

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

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**MSc. Applied Epidemiology Dissertation**

**Muhimbili University of Health and Allied Sciences**

**November, 2012**

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ASSOCIATED FACTORS AMONG UNDER FIVES IN  
TEMEKE DISTRICT, DAR ES SALAAM REGION,  
TANZANIA**

**By**

**Joyce Lyimo**

**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**

**Muhimbili University of Health and Allied Sciences**

**November, 2012**

**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  $\leq 73,300$  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 ( $\geq 90\%$  nationally and  $\geq 80\%$  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



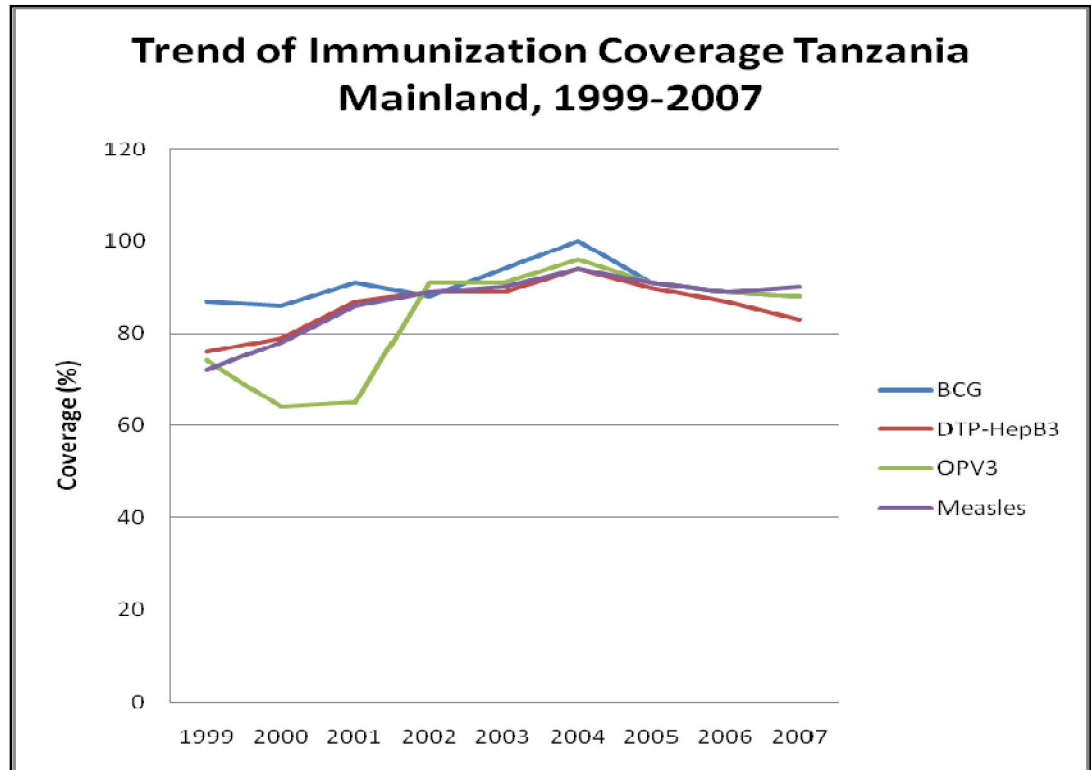
of measles and the appropriate and early management of measles complications [4]

