79% of the first dose of HPV vaccine in 2019 in the Country. Last year, the coverage of the second dose of HPV vaccine was still low with only 60% as compared to 90% of the first dose as per data from DHIS2.

Although Dar es Salaam is one of the region with high vaccine coverage, the HPV-2 coverage is also low and varies from one municipality to another. Evidence for the low coverage remains unknown in Tanzania, and may vary from one area to another. Understanding how the second dose of HPV vaccine is implemented in Ilala municipality will help improving the strategy and probably change it towards increasing coverage of the second dose of HPV-2 and bring Tanzania closer to controlling and preventing cervical cancers.

1.3 Conceptual Framework

Basing on the framework, the barriers and facilitating factors for implementation of the second dose of HPV vaccine could be;

At individual/interpersonal level, the barriers would be perception of adolescent girls, fears of vaccine, lack of awareness about need for subsequent doses, socioeconomic status of the family, and social networks the family or individual interacts with (Carhart *et al.*, 2018; Kisaakye *et al.*, 2018; Lim and Lim, 2019; Vu *et al.*, 2020). At the community or societal level, this would be cultural norms and beliefs of the community about the

vaccine, lack or inadequate educational outreach which is mostly conducted by health care providers, trust on the vaccine especially on its safety and or champion in the community (role model about HPV vaccine) (Dubé *et al.*, 2018; Susanto *et al.*, 2020).

At policy and health system level, barriers associated would be failure to incorporate HPV vaccine in the National immunization programs (health systems), ineffective mandate of HPV vaccine at school entry, poor access to HFs, inadequate budget for HCPs to reach the adolescents in schools and community lack of recommendation of HPV vaccine by HCPs to adolescent girls and parents who are more likely to be trusted (Lanning, Golman and Crosslin, 2017; Boyd *et al.*, 2018; Franco *et al.*, 2019; Vu *et al.*, 2019; Nabirye *et al.*, 2020).

Resources that which may determine the implementation of the second dose of HPV vaccine includes human resources like health workers, funds, equipments, availability of vaccines and services.

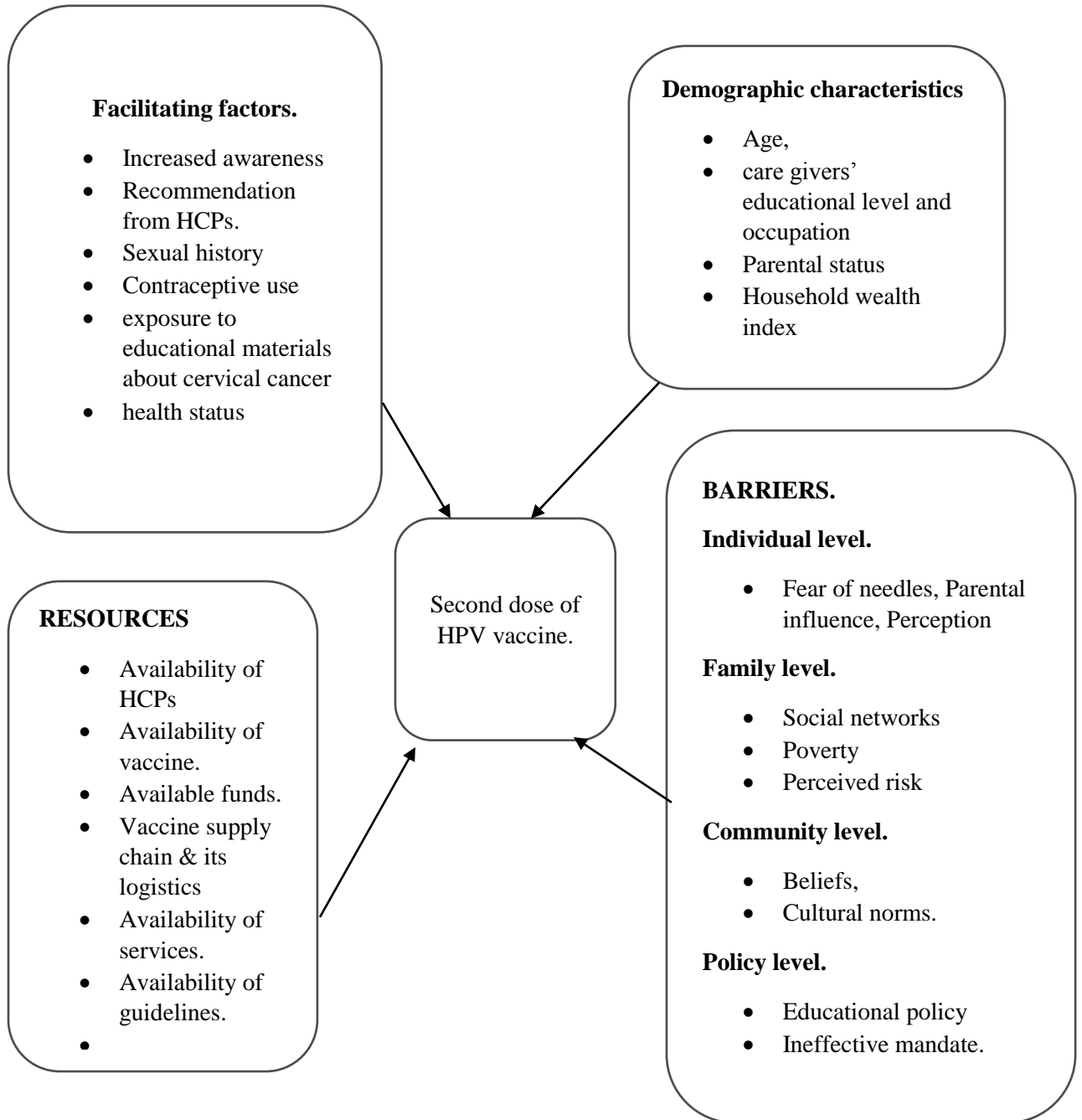


Figure 1: Coceptual frame work

1.4 Rationale

Cervical cancer represents the second most common neoplastic pathology among women and accounts for 83% of HPV attributable cancer with an estimated 500,000 diagnosed cases each year, resulting in more than 250,000 deaths globally. To date, HPV remains the most common sexually transmitted infection, and despite the availability of prevention strategies, the associated cancers represent one of the foremost causes of morbidity and mortality worldwide.

Vaccination against HPV which causes cervical cancer is one of the major public health strategies for preventing cervical cancer in the general population. Though HPV vaccine requires two doses for fully protection, the second dose has been noted to have lower coverage compared to the first dose in both high income and developing countries. Without duo doses, the complete prevention and protection against future cancers remains a challenges.

The result findings from this study that aims at assessing the implementation of the second dose of HPV vaccine in Ilala municipality would provide recommendation which could help changing strategies for policy makers and other stakeholders to increase the coverage of the second dose of HPV vaccine as a booster dose to provide full protection to women from cervical cancer disease.

1.5 Research Questions

1.5.1 Main research question.

What are the factors associated with implementation and uptake of the second dose of HPV vaccine among secondary school girls in Ilala Municipality, Dar es Salaam Tanzania?

1.5.2 Specific questions.

1. What are the demographic characteristics associated with uptake of the second HPV vaccine among secondary school girls in Ilala Municipality in Dar es salaam, Tanzania?
2. What are the factors associated with uptake of the second HPV vaccine among secondary school girls in Ilala Municipality in Dar es salaam, Tanzania?
3. What available resources are there for implementation of the second dose of HPV vaccine in Ilala municipality in Dar es salaam, Tanzania?

1.6 Objectives.

1.6.1 Broad objective.

To assess the factors associated with implementation and uptake of the second dose of HPV vaccine among secondary school girls in Ilala Municipality in Dar es Salaam, Tanzania.

1.6.2 Specific objectives.

1. To determine the demographic characteristics associated with uptake of the second dose of HPV vaccine among secondary school girls in Ilala municipality in Dar es Salaam, Tanzania.
2. To determine factors associated with uptake of the second dose of HPV vaccine among secondary school girls in Ilala Municipality in Dar es salaam, Tanzania.
- 3 To assess availability of resources for implementation of the second dose of HPV vaccine in Ilala municipality in Dar es Salaam, Tanzania.

CHAPTER TWO

2 LITERATURE REVIEW

Cervical cancer is one of the leading causes of death among women worldwide, with approximately 530,000 new cases and 275,000 deaths annually (Ogunseitán, Malouin and Martens, 2012; Alsbeih, 2018). It was estimated to have 570 000 new cases and 311 000 deaths worldwide in 2018, in which the highest regional incidence and mortality rates was seen in Africa, where the rates were 7–10 times higher than in the western world. Today, nearly 90% of deaths occur in low- and middle-income countries (Gultekin *et al.*, 2020).

Cervical cancer predominantly affects families in the lower socioeconomic groups, with a very large proportion of all cases worldwide (85%) occurring in developing countries. The reason for this is mainly lack of access to health services, including screening and treatment of precancerous lesions. The main cause of cervical cancer namely persistent infection with sexually transmitted human papillomavirus (HPV) has been clearly established, opening the way to new primary and secondary prevention strategies. Vaccination of adolescent women and screening of adult women with HPV tests followed by appropriate management of precursor lesions in the populations at highest risk has generated a realistic expectation for cervical cancer control in the near future, however, coverage and implementation of the second dose of HPV-2 is still low in both high and low income countries (Murillo *et al.*, 2016).

2.1 Facilitating factors for implementation of the second dose of HPV vaccine.

Some of the most important decisions affecting access to the HPV vaccine are made at policy level, and relate to whether the vaccine is incorporated into the healthcare system, the financial arrangements for accessing the vaccine, and the arrangements for its delivery to the target population. School-based programs where the policy is to offer HPV vaccine universally to eligible young women have been noted to be facilitating factors for implantation of HPV vaccine (Ferrer *et al.*, 2014). Strong recommendation of HPV vaccine from health care providers, educational outreach, and engagement of the

community members and presence of champion were strongly associated with increased coverage and thus implementation (Carhart *et al.*, 2018).

Facilitators which are noted to increase implementation includes momentum for improving HPV vaccination, school-entry requirement, pharmacy-based HPV vaccination, state immunization registry, and HPV vaccine funding. Strategies for improving HPV vaccination focus on addressing lack of awareness about the importance of HPV vaccination among the public and providers, advocating for policy changes around HPV vaccine coverage, vaccine education, and pharmacy-based vaccination and coordination of efforts (Cartmell *et al.*, 2018).

Other Facilitators highlighted by the participants included the use of small media such as posters and pamphlets that should be culturally tailored and written at the literacy level of the population that is being targeted. Local radio talk shows seem to have been the source of many of the myths concerning the vaccine. These talk shows can be used to present information on the facts surrounding vaccination. The radio has been used in many diverse settings to disseminate health information. Because of the ease with which it can elicit its viewer's reactions and comments it can successfully disseminate health information about HPV vaccine (Sealy, Modeste and Dyett, 2020).

In Sub Saharan Africa, strong political will, clear governance structures and effective collaboration with global partners have been major facilitators for increasing HPV vaccination coverage. Vaccine communication, community engagement, the capacity of the health workforce and sustainable financing were also mentioned as facilitating factors for improving coverage and implementation (Amponsah-Dacosta *et al.*, 2020).

2.2 Barriers for implementation of the second dose of HPV vaccine.

2.2.1 The individual and family level.

Knowledge gap, fear, sexuality belief, and healthy adolescents may be some of the barriers of HPV vaccine implementation at the parent-child level. Often parents did not perceive

the HPV vaccine as a routine part of adolescent care and did not schedule an appointment unless the child was sick. Parents frequently expressed concerns and fear regarding the vaccine safety, efficacy, side effects, and what they heard from social media. They also articulated that they did not think their children needed the vaccine because of their religion, or because their children were not sexually active, or that the vaccine promoted promiscuity. Furthermore, Lack of knowledge regarding the need, how to, and when to return for subsequent injections also prevented many adolescents from receiving their second shots (Carhart *et al.*, 2018). Fear of vaccination, especially needles, and side-effects as important reasons why some young women resisted vaccination. However, Lack of understanding, literacy issues and the stigma of vaccination against a sexually transmitted infection especially in some young women within cultures advocating monogamy and prohibiting sexual contact outside of marriage were also mentioned as the factors for low HPV vaccine coverage and vaccination completion (Batista Ferrer *et al.*, 2016).

Parents' and students' attitudes, values, knowledge, confidence, as well as the influence of parents' and students' closest social circles were significant factors associated with low coverage of HPV vaccine and dose completion. Additionally, parents' reluctant and lack of understanding on HPV vaccination, lack of healthcare providers' recommendations, perceived benefits and safety of the vaccine or vaccine-related knowledge were also noted as one of the factors at both individual and parental level (Dubé *et al.*, 2019).

