UPTAKE OF MEASLES VACCINATION SERVICES AND ASSOCIATED FACTORS AMONG UNDER FIVES IN TEMEKE DISTRICT, DAR ES SALAAM REGION, TANZANIA

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By

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A Dissertation Submitted in Partial fulfillment of the Requirements for the Degree of Master of Applied Epidemiology of the Muhimbili University of Health and Allied Sciences

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CERTIFICATION

The undersigned certify that they have read and hereby recommend for acceptance by Muhimbili University of Health and Allied Sciences a thesis / dissertation entitled ***Uptake of Measles Vaccination Services and Associated Factors Among Under Fives in Temeke District, Dar es salaam Region, Tanzania*** in fulfillment of the requirements for the degree of Master of Applied Epidemiology of the Muhimbili University of Health and Allied Sciences

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Date: _____

DECLARATION AND COPYRIGHT

I, **Joyce E. Lyimo,** declare that this **dissertation** is my own work and that it has not been presented and will not be presented to any other university for similar or any other degree award.

Signature..... Date: .....

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Special thanks to my daughter, Anna Haule, and my family who tolerated me when I was away from home and supported me persevere throughout the challenging duration of the course and implementation of this project.

DEDICATION

This dissertation is dedicated to my daughter Anna Jonathan Haule.

ABSTRACT

Background: Measles outbreaks have been recurring in Tanzania despite ongoing efforts in immunization. In May 2011, there was a large Measles outbreak in the Temeke district, Dar es salaam where a total 588 cases were reported. The investigation found that a large percentage of underfives had not received measles vaccination. Although measles vaccination coverage figures are easily available, information about factors affecting uptake of measles vaccination services is not easily available. In order to plan and implement interventions that aim to improve uptake of measles vaccination services, information on the determinants of measles uptake level such as community, health facility, household and children factors is needed. This study investigated the factors associated with the low uptake of vaccination services in Temeke district.

Methods: A cross-sectional survey was conducted to assess the uptake of measles vaccination services and associated factors among children aged 12-23 months. Uptake of measles vaccination services was defined as the act of taking a child for vaccination which shows the level of acceptance of vaccination services by a caretaker. Uptake of measles vaccination was categorized into two groups; Low uptake and high uptake of vaccination services. Any child who had received both routine and supplementary measles vaccines was said to have high uptake and a child was said to have a low uptake of vaccination services if he/she had received either routine or supplementary only or neither of the two vaccines. Household and children determinants of low uptake for measles services were assessed. Bivariate and multivariate logistic regression were performed to identify significant determinants of low uptake. Analysis was done using EpiInfo version 3.5.1.

Results: A total of 295 children aged between 12-23 months were involved in the study. The mean age was 17 months. A total of 82 out 295 (27.8%) children had received either routine or supplementary vaccine or neither of the two

vaccine i.e had a low uptake of vaccination services. A total of 23 (7.8%) out of 295 children had not received routine measles vaccination while 66 out of 295 (23.4%) children had not received supplementary measles vaccination. The number of children who neither received routine nor supplementary vaccinations was 9 out of 295 (3%). Factors which were significantly associated with low uptake of vaccination services were younger age of the child (Adjusted Odds Ratio (AOR) 2.11 CI 1.10-4.38), low education level of the caretaker (AOR 3.36 CI 1.17-9.62), caretaker's lack of knowledge on the purpose of supplementary measles vaccine (AOR 2.04 CI 1.06-3.93), caretaker's lack of knowledge of the age for routine measles vaccination (AOR 4.71 CI 2.47-8.99), residing in a ward where there are high measles cases (AOR 2.29 CI 1.23- 4.27) and residing in a ward less than 2 years duration (AOR 2.24 CI 1.12-4.48).

Conclusions: The uptake of both routine and supplementary measles vaccine is below the Tanzania estimated coverage. Household and childhood factors played a role in determining the uptake of measles vaccination services. There is a need for the DHMT to revisit the Health education sessions during RCH services covering vaccine preventable diseases and identify gaps to be addressed. The team should also find out reasons behind mothers not sending children for vaccination especially supplementary vaccines.

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ABBREVIATIONS

BCG	Bacille Calmette-Gue´rin vaccine
DPT-HB	Diphtheria Pertussis Tetanus Hepatitis B combination vaccine
EPI	Expanded Program on Immunization
Hib	Haemophilus influenza type b
MCV	Measles Containing Vaccine
MOHSW	Ministry of Health and Social Welfare
OPV	Oral Polio Vaccine
RCH	Reproductive and Child Health
RRL	Regional Reference Laboratory
SIA	Supplementary Immunization Activities
TDHS	Tanzania Demographic and Health Survey
UN	United Nations
UNICEF	United Nations Children and Education Fund
WHO	World Health Organization

DEFINITION OF TERMS

Coverage of vaccination

The extent to which program administrative figures capture the number of doses delivered to the target population for a particular antigen. In order to estimate percentage vaccination coverage, this number is divided by the total estimated number of people to be vaccinated in the target population.

Uptake of vaccination

The act of taking a child for vaccination showing the level of acceptance of vaccination services by a caretaker. The vaccination of the child must be documented by a valid date on a vaccination certificate (Road to Child Health card) to facilitate calculation of the rate of uptake of vaccination in a community.

Caretaker: A caretaker was defined as either a mother or anybody who is considered to be attending the needs of a child.

Supplementary vaccination: Vaccination given after routine schedule. In Tanzania, supplementary vaccination is done for measles and polio diseases. For measles vaccine supplementary administration is done after every three years, which normally goes together with vitamin A drops and antihelminths.

CHAPTER ONE

1. Introduction

1.1 Background

Measles is one of the leading causes of death among young children. According to WHO region 2007 statistics, it was estimated that 51% of all measles deaths were occurring in South East Asia, 37% of them occurring in Africa while both Europe and America had the least rates (<0.15%). [1] In 2008, there were 164 000 measles deaths globally. [2]

Measles is caused by a virus in the paramyxovirus family. The measles virus normally grows in the cells that line the back of the throat and lungs. Measles is a human disease and is not known to occur in animals. It is transmitted via droplets from the nose, mouth or throat of infected persons. Initial symptoms, which usually appear 8–12 days after infection, include high fever, runny nose, bloodshot eyes, and tiny white spots on the inside of the mouth. Several days later, a rash develops, starting on the face and upper neck and gradually spreading downwards. There is no specific treatment for measles and most people recover within 2–3 weeks. However, particularly in malnourished children and people with reduced immunity; measles can cause serious complications, including blindness, encephalitis, severe diarrhea, ear infection and pneumonia. More than 95% of measles deaths occur in low-income countries with weak health infrastructures. Many deaths are attributed to unvaccinated children as such measles vaccination coverage is used as an indicator to monitor progress.. In 2008, all UN member states reaffirmed their commitment to achieving a 90% reduction in measles mortality by 2010 compared with 2000, from an estimated 733,000 deaths in 2000 worldwide to ≤73,300 by 2010. The World Health Organization (WHO) and UNICEF have identified 47 priority countries with the highest burden of measles for an

accelerated strategy for measles mortality reduction. The strategy includes (1) achieving and maintaining high coverage (≥90% nationally and ≥80% in each district) with 2 doses of measles-containing vaccine (MCV) delivered through routine services or supplemental immunization activities (SIAs), (2) implementing effective laboratory-supported disease surveillance, and (3) providing appropriate clinical management for measles cases.

During 2000-2008, global measles mortality declined by 78%, from an estimated 733,000 deaths in 2000 to 164,000 in 2008, but the reduction in measles mortality has been leveling off since 2007. An estimated 4·3 million additional child deaths have been averted as a result of accelerated measles control efforts, including increases in routine measles immunization coverage and administration of more than 600 million doses of measles vaccine in mass vaccination campaigns. Estimates indicated that almost a quarter of all lives saved annually towards achieving Millennium Development Goal 4 were the result of progress towards achieving a 90% reduction in measles deaths. [3]

1.2 Preventive and Control Strategies for Measles in Africa

In 2001, World Health Organization, Africa region launched an initiative aimed at mobilizing resources and provide support to the African Region to reduce measles deaths globally. The initiative was geared at providing the first dose measles vaccine through routine immunization as a first dose of measles vaccine to children of 9 months and older through routine immunization services. It also aimed at provision of a second opportunity for measles immunization though supplemental immunization activities (SIAs) to reach children that have never been vaccinated in the routine immunization program and children that have not been protected after the first dose and thirdly the initiative aimed at providing improved clinical management of measles cases which include providing supplemental doses of vitamin A to all suspected cases

