

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ



**The National Ribat University**

**Faculty of Graduate Studies and Scientific Research**

**Mother's Knowledge and compliance regarding child vaccination in  
public health centers in Khartoum North**

**(2016- 2017)**

Dissertation Submitted in Partial Fulfillment for the requirement of the master  
degree in nursing science (pediatric nursing)

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# الآية



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## *Dedication*

*I dedicate this work to:*

*MY: mother*

*MY: father*

*MY: husband*

*MY: sisters and brothers*

*MY: daughters (rahaf and rital)*

*MY: all friends*

## *Acknowledgement*

**First I would like to thank ALLAH almighty for giving me courage and support in order to accomplish the task of my Master Thesis.**

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### List of abbreviation:

<b>1</b>	<b>BCG</b>	<b>Bacillus Calmette-Guerin</b>
<b>2</b>	CCM	cold chain monitor card
<b>3</b>	DPT	Diphtheria Pertussis Tetanus
<b>4</b>	DT	Diphtheria Tetanus
<b>5</b>	EPI	Expanded Program on Immunization
<b>6</b>	GAVI	Global Alliance for Vaccine and Immunization
<b>7</b>	HIB	Hepatitis B various
<b>8</b>	IPV	Inactivated polio
<b>9</b>	MMR	Measles Mumps Rubella
<b>10</b>	OPV	Oral Polio Vaccine
<b>11</b>	BOPV	Bivalent oral polio vaccine
<b>12</b>	TB	Tuberculosis
<b>14</b>	WHO	World Health Organization
<b>15</b>	MOH	Ministry of health

## **Abstract**

**Background:** Mother's knowledge play a major role in achieving complete immunization schedule. **Aiming:** to assess mothers knowledge and compliance regarding vaccination schedule. **Method:** This is a descriptive cross sectional facility base study by interview structured questionnaire for data collection sample of 150 mothers from bahary locality center participated in the study and analyzed by using the computerized program (statistical package for social science (spss) presented in form of tables and figure , percentage and mean. **Result :**Findings from the study revealed that most of mothers know vaccination benefit (85.2%) while their knowledge regarding vaccines( 55.2%) . It also revealed that family and friend (%73) and the mass media were the most accessible source of information (%73). Furthermore, the study outcome a high percentage of complete vaccination, However, the few mothers who could not complete the vaccination schedule for their children (%22.7) referred to sick of the child .**Conclusion:** The study concluded that knowledge poor regarding the vaccination so the mothers need health education about importance of vaccinations

## مستخلص البحث:

**المقدمة:** تلعب معرفة الأمهات دورا كبيرا في اكمال جدول التطعيم. **الهدف:** لتقييم معرفه الام والتزامها بجدول التطعيم. **الطريقة:** استخدمت الدراسة الوصفية المقطعية لقاعده المراكز الصحية عبر ملا الاستبيان عن طريق المقابلة لعينه أمهات عددها 150 ام شاركه من جميع مراكز بحري المختارة ، وقد تم التحليل باستخدام برنامج التحليل الاحصائي الالي حيث تم عرض البيانات باستخدام الجداول والرسم البياني بالنسب المئوية والوسط الحسابي. **النتائج:** معظم الامهات لديهن معرفه بفوائد التحصين (85.2%) بالرغم من ان معرفتهن فيما يختص بالتطعيمات (55.2%) وايضا اتضح ان الأسرة والاصدقاء (73%) ووسائل الاتصال من أكبر المصادر للحصول على المعلومات (73%). على الرغم من ذلك وضحت الدراسة نسبة عالية من اكمال جداول التطعيم، والقليل من الامهات اللاتي لم يكملن جداول التطعيم لأطفالهم (22.7) الجان ذلك لمرض الطفل.

# **Chapter One**

**(Background, Problem statement,  
Justification, Objectives)**

## 1-1Introduction

### BACKGROUND:

Childhood is one of the most important stages of human life. As the child goes through many stages of physical, mental and psychological development, they are prone to be exposed to variety of risk factors e.g.: communicable disease and malnutrition that may lead to poor health statues, handicap or increased chance of mortality. it is therefore , of a prime importance that quality of child care should be kept at it is optimal level throughout the entire stages of child development

(1)Vaccination is an important means of controlling disease and has been considered as the most cost effective health intervention .(2)

The wide spread using of vaccine has greatly improved global public health, preventing millions of childhood hospitalization and death each year.(3)

Vaccination's provided in most countries through the expanded program on immunization (EPI) and as a part of the primary health care approach. There are Different approach are used to enhance vaccination coverage such as fixed vaccination posts, outreach service and national vaccination days(4)

Worldwide vaccination coverage shows an increase in the past year but the validity of the official reports for measuring change over time has been questioned(5) .