Inadequate publicity on HPV and cervical cancer as well as Low risk perception of cervical cancer in an individual and family-level were noted as a barrier where by participants did not see value in being vaccinated to protect against something they did not view as a risk since they were not sexually active. Cervical cancer was rarely discussed as it was seen as a 'taboo' topic due to its connection with sexual activity, posing an individual and interpersonal barrier to vaccination and this extended to a belief which seemed relatively widely held, that if an individual had the vaccine, and others would think that they were sexually active or even promiscuous or at least planning to be (Lim and Lim, 2019).

HPV vaccine awareness, perceived safety or side effect issues, and beliefs regarding the relationship between HPV vaccine and sexual activity that HPV vaccine promoted adolescents' sexual activity was often mentioned as a reason against parents' vaccine uptake and vaccination completion for adolescent children (Vu *et al.*, 2020). Risk perception, fear of vaccine safety, perceived benefits, and lack of knowledge or awareness were observed to hinder HPV vaccination and completion at the individual level. At interpersonal level, Key influential people who affect HPV vaccination uptake were noted to be family, specifically mothers, as well as peers (Lanning, Golman and Crosslin, 2017). Misinformation received from the internet or peers, lack of knowledge about the vaccine, concern about vaccine safety, skeptical parents, and the infrequency of adolescent medical visits were narrated as barriers for HPV vaccine coverage. Many participants referenced parents' belief that their children will not engage in risky sexual behavior, referring to Christian faith or belief in abstinence before marriage (Dilley *et al.*, 2018).

In Sub Saharan Africa (SSA), lack of awareness about the vaccine was the main reason given by adolescent girls for not being vaccinated and even completing vaccination. Misconception of the HPV vaccine and fear of pain and adverse events were also reported as barriers for HPV vaccine coverage for adolescents and parents in Tanzania, Botswana, and Mozambique (Black and Richmond, 2018). However, in Uganda, most of adolescent girls received the first dose of HPV and were aware of it though they did not know the right doses and intervals between the doses which led to missing of the subsequent doses (Kisaakye *et al.*, 2018).

2.2.2 The community and societal level.

Lack of HPV vaccination champion, and limited healthcare financing capacity/resources are barrier associated factors at the community and or societal level. Poverty, geographical isolation, and limited health resources as well as lack of transportation particularly in rural communities are significantly associated factors with low HPV vaccine coverage and vaccination completion (Carhart *et al.*, 2018). It is also noted that social norms,

sociocultural perspectives on vaccine are also believed to be barriers for vaccine uptake (Dubé *et al.*, 2018).

Lack of school-based and community-based HPV vaccine programs adapted to the local community's social, cultural, and religious background are barriers for HPV vaccine implementation and vaccination completion (Susanto *et al.*, 2020). Mobilization of credible influencers who are trusted by the community (community and religious leaders), as well as national figureheads and/or celebrities, can decrease public confidence and therefore reduce vaccination coverage if not well involved (Kabakama *et al.*, 2016). Lack of knowledge surrounding the vaccine's indication, efficacy and safety, as well as a lack of community engagement to address concerns and misunderstandings, particularly in rural districts are the major factors associated with low coverage of HPV vaccination at community/societal level. It is furthermore stated that women's limited decision-making power compared to their husbands regarding their daughters receiving the HPV vaccination, coupled with a lack of engagement with male community members during the vaccine's roll-out are also attributed to low HPV vaccination uptake (Hoernke, no date).

2.2.3 The policy and health system level.

The policy and health challenges associated with HPV-2 coverage varies from one region to another and whether in high income or developing countries, vaccination policy impacts vaccine uptake like that which includes mandatory vaccination for school entry as well as funding for vaccine costs. Lack of mandate vaccination at school entry and incorporation of HPV vaccine in the National immunization programs are believed to be one of the challenges at policy level which indirectly affect health system as well (Lanning, Golman and Crosslin, 2017; Lake *et al.*, 2019). Lack of HPV vaccine mandate in state legislation, political ideology, and education policies were repeatedly noted as factors which could pause these challenges at policy level (Franco *et al.*, 2019).

At health level, lack of health education about the HPV vaccine shots and recommendations from health care providers (HCPs) are the major factors that could be associated with low HPV vaccine coverage (Boyd *et al.*, 2018). It is also observed that limited access to health facilities, inadequate budget of HPV vaccine scheduling activities for HCPs to attend vaccination site are also factors associated with low HPV-2 coverage (Vu *et al.*, 2019). Lack of healthcare providers' effective communication with parents about vaccine benefits and risks, the value and need for vaccinations, and vaccine safety was also a significant barrier associated with low vaccine uptake mentioned at health system level (Dubé *et al.*, 2018).

Insufficient funds to facilitate the transport/delivery of vaccines at the different vaccination sites and the health workers responsible for vaccinating the girls was strongly associated with low coverage of the HPV vaccine and dose completion (Kisaakye *et al.*, 2018). Low financing, and transport challenges to reach the adolescents in schools and community, myths about the vaccine, unclear communication on the target for the vaccine's coverage are among factors associated with low coverage of HPV-2. Failure of provision of HPV vaccine to private schools and private health facilities were noted as associating factors for HPV coverage and this creates inequity in access for those who prefer to utilize private health facilities for receipt of the vaccine and girls in private schools. Inadequate staff to run the work in the health center and insufficient training on HPV vaccine together with inconsistency in vaccine supply was noted in health facilities. Additionally, lack of Information, Education and Communication (IEC) materials on HPV vaccine in health facilities, schools and other communal places such as markets were observed to be contributing factors for low coverage of the HPV-2 (Nabirye *et al.*, 2020).

2.3 Resources for implementation of the second dose of HPV vaccine.

Dealing with cancer is a source of anxiety and suffering for people and their families in any country. Yet, dealing with the disease in low-income countries, where morbidity and mortality is highest due to resources and health system constraints has additional

challenges. This is especially evident with cervical cancer, which has often been coined the “disease of disparity”. These vaccines were first introduced in high-income countries in 2006, yet their use has been very limited in low-income countries due to the high vaccine price and challenging delivery logistics (Hanson *et al.*, 2015).

Clinicians and nurses should be trained on how to better communicate the importance and benefits of the HPV vaccine with parents and adolescents. Furthermore, reminder call systems should be implemented for youth and parents to increase follow-up with the 2nd dose of the HPV vaccine. Additionally, innovative and engaging educational materials need to be developed in multiple languages to inform high-risk youth and their parents, and these may include videos using creative methods to reach target populations, such as narratives, and cartoons. They can be disseminated at clinic sites, community presentations, and via mobile technology, and social media outlets (Baezconde-Garbanati *et al.*, 2017).

Cost is an important determinant of successful implementation of healthcare programs as determined in the study done in Mozambique. Health program implementation is associated with costs over and above the costs of the intervention itself and exclusion of implementation costs may bias economic evaluation results. Costs are incurred during different phases of implementation and measuring and documenting implementation-phase-specific costs may provide useful information for national policy makers and health program managers engaged in decision making for adoption of health service innovations (Soi *et al.*, 2019).

In Tanzania, most of vaccines including HPV vaccine are currently being implemented by the Government of Tanzania. Most are delivered as vertical programs. Coverage of current programs is not universal, and is limited by financial, human resource and logistic constraints (Watson-Jones *et al.*, 2016).

A strong and efficient health system is needed to sustain an effective supply chain system to deliver health commodities to achieve intended health outcomes. The success of EPI rests on the vaccine supply chain systems to transport vaccines and related supplies to the

service delivery points. Despite the successes of EPI, the interrupted supply of vaccines is not uncommon particularly in low-income countries due to challenges with cold chain systems, human resource capacity, and last-mile distribution (Bulula *et al.*, 2020).

CHAPTER THREE

3 METHODOLOGY.

3.1 Study design.

A cross sectional study design with mixed methods employing both quantitative and qualitative approaches was used. Structured questionnaire and interview guide were used as data collection tools for quantitative and qualitative data respectively.

3.2 Study area.

A study was conducted in Ilala Municipality, one of the five municipalities in Dar es Salaam region, Tanzania that include Temeke, Kinondoni, Kigamboni and Ubungu. It was a municipal that showed a lowest coverage of the second dose of HPV vaccine compared to other municipalities in Dar es Salaam and this was the reason why assesment of the implementation of HPV-2 was done in that municipality.

3.3 Sampling technique.

3.3.1 Quantitative sample.

A multi stage sampling technique for sampling school girls was applied in the study. Three wards that include Western Upanga, Gerezani and Segerea were selected in Ilala municipality by means of simple random sampling technique. The sampling frame being the list of all wards in Ilala municipality.

Two secondary schools from each pre-selected wards were selected making a total of 6 secondary schools to be involved in the study which included Tambaza, Jangwani, Dar Es Salaam, Benjamin Mkapa, Migombani and Ugombolwa secondary schools. These schools were selected by using simple random sampling technique, whereby the list of all secondary schools in the pre-selected wards formed a sampling frame.

The last stage was to select girls for participation in the study. This selection was done by using simple random selection technique, with the attendance registers of the students forming the sampling frame.

3.3.2 Qualitative sample

A purposive sampling technique for selection of eight Health care providers (HCPs) from health facilities and three CHMT members involved in implementation of HPV-2 was used. These were key custodians of information of value for the study as they were considered as key people involved in supply chain management of HPV vaccine commodities and administering of HPV vaccine to school girls and community mobilization together with all logistics which believed to be key factors for successful implementation of HPV vaccine.

3.4 Sample size

3.4.1 Quantitative approach

The sample size was calculated using Fisher's et al, (2003). The formula used to estimate the smallest possible categorical sample size was shown as below.

$$n = Z^2 * \frac{p(1-P)}{d^2}$$

Whereby

- n sample size
- Z precision level of the study (set at 95%)
- P prevalence of HPV-2 (60%)
- d margin of error allowed for the study (5%)

Computation of the sample size resulted into a total of 369 school girls to be involved in the study. However, an additional 5% girls to cover for any non-response rate was applied which made a final sample of **388** school girls.

3.4.2 Qualitative approach

Eight Health Care Providers who were all nurses from Mnazi mmoja Health Center and Ilala Regional Referral Hospital involved in the implementation of HPV vaccine (RCH clinics) and three CHMT members from Ilala DMO Office which included HPV vaccine focal person, RCHCo and school health coordinator were purposely selected to participate

in the Key Informant Interviews (KIIs). These were key custodians of information of value for the study as they were considered key people with rich information for the implementation of HPV vaccine. However, the number of participants for the qualitative section would be changing depending on the saturation point until when no new information was generated.

3.5 Study population.

Study population was all adolescent girls aged 12-14 years and above in the pre-selected secondary schools as well as health care providers and CHMT members involved in implementation of HPV vaccine in Ilala municipality.

3.6 Data collection methods

Quantitative data was collected using self-administered questionnaire after obtaining ethical approval and necessary permission from local government and school authority. Full explanation about the study was given to the respondents. Respondents' consent was gained from school girls aged 18 years and above before administration of the questionnaires. Heads of pre-selected secondary schools consented on behalf of those school girls aged less than 18 years who can not sign the consent forms. Key variables like demographic characteristics, perceptions, knowledge, awareness, myths and misconceptions that could affect HPV-2 uptake were tested.

Qualitative data from health care providers as well as CHMT members involved in implementation of HPV-2 as Key informants was collected by using an Interview Guide. The Guide included questions on assessing their understanding about HPV vaccine, and cervical cancer; their perceptions about HPV -2 and how they influence adolescent girls with regard to uptake of HPV-2. Supply chain management of HPV-2 commodities, logistics, community mobilization, delivery mechanism of vaccines and incentives for team members implementing the vaccine, factors like awareness on subsequent HPV vaccine doses, positive attitude which are paramount for a successful implementation and uptake of HPV-2.

3.7 Inclusion criteria.

All adolescent girls from pre-selected secondary schools who were present at schools during data collection as well as health care providers and CHMT members involved in implementation of HPV vaccine were legible for inclusion in the study.

3.8 Exclusion criteria

All adolescent girls who were contraindicated to take HPV vaccine, those who could not read or right as well as health care providers and CHMT members who were not willing to consent to be involved in the study.

3.9 Variables

3.9.1 Independent variables

The independent variables included in the questionnaire were designed according to the conceptual framework that included;

1. Demographic characteristics (age, caregiver's education status, parental status, caregiver's occupation, education level, household wealth index). The source of demographic data was extracted from TDHS 2015/16. The scores for household wealth index were determined using household's assets ownership like source of energy for cooking and lighting, type of house, roofing, floor, toilets, source of water, and other assets. The variables constructed were reduced using principle component analysis (PCA) to remain those that determine the wealth index. Factor loadings was used to derive levels of wealth index and categorize into quintiles (wealthiest, fourth, middle, second and the poorest). This method has been used widely in Tanzania including in Demographic and Health Surveys.
2. Awareness and knowledge in relation to HPV-2 vaccine uptake (particularly on cervical cancer, etiology, HPV transmission and prevention); The variables had fifteen questions, each with the response of "yes" or "no" and the correct response scored one point in which a score of more than or equal 7 out of 15 points were

considered good knowledge. Respondents who heard about HPV vaccine second dose were considered aware compared with those who didn't. (Rosen *et al.*, 2017).