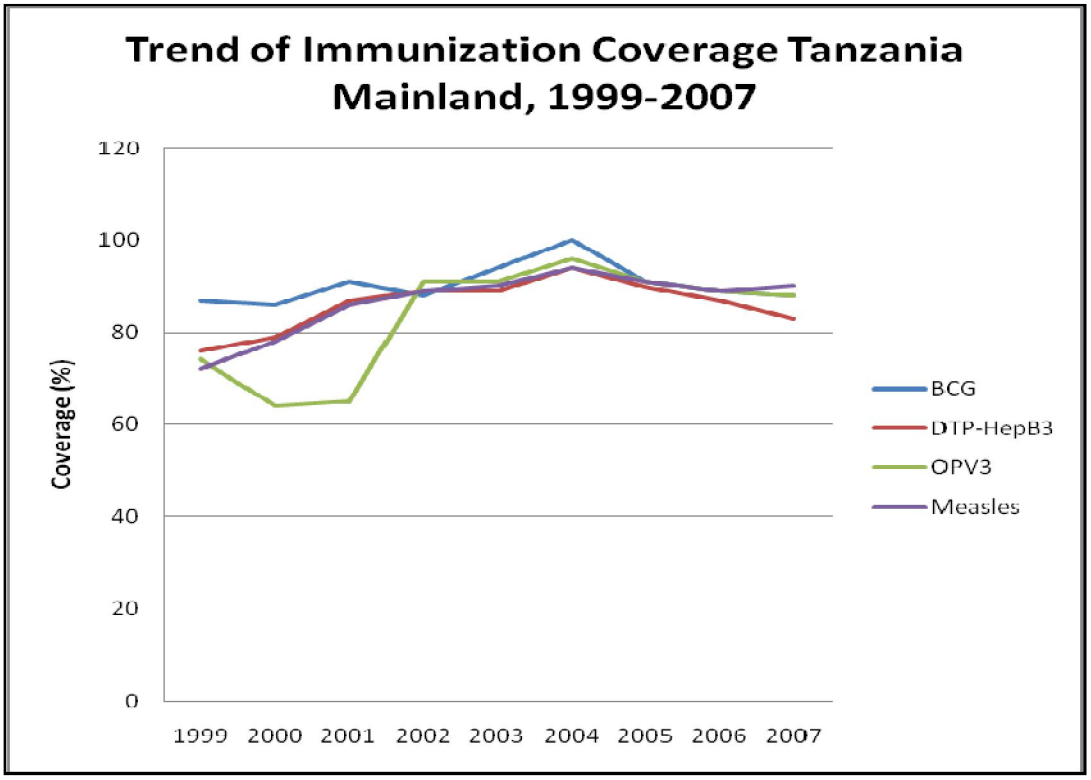
of measles and the appropriate and early management of measles complications [4]

The Measles Initiative has supported measles vaccination of over 395 million children in the African Region through measles supplemental immunisation activities from 2001 - 2008. To date, 40 countries in the Region have been supported to establish case-based surveillance for measles as a strategy to monitor the impact of vaccination activities and to document the reduction of disease burden. Additionally, a network of 36 national measles laboratories and 4 Regional Reference Laboratories (RRL) has been established for the confirmation of measles cases and outbreaks as well as the isolation of locally circulating measles virus strains. [4]

Preventive and Control Strategies for Measles in Tanzania

Tanzania has been conducting measles control initiatives since 1999, emphasizing the strengthening of routine as well as supplementary immunization activities. Figure 1 presents trend in antigen coverage since 1999-2007. Antigen coverage increased remarkably between 1999 and 2001, after which all stagnated around 95% coverage. While the routine measles immunization (single dose vaccine at 9 months) gives a protection of 85%, the supplementary dose given during campaigns has shown to increase the protection to 99%. The current measles immunization routine coverage in Tanzania is more than 90% while the campaign results have also shown figures to be above 90%. [5]

Figure 1: Trend of immunization Coverage Tanzania Mainland, 1999-2007*



*Source: EPI/ MoHSW 1999 – 2007 Annual coverage reports

Recent Tanzania Demographic Health Survey (TDHS) for 2010 has shown that proportion of fully immunized (received all antigens) is 75% and this is an increase compared to 71% in 1999 (TDHS, 2004-05). [6]. Whereas full immunization reflected a child who received all antigens, antigen coverage was somehow higher for example proportion of children receiving the third dose of DPT/DPT-HB (or DPT-HB-Hib) (88%) and polio (85%), and measles (85%).

1.3 Problem statement

Low uptake of vaccination services has been associated with outbreaks of vaccine preventable diseases. Measles outbreaks have been linked with multiples of low coverage of routine immunization and SIA, leading to critical build up of susceptible populations [5, 7]. Contrary to the link between measles outbreaks with unvaccination state, reports from Temeke DHMT shows coverage level for measles vaccination to be as high as 100% [8] although investigation which was done during 2011 outbreak in the district revealed vaccination coverage of 80% [9]. Vaccination coverage data are readily available but there are few studies looking the level of uptake of vaccination services in the country [10- 12].

Low uptake of vaccination services have also been shown in other studies to be associated with the occurrence of measles outbreaks. Studies done during 2006 and 2011 outbreaks in Tanzania found that being unvaccinated was the risk factor for the occurrence of the outbreaks.

This study aimed at obtaining community-based information on the level of uptake of measles containing vaccine (MCV) delivered through routine vaccination services and supplementary measles vaccination services together with factors which are associated with the low uptake of these services in the district.

1.4 Rationale

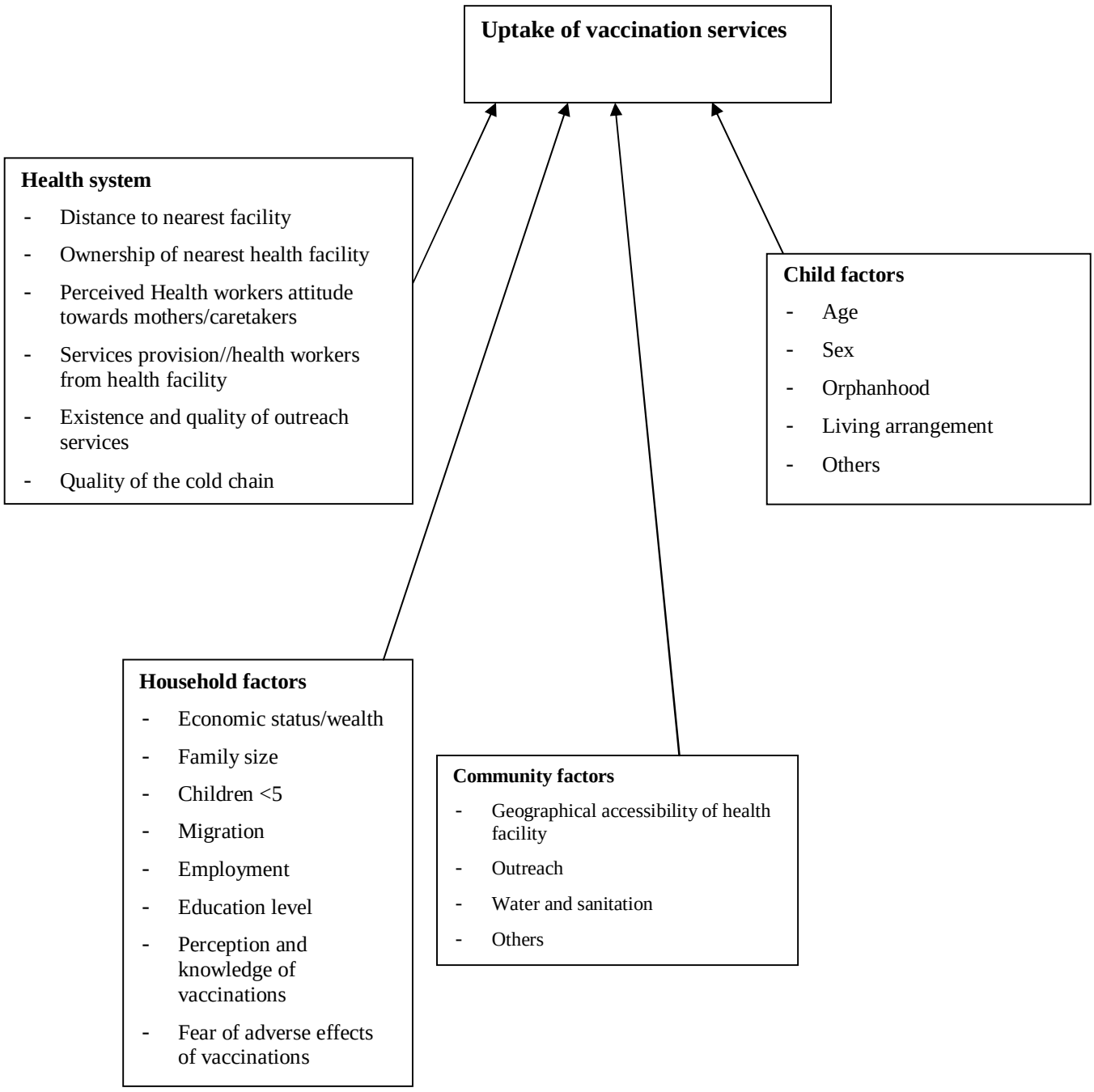
Vaccination coverage figures are generally available, however there is no information about factors affecting uptake of vaccination services in various areas. In order to define priorities and plan and implement interventions that aim to improve uptake of vaccination services, community-based information about the determinants of measles uptake of vaccination services in the district population is needed.

This study aimed at assessing the level of uptake of measles vaccination services. Moreover factors associated with low uptake such as household factors, community, childhood were assessed.

The results obtained from this study will be used program managers working with RCH services at National, Regional and district level to improve uptake of vaccination services. It is expected that these results will be incorporated when planning Routine vaccination and Supplementary Immunization activities.

Conceptual Framework

Figure 2: Conceptual framework of factors affecting uptake of vaccination services



1.3 Hypothesis

- Low uptake of measles vaccination among children less than five years in Temeke district is due to unfavourable child and household characteristics.