The world health organization (WHO) experts show that there was a tendency to overstate the number of fully immunized children against vaccine preventable disease (6).

To improve mothers' awareness, good knowledge regarding vaccination is required. Therefore, multi disiplinary team should provide mothers with need information about the risks and benefits of vaccines [7]. Many studies showed that mothers' knowledge regarding child vaccination varies according to the family physician and other medical staff [8]. Although mothers would like to know about the benefits and other information about vaccines, many physicians include vaccine risk in their discussions with mothers without comparing it to the risks involved in infectious disease [9].

Mothers with good level knowledge regarding vaccination will be able to reduce the incidence of infectious diseases. The sources of information provided by maternity clinics, the media, literature, and the internet cover vaccination benefits and the risks of vaccine-preventable diseases [10, 11].

The most important factor affecting mother's knowledge is communication between mothers and the sources of information or vaccination providers [12]. Improving communication will improve mothers' perceptions of the benefits and risks of vaccines [13].

Mothers will be more likely to continue with their child's vaccination [14], although at the same time they may still be doubtful about vaccination[15] and fear from side effect [ 16].

Previous studies have shown that uptake of vaccination services is depend not only on provision of these services but also on other factors including knowled ge of mothers ,density of health workers accessibility to vaccination clinics[17,18].

## **1-2 Problem statement:-**

Epidemiological study has shown that 2.5 million deaths occurred every year as a result of vaccine preventable disease, mainly in Africa and Asia among children (19).

Cases of vaccine preventable disease (measles, rubella, TB, whooping cough, diphtheria and pertussis), in Sudan (Khartoum state) (2016):

measles: in 2016 total case in Khartoum (136 ), rubella: in 2016 total case in Khartoum (477), TB: in 2016 total case in Khartoum (1), whooping cough: in 2016 total case in Khartoum (39), diphtheria: in 2016 total case in Khartoum (39) and pertussis: in 2016 total case in Khartoum (1) case.

### **1-3 Justification:-**

An estimated 2.1 million people around the world died in 2002 by the disease can be prevented by vaccine.

There are missing vaccination schedule due to lack of understanding of next appointment.

## **1-4 Objectives:-**

### **General objective:-**

- To assess Mother's Knowledge and compliance regarding vaccination in bahry locality centers.

### **Specific objectives:-**

- To assess mother's knowledge regarding vaccination. (Importance).
- To determine compliance of the mothers regarding vaccination.

# **Chapter Two**

## **(Literature Review)**

## **2-1: Literature review;**

### **2-1-1: History of vaccination:**

It is known that the process of inoculation was used by Chinese physicians in the 10th century.(20) Scholar Ole Lund comments: "The earliest documented examples of vaccination are from India and China in the 17th century, where vaccination with powdered scabs from people infected with smallpox was used to protect against the disease. Smallpox used to be a common disease throughout the world and 20 to 30% of infected persons died from the disease. Smallpox was responsible for 8 to 20% of all deaths in several European countries in the 18th century. The tradition of vaccination may have originated in India in AD 1000. (21)The mention of inoculation in the Sacteya Grantham, an Ayurveda text, was noted by the French scholar Henri Marie Husson in the journal Dictionaries sciences medical's (22)Inoculation was reportedly widely practiced in China in the reign of the longqing Enperor (r. 1567–1572) during the Ming dynasty(1368–1644)(23). The Anatolian Ottoman Turks knew about methods of inoculation. This kind of inoculation and other forms of variolation were introduced into England by lady Montagu, a famous English letter-writer and wife of the English ambassador at Istanbul between 1716 and 1718, who almost died from smallpox as a young adult and was physically scarred from it. Inoculation was adopted both in England and in America nearly half a century before Jenner's famous smallpox vaccine of 1796(43) but the death rate of about 2% from this method mean that it was mainly used during dangerous outbreaks of the disease and remained controversial .(24)