3. Perception about HPV vaccine; adolescents' perception on HPV vaccine and cervical cancer were assessed with ten questions, each with response of "yes", "no", "don't know". A correct response to each question scored one point, more than 50% was considered good perception (Ndikom and Oboh, 2017).

4. Attitude; The variable was measured with ten questions to assess participants' attitude on HPV vaccine series, the mean level of agreement based on a likert scale from 5 (strongly agree) to 1 (strongly disagree) and the Cronbach's α was used to test for reliability where by score of more than 0.5 was considered reliable (Suryadevara *et al.*, 2016). Those who responded strongly agree, agree were considered having a good (positive) attitude and those responded strongly disagree, disagree and undecided were considered having poor (negative) attitude. The questions were adapted from Witte, Meyer, and Martell (2001).

3.9.2 Dependent variable

1. Uptake of the second dose of HPV vaccine. A direct question was asked to the participants in the study to whether they received the second dose of HPV vaccine. The answers were categorized into a "yes" or "no". Those who responded "yes" were automatically meant to have received the first dose.

3.10 Data management and analysis.

Demographic characteristics associated with uptake of the second dose of HPV vaccine.

Demographic data like age, caregiver's education status, parental status, caregiver's occupation, education level, household wealth index were constructed and analysed using SPSS version 26. Ages together with other variables like education, occupation parental status were summarized in frequencies and percentages then presented in tables.

The scores for household wealth index were determined using household's assets ownership, source of energy for cooking and lighting, type of house, roofing, floor, toilets, source of water, and other assets. The variables were constructed and reduced using principle component analysis (PCA) to remain those that determine the wealth index. Factor loadings was used to derive levels of wealth index and categorize into quintiles (wealthiest, fourth, middle, second and the poorest). This variable together with other variables above were summarized in frequencies and percentages and presented in tables as well.

Factors associated with uptake of the second dose of HPV vaccine among secondary school students

Data from adolescent girls were directly entered in to SPSS software and analyzed by using SPSS (Statistical Package for the Social Science) version 26. An odds ratio (OR) with 95% (CI) was applied to test significant association between exposure and outcome variables. Categorical variables were summarized as percentages and frequencies and presented in tables. Binary simple logistic regression was used to assess strength of association between explanatory variables and outcome variable (second HPV-2 vaccines), then a multivariable logistic regression model was performed to those factors with a P-value less than 0.2 to determine factors independently associated with uptake of the second dose of HPV vaccine.

Assessment of availability of resources for implementation of the second dose of HPV vaccine

Qualitative data from Health Care Providers and CHMT members involved in implementation of HPV-2 were analyzed by using Thematic Content Analysis. For all key informants' interviews, notes and interview transcripts were analyzed thematically following inductive approach. Transcripts together with expanded field notes were the main data to be used for analysis. To ensure familiarization with the data, multiple readings of the transcripts and expanded notes were conducted. Thematic questions were

selected and parts of text that referred to those questions were marked and coded. Similar codes considered to be pertinent to the pre-set research questions were marked and coded similar subthemes to form a theme. The emerged themes data analysis that involves stages like transcriptions, familiarization of information, coding and interpretation of data were performed. Triangulation of both qualitative and quantitative data was conducted to address the specific objectives for this study.

3.11 Ethical consideration.

Ethical approval of the study was obtained from the Muhimbili University of Health and Allied Sciences (MUHAS) and an Ethical Review Board (ERB) before conducting data collection. Permission to carry out the study in the region was obtained from the regional and district council. The purpose of the study was explained to participants and written informed consent was sought to school girls aged 18 years and above before the interview and Heads of selected secondary schools consented on behalf of those girls less than 18 years who could not consent. Health education provided to all participants before and after data collection. Privacy and confidentiality were highly considered. Information provided by the participants was disclosed only for research purposes.

3.12 Limitation and mitigations of the study.

3.12.1 Limitation.

The challenges faced by the researcher was selection biases especially in quantitative approaches where by participants were selected only from secondary schools which would probably miss a large number of adolescent girls who are non-scholars as well as those who are in primary schools but eligible for HPV vaccination as per WHO recommendation (9-14years).

3.13.2 Mitigation.

Adolescent girls from all groups eligible for HPV vaccination which include those in primary schools, secondary school and non-scholars as well should be included in the study which would increase representation that in turns increases data precision.

CHAPTER FOUR

4 RESULTS

Socio-demographic characteristics of the respondents.

A total of 389 respondents participated in the study with a response rate of 100%. Respondents aged 12 to 13 years old were 57 (14.7%) while those aged 14 years and above were 332 (85.3%). Majority of the respondents 322 (82.8%) were living with two parents secondary school level of education and above 310 (79.7%).

Respondents with self employed parents were 215 (55.3%) high compared with those whose parents were employed 140 (36.0%). There was no much difference in terms of house hold wealth index among respondents participated in the study ranging from the poorest, second, middle, fourth or even the wealthiest group (Table 1). However, according to education system in Tanzania, a child starts primary school at 7 years of age when he/she is supposed to be in secondary schools at the age of 14 years. In this study findings, 57 (14.7%) school girls were found to be aged between 12 to 13 years, this could probably due to parents sending their children to primary schools at early age below 7 years.

Table 1: Socio-demographic characteristics of the respondents

Characteristics	Frequency	Percent
<i>Age category of the girls</i>		
12 to 13 years	57	14.7
14 years and above	332	85.3
Total	389	100.0
<i>Parental status of participants</i>		
One parent	64	16.5
Two parents	322	82.8
Orphan	3	0.8
Total	389	100.0
<i>Parental educational level</i>		
No formal education	5	1.3
Primary education	74	19.0
Secondary education or more	310	79.7
Total	389	100.0
<i>Parents' occupation</i>		
Employed	140	36.0
Self employed	215	55.3
Unemployed	34	8.7
Total	389	100.0
<i>Household Wealth Index</i>		
Lowest	78	20.1
Second	77	19.8
Middle	78	20.1
Fourth	78	20.1
Highest	78	20.1
Total	389	100.0

Level of HPV vaccine uptake.

The descriptive analysis done on the characteristics of the uptake of the first and second dose of HPV vaccine indicated that, out of 389 respondents, only 137 (35.2%) received the first dose of HPV vaccine shot. Apart from those who received the first dose of HPV vaccine, only 83 respondents out of 389 received the second dose which is equivalent to 21.3% lower as compared with the first dose. The majority of the respondents did not receive both the first and second dose of HPV vaccine (Table 2). Therefore, the uptake level of the second dose of HPV vaccine is lower as compared with the first dose in Ilala municipality.

Table 2: Uptake of the first and second dose of HPV vaccine.

HPV vaccine shots	Yes	
	N	(%)
<i>Received first HPV vaccine shot</i>		
Yes	137	(35.2)
No	252	(64.8)
Total	389	(100.0)
<i>Received second HPV vaccine shot</i>		
Yes	83	(21.3)
No	306	(78.7)
Total	389	(100.0)

To determine the demographic characteristics associated with uptake of HPV-2 vaccine

Majority of the respondents who received the second dose of HPV vaccine 81 (24.4%) as well as those who did not receive 251 (75.6%) were aged 14 years and above, only few were aged between 12 to 13 years. Many of the respondents as well had both parents and were self-employment with secondary educational level. Respondents with one parents or

orphan as well as those with two parents did not show much difference in receiving the second dose of HPV vaccine, 14(20.9%) and 69 (21.4%) respectively (Table 3).

There was no much difference that was observed in receiving second dose of HPV vaccine between respondents whose parents were employed, self-employed or unemployed. This was also observed in household wealth index, which had also no much difference between the poorest, second, middle, fourth or even the wealthiest group as shown in the table below. In all group levels of the demographic characteristics, majority of the respondents did not receive the second dose of the HPV vaccine as compared with the minority who receive the vaccine

Table 3: Demographic characteristics associated with uptake of HPV-2 uptake

Variables	Received second dose of HPV vaccine				P-value (χ^2)
	Yes		No		
	N	(%)	N	(%)	
Age (years)					
12 - 13	2	(3.5)	55	(96.5)	<0.001
14 +	81	(24.4)	251	(75.6)	
Parental status					
One parent or Orphan	14	(20.9)	53	(79.1)	0.923
Two parents	69	(21.4)	253	(78.6)	
Parental educational level					
No formal education or secondary education	15	(19.0)	64	(81.0)	<0.001
	68	(21.9)	242	(78.1)	
Parents' occupation					
Employed	20	(14.3)	120	(85.7)	0.032
Self employed	53	(24.7)	162	(75.3)	
Unemployed	10	(29.4)	24	(70.6)	
Household Wealth Index					
Lowest	19	(24.4)	59	(75.6)	0.122
Second	21	(27.3)	56	(72.7)	
Middle	20	(25.6)	58	(74.4)	
Fourth	10	(12.8)	68	(87.2)	
Highest	13	(16.7)	65	(83.3)	
Total	83	(21.3)	306	(78.7)	

To determine factors associated with uptake of the second dose of HPV vaccine

The univariate logistic regression analysis done to determine factors associated with HPV vaccine revealed that, respondents with good perception, positive attitude, awareness on HPV-2 vaccine, good knowledge were positively associated with uptake of HPV-2 vaccine as compared to their counterparts (poor perception, negative attitude, not aware and poor knowledge) respectively. All variables showed statistical significance in association with second HPV vaccine shots before confounding factors were adjusted.

A total of 147 (37.8%) respondents with good perception about HPV-2 vaccine were 1.84 times more likely to receiving HPV-2 vaccine shot compared to those with poor perception (OR: 1.84; 95% CI: 1.13-3.01) P-value 0.015. Likewise, a total of 219 (56.3%) respondents with positive attitude towards HPV vaccine were 2.24 times more likely to receiving second dose of HPV vaccine compared to those with negative attitude (OR: 2.24; 95% CI: 1.33-3.79), P-value 0.03.

Those with good knowledge 186 (48.2%) towards HPV vaccine were 1.67 times more likely to receiving HPV vaccine compared to the poor knowledge group (OR: 1.67; 95% CI: 1.02-2.73) with P-value 0.041. A total of 322 (82.8%) respondents were aware about HPV vaccine second dose and these were 10.92 times more likely to receiving second dose of HPV vaccine compared to reference category (OR: 10.92; 95% CI: 2.62-45.62), P-value 0.001 (Table 4).

Table 4: Univariate Logistic regression for the factors associated with HPV-2 uptake

<i>Variables</i>	N	(%)	OR	95% CI	P value
<i>Perception towards HPV vaccine</i>					
Good perception	147	(37.8)	1.84	1.13 3.01	0.015
Poor perception	242	(62.2)	1		
<i>Attitude towards HPV vaccine</i>					
Positive attitude	219	(56.3)	2.24	1.33 3.79	0.003
Negative attitude	170	(43.7)	1		
<i>Knowledge on HPV vaccine</i>					
Good knowledge	186	(48.2)	1.67	1.02 2.73	0.041
Poor knowledge	203	(52.2)	1		
<i>Awareness on HPV-2 vaccine</i>					
Heard about HPV-2 vaccine	322	(82.8)	10.92	2.62 45.62	0.001
Not heard about HPV-2 vaccine	67	(17.2)	1		

An adjusted logistic regression analysis to control the confounding factors was conducted in order to assess the independently association between explanatory variables (demographic characteristics, perception, attitude, awareness and knowledge) and outcome variables of the respondents on HPV vaccine. Among the four factors adjusted for confounding factors, only two factors (attitude and awareness) were found to be independently associated with second HPV vaccine uptake with P-value <0.05. Other factors were not statistically significant and therefore, did not fit to be as independently associated factors.

A total of 147 (37.8%) respondents aged 12-13 years old were 86% less likely to receiving HPV-2 vaccine compared to their reference age group (14 years or above) (AOR: 0.14; 95% CI: 0.03-0.59), and it was statistically significant P-value=0.008. The same as attitude, a total of 219 (56.3%) respondents with positive attitude towards HPV vaccine were found to be statistically significant with a positive association (AOR: 2.04; 95% CI: 1.10-3.76), P-value=0.023. That means, respondents with positive attitude were 2.04

times more likely to receiving HPV-2 vaccine as compared to those with negative attitude (P=0.023).

There were 322 (82.8%) respondents who were aware about HPV-2 vaccine, these respondents were 9.16 times more likely to receiving second HPV vaccine shot compared to the group without awareness (AOR: 9.16; 95% CI: 2.11-39.85), P-value=0.003.

A total of 79 (20.3%) respondents had parents with no formal education or primary education and were negatively associated with uptake of second HPV vaccine shot. Such adolescents were 40% less likely to receiving second HPV vaccine compared to those whose parents had secondary education or above (AOR: 0.61; 95% CI: 0.30-1.22), P-value=0.159. However, this association did not reach any statistical significance level. Respondents with employed as well as self-employed parents were 140 (36%) and 215 (55.7%) respectively. Such respondents were 0.39 and 0.70 times less likely to receiving second dose of HPV vaccine compared to those whose parents were non-employed (AOR: 0.39; 95% CI: 0.14-1.05), P-value=0.063 and (AOR: 0.70; 95% CI: 0.29-1.73), P-value=0.444 respectively.