1.4 Research questions

1. What is the magnitude of low uptake of measles vaccination services among children under fives in Temeke?
2. What are the factors which are associated with low vaccination uptake?
    a. Childhood factors
    b. Household factors

1.5 Objectives

Broad objective

To assess the level of low uptake of measles vaccination services and the associated factors among children under five years in Temeke District, Tanzania.

Specific objectives

1. To determine proportion of children who are had not vaccinated against measles during routine vaccination among children less than five years old.
2. To determine proportion of children who had not vaccinated against measles during the supplementary measles vaccination for children less than fives
3. To assess factors associated with low uptake of vaccination services
    - Household factors
    - Childhood factors

CHAPTER TWO

Literature Review

There has been a steady increase in routine measles coverage from 71% to 82% globally between 2000 and 2009, and from 56% to 73% in the 47 countries with the greatest burden of measles deaths [13]. Immunization averts an estimated 2.5 million child deaths a year, but despite the successes, millions of children in developing countries almost 20% of all children born every year do not get the complete immunizations scheduled for their first year of life. An estimated 23 million children under one year of age were, in 2007, still not receiving their first dose of measles vaccine through routine immunization: about 15 million (65%) of these children are living in eight populous countries: India (8.5 million), Nigeria (2 million), China (1 million), Ethiopia (1 million), Indonesia (0.9 million), Pakistan (0.8 million), Democratic Republic of the Congo (0.6 million), and Bangladesh (0.5 million) [14].

In Tanzania measles vaccination coverage level is estimated to be 90% [16]. However there are variation in the coverage level among regions and districts. In the study done by Sembuche et al, it was found children who underwent routine measles vaccination in Bariadi District were 82.2%, [10]**.** Another study conducted in Kilindi District in 2009 revealed vaccination coverage of 61.4% [12].

There are many factors which affect vaccination uptake that include health system factors like distance to the nearest health facility**,** and presence of a vaccinator may have an effect on the vaccination uptake. In a study conducted in the urban slum in India Ghei K et al showed that presence of a health facility within 2 kilometres was associated with more than twice the likelihood of the child to be completely immunize [16, 17].

Household factors includes economic status, employment, family size, number of children in the household, mother's/ caretaker's level of education and attitudes and beliefs may also influence the uptake of vaccine [18-23]. In a study done by Mutua et al noted that household assets and household expenditures were predictors of vaccination. They also found that children of mothers who had completed primary education had a greater chance of being vaccinated than those of mothers who had no education [24]. In a study conducted in Athens Foutolou et al found that parents with scientific responsibilities working in clerical jobs, and those in medium level of private sector exhibited higher level of vaccination of their offspring compared to parents owning enterprises of private sector or heading departments or farmers and workers [25]. Lack of information and understanding about the importance of vaccines and immunization may lead to failure for the children to return for the required follow-up doses. In Nigeria, maternal factor that was most strongly associated with non-completion of vaccination was lack of awareness of the need for vaccination [26]. The role of maternal knowledge on vaccination as an important determinant of vaccination coverage has been shown by several researchers even in communities with a high level of illiteracy [26, 27, 28, 29, 30].

Other household factors like Parental attitude have also been shown to influence the uptake of vaccination services [11, 31]. Other studies found that those with low uptake of vaccination differed from those with high uptake in their attitudes towards, and knowledge of, infant immunization based on a wide range of personal experiences [32]. Another study identified parental concerns about exposing children to potential risk and moral and religious objections to vaccinations as important factors affecting uptake of vaccination services [33].

Place of birth has also been shown to be associated with child's completeness of vaccination. Ruta in his study demonstrated that children born in a health facility were more likely to complete vaccination schedule than those born at

home [34]. Child factors like age and sex may also influence the uptake of vaccine. Devendra Kumar et al found that fully-immunized children were predominantly male. The female children were less likely to receive complete immunization and more likely to remain in the non-immunized or partially-immunized group [35]. The child's sex and maternal age may also influence the likelihood of vaccination [36]. The effect of a child's age on vaccination status is likely to depend on whether the child came into contact with health services early in its life, and secondly on the temporal effect of mass vaccination campaigns which may have been more effective in particular years [37].

Social characteristics such as income, family size, ethnicity, social isolation and migrant status have also been linked to vaccination uptake [38-40]. The effect of socioeconomic variables on vaccination uptake has also been explored. Economic status has also been associated with immunization status. Mutua et al also shown that household assets and household expenditure also influenced uptake of vaccine by children. A study done by Mosley et al about the effectiveness of vaccination campaigns in terms of their ability to reduce mortality has raised doubts in poor socioeconomic circumstances where uptake is known to be low. [41]

Overall, many studies on factors associated with uptake describes maternal education, place of residence, and familial wealth as measured through the proxy of father's occupation as determinants of vaccine uptake [38-40, 42]. Other studies that sought to identify determinants of uptake of vaccination have also supported the view that maternal education basic health education for mothers and area of residence are important factors [43-45].

CHAPTER THREE

Methodology

3.1 Study area

The study was conducted in the Temeke district of Dar es salaam region. Dar es Salaam has 3 districts namely Temeke, Ilala and Kinondoni. Temeke District was chosen because it had the highest cumulative number of measles cases among the three districts of Dar es salaam Region since 2001.The district had also experienced a recent measles outbreak which occurred in May 2011 of which 1088 cases were reported. [46]

Temeke District is the southernmost of the three districts in Dar es Salaam, Tanzania, with Kinondoni located to the far North of the city, and Ilala being located in the downtown of Dar es Salaam. To the East is the Indian Ocean and to the South and West is the Coastal region of Tanzania. The population of Temeke District by 2011 projections is said to be 988809. The area is 786.5 km². The Temeke District is administratively divided into 3 divisions and 30 wards and 180 streets. The three divisions are Kigamboni, Chang'ombe and Mbagala. The following are the list of Temeke's wards: Azimio, Buza, Chamazi, Chang'ombe, Charambe, Keko, Kigamboni, Kibada, Kijichi, Kilakala, Kiburugwa, Kimbiji, KisaraweII, Kurasini, Makangarawe, Mbagala, MbagalaKuu, Mianzini, Miburani, Mjimwema, Mtoni, PembaMnazi, Sandali, Somangira, Tandika, Temeke, Toangoma, Tungi, Vijibweni, Yombo Vituka. [3] There are 67 health facilities involved with provision of vaccination services, 33 of these are owned by the government. The underfive population which was expected to be vaccinated in 2010 was 266,144 children. In 2011 the vaccination coverage was said to be 92%.

3.2 Study design

This was a cross- sectional study which was conducted from December 2011 to March 2012.

3.3 Study population

This comprised of children aged 12-23 months. These included children born exactly twelve months at the date of interview and any age before two years. All visiting children were excluded in the study together with those whose caretaker had communication impairment together with those who did not consent to participate in the study. A caretaker was defined as either a mother or anybody considered to be attending the needs of a child.

3.4 Sample size calculation

Sample size was calculated from the formula

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

where z= 1.96

Coverage of measles vaccine=82% [9]

Margin of error ε =5%

$$N = \frac{1.96^2 * 0.82 * 0.18}{0.05^2}$$

$$= 227$$

Being urban setting, we anticipated a non-response rate of 20%. Taking the non-response rate of 20% thus dividing by 0.8 sample size of 284 was obtained

3.5 Sampling strategy

The district has thirty wards. We used the presence or absence of measles cases as an entry point to the wards. All the wards in the district were ranked basing on the number of measles cases reported during 2011 outbreak, (Table1). Eight wards were involved in the study. The wards comprised of the first leading four wards as far as number of measles cases were concerned and the last four wards in the hierarchy. The aim was to compare wards with highest number of measles cases with those which had the least number of cases pertaining to uptake of measles vaccination services. This was followed by proportionate sampling of children in each ward depending on the size of population in each ward. In this way the leading four wards were Tandika, Temeke, Keko and Sandali while the wards which ranked the lowest were Somangira, Pemba Mnazi, Kimbiji and Kisarawe II.

Table 1: Distribution of measles cases according to ward of residence, Temeke, 2011

Ward	Number of measles cases reported in 2011 outbreak
Tandika	158
Temeke	99
Keko	92
Sandali	84
Azimio	79
Mtoni	78
Mbagala Charambe	68
Kijichi	64
Mbagala	59
Mbagala Kiburugwa	39
Buza	29
Yombo Vituka	13
Kilakala	12
Somangira	0
Pemba mnazi	0
Kimbiji	0
Kisarawe II	0

A list of streets making up the ward was obtained and two streets were picked randomly from each ward. A list of households from each of the selected street could not be obtained from the street leaders to enable creating of a sampling frame. We therefore used the office of street government as a starting point in identification of a house. We spun a bottle to determine which direction to move. After obtaining the first house with an eligible child, we subsequently

visited every second household. The selected household involved in the study has to have a child aged between 12-23 months, in case there are more than two eligible children in the household, one child was selected at random using balloting technique. The head of the household was then asked to assist in identification of the mother/caretaker of the eligible child to be interviewed.

3.6 Data collection methods

Data were collected using a structured questionnaire administered by the researcher and trained research assistants who were trained by the researcher. The study aimed at interviewing the child's mother and, for the children who were not being raised by their mothers the person taking care of the child was interviewed. The questionnaires covered information on demographic variables, child vaccination status, household factors which might affect vaccination uptake including mother's knowledge and attitudes toward measles vaccine, and household factors like type of house, presence of a latrine.