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**

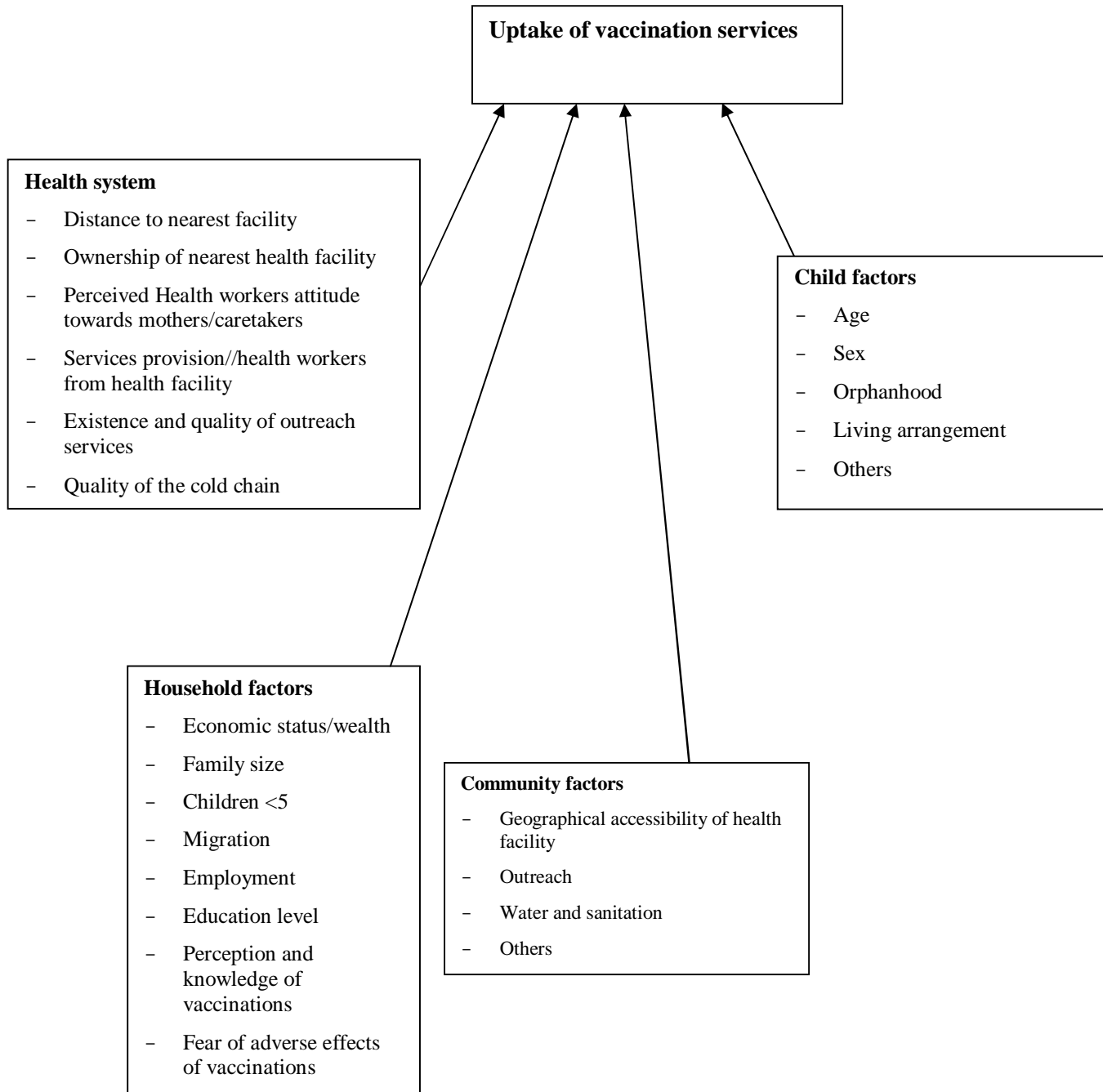
Vaccination coverage figures are generally available, however there is no information about factors affecting uptake of vaccination services in various areas. In order to define priorities and plan and implement interventions that aim to improve uptake of vaccination services, community-based information 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 km<sup>2</sup>. 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

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

where  $z = 1.96$

Coverage of measles vaccine = 82% [9]

Margin of error  $\epsilon = 5\%$

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

$$= 227$$

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**

<b>Ward</b>	<b>Number of measles cases reported in 2011 outbreak</b>
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 or 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%
<b>Total</b>	<b>295</b>	<b>100.0%</b>

### 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**

<b>Characteristic</b>	<b>Frequency</b>	<b>Percent</b>
<b>Sex of child</b>		
Male	131	44.4
Female	164	55.6
<b>Age group (months)</b>		
12-13	94	31.8
14-23	201	68.2
<b>Relationship to caretaker</b>		
Biological mother	289	97.9
Other	6	2.1
<b>Child birth order</b>		
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**