All respondents in each group of household wealth index that includes lowest 78(20.1%), second 77(19.8%), middle 78(20.1%) and fourth 78(20.1%) were respectively 1.390, 2.067, 1.520 and 0.574 times more likely to receiving second dose of HPV vaccine compared to the highest quantiles group. However, this was not statistically significant (P-value<0.05).

A total of 147 (37.8%) respondents had good perception about HPV vaccine, such respondents were 1.58 times more likely to receiving HPV vaccine compared to those with poor perception (AOR: 1.58; 95% CI: 0.88-2.84) P-value-0.124. Those with good knowledge of HPV vaccine were 186 (48.2%), and were 1.05 times more likely to receiving HPV vaccine as compared to those with poor knowledge (AOR: 1.05; 95% CI: 0.57-1.95) with P-value 0.878 (Table 5).

Table 5: Multivariate Logistic regression for the factors associated with HPV-2 uptake

Variables	N	(%)	AOR	95% CI		P value
<i>Age (years)</i>						
12-13	147	(37.8)	0.14	0.03	0.59	0.008
14+	332	(85.3)	1			
<i>Parental educational level</i>						
No formal and primary education	79	(20.3)	0.61	0.30	1.22	0.159
Secondary or above	310	(79.7)	1			
<i>Parental occupation status</i>						
Employed	140	(36.0)	0.39	0.14	1.05	0.063
Self employed	215	(55.7)	0.70	0.28	1.73	0.444
Unemployed	34	(8.7)	1			
<i>Household wealth index</i>						
Lowest	78	(20.1)	1.39	0.57	3.38	0.468
Second	77	(19.8)	2.07	0.87	4.88	0.098
Middle	78	(20.1)	1.52	0.65	3.53	0.330
Fourth	78	(20.1)	0.57	0.22	1.48	0.251
Highest	78	(20.1)	1			
<i>Perception on HPV vaccine</i>						
Good perception	147	(37.8)	1.58	0.88	2.84	0.124
Poor perception	242	(62.2)	1			
<i>Attitude on HPV vaccine</i>						
Positive attitude	219	(56.3)	2.04	1.10	3.76	0.023
Negative attitude	170	(43.7)	1			
<i>Awareness on HPV-2 vaccine</i>						
Heard about HPV vaccine	322	(82.8)	9.16	2.11	39.85	0.003
Not heard about HPV vaccine	67	(17.2)	1			
<i>Knowledge on HPV vaccine</i>						
Good knowledge	186	(48.2)	1.05	0.56	1.95	0.878
Poor knowledge	203	(52.2)	1			

Availability of resources for implementation of HPV vaccine second dose

There were eleven key informants consented to be involved in the KIIs, three from DMO office in Ilala municipality named as CHMT members (one HPV focal person, DRCHCo and Distric school health coordinator) and eight from health facilities named as health care providers. Majority of them were nurses with only one key informant as an environmental health officer. Three of them with certificate, five with diploma and three with degree and above (Table 6).

Table 6: Demographic characteristics of key informants

Participants	Male	Female	Total
<i>Institution</i>			
DMO office (CHMT)	1	2	3
Health facility (HCPs)		8	8
Others			
<i>Age (years)</i>			
20-24	0	0	0
25-29	0	0	0
30-34	0	2	2
35-39	0	3	3
40-44	1	1	2
45+	0	4	4
<i>Level of education</i>			
Primary	0	0	0
Secondary	0	0	0
Certificate	0	3	3
Diploma	0	5	5
Degree or above	1	2	3
<i>Occupation status</i>			
Doctor	0	0	0
Nurse	0	10	10
Others	1 (Environment Health officer)	0	1
<i>Total</i>	1	10	11

Qualitative results

Table 7: Summary of codes and themes on qualitative analysis plan.

Initial codes	Code	Themes
<ul style="list-style-type: none"> • Communication with school management. • Identification of eligible girls for vaccination 	Initial communication with school management is made prior to physical visit for identification of eligible girls	Implementation of HPV-2 vaccine.
<ul style="list-style-type: none"> • HPV-2 provided after 6 months • Provided to students at schools. • Provided to out of school girls gathered at VEO or WEO offices 	Provided to in and out of school girls 6 months later after the first dose.	
<ul style="list-style-type: none"> • Vaccine requested from MSD • Stored in the DVS • Supplied to health facilities monthly as per their request 	Vaccine requested from MSD, stored in the district vaccine store and supplied to facilities on monthly bases according to their request.	HPV vaccine supply chain
<ul style="list-style-type: none"> • No challenges with medical equipment • HPV vaccines are available all the time • Equipment supplied monthly 	Adequate supply of medical equipment and supplies	Resources allocation for HPV-2 implementation.
<ul style="list-style-type: none"> • Lack of enough HCPs • Vaccination-schedule cancellation due to shortage of staffs • Overwhelmed staffs when others go for vaccination 	Shortage of human resources (health care providers)	
<ul style="list-style-type: none"> • Allowance delayment • Transport allowance paid after work. 	Lack of timely payment of transport allowance to HCPs	
<ul style="list-style-type: none"> • Parents negative perception on vaccine that it causes cancer and infertility • Fear of needle • Adolescents' rejection from parents 	Individual, social-cultural, organizational and policy level barriers for implementation of second dose of HPV-2 vaccine	Acceptability of HPV vaccine

Implementation of HPV-2 vaccine

HPV vaccine is implemented in both public and private schools as well as in the health facilities. Health care providers initially communicate with teachers to identify eligible students before they go for vaccination

“HPV-2 vaccine is implemented in both Government and private schools, whereby health care workers identify the schools around their ward and communicate with school health teachers to identify school girls eligible for HPV vaccine. Once identified, a school health teacher then communicates with HCWs for vaccination” (CHMT member).

However, the challenges remain with those adolescent girls out of schools in terms of mobilization as it was noted by one of the participants

“We don't get challenges in schools in terms of communication because we give prior information to school administration before we go for vaccination, but for those non scholar girls, you might find that the local government chairperson has no information, there becomes no work because in the community there are people responsible for advertising the specific day for vaccination, if that was not done before then nothing we can do” (Health care worker).

Supply chain of HPV vaccine

HPV vaccines are received in the country from the manufacturers through ministry of health under National immunization and vaccine development program and stored in the central vaccine store which is at MSD. MSD then distributes to the regional level where they are stored in the regional vaccine store before distributed to the council level. At the council level, HPV vaccines are stored in the freezers and refrigerators for cold chain maintenance before distributed to health facilities to reach the end users. Therefore, supply chain of HPV vaccines had no problems as was mentioned by one of the key informant

“Supply chain is good! We have a center here which we call DVS (vaccine store), this stores all vaccines including that of HPV vaccine. Thereafter, we supply to the health facilities according to their request, however, we don’t supply a bulky of vaccine because we give them monthly. Therefore, we get vaccine from MSD according to what we order and we have also a standby generator that works in case electric power is off” (CHMT member).

Resources allocation.

Health care providers from health facilities are the main stakeholders for implementation of HPV vaccine in both primary and secondary schools. They identify schools around their facilities, communicate with teachers to identify eligible school girls for vaccination, go to vaccination sites (schools) and give health education to school girls before vaccination. However, shortage of health care providers was noted by one of the participants that sometimes leads to outreach schedule cancellation

“Vaccines have been there many years ago, and we have been training and orienting HCPs in our health facilities whenever a new vaccine comes. We have no specific health care providers only responsible for vaccination. Therefore, shortage occurs mainly in the health facilities due to inadequacy of HCPs, this becomes difficult for them to divide and go for vaccination when one of them is either sick or has an emergency. So, sometimes vaccination-schedule cancellation occurs due to inadequate health care providers from the respective facility” (CHMT member).

This also correlates with one of the health care providers as she narrated

“Shortage of health care providers is there because when others go for vaccination, those who are left at the health facility become overwhelmed because of many patients at RCH clinics. So, you get tired until those who went for vaccination come back then you can relax. It could be better if there would be permanent health care providers for vaccination only in steady of taking ones

among us because this reduces man power at that particular day” (Health care worker)

Medical equipment and supplies including vaccines, syringes, safety boxes, vaccine carriers and cards are required for scaling up the implementation of HPV vaccines. However, there was no shortage of medical equipment and supplies required for implementation of HPV vaccine in Ilala municipality as was mentioned by one of the participants

“Medical equipment and supplies including vaccines are adequate and available all the time. We have never faced any shortage, vaccines and other medical equipment are available without any problems” (Health care provider). It was furthermore narrated that equipment are supplied monthly together with vaccines and this has not been a problem in implementing HPV vaccine “We have no problem with medical equipment and supplies here. Syringes, vaccine carriers, safety boxes and other equipment are available and are supplied monthly together with vaccines” (Health care provider).

During implementation of HPV vaccine, Health care providers make communication with teachers to the respective schools prior to visiting so that girls eligible for vaccine can be gathered. HCPs then prepare medical equipment and supplies including vaccine itself ready to attend vaccination site, this needs transport expenses to reach the site. However, there is a delay and inconsistency provision of transport means to reach the vaccination site as it was stated by one of the participants

“In case of money or payments, there is a set budget from Basket fund. However, this always delay to be disbursed from the government. So, we communicate with hospital management to provide us transport either in terms of money or a car that help us reach schools for vaccination” (Health care worker).

Lack of incentives and motivation to health care providers responsible for implantation of HPV vaccine were among the issues which demoralized Health care providers

“There should be a motivation at least to encourage us work more, though this is one of our responsibilities as health care providers, but when there is an incentive! It makes us become more motivated.” (Health care worker).

Acceptability of HPV vaccine.

Negative perception from parents about HPV vaccine that it causes cancer and infertility was observed to be one of the factors which sets back HPV vaccine coverage as it was stated by one of the participants

“Social- cultural barriers are all about false beliefs from the community that vaccines causes cancer and make girls infertile. Health education is provided but that is what's happening to the community. Government is also trying much to advocate on the importance of vaccines but the knowledge level to to the community is low” (Health care worker).

Apart from negative perception from parents, an individual barriers for HPV vaccine uptake from adolescent girls themselves were noted due to fear of needles as it causes pain and discomfort at injection sites

“Adolescent girls are so scared of needles, but thanks that they understand when we educate them on the importance of the vaccines. others normally start crying when we start vaccination but sometimes their fellow peers already vaccinated encourage them and finally agree to be vaccinated” (Health care worker).

Adolescent girls’ rejection by their parents from taking HPV vaccine shots was also one of barriers for HPV vaccine uptake, this may be due lack of self dependence of young adolescents on whether to or not take vaccine as they entirely depend on their parents for decision making. This was well narrated by one of the health care providers

“A child tells you that its my parents who don’t want me to be vaccinated, and others wish to get vaccines but as long as they are told by their parents not to take vaccines, they resist” (Health care worker).

CHAPTER FIVE

5 DISCUSSION

5.1 Discussion

This study aimed at determining the demographic characteristics associated with HPV-2 uptake, factors that may be associated with uptake of second HPV vaccine shots and assessing the availability of resources for the implementation of the second dose of HPV vaccine in Ilala municipality. A total of 389 adolescent girls from six secondary schools in Ilala municipality, Dar es Salaam consented to be involved in the study. In addition, eleven key informants that includes three CHMT members from DMO office in Ilala municipal and eight health care providers from different health facilities were also consented and involved in this study.

Among the demographic characteristics tested for an association with dependent variable, age was negatively found to be an independent predictor of second HPV vaccine uptake while awareness on HPV-2 vaccine and good attitude towards HPV vaccine were positively associated. Adolescent girls with young age were less likely to receiving HPV vaccine, while those with good attitude and awareness on HPV vaccine were more likely to receiving HPV-2 vaccine. Adequate health care providers as well as consistent availability of medical equipment and supplies including HPV vaccines themselves together with timely payment of transport allowances to health care providers to reach vaccination sites were resources to inhence implementation of HPV-2 vaccine and its uptake in this study.

HPV-2 vaccine uptake among adolescent girls in Ilala municipality

The uptake of the second dose of HPV vaccine among secondary school adolescent girls was found to be 21.3% which is lower compared to the first dose. This finding was in line with another study done in Uganda which revealed 17.6% uptake level of the second HPV vaccine lower compared to the first dose (Kisaakye *et al.*, 2018). This low uptake of the

second HPV vaccine shot may have many reasons in regards to the local context, which could be due to young age to have self independence in decision making and lack of awareness on the importance of getting second dose of HPV vaccine, this finding was in line with the study done in US which revealed young age and low level of awareness as factors for low coverage(Wilson *et al.*, 2016). Negative perception on HPV vaccine from parents that it causes cancers and infertility to their adolescent girls as well as fear of needles to some girls especially in repeating the second dose because of pain could also be one of the reasons for this low uptake as it was also mentioned by one of the health care providers during interview in this study.