The uptake of measles vaccine was determined by asking the caretaker about the history of vaccination of their child as well as reviewing the RCH card for each child. The supplementary vaccination history was also obtained. The WHO manual on EPI coverage surveys describes two alternatives for estimating uptake, the first is by "card only", in which vaccinations must be documented by a valid date on a vaccination certificate to be included in the numerator and the second alternative is by "card plus history", which includes in the numerator all reported vaccinations even those with no documentation other than mother's report [47].

Due to the present recommended implementation strategy for supplementary measles vaccination for optimal measles prevention, the level of uptake was

estimated with two measles vaccinations, the routine vaccination and supplementary vaccination. The uptake was classified as follows:

- Uptake of measles vaccination was said to be high if the child received both routine and supplementary vaccination and the uptake was said to be low if the child had received either routine, supplementary on no vaccine at all.

Variables studied

Dependent: low measles vaccine uptake

Independent:

Child factors, household factors, distance to health care facility, mode of transport to health care facility, mother's demographic variables, family size, number of under-fives in the family, mother's knowledge on vaccine, mother's attitudes toward measles vaccine, retention of vaccination card and socio-economic status were explored for possible relationship with lower uptake of vaccination services. Materials making the floor, roof and the walls were used in aggregate as a proxy for socio-economic status (SES), whereby a household was categorized as low SES if the material making up the floor of the house is sand or the walls were made of poles and sand or if the roofing of the house was grass.

3.7 Data analysis

Data were entered in a computer, coded and analysed using Epi-info 3.5.1 software. Frequencies of continuous and categorical variables, means and standard deviation of ages were calculated and cross tabulations to determine statistical associations were done with crude ratios presented. Statistical associations were tested using Chi-square test and p-value at 5% significance level (two-tailed test). All factors were also entered into logistic multivariate regression model and the adjusted odds ratios presented.

3.8 Pre testing of the questionnaire

Pre-test of the questionnaires for validity for use in the field was conducted in a street located in another district in the same region. Questions which were ambiguous were rephrased following the pretesting.

3.9 Ethical consideration

The ethical clearance for the study was sought from Muhimbili University Research Review Board. Access to the community was gained through Temeke Municipal Government Officials. Participants were children while their caretakers gave consent during data collection. Children who were found to have not completed the immunization schedule or had not been vaccinated at all were counseled about immunization and referred to RCH clinics for immunization services.

CHAPTER FOUR

Results

4.1 Socio-demographic and economic characteristics of study population

Table 2 presents the distribution of children studied according to the wards in Temeke district. A total of 295 children with their caretakers from eight administrative wards were involved in the study.

Table 2: Distribution of children according to ward in Temeke District

Ward Name	Number in study	Percent
Tandika	47	15.9%
Temeke	45	15.3%
Sandali	36	12.2%
Keko	50	16.9%
Pemba mnazi	20	6.8%
Kimbiji	27	9.2%
Somangira	39	13.2%
Kisarawe II	31	10.5%
Total	**295**	**100.0%**

Characteristics of children

Table 3 presents the characteristics of the children. The total number of children in the study were 295 but with fewer boys 44.6% than girls. A total of 207 (70.1 %) were aged between 12 and 19 months and mean age was 17 months (SD 6.5). The majority 265 (89.8 %) of the children were born at home.

Table 3: Socio-demographic characteristics of children

Characteristic	Frequency	Percent
Sex of child		
Male	131	44.4
Female	164	55.6
Age group (months)		
12-13	94	31.8
14-23	201	68.2
Relationship to caretaker		
Biological mother	289	97.9
Other	6	2.1
Child birth order		
1	100	33.8
2+	195	66.2

Characteristics of caretakers

Table 4 presents the socio-demographic characteristics of the caretakers and their knowledge on measles vaccine. A total of 295 caretakers each representing one child were included in the analysis. Many 289 (98%) of respondents were mothers to the children. Many 189 (64.5%) were married, 60% (171 out of 295) were aged between 16-27 years, the mean age was 27.4 years (SD 6.5), 151 (51.2%) were housewives, 238, (80.7%) had completed primary education.

Table 4: Socio-demographic characteristics of caretakers

Characteristic	Frequency	Percent
Marital status		
Married	243	82.4
Not married	52	17.6
Age in years		
16-29	171	58
30 and above	93	31.5
Unknown age	31	10.5
Education level		
No schooling	23	7.8
Primary education	238	80.7
Secondary education	34	11.5
Occupation		
Housewife	151	51.2
Small scale business/peasant	144	48.8

Socioeconomic characteristics of studied population

Table 5 presents socio-economic characteristics of the studied population. Economic status of the household was assessed using the type of toilet, materials making up a house and household possessions. Out of 295, 77.6% houses had cement floor, 73.9% had walls made of cement blocks, 81.7% had aluminium roof.

Table 5: Socio economic characteristics of the studied population

Characteristics	Frequency N=295	Percent
Material making the floor		
Sand	55	18.6
Cement/tiles	240	81.4
Walls		
Poles and sand	69	23.4
Cement/backed bricks	226	76.6
Roofing		
Grass	52	17.6
Aluminium/cement	243	82.4
Windows		
Wood/no materials	41	13.9
Iron rods with nets	254	86.1
Toilet facility		
Pit latrine	177	60
Flash toilet	118	40
Own house		
No	141	47.8
Yes	154	52.2
Toilet sharing		
Yes	178	62
No	109	38
Households sharing a toilet		
≤ 5 households	86	56.2
6-24 households	67	43.8

4.2 Uptake of measles vaccination services

Table 6 presents the uptake levels among the wards studied. A high proportion 95.9 % (283 out of 295) had retrained their RCH cards which showed that 7.8% (23 out of 295) children did not receive routine measles vaccination while 23.4% (66 out of 295) children did not receive supplementary vaccination. Children who did not receive neither routine nor supplementary measles vaccination were 3% (9 out of 295). The proportion of children who either received one vaccine or none which implied the children who had a low uptake was 27.8% (82 out of 295).

Table 6: Measles vaccination services Uptake level in wards studied

Ward Name	Number of children	Number of children vaccinated (routine and supplementary)	Uptake level
Tandika	47	29	61.7%
Temeke	45	30	66.7%
Sandali	36	24	66.7%
Keko	50	38	76.0%
Pemba mnazi	20	17	85.0%
Kimbiji	27	18	66.7%
Somangira	39	34	87.2%
Kisarawe II	31	23	74.2%
Total	**295**	**213**	**72.2%**

4.3 Caretakers' Knowledge on Measles vaccination

Table 7 summarizes the knowledge of caretakers on vaccines. Out of 295 caretakers, 240 (81.3%) knew the types of vaccines given to an infant from birth, 233 (78.9%) knew the purpose of vaccination, which included correct age at which measles vaccine is administered (54.2%) and 200 (67.9%) knew measles as vaccine preventable disease.

Table 7: Caretakers' knowledge on vaccines

	Number in study	Percent
Knows types of vaccine given to an infant from birth	240	81.3%
Knows purpose of supplementary vaccination	233	78.9%
Knows age for routine measles vaccination	160	54.2%
Measles	200	67.9%
Tetanus	144	48.8%
Polio	129	43.7%
Tuberculosis	47	15.9%
Pertussis	38	12.8%
Diphtheria	21	7.1%
Hepatitis	2	0.6%
Mentions following as vaccine preventable diseases		
Seizures	14	4.7%
Chicken pox	10	3.4%
Malnutrition	7	2.4%
Fevers	5	1.7%
Malaria	4	1.4%

4.4 Factors associated with uptake of measles vaccination services

Table 8 shows the relationship between these factors and uptake of vaccination services

Table 8: Factors associated with low measles vaccination services uptake in Temeke District

Variable	Low uptake/ total	Proportion with low uptake	Crude OR	p-value
Age of child				
12-13	18/43	41.8%	2.1(1.1-4.2)	0.0261
14-23	64/252	25.4%		
Child Place of birth				
Home	9/30	30.0%	1.1(0.5-2.6)	0.7766
Health Facility	73/265	27.5%		
Child birth order				
1	32/100	32.0%	1.3(0.8-2.3)	0.5702
2+	50/195	25.4%		
Caretakers Education level				
No schooling or primary education	77/261	29.5%	2.4(0.9-6.5)	0.0755
Secondary education	5/34	14.7%		
Marital status				
Single or divorced	13/53	24.5%	0.8(0.4-1.6)	0.5582
Married or cohabiting	69/242	28.5%		
Caretaker knew measles is vaccine preventable				
No	31/95	32.6%	1.4(0.8-2.4)	0.2012
Yes	51/200	25.5%		
Caretaker know routine measles vaccination age				
Caretaker didn't know	66/168	39.3%	4.4(2.4-8.2)	0.0000
Caretaker knew	16/127	12.6%		
Caretaker know reason for routine and supplementary vaccination				
Caretaker didn't know	24/62	38.7%	1.9(1.0-3.4)	0.0311
Caretaker knew	58/234	24.8%		

Number of measles cases				
Ward with high measles cases	57/178	32.0%	1.7(1.0-2.9)	0.0460
Ward with low measles cases	25/117	21.4%		
Residence for more than 2 years				
No	22/57	38.6%	1.8(1.0-3.2)	0.0430
Yes	60/248	24.2%		
Number of bedrooms				
1 room	44/136	32.4%	1.5(0.9-2.7)	0.0837
2+ rooms	33/145	22.7%		
Socio-economic Status				
Low	21/90	23.3%	0.7(0.4-1.3)	0.2576
High	61/205	29.8%		

The odds of having low uptake were four times higher in a child whose caretaker could not correctly mention the month in which routine measles vaccine is given than a child whose caretaker could correctly mention the month in which routine vaccine is given. The odds of having low uptake were three times higher in a child whose caretaker had attended primary school or had not attended school than a child whose caretaker had attended secondary school. The odds of having low uptake were two times higher in a child living in wards which reported highest number of measles cases than a child who lived in wards which had lowest number of measles. A child whose family had stayed in the current residence for less than two years was twice more likely to have a low uptake than a child whose family had stayed in the current residence for more than two years. A child aged between 12-13 months was twice more likely to have a low uptake than a child aged between 14-23 months. Caretakers who did not know the purpose of routine and supplementary vaccine were twice likely to have children with low vaccine uptake.