<b>Characteristic</b>	<b>Frequency</b>	<b>Percent</b>
<b>Marital status</b>		
Married	243	82.4
Not married	52	17.6
<b>Age in years</b>		
16-29	171	58
30 and above	93	31.5
Unknown age	31	10.5
<b>Education level</b>		
No schooling	23	7.8
Primary education	238	80.7
Secondary education	34	11.5
<b>Occupation</b>		
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
<b>Material making the floor</b>		
Sand	55	18.6
Cement/tiles	240	81.4
<b>Walls</b>		
Poles and sand	69	23.4
Cement/backed bricks	226	76.6
<b>Roofing</b>		
Grass	52	17.6
Aluminium/cement	243	82.4
<b>Windows</b>		
Wood/no materials	41	13.9
Iron rods with nets	254	86.1
<b>Toilet facility</b>		
Pit latrine	177	60
Flash toilet	118	40
<b>Own house</b>		
No	141	47.8
Yes	154	52.2
<b>Toilet sharing</b>		
Yes	178	62
No	109	38
<b>Households sharing a toilet</b>		
≤ 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 retained 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		Uptake level
	Number of children	vaccinated (routine and supplementary)	
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%
<b>Total</b>	<b>295</b>	<b>213</b>	<b>72.2%</b>

### 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%
Fever	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**

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

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

Ushiriki katika utafiti huu ni hiari .Kutokushiriki au kujittoa 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	<input type="checkbox"/> Male  <input type="checkbox"/> Female	<input type="checkbox"/> Male  <input type="checkbox"/> Female	<input type="checkbox"/> Male  <input type="checkbox"/> Female	<input type="checkbox"/> Male  <input type="checkbox"/> Female	<input type="checkbox"/> Male  <input type="checkbox"/> Female
Date of birth					
Where was the child born?	<input type="checkbox"/> At home <input type="checkbox"/> Health facility <input type="checkbox"/> Others Mention	<input type="checkbox"/> At home <input type="checkbox"/> Health facility <input type="checkbox"/> Others Mention	<input type="checkbox"/> At home <input type="checkbox"/> Health facility <input type="checkbox"/> Others Mention	<input type="checkbox"/> At home <input type="checkbox"/> Health facility <input type="checkbox"/> Others Mention	<input type="checkbox"/> At home <input type="checkbox"/> Health facility <input type="checkbox"/> 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 satisfactory  
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
<b>PIPED WATER</b>		<b>WATER FROM SPRING</b>	
Piped into dwelling		Protected spring	
Piped to yard/plot		Unprotected spring	
Public tap/stand pipe		Rain water	
<b>WELL</b>		Surface water	
Tube well or borehole		(river/dam/lake/ponds/stream/canal/irrigation channel)	
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 kuoia/kuolewa  
Tumeachana Tumetengana Mjane Other mention

6. (Kama ni mwanaume na ameo) 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	<input type="checkbox"/> Kiume <input type="checkbox"/> Kike	<input type="checkbox"/> Kiume <input type="checkbox"/> Kike	<input type="checkbox"/> Kiume <input type="checkbox"/> Kike	<input type="checkbox"/> Kiume <input type="checkbox"/> Kike	<input type="checkbox"/> Kiume <input type="checkbox"/> Kike
Tarehe ya kuzaliwa					
Mtoto alizaliwa wapi?	<input type="checkbox"/> Nyumbani <input type="checkbox"/> Kituo cha afya <input type="checkbox"/> Kwingine taja	<input type="checkbox"/> Nyumbani <input type="checkbox"/> Kituo cha afya <input type="checkbox"/> Kwingine taja	<input type="checkbox"/> Nyumbani <input type="checkbox"/> Kituo cha afya <input type="checkbox"/> Kwingine taja	<input type="checkbox"/> Nyumbani <input type="checkbox"/> Kituo cha afya <input type="checkbox"/> Kwingine taja	<input type="checkbox"/> Nyumbani <input type="checkbox"/> Kituo cha afya <input type="checkbox"/> 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 wafi 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
<b>MAJI YA BOMBA</b>		<b>MAJI TOKA MTONI</b>	
Bomba lililovutwa mpaka nyumbani		Mto unaotunzwa usifanyiwe uchafuzi	
Bomba uwanjani/Kitaluni		Mto usiotunzwa	
Bomba la wanajamii/lililo simamishwa eneo fulani		Maji ya mvua	
<b>KISIMA</b>		Maji juu ya uso wa nchi	
Kisima kirefu		(Mto/bwawa/ziwa/Vidimbwi/kijito/mfe reji/mkondo wa maji ya kumwagilia)	
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