Demographic characteristics associated with HPV-2 vaccine

In our study findings, age was found to be independently associated with uptake of the second dose of HPV vaccine where young aged group (12-13 years old) were less likely to receiving second HPV vaccine shot compared to older age groups (14 years or above). This study finding was in line with the study done in Hong Kong which revealed that age was a factor positively associated with both knowledge and practice but young age had lower likelihood of being vaccinated with HPV vaccine (Leung and Law, 2018). The reason for this would be lack of self dependence in decision making whether to or not take the vaccine as most of them depend on their parents for decision making. This is well explained in the study done on intergrative review of the influences on decision-making of young people about human papillomavirus vaccine which revealed that, young adolescents girls considered themselves as passive in the decision-making process and were happy for their parents to make the decision (Sisson *et al.*, 2019).

In this study, there was no significant difference in receiving second dose of HPV vaccine that was observed among different levels of wealth quantiles, this could be due to the reason that the vaccine is given in the schools where children from different households with all social strata attend. The study being done in urban area where campaigns towards HPV vaccination are easily accessed, would also be one of the reasons for having no difference between these wealth quantiles. This finding was in line with another study

done in South Africa on the magnitude and determinants of missed opportunities for childhood vaccination which revealed that, wealth was not an independent predictor of vaccination as it had no association in the multivariate analysis (Ndwandwe, Nnaji and Wiysonge, 2020). However, this differs from a study done in the United states on HPV vaccination coverage on teen girls which showed that, regardless of elimination of financial barriers attributable to the cost of vaccines for adolescents entitled to publicly purchased vaccines at no cost from providers enrolled in their state's Vaccines for Children Program, the adolescents lived in low-income households had lower vaccination coverage in general compared to those from high-income households, this significant difference could be due to different location of study area (Smith *et al.*, 2016).

Factors associated with uptake of the HPV-2 vaccine

Adjusted logistic regression analysis done on perception, attitude, knowledge and awareness found that, only awareness about HPV vaccine second dose and attitude were factors independently associated with HPV-2 vaccine uptake compared to other factors like knowledge and perception which were not statistically significant after controlling potential confounders. However, these two factors (perception and knowledge) showed statistical significance in the univariate analysis before controlling confounding factors.

Widespread public awareness about HPV vaccination via local engagement, mass media and/or social media is of paramount in increasing second dose of HPV vaccination among adolescent girls (Cartmell *et al.*, 2018). Awareness about HPV vaccine second dose among school adolescent girls in this study was found to be independent predictor of second HPV vaccine uptake. This finding correlates with another quantitative cross sectional study done in Veron, Italy on awareness of HPV and drivers of HPV vaccine which showed awareness as a main predictor of HPV vaccine uptake (Cocchio *et al.*, 2020). Furthermore, this finding was in line with another mixed study design done in Lira District, Uganda on the level and factors associated with uptake of human papillomavirus infections vaccine among female adolescents which revealed that, factors associated with uptake of HPV vaccine included having full information about the vaccine, participating

in community outreaches as well as availability of vaccines (Kisaakye *et al.*, 2018). Regardless of many respondents in this study being aware of HPV vaccine by 82.8%, which was a bit lower compared with the study done in Hong Kong with high awareness 92.8% (Leung and Law, 2018), coverage of both first and second dose of HPV vaccine is markedly low. This could be due to lack of self dependence of adolescent girls on decision making whether to or not take vaccination as well as negative perception of parents on HPV vaccine that it causes cancer and infertility as it was mentioned by one of the key informants in this study.

Studies on HPV vaccine acceptability have reported parents' health behaviours, attitude, beliefs and knowledge about HPV as significant predictors of adolescent girls' HPV vaccination. In turn, individual attitudes and beliefs around health and vaccination are likely to be influenced by parental views and behaviours (Tung, Machalek and Garland, 2016). In our study findings, attitude was found to be an independent predictor of HPV vaccine uptake among adolescent girls. Adolescent girls with positive attitude towards HPV vaccine were positively associated with HPV-2 vaccine uptake. This finding was consistently in line with another study done in Poland on the factors that predict parental willingness to have their children vaccinated against HPV vaccine in a country with low HPV vaccination coverage, which indicated that parental positive attitudes toward vaccinating adolescent children against HPV vaccine were generally favorable for HPV vaccine inclination (Ganczak, Owsianka and Korzeń, 2018). Furthermore, a study done in Italy supported this finding that, positive attitude was positively associated with HPV vaccine completion that includes the beliefs that HPV vaccine is important for the health of females (Suryadevara *et al.*, 2016).

HPV vaccine knowledge promotes coverage in various contexts. Media, medical practitioners, teachers and parents play a significant role in fostering HPV vaccine knowledge which in turn leads to increased HPV-2 vaccination coverage (Yesaya, 2020). Knowledge on HPV vaccine among school girls was found to be low, the reasons for low level of knowledge could be due to lack of perceived benefits and the importance of HPV

vaccine to adolescent girls. This finding was in line with a study done in Australia on Knowledge, attitude and perception of immigrant parents towards human papillomavirus vaccination that revealed a low level of knowledge on HPV vaccine among immigrants (Netfa *et al.*, no date). However, knowledge in this study was not statistically significant after being adjusted in the logistic regression model.

Availability of resources for implementation and uptake of HPV-2 vaccine

Implementation of HPV vaccine

HPV vaccine is implemented in both public and private schools as well as in the health facilities. Health care providers identify the schools around their ward and communicate with school health teachers to identify girls eligible for HPV vaccine. Once identified, a school health teacher then communicates with HCPs for vaccination. Those few who miss the vaccine at schools are organized by School health teachers so that they can be taken to the health facilities for vaccination. The challenges however, remain with non-scholar adolescent girls in terms of reaching and mobilizing them for HPV vaccination. This is well explained by a study done in low and middle-income countries including Tanzania on Human papillomavirus (PHV) vaccine coverage achievements, which revealed that, communities with out of school girls were generally hard to reach and difficult to identify (Gallagher *et al.*, 2017)

Supply chain of HPV vaccine

HPV vaccines are received in the country from the manufacturers through ministry of health under National immunization and vaccine development program and stored in the central vaccine store which is at MSD. MSD then distributes to the regional level where they are stored in the regional vaccine store before distributed to the council level. At the council level, HPV vaccines are stored in the District vaccine store (freezers and refrigerators) for cold chain maintenance before distributed to health facilities to reach the end users. Therefore, supply chain of HPV vaccines has no problems and there is no shortage or an interrupted supply of vaccines.

Resources allocation.

Resources play a key role as determinant factors for successful implementation and uptake of HPV vaccine, this includes human resources, medical equipment and supply as well as vaccine itself. Trained health care providers from health facilities are the main stakeholders for implementation of HPV vaccine in both primary and secondary schools as well as in the health facilities. They identify schools around their facilities, communicate with teachers to identify eligible school girls for vaccination, go to vaccination sites (schools) and give health education to school girls prior to vaccination.

Implementation of second HPV vaccine shot has cost implication. Transport allowances is one of the resources required for implementation of HPV vaccine shots. Health care providers responsible for giving HPV vaccine to primary and secondary schools girls need transport allowance either in terms of money or any other means in order to reach the vaccination sites. This is due to the reason that, some of the schools are not close from their respective health facilities where they work. Therefore, health care providers have to be given transport allowances either directly from the government or from their respective hospital management to ensure that they reach the vaccination sites. However, result findings in this study revealed untimely provision of transport allowance that could affect the implementation of second HPV-2 vaccine shots. This finding is supported by a study done in the US on experience of operational costs of HPV vaccine delivery strategies in Gavi-supported demonstration projects which revealed that school-based delivery had the highest service delivery cost compared to facility-based which is due to transport cost incurred (Botwright *et al.*, 2017). Low financing, myths about the vaccine, unclear communication on the target for the vaccine's coverage and transport challenges to reach the adolescents in the community was another study done in Uganda which supports this finding (Nabirye *et al.*, 2020).

In this study, findings revealed a shortage of health care providers which increases burden to other health workers left at the facilities when others go for vaccination, this sometimes leads to outreach schedule cancellation. This was in consistent with a study done in

Tanzania as it stipulated the impact on health facilities when health workers carry out additional outreach work, as it was raised by a KI (a senior MoHSW representative) who narrated a workforce shortage of 48%, that the same health worker, who is based at the dispensary, is also supposed to provide other health services, but is asked that same person to go out to conduct outreach services (Watson-Jones *et al.*, 2016). This is furthermore, supported by another mixed study design done in Uganda which revealed inadequate staffs to run the works at health facility when other health care providers go to the outreach clinics for HPV vaccine as one of the barriers for implementation of the second dose of HPV vaccine (Nabirye *et al.*, 2020).

Medical equipment and supplies including vaccines, syringes, safety boxes, vaccine carriers and cards are among the commodities required for scaling up the implementation of HPV vaccines. Interruption of supply to any of these equipment and supplies including HPV vaccine may lower down scaling up of HPV vaccine especially HPV-2 vaccine as it may need waiting time for them to be supplied. This finding was consistent with a study done in Uganda on the level and factors associated with uptake of human papillomavirus infections vaccine among female adolescents which showed that, prevalence of uptake of the HPV vaccine was five times higher among adolescents who reported that the vaccines were available at HPV vaccination site at all their visits compared to those who reported that the vaccines were not available at all visits (Kisaakye *et al.*, 2018). However, in this study findings, there was no shortage of medical equipment and supplies required for implementation of HPV vaccine in Ilala municipality as equipment and supplies were available all the time and were monthly delivered to health facilities as explained by one of CHMT members and health care provider.

CHAPTER SIX

6 CONCLUSION AND RECOMMENDATION

6.1 Conclusion

Uptake of second dose of HPV vaccine among adolescent girls in Ilala municipality was low. Factors found to be independently associated with HPV vaccine uptake included young age group of adolescent girls, good attitude towards HPV vaccine and awareness about HPV vaccines. Addressing insufficiency of health care providers as well as consistent availability of medical equipment and supplies including HPV vaccines themselves together with timely payment of transport allowances to health care providers to reach vaccination sites were resources that would enhance implementation of HPV-2 vaccine and its uptake.

6.2 Recommendations

Through evidence gathered in this study, it is recommended that, the Government of Tanzania through the ministry of health, community development, gender, elderly and children to conduct regular HPV vaccination community sensitisations about awareness on HPV-2 vaccine as well as its importance so as to increase its coverage. Building a positive attitude that can change community negative perception about HPV vaccine that it causes cancer and infertility to their adolescent girls, strengthening HPV vaccination community outreaches as well as ensuring regular availability of vaccines at all levels of the implementation is highly recommended that can increase uptake of HPV-2 vaccine and its implementation.

These study findings may pave more studies on HPV vaccines to be conducted specifically to parents and adolescent girls together with other community members to really have rich information about negative perception on HPV vaccine as it was stated out by most of the key informants in this study. Factors associated with untimely uptake of HPV-2 vaccine should furthermore be escalated that may in turn increase its uptake.

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APPENDICES

MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES



APPENDIX I: INFORMED CONSENT FORM (ENGLISH VERSION).

Introduction.

Greetings,

I am **Dr. NCHANG'WA NHUMBA**, a Masters student from Muhimbili University of Health and Allied Sciences pursuing masters of Science in project management monitoring and evaluation in health. I am conducting a study on the evaluation of the implementation of the second dose of HPV vaccine in Ilala Municipality – Dar es salaam, Tanzania. I therefore, request you to participate and cooperate in my study whether me or my research assistants when come to you. Please ask anything about this study you probably do not understand.

Purpose of the study

This study aims to assess the implementation of the second dose of HPV vaccine in Ilala Municipality-Dar es Salaam, Tanzania. Therefore, you will be requested to answer some questions that seek in assessing the implementation of the second dose of HPV vaccine in Ilala Municipality-Dar es Salaam, Tanzania. I would ask you to let me and my research assistants record, audial tape and note down what you will be telling me. This will approximately take 45 minutes of your valuable time.

What participation involves

If you agree to participate in this study, you will be required to sign this consent form and respond to some questions that you will be asked in relation to this study.

Confidentiality

I would like to assure you that all the information collected will be confidential. Only researchers working in this study will have access to the information. We will use study identification number on the records of the information you provide.

Risks

There is no any invasive procedures expected in this study, therefore, no harm is anticipated to occur by you joining this study.

Rights to withdrawal and alternatives

Taking part in this study is completely at your will. If you choose not to participate in this study or if you decide to stop participating in the study you will not get any harm. You can stop participating in this study at any time, even if you have already given your consent. Refusal to participate or withdraw from the study will not involve penalty or loss of any benefits to which you are otherwise entitled.

Benefits

The information you provide will help in assessing the implementation of the second dose of HPV vaccine and thus call upon policymakers and stakeholders review strategies and policies towards controlling and preventing cervical cancers in Tanzania. There will be no direct benefit from this study is expected.

Agreement

Do you agree to participate in this study?

YES

I have read and understood the contents in this form. I agree to participate in this study.