Table 9: Multivariate analysis of the factors associated with low measles vaccine uptake

Variable	Adjusted OR	95% CI
Caretaker know the routine measles Vaccination age		
Caretaker did not know		
Caretaker knew	4.0	2.4-8.9
Caretakers Education level		
Primary education or no schooling education		
Secondary education	3.3	1.1-9.6
Ward measles history		
High measles case rate		
Low measles case rate	2.2	1.2-4.2
Residence duration		
Less than two years		
Two years or more	2.2	1.1-4.4
Age of child		
12-13		
14-23	2.1	1.0-4.3
Caretaker know the reason for supplementary vaccination		
Caretaker did not know		
Caretaker knew	2.0	1.0-3.9

The association between low uptake of measles vaccination services and younger age of child, caretakers' low level of education, ward high measles case history, shorter residence duration and caretakers not knowing time of administration of routine measles vaccination and importance of routine supplementary vaccine remained statistically significant after logistic regression.

CHAPTER FIVE

Discussion

This study described the level of uptake of measles vaccination services (routine and supplementary vaccination services) and the associated factors for children aged 12-23 months in Temeke District, Dar es salaam. The study shows that low uptake of measles vaccination services was associated with younger age of child, caretakers low level of education, high measles case history in the ward, shorter residence duration and caretakers not knowing time of administration of routine measles vaccination and caretakers not knowing importance of supplementary measles vaccine given in the campaigns.

5.1 Uptake of measles vaccination services

The study revealed that the uptake of routine measles vaccination services in Temeke District was 92.2% while the uptake of supplementary vaccination of 77.3%. The coverage levels of routine vaccination are similar to that of urban settings and this is demonstrated also by the TDHS 2010 which showed urban settings had measles coverage of 92.9% [6]. The coverage level is also the same as that found by Sembuche et al in Bariadi [10] however the coverage level for supplementary vaccination found in the study was much lower than the current vaccination coverage level for Tanzania supplementary campaigns which is 90%. [5]

The proportion of children with low uptake of both routine and supplementary measles vaccination services in the district was found to be 27.8% with 7.8% not receiving routine vaccination and 23.4% not receiving supplementary vaccination. This indicates that there is a substantial number of children who do not receive supplementary vaccination. This may contribute to the occurrence of measles outbreaks as it is known that there is a proportion of 15% of

individuals who do not develop immunity with a single dose of the vaccine who would otherwise benefit from supplementary vaccination.

The study also revealed lower uptake of measles vaccination services in the wards with history of high measles case rate (68%) and those with low measles case rate (78.6%). The wards which had reported the highest number of measles cases were actually semi urban as such the low uptake might have been contributed to the socio-economic status difference between the wards. Socioeconomic factors have been found to be associated with immunization coverage as documented in the Tanzania Demographic Health Survey 2010.

About four fifths of the caretakers knew the purpose of vaccination. This is slightly higher than that found in Bariadi District [10]. The observed difference might be a result of the higher literacy level of caretakers observed among caretakers in Temeke District, which is an urban area compared to a semi urban/rural areas of Shinyanga. High proportions have been found in a similar study done in Kenya where more than 90% of the caretakers could define and explain the purpose of immunization [48].

Almost sixty eight percent of caretakers knew measles is one of the immunizable diseases; this is almost similar to the study done in Bariadi District and Kilindi District [10, 12]. The level of knowledge in this study is also is much higher than the 1% of caretakers in a Nigerian study who knew that measles was preventable by immunization [24]. About half of the caretakers did not know the age at which measles vaccination is administered; this might affect the vaccination seeking behaviour and thus completion of the vaccination schedule. Less than 5% of caretakers mentioned diseases like chicken pox, (3.4%), seizures (4.7%), malnutrition (2.4%), fevers (1.7%) and malaria (1.4%) as vaccine preventable diseases. Similar findings were observed elsewhere [10].

5.3 Factors associated with low uptake of measles vaccination

This study revealed that a child aged 12-13 months was twice more likely to have a low uptake of both routine and supplementary measles vaccines than a child aged 14-23 months. This is due to the fact that older children have higher chances of getting exposure to supplementary vaccination apart from the routine vaccination than the 12-13 who are more likely to be exposed to only routine vaccination services due to their age. The study also found that a child whose mother had completed primary or had not attended school was three times more likely to have a low uptake than a child whose caretaker had completed secondary school. The results are also similar to the TDHS 2010, where the percent of children 12-23 months who were fully immunized depended also on mother's education. Mothers who have no education had coverage of 63% while mothers with education had coverage of 88% [6]. Studies done in Mozambique, Malawi, Ethiopia and India have also found that maternal education was an important determinant of childhood immunization [49-52].

This study also found there is a relationship between low uptake of vaccination and caretaker's not knowledgeable of the month of vaccination and importance of supplementary vaccination. This relationship with knowledge emphasizes the effect of health seeking and exposure to knowledge among the caretakers. The results are similar to a study done by Sembuche et al on the factors associated with uptake of vaccines services in Shinyanga where they found that a child whose caretaker knew the purpose of vaccination was twice more likely to be fully vaccinated than a child whose caretaker did not know the purpose of vaccination [10].

It was found that children from the wards which reported the highest number of measles cases in 2011 measles outbreak were more likely to have a low uptake of vaccination services than those residing in wards which reported the least number of measles cases during the outbreak. The observed difference might have been contributed by the fact that the wards which had the highest number cases were located in semi urban areas where fewer children were immunized compared to urban wards where higher proportion of children were immunized hence fewer cases. This has also been found in a recent TDHS 2010 where urban rural discrepancies existed in relation to vaccination coverage with urban areas having a high coverage.

This study observed a relationship between low uptake of vaccination services with residence of less than two years. This can be explained by the fact that movement to new areas might have affected uptake of the vaccination services to the time needed by the caretaker to be acquainted to new living environment and also the shifting might have been happened at the time when the child had to be vaccinated. This relationship between vaccination and migration has also been shown in other studies on the determinants of tetanus and seasonal influenza vaccine uptake in adults living in German [53].

5.4 Study limitations

This study has several limitations. The study relied on caretakers' history for assessing uptake (routine and supplementary measles vaccine). This was done because supplementary vaccine is not recorded in the RCH card. This might have lead to a recall bias if the caretakers don't remember if the child had been given the supplementary vaccine. However, we believe that because our study was done soon after a very recent supplementary measles vaccine campaign (within 3 months), the mothers/caretakers would still have fresh memories about vaccination.

Lastly, this study did not explore the study did not explore health system factors and community factors which might have provided some clues on the program factors which may have significant association with uptake of vaccinations

CHAPTER SIX

Conclusions and Recommendations

6.1 Conclusion

The study shows that low uptake of measles vaccination services was associated with younger age of child, caretakers low level of education, ward high measles case history, shorter residence duration, caretakers low knowledge of time of administration of routine measles vaccination and caretakers low knowledge of importance of supplementary measles vaccine given in the campaigns..

6.2 Recommendations

1. The District Health Management Team need to revisit Health education sessions during RCH services which covers vaccine preventable diseases and identify gaps to be addressed.

2. The District Health Management team should find out the reasons which make some mothers not to send their children for supplementary vaccination.

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APPENDICES

Appendix 1a: INFORMED CONSENT FORM- English Version

MUHIMBILI UNIVERSITY OF HEALTH AND ALLIED SCIENCES - DIRECTORATE OF RESEARCH & PUBLICATIONS.

ID-NO: ...../......./.....

ID-NO _____

Consent to participate in this study

Greetings, My name is …..... from Muhimbili University of Health and Allied Sciences, Dar es Salaam. At the moment, we are carrying out a study to determine Uptake of Measles Vaccination Services and Associated factors among Undefives in Temeke District, Dar es salaam, Tanzania

Purpose of the study

This study has the purpose of collecting information on factors influencing uptake of vaccination services among children under five years, Temeke District in Dar es salaam Region. You are being asked to participate in this study because you have particular knowledge and experiences that may be important to the study.

What participation involved

If you agree to participate in this study, you will be required to answer series of questions that have been prepared for the study through interviewing in order to obtain the intended information regarding factors influencing uptake of vaccination services among children under five years, Temeke District in Dar es salaam Region.

Confidentiality

I assure you that all the information collected from you will be kept confidential. Only people working in this research will have access to the information. We will be compiling a report which will contain responses from several mothers of children less than five years without any reference to any individual. We will not put your name or other identifying information on the records of the information you provide.

Risks

You will be asked questions about factors that are associated with uptake of vaccination services for your child. Some questions could potentially make you feel uncomfortable. You may refuse to answer any particular question and stop the interview at any time. We do not expect any harm to happen to you because of participation in this study

Right to withdraw and alternatives

Taking part in this study is completely your choice. If you choose not to participate in the 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 withdrawal 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 to increase our understanding on factors influencing uptake of vaccination services among children under five years, Temeke District in Dar es salaam Region and communicate the findings to policy makers in the district for improvement of vaccination services in the district.