It was noticed during the 18th century that people who had suffered from the less virulent cowpox were immune to smallpox, and the first recorded use of this idea was by a farmer Benjamin Jesty at yetmenster in Dorset, who had suffered the disease and transmitted it to his own family in 1774, his sons subsequently not getting the mild version of smallpox when later inoculated in 1789. But it was Edward Jenner, a doctor in Berkeley in Gloucestershire, who established the procedure by introducing material from a cowpox vesicle on Sarah Nelmes, a milkmaid, into the arm of a boy named JamesPhips . Two months later, he inoculated the boy with smallpox and the disease did not develop. In 1798 Jenner published An Inquiry into the Causes and Effects of

the Variable Vaccine, which coined the term vaccination and created widespread interest. He distinguished 'true' and 'spurious' cowpox (which did not give the desired effect) and developed an "arm-to-arm" method of propagating the vaccine from the vaccinated individual's pustule. Early attempts at confirmation were confounded by contamination with smallpox, but despite controversy within the medical profession and religious opposition to the use of animal material, by 1801 his report was translated into six languages and over 100,000 people were vaccinated.(25)

Since then vaccination campaigns have spread throughout the globe, sometimes prescribed by law or regulations. Vaccines are now used against a wide variety of diseases besides smallpox. Louis Pasteur further developed the technique during the 19th century, extending its use to killed agents protecting against anthrax and rabies. The method Pasteur used entailed

treating the agents for those diseases so they lost the ability to infect, whereas inoculation was the hopeful selection of a less virulent form of the disease, and Jenner's vaccination entailed the substitution of a different and less dangerous disease for the one protected against. Pasteur adopted the name *vaccine* as a generic term in honor of Jenner's discovery.

A doctor performing a typhoid vaccination in Texas, 1943

Developed successful vaccines for measles, mumps, hepatitis A, hepatitis B, chickenpox, meningitis, pneumonia and homophiles influenza (26)

## **2-1-2: World vaccination Week 2016: vaccination game-changers should be the norm worldwide**

The "Global Vaccine Action Plan" envisions a world where everyone lives life free from vaccine preventable diseases by 2020. It set 6 mid-term targets for 2015:

Vaccination against diphtheria, tetanus and whooping cough (DTP)

Target: Reach 90% coverage nationally and 80% coverage in every district or equivalent administrative unit against diphtheria, tetanus and whooping cough by 2015. Gap: 65 countries Introduction of new or under-utilized vaccines

Target: At least 90 low- or middle-income countries to have introduced 1 or more new or underutilized vaccines by 2015. ON TRACK.

Polio eradication

Target: A world free of polio. Gap: 2 countries remain polio endemic.

Maternal and neonatal tetanus: Global elimination by end-2015

Target: Eliminate maternal and neonatal tetanus in 59 priority countries. Gap: 21 countries.

Measles elimination

Target: Eliminate measles from 4 WHO regions by end-2015. Gap: 15% of all children are not being immunized against measles.

Rubella elimination

Target: Eliminate rubella from 2 WHO regions by end-2015. Gap: Half of all children do not receive the rubella vaccine. (27)

### **2-1-3: vaccination in Sudan:**

Vaccination is one of the strongest medical interventions and most feasible in the fight against diseases, particularly childhood diseases. (28)

The overall objective of the expanded program of immunization upgrade and improve the health of children without the public by reducing the rate of injuries and deaths caused by childhood that can be prevented through vaccination diseases (28).

The beginning of the vaccination program in Sudan:

Sudan began to like the attention of the world was the child's health since the year 1976 is the beginning of the EPI following the success of the smallpox eradication campaign

It began as a pilot program in three parts is greater Khartoum and Port Sudan island and then extended to cover the whole of Sudan

It included six traditional vaccines: BCG, triple, paralysis and measles vaccine as the last vaccine is introduced in 1985. (28)

## 2-1-4: processing of Vaccines:

1/measles -BCG - polio -Tetanus-DPT: 1976-2005

2/HBV: 2005-2006

3/penta vaccine: 2008

4/Rota: 2011

5/ inactivated polio (IPV): 2015

6/Meningitis: 2016

7/yellow fever: 2017(28)



## 2-1-5: EPI New Issues:

Polio Eradication:

The switch from the triple vaccine paralysis parity to polio vaccine Bivalent (29).

### 2-1-5-1: The final strategic plan to eradicate poliovirus:

At the end of the year 2013, the World Health Organization developed a "final strategic plan" from 2018 to 2013 to eradicate poliovirus. This plan aims to :

Withdraw all vaccines paralysis oral globally, starting with the component type 2 in April 2016 ("switch" from trivalent oral polio vaccine (OPV) to a bivalent oral polio vaccine (bOPV).

The introduction of the inactivated polio vaccine( IPV ) to routine immunization before switching from trivalent oral polio vaccine( tOPV) tobivalent ( bOPV) to maintain protection against all three poliovirus patterns of children (29).