Signature of Participant _____

Date _____

Signature of the Researcher

Date

NO

Contact Information.

Dr. NCHANG'WA NHUMBA,
Principal Investigator,
Muhimbili University of Health and Allied Sciences (MUHAS),
P.O.Box 65001, Dar es Salaam,
Mobile No: +255756828567.

Prof. Bruno Sunguya,
Chairman of Research and Ethics Committee.
Muhimbili University of Health and Allied Science (MUHAS),
P.O. Box 65001 Dar es Salaam.
Tel No: 2150302-6.

APPENDIX II: CONSENT FORM (KISWAHILI VERSION).**Utangulizi**

Jina langu ni NCHANG'WA NHUMBA, ni mwanafunzi wa shahada ya uzamili na mtafiti kutoka Chuo Kikuu cha Afya na Sayansi Shirikishi Muhimbili. Ninafanya tathmini juu ya utekelezaji wa chanjo ya pili ya kuzuia maambukizi ya saratani ya shingo ya kizazi katika manispaa ya Ilala mkoa wa Dar es Salaama, Tanzania. Kwahiyo, naomba ushiriki wako kwenye huu utafiti na kama una swali lolote kuhusiana na huu utafiti pengine hujaelewa, waweza uliza bila tatizo.

Dhumuni la utafiti

Lengo la utafiti huu ni kuchunguza utekelezaji wa chanjo ya pili ya kuzuia maambukizi ya saratani ya shingo ya kizazi katika manispaa ya Ilala mkoa wa Dar es Salaam. Hivyo unaombwa kushiriki katika hii tafiti kwani naamini utakuwa na majibu sahihi yanayohitajika katika hii tafiti. Nakuomba pia kuniruhusu mimi na wasaidizi wangu kurekodi na kuandika kile utakachosema ili kusaidia wakati wa kuandikia taarifa ya utafiti huu.

Kinachohusika kwenye hii tafiti

Kama utakubali kushiriki kwenye hii tafiti, mtafiti atafanya mahojiano ya kina kuhusiana na mtazamo wako wa namna chanjo ya pili ya kuzuia maambukizi ya saratani ya shingo ya kizazi inavyotekelezwa katika manispaa ya Ilala mkoa wa Dar es Salaam. Mahojiano haya yanaweza chukua dakika 45 mpaka lisaa limoja.

Usiri

Napenda kukuhakikishia kuwa taarifa zote zitakazopatikana zitakuwa ni za ziri, zitatumika kwa madhumuni ya tafiti tu. Hatutotumia majina kwenye rekodi zozote zitakazofanyika.

Madhara

Sitegemei kutakuwa na kitu chochote kitakachotokea kwako kwa kushiriki katika utafiti huu, wala hakuna madhara yeyote yatakayotokea kwako katika kushiriki kwenye huu utafiti.

Faida

Taarifa utakazotoa zitasaidia kupata picha halisi ya namna chanjo ya pili ya kuzuia maambukizi ya saratani ya shingo ya kizazi inavyotekelezwa katika manispa ya Ilala mkoa wa Dar es Salaam na hivyo kufungua njia kwa serikali na wadau wengine kujua namna bora ya kufanya chanjo ya pili kuongezeka sawasawa na ile ya kwanza na hivyo kupunguza maambukizi na vifo vitokanavyo na ugonjwa wa saratani ya shingo ya kizazi. Hakuna faida ya moja kwa moja ambayo utaipata.

Haki ya kushiriki

Kushiriki kwenye hii tafiti ni ridhaa yako mwenyewe. Kama utachagua kutoshiriki au ukiamua kusitisha kushiriki basi hutopata madhara yoyote. Unaweza kuamua kuacha kushiriki mda wowote. Hakuna tozo yoyote itakayokuwepo kama ukikataa kushiriki. Kama umekubali kuhojiwa, tafadhali saini hapa:

Makubaliano.

Saini yako hapa chini inamaana kwamba umesoma habari hapo juu, umeelewa na uko tayari kushiriki kwenye utafiti huu kwa hiari.

Mimi..... nimesoma na kuelewa kilichoelezwa kwenye fomu hii na maswali yangu yamejibiwa kiufasaha. Hivyo ninakubali kujibu maswali yatakayoulizwa.

Sahihi ya mhojiwa Tarehe

Sahihi ya mkusanya taarifa.....Tarehe.....

Mawasiliano.

Dr. NCHANG'WA NHUMBA,

Mtafiti Mkuu, Mwanafunzi wa shahada ya pili ya usimamizi wa miradi, ufuatiliaji na tathmini katika Afya.

Chuo Kikuu cha Afya na Sayansi Shirikishi Muhimbili

S.L.P 65001, Dar es Salaam,

Namba ya simu: +255756828567.

Prof. Bruno Sunguya,

M/kiti wa Kamati ya Maadili ya Tafiti

Chuo Kikuu cha Afya na Sayansi Shirikishi Muhimbili

S.L.P 65001 Dar es Salaam.

Namba ya Simu: 2150302-6.

APPENDIX III: QUESTIONNAIRES FOR SCHOOL CHILDREN**(ENGLISH VERSION)****MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES****SCHOOL OF PUBLIC HEALTH AND SOCIAL SCIENCES****Introduction**

This is the questionnaire that focuses on assessing general knowledge about cervical cancer and Human papillomavirus vaccine which may address the research questions of this study entitled “implementation of the second dose of HPV vaccine in Ilala Municipality-Dar es Salaam, Tanzania”.

The questionnaire has thirty-six (36) questions that has a multiple choice questions and others with “yes”, “no” or “don’t know” responses. You will be required to choose the correct answer and response from each question provided in this questionnaire. Ask any question for clarification that seems not clear. Do not write your name in the questionnaire provided for confidentiality and ethical issues.

ID No:

Demographic characteristics of a participant
1. Age a) 9 b) 10 c) 11 d) 12 e) 13 f) 14 or more

2. Girls' parental status		
a) one parent		
b) Both parents		
c) Orphan		
3. Care giver's education status.		
a) No formal education		
b) Primary education		
c) Secondary education or more		
4. Care giver's occupation		
a) Employed		
b) Self employed		
c) Unemployed		
Household wealth index	Yes	No
5. Does any member of the household own:		
a) A watch?		
b) A mobile phone?		
c) A bicycle?		
d) A car or a truck?		
e) A boat with a motor?		
6. Does your household have:	Yes	No
a) Electricity that is connected?		
b) A radio in working condition?		
c) A television in working condition?		
d) A computer in working condition?		

e) A refrigerator in working condition?		
f) Battery or generator for power?		
g) An iron (charcoal or electricity)?		
7. Do you have a separate room which is used as a kitchen?		
8. Do you share the toilet with other households?		
9. Does any member of the household have a bank account?		
Awareness and knowledge about HPV vaccine and cervical cancer.		
Variable	Response	
	Yes	No
10. Have you heard about HPV-2 vaccine?		
11. HPV can lead to:		
a) Anal warts		
b) Oral cancer		
c) Genital warts		
d) Cervical cancer		
12. HPV vaccine prevents from:		
a) Anal cancer		
b) Oral cancer		
c) Cervical cancer		
d) Genital warts		
13. HPV is transmitted through:		
a) Air droplets?		

b) Contact with body fluids?			
c) Sexual intercourse?			
14. HPV infection can be prevented with:	Yes	No	
a) Vaccine			
b) Use of condom			
c) Antibiotics			
d) Sexual abstinence			
Perception about HPV vaccine and cervical cancer			
Perception	Yes	No	Don't know
15. HPV vaccination can prevent cervical cancer			
16. The HPV vaccine increases the occurrence of cervical cancer			
17. HPV is the main cause of cervical cancer			
18. Having multiple sex partners reduce the risk of HPV infection			
19. Sex at an early age increases risk of HPV infection			
20. HPV is transmitted sexually			
21. HPV infection can easily be noticed			
22. Cervical cancer is a sexually transmitted disease			
23. HPV vaccine prevents against contacting genital warts			
24. The virus can clear from the body without treatment in some individuals			
Attitude about HPV vaccine completion			
25. HPV vaccine is important for the health of girls/women			

<ul style="list-style-type: none"> 1. Strongly disagree 2. Disagree 3. Undecided 4. Agree 5. Strongly agree 		
26. I do not plan to receive HPV vaccine		
<ul style="list-style-type: none"> 1. Strongly disagree 2. Disagree 3. Undecided 4. Agree 5. Strongly agree 		
27. HPV vaccine is effective in preventing genital cancers		
<ul style="list-style-type: none"> 1. Strongly disagree 2. Disagree 3. Undecided 4. Agree 5. Strongly agree 		
28. Receiving HPV vaccine will change my sexual behaviours		
<ul style="list-style-type: none"> 1. Strongly disagree 2. Disagree 3. Undecided 4. Agree 5. Strongly agree 		

<p>29. HPV vaccine is unnecessary</p> <ol style="list-style-type: none">1. Strongly disagreeDisagree2. Undecided3. Agree4. Strongly agree		
<p>30. It is hard to find time to get all doses of HPV vaccine</p> <ol style="list-style-type: none">1. Strongly disagree2. Disagree3. Undecided4. Agree5. Strongly agree		
<p>31. I don't know much about the vaccine so will not take it</p> <ol style="list-style-type: none">1. Strongly disagree2. Disagree3. Undecided4. Agree5. Strongly agree		

<p>32. I plan to complete the HPV vaccine series</p> <ol style="list-style-type: none"> 1. Strongly disagree 2. Disagree 3. Undecided 4. Agree 5. Strongly agree 		
<p>33. I have already completed the HPV vaccine series</p> <ol style="list-style-type: none"> 1. Strongly disagree 2. Disagree 3. Undecided 4. Agree 5. Strongly agree 		
<p>34. HPV vaccine is not safe</p> <ol style="list-style-type: none"> 1. Strongly disagree 2. Disagree 3. Undecided 4. Agree 5. Strongly agree 		
<p>HPV vaccine coverage</p>	<p>Yes</p>	<p>No</p>
<p>35 Have you received the first HPV vaccine shot?</p>		
<p>36 Have you received the second dose of HPV vaccine shot?</p>		

**APPENDIX IV: QUESTIONNAIRES FOR SCHOOL CHILDREN (KISWAHILI
VERSION)**

**CHUO KIKUU CHA AFYA NA SAYANSI SHIRIKISHI MUHIMBILI
SCHOOL OF PUBLIC HEALTH AND SOCIAL SCIENCES**

Utangulizi.

Hili ni dodoso linalolenga kuangalia uelea wa washiriki wa huu utafiti kuhusu saratani ya mlango wa kizazi pamoja na chanjo yake ambalo lingeweza kusaidia kujibia maswali ya utafiti huu wenye kichwa cha somo kisemacho “implementation of the second dose of HPV vaccine in Ilala Municipality-Dar es Salaam, Tanzania”.

Dodoso hili lina maswali 36 ambapo kuna maswali ya kuchagua pamoja na mengine yenye majibu ya “ndio”, “hapana”, “sijui”. Kwahiyo unaombwa kujibu maswali yote katika dodoso hili ambalo umepewa. Unaruhusiwa kuuliza swali lolote kwa ajili ya ufafanuzi. Usiandike jina lako kwenye hili dodoso kwa ajili ya usiri na miiko ya taaluma ya utafiti.