Responsibility of Investigator

In the case where the child will be found to have not completed the immunization schedule or will not be immunized at all, the caretaker will be counselled on the advantages of immunization and be advised to visit the health facility for immunization services.

In case of injury

We do not anticipate that any harm will occur to you or your family as a result of participation in this study.

Who to contact

If you have questions about this study, please don't hesitate to contact:

Joyce E. Lyimo, The **Principal Investigator** Muhimbili University of Health and Allied Sciences (MUHAS), P.O. Box 65001, Dar es Salaam (Tel. no. 0718010346 or 0754362743).

Prof M. Aboud, Chairman of Senate Research and Publications P. O. Box 65001, Dar es Salaam. Tel: 2150302-6

DR. I. Semali, The supervisor of this study.

Signature

Do you agree?

Participant agrees…… Participant does not agree……..

I ……. have read the content in this form, my questions have been answered, I agree to participate in this study

Signature of Participant…….……

Signature of Research assistant…….

Date of signed consent……

Appendix 1b: INFORMED CONSENT FORM- Swahili version

CHUO KIKUU CHA AFYA NA SAYANSI YA TIBA CHA MUHIMBILI

KURUGENZI YA UTAFITI NA UCHAPISHAJI

FOMU YA RIDHAA

ID-NO _____

Ridhaa ya kushiriki

Hujambo? Ninaitwa……. Ninafanya kazi ya kutafiti sababu zinazoathiri utumiaji wa huduma za chanjo kwa watoto wenye umri chini ya miaka mitano kwenye wilaya ya Temeke, mkoa wa Dar es salaam.

Madhumuni ya utafiti

Utafiti huu unakusudia kuchunguza sababu zinazoathiri utumiaji wa huduma za chanjo kwa watoto wenye umri chini ya miaka mitano kwenye wilaya ya Temeke, mkoa wa Dar es salaam. Unaombwa kushiriki kwenye utafiti huu kwa sababu unaoujuzi ama unafahamu matukio ambayo ni za muhimu.

Nini kinahitajika ili kushiriki

Ili kushiriki katika utafiti huu inabidi kukubali na kujiunga kwa kujibu maswali toka kwenye dodoso wa kwa ajili ya utafiti huu.

Usiri

Ninakuhakikishia kuwa taarifa zitakazokusanywa kutoka kwako kupitia dodoso hili zitakua siri na hakuna mtu yeyote ambaye hafanyikazi kwenye utafiti huu atakayeambiwa ulichosema. Itaadaliwa taarifa ya utafiti huu ambao hautamtaja mshiriki yeyote. Jina lako wala utambulisho mwingine wowote hautawekwa

kwenye taarifa unazozitoa. Taarifa zako zitaingizwa kwenye ngamizi kwa kutumia namba za utambulisho

Hatari

Hakuna hatari yeyote itakayotokea kwako kutokana na ushiriki wako kwenye utafiti huu

Haki ya kujitoa au vinginevyo

Ushiriki katika utafiti huu ni hiari .Kutokushiriki au kujitoa kutoka kwenye utafiti hakutakua na adhabu yeyote na hutapoteza stahili zako endapo utaona ni vema kufanya hivyo.

Faida

Kama utakubali kushiriki kwenye utafiti huu itakua ni fanasa kwa vile utafiti huu una lengo la kuboresha huduma za chanjo kwa kubaini sababu zinazoathiri utumiaji wa huduma za chanjo kwa watoto wenye umri chini ya miaka mitano kwenye wilaya ya Temeke, mkoa wa Dar es salaam.

Waajibu wa mtafiti

Endapo mtoto atakutwa hajakamilisaha chanjo au hajachanjwa kabisa, elimu itatolewa juu ya faida za kuchanjwa na mzazi/mlezi wa mtoto atashauriwa ampeleke mtoto katika zahanati/kituo cha afya kinachotoa huduma za chanjo ili mtoto akachanjwe.

Endapo utapata madhara au la

Hatutegemei kupata madhara yoyote kutokana na ushiriki wako katika utafiti huu.

Nani wa kuwasiliana naye

Kama kuna swali kuhusianan na utafiti huu itakubidi kuwasiliana na mtafiti mkuu Joyce Lyimo wa Chuo Kikuu cha Afya na Sayansi ya Tiba Muhimbili, S.L.P. 65001 DSM. Simu (Tel: 0718 010346). Kama una maswali zaidi unaweza kuwasiliana na Prof M. Aboud **,** Mkurugenzi wa Kamati ya Utafiti na Uchapishaji, Chuo Kikuu cha Muhimbili Tel:2150302-6, Dr I. Semali (0754 269838) au Dkt. Janneth Mghamba (0786 444998) ambao ni wa simamizi wa utafiti huu.

Je, Umekubali?

Mshiriki amekubali…… Mshiriki hajakubali……

Mimi……...nimesoma maelezo ya fomu hii, maswali yangu yamejibiwa na nimeridhika. Nakubali kushiriki katika utafiti huu.

Sahihi ya Mshiriki……

Sahihi ya mtafiti msaidizi……

Tarehe ya kutia sahihi ya kushiriki……

Appendix 2a: Questionnaire – English Version

Temeke Measles Vaccination Uptake Survey

Questionnaire number _____

Name of Ward _____

Name of Village _____

Name of Interviewer_____

Date of interview _____

Greetings,

My name is …… I am working on this research project with the objective of assessing factors affecting uptake of vaccination services among children under five years, Temeke District in Dar es salaam Region. You are being asked to participate in this study because you have particular knowledge and experiences that may be important to the study.

Head of household

1. Name of head of household (optional) _____
2. How old are you? _____
3. Number of year of schooling have you had?

   □ None □ Primary incomplete □ Primary complete □ Reached secondary or above

4. What is your occupation?

□ Peasant □ Small business □ driver □ house servant □ labourer □ artisan □ business person □ professional/technician □ Unemployed □ Others mention_____

5. What is your marital status?

□Married □Cohabiting □Never married □Divorced □Separated □Widowed □Other mention_____

6. If man and if married how many wives do you have?_____
7. How many people live in your household?_____
8. How many children aged less than five years live in your household?_____
9. How many children aged less than two years live in your household?_____

Demographics of the mother

10. Name of head of mother (optional)

_____

11. Age of the mother _____

12. Number of year of schooling have you had?

□ Pre-primary □ Primary □ Post-Primary training □ Secondary Post secondary training □ University

13. What is your occupation?

□ Housewife □ Peasant □ Small business □ driver □ house servant □ labourer □ artisan □ business person □

professional/technician □ Unemployed □ Others mention_____

14. What is your marital status?

□Married □Cohabiting □Never married □Divorced □Separated □Widow □Other mention _____

DEMOGRAPHIC CHARACTERISTICS OF CHILDREN AGED LESS THAN TWO YEARS

	Child 1	Child 2	Child 3	Child 4	Child 5
Name of the child? (optional)					
Sex	□ Male □ Female	□ Male □ Female	□ Male □ Female	□ Male □ Female	□ Male □ Female
Date of birth					
Where was the child born?	□ At home □Health facility □ Others Mention	□ At home □Health facility □ Others Mention	□ At home □Health facility □ Others Mention	□ At home □Health facility □ Others Mention	□ At home □Health facility □ Others Mention

Demographic information of selected child

15. Does the father usually stay in this house? □ Yes □ No

16. If no, where is the father?

□ Living in another region □ Lives in another area but same region □ Dead

17. What is the birth order of the selected child?_____

18. Sex of the child □ Female □Male

19. Where was the child born?

□Home □Hospital □Other mention_____

20. Is the father staying with the child?

21. If no, where is the father?

□ Living in another region □ Lives in another area but same region □ Dead

22. Is the mother staying with the child?

23. If no, where is the mother?

□ Living in another region □ Lives in another area but same region □ Dead

24. Relationship to the child

□ Son or daughter □ Adopted/foster/stepchild □ Grandchild □ Niece/nephew by blood □ Niece/nephew by marriage □ Brother or sister

□ Other relative Mention _____ □ not related

□ don't know

Knowledge on Vaccines

I am now going to ask you some questions about vaccines

25. Please mention diseases which are immunized during childhood

    □TB □Polio □Diphtheria

    □Pertussis □Tetanus □Measles □Hepatitis □Haemophilus influenza

26. At what age is measles vaccine administered?_____

27. What is the importance of routine vaccines?

    _____

28. What is the importance of supplementary vaccines

    _____

29. How do you consider vaccination services provided by the clinic you send your child? Please select one from these; (Read for her/him)

    □Very satisfactory □Satisfactory □Somehow satisfactory □Not satistfactory □Not satisfactory at all

30. If not satisfactory, why?

    _____

    _____

VACCINATION HISTORY VACCINATION CAMPAIGN INFORMATION

31. Does your child have a RCH card □ Yes □ No

32. Did (mention the child name) receive a vaccination? □ Yes □ No

33. If yes, where did he/she get the vaccines?

    □Hospital □during vaccination campaign □other mention_____

34. If no, why?

_____

35. Please tell me if (NAME) received any of the following vaccinations:

i. A BCG vaccination against tuberculosis, that is, an injection on the right arm or shoulder that usually causes a scar □Yes □ No

ii. Polio vaccine, that is drops in the mouth □Yes □No

iii. When was the first polio vaccine received? □ At birth □ Within first 2 weeks □ Not received □ I don't know □ Other mention

iv. How many times was the polio vaccine received?

v. A DPT-HB vaccination, that is, an injection given in the thigh or buttocks sometimes at the same time as polio vaccine □ Yes □ No

vi. How many times was a DPT-HB vaccine received?

vii. A measles injection or MMR, that is, an injection given in the thigh at the age of 9 months □ Yes □ No

viii. If yes, when did the child get the vaccine?

ix. Where did the child get the measles vaccine □Hospital □During campaign □Other mention _____

x. If no why didn't the child get the vaccine?

36. Did_____(NAME) get any vaccine apart from those provided in the RCH clinic? □ Yes □No

37. If yes, please mention the vaccines □Measles □Vitamin A □Polio □Antihelminths □Other mention _____

38. Where are the records for those vaccines?

□RCH card □No records □other mention _____

39. Where were those vaccines provided? □Hospital □ During campaign □other mention_____
40. Who sends the child to the RCH clinic?_____
41. What is the name of the RCH clinic you send your child?-_____
42. What transport do you use when going to the RCH clinic? □on foot □by bus

□ private car □other mention _____

43. How long do you take to the clinic? _____minutes
44. How many vaccination campaigns have been there in this area in the past three years? (write the year or years)_____

□Once (mention the year _____) □ twice (mention years _____)

□Three times (mention years _____) □ I don't know

45. When were this year campaign conducted (give dates)_____
46. What were the vaccines administered?

□Vitamin A □measles □antihelminths

47. Did you send your child for vaccination during that campaign? □ Yes □ No
48. If yes can you please show me where it was recorded? □RCH card □no record □not vaccinated □other _____
49. How did the information about campaign reach you?

□ Television □ Radio □ broadcast by car □ other mention _____

HOUSEHOLD CHARACTERISTICS

50. Where do you usually obtain water for this household?

	Tick		**Tick**
PIPED WATER		**WATER FROM SPRING**	
Piped into dwelling		Protected spring	
Piped to yard/plot		Unprotected spring	
Public tap/stand pipe		Rain water	
WELL		Surface water (river/dam/lake/ponds/stream/canal/irrigation channel)	
Tube well or borehole			
Dug well (protected well)		Other (specify)	
Dug well (unprotected well)			

51. Who owns the source?

□Authority □NGO □Private □ I don't know

□Other mention_____

52. How long do you take to fetch water?

□Minutes _____ □ Source at home

53. Do you treat water before drinking? □Yes □No

54. If yes, how do you treat it?

□Boiling □Bleaching □Filtering with piece of cloth □Sand filtering

□Radiation

□Leave it to settle □other mention

55. What is the type of latrine do you use?

□Flash to sewage

□Flash to septic tank

□Flash to pit

□pit latrine

□Bucket

□No toilet

□Other mention_____

56. Do you share the toilet facility with other households? □Yes □No

57. If yes, how many other households share the toilet? _____

58. Does your household possess the following?

□Electricity □paraffin lamp □Radio □television □mobile phone

□Telephone □iron(charcoal /electrical □Fridge

59. What type of fuel does your household mainly use for cooking?

□ Electricity □ bottled gas □ paraffin/kerosene □ charcoal □ firewood

□ crop residual □ animal dung □ no food cooked in the household

□other specify

60. Floor (record observation, mark only one)

□earth, sand □wood □cement □carpet □tiles

□other mention _____

61. Wall (record observation, mark only one)

□ poles and mud

□ Wood, timber □ baked bricks □cement blocks □Stones □Other mention_____

62. Roof (record observation, mark only one)

□Grass □Aluminium □Tiles □Cement □asbestos

□Other mention _____

63. Window materials □Glass □wood □iron rods and nets

□ other mention _____

64. How many rooms does your household use for sleeping? _____

65. Does anyone in your household have the following(Read and tick as appropriate)

□Watch □Bicycle □motorbike □Car □bank account

66. Do you own the house? □ Yes □No

67. If no, do you pay rent? □ Yes □No

68. Have been in this area for more than two years? □ Yes □No

69. If no, when did you move to this area? _____

70. Where did you move from?

□Another street in the same ward

□Another ward in the same district

□Another district here in Dar es salaam

□Rural village here in Tanzania

□Another city here in Tanzania

□Outside Tanzania

Appendix 2: Swahili Version

DODOSO KUHUSU UTAFITI WA HUDUMA ZA CHANJO TEMEKE, DAR ES SALAAM, 2011

Dodoso namba _____

Jina la Kata _____

Jina la Kijiji_____

Jina la mdodosaji _____

Tarehe ya mahojiano _____

Salam,

Ninaitwa …… ninafanya utafiti ambao lengo lake ni kuchunguza mambo ambayo yanaathiri huduma ya chanjo kwa watoto walio na umri chini ya miaka mitano ambao wapo katika Wilaya ya Temeke katika mkoa wa Dar es salaam. Unaombwa kushiriki katika utafiti huu kwakuwa unazo taarifa fulani na uzoefu ambao unaweza kusaidia utafiti huu.

MKUU WA KAYA

1. Jina la mkuu wa kaya (si lazima) _____
2. Una umri gani?
3. Umefikia kiwango gani cha elimu?

   □ Chini ya elimu ya msingi □ Elimu ya msingi □ Kozi baada ya elimu ya msingi □ Elimu ya sekondari □ Kozi baada ya elimu ya sekondari □ Chuo kikuu

4. Kazi yako ni nini?

   □Mkulima □Biashara ndogo ndogo □Dereva □Mhudumu wa ndani □Kibarua □Msanii □Mfanya biashara □Fundi □sijaajiriwa □Nyingine taja

5. Hali yako ya ndoa ni ipi?

   □Nimeoa/Nimeolewa □Tunaishi tu pamoja □Sijawahi kuoa/kuolewa □Tumeachana □Tumetengana □Mjane □Other mention

6. (Kama ni mwanaume na ameoa) une wake wangapi?

7. Watu wangapi wanaishi nyumbani kwako?_____
8. Watoto wangapi wenye umri chini ya miaka mitano wanaishi nyumbani kwako?_____
9. Watoto wangapi wenye umri chini ya miaka miwili wanaishi nyumbani kwako?_____

TAARIFA ZA KIDEMOGRAFIA ZA MAMA

10. Jina la mama (si lazima)

    _____

11. Una umri gani?

12. Umefikia kiwango gani cha elimu?

    □ Chini ya elimu ya msingi □ Elimu ya msingi □ Kozi baada ya elimu ya msingi □ Elimu ya sekondari □ Kozi baada ya elimu ya sekondari □ Chuo kikuu

13. Kazi yako ni nini?

□Mama wa nyumbani □Mkulima □Biashara ndogo ndogo □Dereva □Mhudumu wa ndani □Kibarua □Msanii □Mfanya biashara □Fundi □sijaajiriwa □Nyingine taja_____

14. Hali yako ya ndoa ni ipi?

□Nimeolewa □Tunaishi tu pamoja □Sijawahi kuolewa □Tumeachana □Tumetengana □Mjane □Other mention _____

TAARIFA ZA KIDEMOGRAFIA ZA WATOTO WALIO NA MIAKA CHINI YA MITANO/MIWILI

	Mtoto 1	Mtoto 2	Mtoto 3	Mtoto 4	Mtoto 5
Jina la mtoto (Silazima)					
Jinsia	□ Kiume □ Kike	□ Kiume □ Kike	□ Kiume □ Kike	□ Kiume □ Kike	□ Kiume □ Kike
Tarehe ya kuzaliwa					
Mtoto alizaliwa wapi?	□ Nyumbani □Kituo cha afya □ Kwingine taja	□ Nyumbani □ Kituo cha afya □ Kwingine taja	□ Nyumbani □ Kituo cha afya □ Kwingine taja	□ Nyumbani □ Kituo cha afya □ Kwingine taja	□ Nyumbani □ Kituo cha afya □ Kwingine taja

Chagua kwa nasibu mtoto mmoja mmoja miezi 12 hadi 23.

15. Jina la mtoto _____
16. Mtoto huyu amezaliwa lini? (andika tarehe) _____
17. Je_____(taja jina la mtoto) ni wa ngapi kuzaliwa?_____
18. Jinsia ya mtoto □ Mwanamke □Mwanaume
19. Mtoto alizaliwa wapi?
    □Nyumbani □Hospitali □Kwingine taja
20. Baba yake mtoto huyu huwa anaishi hapa kwenye nyumba hii? □Ndiyo □Hapana
21. Kama siyo, yuko wapi?
    □Anaishi mkoa mwingine □Anaishi eneo lingine lakini mkoa huu huu □Amefariki
22. Mama yake mtoto huyu anaishi hapa kwenye nyumba hii? □Ndiyo □Hapana
23. Kama siyo, yuko wapi?
    □Anaishi mkoa mwingine □Anaishi eneo lingine lakini mkoa huu huu □Amefariki
24. Uhusiano wako na mtoto
    □Mwanangu wa kumzaa □Mtoto wa kulea/wa kambo Mjukuu □Mtoto wa kaka, dada, □Mtoto wa wifi au shemeji □Mdogo wangu □Hatuna uhusiano □Sijui □ Uhusiano mwingine taja_____

    UFAHAMU KUHUSU CHANJO

    Sasa ninakwenda kukuuliza maswali kuhusiana na chanjo
25. Tafadhali taja magonjwa ambayo yanatolewa chanjo kitaifa wakati wa utotoni

    □ Kifua kikuu □ Kupooza □ Donda koo
    □Kifaduro □ Pepopunda □ Surua □Homa ya ini

26. Chanjo ya surua huwa inatolewa mtoto akiwa na umri gani?_____
27. Unafikiri chanjo zinazotolewa kliniki zina umuhimu gani?