ID No:

Sifa na idadi ya watu
1. Umri (miaka) a) 9 b) 10 c) 11 d) 12 e) 13 f) 14 au zaidi

2. Kuhusu wazazi wa bint,		
a) mzazi mmoja		
b) Wazazi wote		
c) Yatima		
3. Elimu ya mlezi/mzazi.		
a) Hana elimu		
b) Shule ya msingi		
c) Shule ya Sekondari au zaidi		
4. Kazi ya mlezi/mzazi		
a) Mwajiriwa		
b) Amejajiri		
c) Sio mwajiriwa		
Faharisi za utajiri nyumbani	Ndio	Hapana
5. Je, kila mwanafamilia ndani ya nyumba anamiliki:		
a) Saa?		
b) Simu ya mkononi?		
c) Baisikeli?		
d) Gari au lori?		
e) Mashua?		
6. Je, nyumbani kuna:		
a) Umeme uliunganishwa?		
b) Redio ambayo inafanya kazi?		
c) Tivi ambayo inafanya kazi?		

d) Kompyuta inayofanya kazi?		
e) Frigi ambalo linafanya kazi?		
f) Jenereta ambalo linafanya kazi?		
g) Pasi ya umeme au mkaa?		
7. Je, nyumbani kuna chumba kilichotengwa kwa matumizi ya jiko?		
8. Je, mnatumia choo cha pamoja na wanafamilia wengine?		
9. Je, kuna mwanafamilia anamiliki akaunti bank?		
Ufahamu kuhusu chanjo ya saratani ya shingo ya kizazi na ugonjwa wa saratani ya kizazi.		
Vigezo	Majibu	
	Ndio	Hapana
10. Je, umewahi sikia kuhusu chanjo ya pili ya saratani ya shingo ya kizazi?		
11. Virusi vya papilloma vinaweza pelekea:		
	Ndio	Hapana
a) Warts za sehemu ya haja kubwa		
b) Saratani ya mdomo		
c) Warts za sehemu za siri		
d) Saratani ya shingo ya kizazi		
12. Chanjo ya virusi vya papilloma inazuia:		
	Ndio	Hapana
a) Saratani ya haja kubwa		

b) Saratani ya mdomo			
c) Saratani ya shingo ya kizazi			
d) Warts za sehemu za siri			
13. Virusi vya papilloma vinaenezwa kupitia:	Ndio	Hapana	
a) Majimaji yatoakanayo na hewa ya kupumua?			
b) Kugusana na majimaji ya mwili?			
c) Kwa njia ya kujamiana?			
14. Maambukizi ya virusi vya papilloma yanaweza zuiliwa kwa:	Ndio	Hapana	
a) Chanjo			
b) Kutumia kondomu			
c) Dawa za kuua vimelea			
d) Kuacha kufanya ngono			
Mapokeo kuhusu chanjo ya virusi vya papilloma na ugonjwa wa saratani ya shingo ya kizazi			
Mapokeo	Ndio	Hapana	Sijui
15. Chanjo ya virusi vya papilloma inaweza zuia saratani ya shingo ya kizazi.			
16. Chanjo ya virusi vya papilloma inaongeza maambukizi ya saratani ya shingo ya kizazi			
17. Virusi vya papilloma vinasababisha saratani ya shingo ya kizazi			
18. Kuwa na wapenzi wengi kunapunguza uwezekano wa kupata maambukizi ya virusi vya papilloma			
19. Kufanya mapenzi katika umri mdogo kunaongeza uwezekano wa kupata maambukizi ya virusi vya papilloma			

20. Virusi vya papilloma vinaenezwa kwa njia ya kujamiana			
21. Maambukizi ya virusi vya papilloma yanaweza gundulika mapema			
22. Ugonjwa wa saratani ya shingo ya kizazi unaenezwa kwa njia ya kujamiana			
23. Chanjo ya virusi vya papilloma inazuia kupata warts za sehemu za siri			
24. Kirusi wa papilloma kinaweza kutoweka mwilini hata bila ya kutibiwa kwa baadhi ya watu			
Mtazamo kuhusu kukamilisha dozi za chanjo ya virusi vya papilloma			
25. Chanjo ya virusi vya papilloma ni ya muhimu kwa afya za mabinti/wanawake			
1. Sikubaliani kabisa 2. Sikubaliani 3. Sina maamuzi 4. Nakubaliana 5. Nakubaliana kabisa			
26. Sina mpango wa kupata chanjo ya virusi vya papilloma			
1. Sikubaliani kabisa 2. Sikubaliani 3. Sina maamuzi 4. Nakubaliana 5. Nakubaliana kabisa			
27. Chanjo ya virusi vya papilloma ni muhimu kwa kuzuia warts za sehemu za siri			
1. Sikubaliani kabisa 2. Sikubaliani 3. Sina maamuzi 4. Nakubaliana 5. Nakubaliana kabisa			
28. Kupata chanjo ya virusi vya papilloma itabadilisha tabia yangu kuhusu swala la mapenzi			

<ol style="list-style-type: none"> 1. Sikubaliani kabisa 2. Sikubaliani 3. Sina maamuzi 4. Nakubaliana 5. Nakubaliana kabisa 		
29. Chanjo ya virusi vya papilloma sio ya muhimu		
<ol style="list-style-type: none"> 1. Sikubaliani kabisa 2. Sikubaliani 3. Sina maamuzi 4. Nakubaliana 5. Nakubaliana kabisa 		
30. Ni vigumu kupata mda kwa ajili ya kupata dozi zote za chanjo ya virus vya papilloma		
<ol style="list-style-type: none"> 1. Sikubaliani kabisa 2. Sikubaliani 3. Sina maamuzi 4. Nakubaliana 5. Nakubaliana kabisa 		
31. Sina ufahamu wa kutosha kuhusu hii chanjo kwahiyo siwezi choma		
<ol style="list-style-type: none"> 1. Sikubaliani kabisa 2. Sikubaliani 3. Sina maamuzi 4. Nakubaliana 5. Nakubaliana kabisa 		
32. Nina mpango wa kupata dozi zote za chanjo ya virusi vya papilloma		

<ol style="list-style-type: none"> 1. Sikubaliani kabisa 2. Sikubaliani 3. Sina maamuzi 4. Nakubaliana 5. Nakubaliana kabisa 		
33. Tayari nimeshapata dozi zote za chanjo ya virusi vya papilloma		
<ol style="list-style-type: none"> 1. Sikubaliani kabisa 2. Sikubaliani 3. Sina maamuzi 4. Nakubaliana 5. Nakubaliana kabisa 		
34. Chanjo ya virusi vya papilloma sio salama		
<ol style="list-style-type: none"> 1. Sikubaliani kabisa 2. Sikubaliani 3. Sina maamuzi 4. Nakubaliana 5. Nakubaliana kabisa 		
Kuhusu chanjo ya virusi vya papilloma	Ndio	Hapana
34. Je, umepata chanjo ya kwanza ya virusi vya papilloma?		
35. Je, umepata chanjo ya pili ya virusi vya papilloma?		

APPENDIX V: INTERVIEW GUIDES

INTERVIEW GUIDE FOR HEALTH SERVICE PROVIDERS (ENGLISH VERSION)

Greet the participant and introduce yourself.

I would like to thank you for taking the time to meet with me today. My name is..... Research assistants and I would like to talk to you about your experiences in HPV vaccine and cervical cancer, specifically on how the second dose of HPV vaccine is implemented as the main objective in this study; to explore the facilitating factors for the implementation of HPV-2 in this municipality as well as to explore the barriers. Provide consent form to the participant and allow him/her to read it. Ask the participant if he/she has question or if there is anything need to be clarified before sign the consent form. Respond to the question or clarify the matter. Allow him/her to sign the consent form if she/he agrees to participate. Say a word of thanks for him/her to agree to participate. If she/he did not agree, give him a word of thanking and proceed to the next participant.

Title.....

Years served in this position.....

Age.....

Sex.....

Education.....

1. How is the HPV vaccine especially second dose (HPV-2) implemented in this municipality?

2. Probe on the factors facilitating the implementation of the second dose of HPV vaccine.

How guidelines facilitate the implementation or uptake of second dose of HPV vaccine?

To what extent health care providers facilitate the implementation of the second dose of HPV vaccine?

How presence of fund facilitates the implementation of HPV-2 uptake?

How availability of equipment facilitates the implementation of the second dose of HPV vaccine?

Are there any other factors influencing the implementation of second dose of HPV vaccine?

3. What are the barriers, if any; you encountered for the implementation of the second dose of HPV vaccine?

a) Probe for a social – cultural barriers

b) Probe for individual's barriers

c) Probe for organizational barriers (inaccessibility of services, health promoters and unavailability of services)

d) Probe for resources allocation (shortage of human resources, lack of fund)

4. What recommendation do you have for the future efforts that aiming at the implementation of second dose of HPV vaccine?

5. Is there anything more you would like to add?

APPENDIX VI: INTERVIEW GUIDE FOR HEALTH SERVICE PROVIDERS

(KISWAHILI VERSION)

Salamu na kujitambulisha.

Napenda kukushukuru sana kwa mda wako uliotenga leo ili tuweze kuongea. Jina langu.....Mimi na wasaidizi wangu tungependa kuzungumza na wewe kuhusu uzoefu wako na chanjo ya virusi vya papilloma na ugonjwa mwenyewe wa saratani ya shingo ya shingo ya kizazi, hususani namna mnavyotekeleza utoaji wa chanjo ya pili ya virusi vya papilloma kama ilivyo lengo kuu kwenye huu utafiti; kuangalia sababu zinazosaidia kuongeza utoaji wa chanjo ya pili ya virusi vya papilloma na namna utekelezaji unavyofanyika ikiwa ni pamoja na vifaa vinavyohitajika, upatikanaji wa chanjo yenyewe na rasilimali zinazohitajika kama vile watoa huduma, fedha na miundo mbinu. Mpatie mshiriki form ya ridhaa ili aweze kuisoma na kuelewa kabla ya kusaini. Muulize mshiriki kama ana swali lolote kabla ya kuendelea na mahojiano. Mruhusu asaini form ya ridhaa kama atakubaliana kushiriki katika utafiti huu.

Mshukuru mshiriki kwa kukubali kushiriki kwenye utafiti na hata kama amekataa mshukuru pia kabla ya kuendelea na mshiriki mwingine.

Wasifa.....

Miaka aliyotumikia.....

Umri.....

Jinsia.....

Elimu.....

1. Je, utekelezaji wa utoaji chanjo ya virusi vya papilloma (HPV vaccine) ukoje hasa ile chanjo ya pili?

2. Kuna sababu zozote zinazochangia kuongeza ufanisi wa utoaji wa chanjo ya pili ya virusi vya papilloma?

- Dodosa kuhusu;

- Miongozo ya kutolea huduma inavyosaidia utekelezaji wa kutoa chanjo hasa ile ya pili ya virusi vya papilloma.
- Watoa huduma wanavyoweza saidia utekelezaji wa kutoa chanjo ya pili ya virusi vya papilloma.
- Upatikanaji wa fedha unavyoweza saidia utekelezaji wa kutoa chanjo ya pili ya virusi vya papilloma.
- Upatikanaji wa vifaa unavyosaidia utekelezaji wa utoaji wa chanjo ya virusi vya papilloma?
- Sababu nyingine ambazo zinaweza saidia utekelezaji wa utoaji wa chanjo ya pili ya virusi vya papilloma?

3. Ni vitu gani vingine umewahi kumbana navyo vilivyopelekea wewe ushindwe kutekeleza vizuri majukumu yako ya utoaji wa chanjo ya pili ya virusi vya papilloma?

Dodosa kuhusu;

- Changamoto zinazotokana na tamaduni za kijamii.
- Changamoto zinazotokana na mtu mwenyewe.
- Changamoto za kitaasisi (ugumu wa kufikika kwa huduma, kukosekana kwa huduma au vitendea kazi)
- Mgawanyo wa rasilimali (upungufu wa watumishi, ukosefu wa fedha)

4. Je, unashauri jitihada gani zitumike kuongeza ufanisi wa utekelezaji wa kutoa chanjo ya pili ya virusi vya papilloma?

5. Je, kuna kitu kingine ungependa kuongezea ambacho tumekisahau na ni cha muhimu katika kuongeza ufanisi wa utoaji chanjo ya pili ya virusi vya papilloma?

INTERVIEW GUIDE FOR DMO, RCH COORDINATOR AND OTHER

OFFICIALS (ENGLISH VERSION)

Greet the participant and introduce yourself.

I would like to thank you for taking the time to meet with me today. My name is..... Research assistants and I would like to talk to you about your experiences in HPV vaccine and cervical cancer, specifically on how the second dose of HPV vaccine is implemented as the main objective in this study; to explore the facilitating factors for the implementation of HPV-2 in this municipality as well as to explore the barriers. Provide consent form to the participant and allow him/her to read it. Ask the participant if he/she has question or if there is anything need to be clarified before sign the consent form. Respond to the question or clarify the matter. Allow him/her to sign the consent form if she/he agrees to participate. Say a word of thanks for him/her to agree to participate. If she/he did not agree, give him a word of thanking and proceed to the next participant.

Title.....

Age.....

Sex.....

Education.....

Years served in this position.....

1. Tell me how HPV vaccine especially HPV-2 is being implemented?

2. How is the supply chain of HPV vaccine in Ilala municipality?

Probe questions.

- Tell me the trend of HPV vaccine administration at the point of delivery and factors that may affect its implementation.
- Are health care providers trained on HPV vaccine?

- How is awareness creation about HPV vaccine to adolescent girls, parents and community?
- Is there any fund allocated for implementation of HPV vaccine in Ilala municipality?

3. What are the factors facilitating the implementation of second dose of HPV vaccine?

Probe questions.

- How guidelines facilitate the implementation of HPV vaccine?
- To what extent health care providers facilitate the implementation of the second dose of HPV vaccine?
- Are there any other factors influencing the implementation of the second dose of HPV vaccine?

4. What are the resources for implementation of HPV vaccine in Ilala municipality?

Probes questions:

How presence of fund facilitates the implementation of the second dose of HPV vaccine?

Probe questions.

- Is there any cost implication in implementing HPV -2 vaccine? If so, how does it affect the implementation?
- How is availability of HPV vaccine and the mode of supply chain? Is there any interruption in supply that could affect the implementation of the second dose HPV vaccine?
- What is the staffing capacity and how could it affect the implementation of HPV vaccine?

5. What are the barriers, if any; you encountered for the implementation of the second dose of HPV vaccine?

a. Probe for social-cultural barriers

b. Probe for individual barriers

- c. Probe for organizational barriers (inaccessibility of services, incapability of services)
 - d. Probe for resources allocation (shortage of human resources, lack of fund, equipment)
6. What recommendation do you have for the future efforts that aiming at the implementation of the second dose of HPV vaccine?
7. Is there anything more you would like to add?