    _____
28. Unafikiri chanjo zinazotolewa wakati wa kampeni za chanjo zina umuhimu gani?_____
29. Je unazichukuliaje huduma za chanjo zinazotolewa an kliniki unayompeleka mtoto wako? Tafadhali chagua moja kati ya haya; (msomee)

    □Zinaridhisha sana □Zinaridhizisha □Zinaridhisha kidogo □Haziridhishi □Haziridhishi kabisa

30. Kama zinaridhisha kidogo au haziridhishi kwa nini?

    _____

    _____

TAARIFA ZA CHANJO ZA MTOTO NA KAMPENI ZA CHANJO

31. Je_____(taja jina la mtoto) anayo kadi ya kliniki? □Ndiyo □Hapana
32. Je_____.(taja jina la mtoto) alipata chanjo yoyote za kumkinga dhidi ya magonjwa? □Ndiyo □Hapana
33. Kama ndiyo, chanjo hizo alizipatia wapi?

    □Hospitali □wakati wa kampeni za chanjo □kwingine taja
34. Kama hapana, kwa nini hakupata?

    _____
35. Tafadhali naomba uniambie kama_____.(taja jina la mtoto) alipata chanjo zifuatazo

    i. Je alipata chanjo ya kifua kikuu BCG ambayo ni sindano anayochomwa bega la kulia na huwa inaacha kovu □ Ndiyo □Hapana

ii. Je alipata chanjo ya kupooza ambayo ni matone anayopewa mdomoni

□ Ndiyo □Hapana

iii. Chanjo ya kwanza ya kupooza aliipata lini?_____

iv. Alipata chanjo ya kupooza mara ngapi? _____

v. Je alipata Chanjo ya Dondakoo-Pepopunda-Kifaduro-Homa ya Ini (DTP-HB) ambayo huchomwa kwenyepaja au matakoni inayotolewa sambamba na ya kupooza ? □ Ndiyo □ Hapana

vi. Hii Chanjo ya Dondakoo-Pepopunda-Kifaduro-Homa ya Ini (DTP-HB) alipata mara ngapi? _____

vii. Je alipata chanjo ya surua ambayo huchomwa kwenye paja mtoto anapokuwa na miezi tisa? □ Ndiyo □Hapana

viii. Kama ndiyo, hiyo chanjo aliipata lini? _____

ix. Na chanjo hiyo ya surua aliipatia wapi? □Hospitali □Kwenye kampeni □Kwingine taja _____

x. Kama siyo, kwa nini hakupata hiyo chanjo?

_____

_____

36. Je _____(Taja jina la mtoto) alipata chanjo yoyote mbali na zile zinazotolewa kliniki ya watoto? □ Ndiyo □Hapana
37. Kama ndiyo, naomba unitajie chanjo hizo □Surua □Vitamini A □Kupooza □Dawa za minyoo □Nyingine taja _____
38. Je kumbukumbu za chanjo hizo/hiyo ziliandikwa wapi?

□Kwenye kadi □Hazikuandikwa □Sehemu nyingine taja _____

39. Je chanjo hizo zilitolewa wapi? □Hospitali □ Kwenye kampeni □Nyingine taja_____

40. Je, ni nani huwa anampeleka mtoto kliniki?_____
41. Tafadhali nitajie jina la kituo unachompeleka mtoto kwa ajili ya chanjo-_____
42. Huwa unatumia usafiri gani kwenda kliniki? □Kwa mguu □kwa basi kwa □gari la familia □Nyingine taja _____
43. Ni muda gani unatumia kutoka nyumbani kwako hadi kliniki? (Taja dakika)
44. Hivi kwa kipindi cha miaka mitatu iiliyopita kumekuwa na kampeni za chanjo mara ngapi katika eneo hili? (andika na mwaka au miaka)_____

    □Mara moja (taja mwaka _____) □ Mara mbili (Taja miaka _____)

    □Mara tatu (taja miaka _____) □ Sijui
45. Je mwaka huu kampeni za chanjo zilifanyika lini katika eneo hili? (andika tarehe)_____
46. Ni chanjo zipi zilitolewa?

    □Vitamini A □Chanjo ya surua □dawa za minyoo
47. Ulimpeleka mtoto wako kwenye kampeni hiyo? □Ndiyo □Hapana
48. Kama ndiyo, ni mahali gani paliandikwa kumbukumbu yoyote kuhusiana na chanjo alizopewa?

    □Taarifa iliandikwa □Taarifa haikuandikwa □hakupata chanjo

    □Mengine taja _____
49. Je, ulipataje taarifa kuhusiana na kampeni hiyo?

    □Tv □ Redio □Matangazo ya sauti kwa njia ya magari

    □Nyingine taja _____

TABIA ZA KAYA

50. Maji katika nyumba hii huwa yanapatikana kutoka wapi?

	vema		**Vema**
MAJI YA BOMBA		**MAJI TOKA MTONI**	
Bomba lililovutwa mpaka nyumbani		Mto unaotunzwa usifanyiwe uchafuzi	
Bomba uwanjani/Kitaluni		Mto usiotunzwa	
Bomba la wanajamii/lililo simamishwa eneo fulani		Maji ya mvua	
KISIMA		Maji juu ya uso wa nchi (Mto/bwawa/ziwa/Vidimbwi/kijito/mfereji/mkondo wa maji ya kumwagilia)	
Kisima kirefu			
Kisima cha kuchimbwa kwa mkono (Kinachotunzwa)		Kwingine (taja)	
Kisima cha kuchimbwa kwa mkono (kisicho tunzwa)			

51. Nani ndiye mmiliki wa chanzo hicho cha maji?
    □Mamlaka ya maji □Taasisi isiyo ya kiserikali □Mtu binafsi □Sijui
    □Mwingine taja
52. Ni muda gani huwa unatumia kwenda kwenye maji kusubiri na kurudi?
    □Dakika _____ □ Chanzo kipo nyumbani
53. Je, kuna chochote unafanya au kuweka kwenye maji hayo kabla ya kunywa? □Ndiyo □Hapana
54. Kama ndiyo huwa unafanya nini?
    □Nachemsha □Nayaweka dawa □Nayachuja kutumia kitambaa □Nayachuja kwa □kutumia mchanga □Natuima mionzi ya jua □Nayaacha yatulie
    □Nyingine taja _____

55. Choo cha kaya hii ni cha aina gani?

□Flashi kwenye mtaro wa maji machafu

□Flashi kwenye tanki la maji machafu nje

□Flashi kwenye shimo

□Choo cha shimo

□Ndoo

□Hakuna choo

□Nyingine taja

56. Je, choo huku huwa mnatumia na kaya nyingine? □Ndiyo □Hapana

57. Kama ndiyo, ni kaya ngapi zingine huwa wanatumia choo hiki? _____

58. Je kaya yako ina vitu vifuatavyo?

□Umeme □taa ya chemli □Redio □televisheni □Simu ya mkononi

□Simu ya mezani □pasi(ya mkaa /umeme □Friji

59. Nishati gani huwa mnatumia kwa ajili ya kupikia?

□Umeme □gesi ya mtungi □mafuta ya taa □Mkaa □kuni □Mabaki ya mazao □kinyesi cha wanyama □hatupiki chakula nyumbani □Nyingine taja _____

60. Sakafu (angalia kisha ujaze panapostahili, chagua moja tu)

□Ya udongo □Mbao □Sementi □Zulia □Terazo/vigae(tiles)

□Nyingine taja _____

61. Kuta (angalia kisha ujaze panapostahili, chagua moja tu)

□Majani □Fito na udongo □Mbao □Matofali ya kuchoma □Matofali ya sementi □Mawe □Nyingine taja_____

62. Paa (angalia kisha ujaze panapostahili, chagua moja tu)

□Nyasi/makuti □Bati □Vigae □Sementi □asbestos

□Nyingine taja _____

63. Madirisha □Ya vioo □Ya mbao □Nondo na nyavu

□ Nyingine taja _____

64. Kaya hii ina vyumba vingapi vya kulala? _____
65. Kuna mtu kwenye kaya hii anamiliki kitu kifuatacho? (Msomee ajibu Ndiyo au Hapana)

    □Saa ya mkononi □Baiskeli □Pikipiki □Gari □Akaunti benki
66. Je nyumba mnayoishi ni ya kwenu wenyewe? □ Ndiyo □Hapana
67. Kama siyo, mnalipa pango/kodi ya nyumba? □ Ndiyo □Hapana
68. Je, mmekuwako kwenye eneo hili zaidi ya miaka miwili iliyopita? □ Ndiyo □Hapana
69. Kama jibu ni hapana, lini mmehamia katika eneo hili _____
70. Mlihamia kutokea wapi?

    □Mtaa mwingine kata hii hii

    □Kata nyingine wilaya hii hii

    □Wilaya nyingine hapa hapa Dare s salaam

    □Kijijini hapa hapa Tanzania

    □Mji mwingine hapa hapa Tanzania

    □Nje ya Tanzania