INTERVIEW GUIDE FOR DMO, RCH COORDINATOR AND OTHER

OFFICIALS (KISWAHILI VERSION)

Salamu na kujitambulisha.

Napenda kukushukuru sana kwa mda wako uliotenga leo ili tuweze kuongea. Jina langu.....Mimi na wasaidizi wangu tungependa kuzungumza na wewe kuhusu uzoefu wako na chanjo ya virusi vya papilloma na ugonjwa mwenyewe wa saratani ya shingo ya shingo ya kizazi, hususani namna mnavyotekeleza utoaji wa chanjo ya pili ya virusi vya papilloma kama ilivyo lengo kuu kwenye huu utafiti; kuangalia sababu zinazosaidia kuongeza utoaji wa chanjo ya pili ya virusi vya papilloma na namna utekelezaji unavyofanyika ikiwa ni pamoja na vifaa vinavyohitajika, upatikanaji wa chanjo yenyewe na rasilimali zinazohitajika kama vile watoa huduma, fedha na miundo mbinu. Mpatie mshiriki form ya ridhaa ili aweze kuisoma na kuelewa kabla ya kusaini. Muulize mshiriki kama ana swali lolote kabla ya kuendelea na mahojiano. Mruhusu asaini form ya ridhaa kama atakubaliana kushiriki katika utafiti huu.

Mshukuru mshiriki kwa kukubali kushiriki kwenye utafiti na hata kama amekataa mshukuru pia kabla ya kuendelea na mshiriki mwingine.

Wasifa.....

Miaka aliyotumikia.....

Umri.....

Jinsia.....

Elimu.....

1. Je, waweza kuniambia ni kwa namna gani mnatekeleza utoaji wa chanjo ya virusi vya papilloma hasa ile chanjo ya pili?

2. Je, mnyororo wa utoaji wa chanjo katika manispaa ya Ilala ukoje?

Dodosa kuhusu;

- Watoa huduma wa afya kama wamepata mafunzo kuhusu namna ya utoaji wa hii chanjo.

- Ufahamu wa mabinti, wazazi na jamii kuhusu chanjo ya virusi vya papilloma.
- Utaratibu unaotumika kutoa elimu kwa jamii kuhusu chanjo ya virusi vya papilloma.
- Fedha iliyotengwa kwa ajili ya utekelezaji wa utoaji wa chanjo ya virusi vya papilloma katika manispaa ya Ilala na namna inavyoweza athiri utekelezaji.

3. Je, kuna sababu zozote zinazochangia ufanisi wa utekelezaji wa hii chanjo ya pili?

Dodosa kuhusu;

- Miongozo ya kutolea huduma inavyoweza saidia utekelezaji wa chanjo ya pili ya virusi vya papilloma.
- Watoa huduma wanavyoweza saidia utekelezaji wa kutoa chanjo ya pili ya virusi vya papilloma.
- Upatikanaji wa fedha unavyoweza saidia utekelezaji wa kutoa chanjo ya pili ya virusi vya papilloma.
- Upatikanaji wa vifaa unavyoweza saidia utekelezaji wa utoaji wa chanjo ya virusi vya papilloma.
- Sababu nyingine ambazo zinasaidia utekelezaji wa utoaji wa chanjo ya pili ya virusi vya papilloma kwa mabinti.

4. Rasilimli zipi zinatumiwa kwenye utoaji wa chanjo ya virusi vya papilloma katika manispaa ya Ilala na namna zinavyoweza athiri utekelezaji wake?

Maswali ya kudodosa:

- Je, kuna gharama zozote zinazotokana na utekelezaji wa utoaji wa hii chanjo ya pili ya virusi vya papilloma? Kama ndivyo, ni kwa nama gani inaathiri utekelezaji wake
- Je, upatikanaji wa chanjo ukoje, kuna wakati chanjo inakosekana mpaka kupelekea kuathiri utekelezaji wake?
- Je, namba ya watumishi ikoje na ni kwa namna gani inaweza athiri utekelezaji wa utoaji wa hii chanjo ya pili?

5. Ni vitu gani vingine umewahi kumbana navyo vilivyopelekea/vinavyopelekea kuathiri utoaji wa chanjo ya pili ya virusi vya papilloma?

a) Dodosa kuhusu vizuizi vinavyotokana na tamaduni za kijamii.

b) Dodosa kuhusu vizuizi vya mtu mwenyewe.


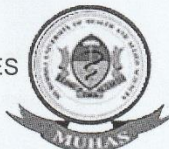
c) Dodosa kuhusu vizuizi vya kitaasisi (ugumu wa kufikika kwa huduma, kukosekana kwa huduma au vitendea kazi)

d) Dodosa kuhusu rasilimali (upungufu wa watumishi, ukosefu wa fedha)

6. Je, unashauri ni jitihada gani zitumike kuongeza ufanisi wa utekelezaji wa kutoa chanjo ya pili ya virusi vya papilloma?

7. Je, kuna kitu kingine ungependa kuongezea ambacho tumekisahau na ni cha muhimu katika utekelezaji wa utoaji wa chanjo ya pili ya virusi vya papilloma?

APPENDIX VI: ETHICAL CLEARANCE LETTER

	<p>UNITED REPUBLIC OF TANZANIA MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES OFFICE OF THE DIRECTOR - RESEARCH AND PUBLICATIONS</p>	
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Ref. No.DA.282/298/01.C/ Date: 07/05/2021

MUHAS-REC-05-2021-602

Nchang'wa Nhumba,
 MSc. PMMEH,
 School of Public Health and Social Sciences
MUHAS

RE: APPROVAL FOR ETHICAL CLEARANCE FOR A STUDY TITLED: THE IMPLEMENTATION OF THE SECOND DOSE OF HUMAN PAPILLOMAVIRUS VACCINE (HPV-2) IN ILALA MUNICIPALITY-DAR ES SALAAM, TANZANIA.

Reference is made to the above heading.

I am pleased to inform you that the Chairman has on behalf of the University Senate, approved ethical clearance of the above-mentioned study, on recommendations of the Senate Research and Publications Committee meeting accordance with MUHAS research policy and Tanzania regulations governing human and animal subjects research.

APPROVAL DATE: 07/05/2021
 EXPIRATION DATE OF APPROVAL: 06/05/2022

STUDY DESCRIPTION:
Purpose:
 To assess the coverage and factors associated with uptake of second dose of HPV vaccine among secondary school students in Ilala Municipality, Dar es Salaam.

The approved protocol and procedures for this study is attached and stamped with this letter, and can be found in the link provided: <https://irb.muhas.ac.tz/storage/Certificates/Certificate%20-%20695.pdf> and in the MUHAS archives.

The PI is required to:

1. Submit bi-annual progress reports and final report upon completion of the study.
2. Report to the IRB any unanticipated problem involving risks to subjects or others including adverse events where applicable.
3. Apply for renewal of approval of ethical clearance one (1) month prior its expiration if the study is not completed at the end of this ethical approval. You may not continue with any research activity beyond the expiration date without the approval of the IRB. Failure to receive approval for continuation before the expiration date will result in automatic termination of the approval for this study on the expiration date.
4. Obtain IRB amendment (s) approval for any changes to any aspect of this study before they can be implemented.
5. Data security is ultimately the responsibility of the investigator.
6. Apply for and obtain data transfer agreement (DTA) from NIMR if data will be transferred to a foreign country.
7. Apply for and obtain material transfer agreement (MTA) from NIMR, if research materials (samples) will be shipped to a foreign country,
8. Any researcher, who contravenes or fail to comply with these conditions, shall be guilty of an offence and shall be liable on conviction to a fine as per NIMR Act No. 23 of 1979, PART III section 10 (2)
9. The PI is required to ensure that the findings of the study are disseminated to relevant stake holders.
10. PI is required to be versed with necessary laws and regulatory policies that govern research in Tanzania. Some guidance is available on our website <https://drp.muhas.ac.tz/>.



Dr. Bruno Sunguya
Chairman, MUHAS Research and Ethics Committee



Cc: Director of Postgraduate Studies

APPENDIX VII: INTRODUCTION LETTER



UNITED REPUBLIC OF TANZANIA
 MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY
 MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES
 OFFICE OF THE DIRECTOR – POSTGRADUATE
 STUDIES



Ref. No. HD/MUH/T.723/2019

11th May, 2021

REGIONAL ADMINISTRATIVE SECRETARY,
 P.O BOX 5429,
 DAR ES SALAAM-TANZANIA.

Re: INTRODUCTION LETTER

The bearer of this letter is Nchang'wa Nhumba (HD/MUH/T.723/2019), a student at Muhimbili University of Health and Allied Sciences (MUHAS) pursuing MSc. Project Management Monitoring and Evaluation In Health.

As part of his studies he intends to do a study titled: *“The Implementation Of The Second Dose Of Human Papillomavirus Vaccine (HPV-2) In Ilala Municipality-Dar es Salaam Tanzania”*.

The research has been approved by the Chairman of University Senate.

Kindly provide him with the necessary assistance to facilitate the conduct of his research.

We thank you for your cooperation.


 Ms. Victoria Mwanilwa


For: DIRECTOR, POSTGRADUATE STUDIES

cc: Dean, School of Public Health and Social Sciences, MUHAS
 cc: Nchang'wa Nhumba

APPENDIX VIII: PERMISSION LETTER

HALMASHAURI YA JIJI LA DAR ES SALAAM
BARUA ZOTE ZIPELEKWE KWA MKURUGENZI WA JIJI

S.L.P. Na. 20950
Simu Na. 2128800
Fax Na. 2121486



OFISI YA MKURUGENZI
1MTAA WA MISSION
S.L.P. 20950
11883 - DAR ES SALAAM

Kumb. Na. DCC/AF.3/17.../05.../2021..

..... MKUJI WA IDARA

..... IDARA YA AFYA

..... JIJI LA DAR ES SALAAM


YAH:RUHUSA YA NDUGU NCHANJWA NIMBA KUFANYA
PROJECT/FIELD/RESEARCH

Tafadhari rejea somo tajwa hapo juu.

Mtajwa hapo juu ni mwanachuo katika chuo cha MUHAMMADI UNIVERSITY OF HEALTH & SCIENCE
ambaye amekubaliwa kufanya Project/Field/Research juu ya
CHANO YA SAKATAJI YA KIZAZI katika ofisi yako kuanzia tarehe 12 hadi
tarehe 30/05/2021

Hivyo mpokee na kumpa ushirikiano kulingana na mahitaji yake.

Nakutakia kazi njema.


Kny: MKURUGENZI WA JIJI
HALMASHAURI YA JIJI LA DAR ES SALAAM
Mkurugenzi
Halimashauri ya Jiji la Dar es Salaam

F. 98

JAMHURI YA MUUNGANO WA TANZANIA
Ofisi ya Rais
TAWALA ZA MIKOA NA SERIKALI ZA MITAA

MKOA WA DAR ES SALAAM

Anwani ya Simu:
Simu: 2203156/58
Fax: +25522203213
Tovuti: www.dsm.go.tz
Barua Pepe: ras@dsm.go.tz
Unapojibu Tafadhali taja:



OFISI YA MKUU WA MKOA
3 Barabara ya Rashidi Kawawa,
S.L.P 5429,
12880 - DAR ES SALAAM.

Kumb. Na. FA.232/293/01H/147

12 Mei, 2021


Mkurugenzi wa Halmashauri ya Jiji,
DAR ES SALAAM.

**YAH: UTAFITI "THE IMPLEMENTATION OF THE SECOND DOSE OF HUMAN
PAPILLOMA VIRUS VACCINE (HPV 2)**

Tafadhali husika na kichwa cha habari hapo juu.

2. Ofisi ya Mkuu wa Mkoa wa Dar es salaam inautambulisha utafiti tajwa hapo juu ambao umeombewa kibali kutoka Chou Kikuu cha Afya Muhimbili (MUHAS). Utafiti huu unafanywa na Nchang'wa Nhumba mwanachuo wa Shahada ya Uzamili wa Project Management Monitoring Evaluation in Health.
3. Lengo la utafiti huu ni kutimiza taratibu za mtaala wa masomo pamoja na kutathmini utoaji wa chanjo ya pili ya kuzuia saratani ya shingo ya kizazi kwa wasichana wa Jiji la Dar es Salaam. Utafiti huu utafanyika Halmashauri ya Jiji la Dar es Salaam kuanzia 12 - 30 Mei, 2021.
4. Kwa barua hii, naomba apewe ushirikiano Mtafiti Nchang'wa Nhumba mwenye dhamana ya kufanya utafiti.

Nashukuru kwa ushirikiano.


Dkt. Rashid S. Mfaume
Kny; Katibu Tawala wa Mkoa
DAR ES SALAAM

Nakala: Katibu Tawala Mkoa,
DAR ES SALAAM. – Aione kwenye Jalada