### **2-1-5-2: switching from trio oral polio vaccine (tOPV) to bivalent polio vaccine(bOPV):**

In April 2016, Withdrawal of type 2

After April 2016, use of inactivated polio vaccine (IPV)+bivalent polio vaccine(bOPV)

Bivalent polio (IPV) will provide the protection of children, type 2 poliovirus after the pattern 2 has been removed from the oral polio vaccine( OPV).

Inactivated polio vaccine ( IPV) also provides extra protection against types 1 and By use them together OPV2 IPV and secured the best form of protection in the final stages of the eradication of the poliovirus (29).

### **2-1-5-3: Bacterial meningitis in a routine 2016:**

Sudan joined the network of regional investigation of meningeal bacterial in 2007, and the data available by the end of 2010 showed that 71% of all cases of bacterial meningitis were the result of cases of meningitis, Neisseria, and 18% is the ratio of cases of meningitis, pneumonia. And it is happening in Sudan a major epidemic of bacterial meningitis every 10-12 years.

To further improve the health status of the population and children in the country, in the 2012-2013 government of Sudan has conducted a vaccination against meningococcal campaigns (A) for the age group 1-29 years with support from global alliance for vaccine and immunization (GAVI) and donors have been executed in two phases, has achieved high coverage in all of Sudan ratios reaching the total coverage

ratio of more than 95%.It was preparing a proposal for the introduction of a vaccine meningitis in Sudan in September 2015, and has approved in December 2015.

Target age for routine vaccination of 9 months w89ith the initial dose of measles in July 2016.

Target age to drive up from one year to four years in October 2016(29)

### 2-1-5-4: EPI in sudan: (28)

Type of vaccine	Vaccination age	Dosage Method and Place of Vaccination	Amount of the dose	Number of doses	Dosage Time Difference Between	Disease
BCG vaccine	At birth	In the outer layer of the skin at the top of the left forearm	0.5 ml for children less than a year	one		Tuberculosis
Polio + muscle paralysis (taken with the third dose paralysis)	Zero dose 6weeks 10weeks 14weeks	Orally +  In the muscle in the outer part of the mid-thigh at 90 angle	0.5ml	Zero + 3doses routine	At least 4 week	Poliomyelitis
Compound vaccine	6weeks 10weeks 14weeks	In the muscle in the outer part of the mid-thigh at 90 angle	0.5ml	3doses	At least 4 week	Diphtheria, influenza , tetanus, and hepatitis type B
Rota virus vaccine	6weeks 10weeks 14weeks	Orally	0.5ml	2doses	At least 4 week	Diarrhea
Pneumococcal vaccine	6weeks 10weeks 14weeks	In the muscle in the outer part of the mid-thigh at 90 angle	0.5ml	3doses	At least 4 week	Meningitis - pneumonia - septicemia - and arthritis
Measles vaccine	9 month	Subcutaneous at the top of the left planters at a sharp angle	0.5ml	2Doses	9 month 18 month	Measles
Bacterial meningitis	9month	Subcutaneous at the top of the right planters at a sharp angle	0.5ml	One dose	9month 18month [ poster dose]	Meningitis

### **2-1-2: vaccination:**

Vaccination is the process whereby a person is made immune or resistant to an infectious disease, typically by the administration of a vaccine. Vaccines stimulate the body's own immune system to protect the person against subsequent infection or disease.

Vaccination is a proven tool for controlling and eliminating life-threatening infectious diseases and is estimated to avert between 2 and 3 million deaths each year. It is one of the most cost-effective health investments, with proven strategies that make it accessible to even the most hard-to-reach and vulnerable populations. It has clearly defined target groups; it can be delivered effectively through outreach activities; and - vaccination does not require any major lifestyle change. [30]

### **2-1-3: The Immunity:**

Immunity is the ability of the body to tolerate material that is indigenous to it and element material that is foreign. the immune system is comprised of organs and specialized cell that protect the body by identifying harmful substance known as antigens and by destroying them by using antibodies this protection active immunity - passive immunity.[31]

### **2-1-4: Some reasons to get vaccination:**

They help reduce the spread of disease to others. They are often needed for entrance into school or day care. And they may be needed for employment or for travel to another country. Getting immunized costs less than getting treated for the diseases that the shots protect you from. The risk of getting a disease is much greater than the risk of having a serious reaction to the vaccine. When vaccination rates drop below a certain level, preventable diseases show up again. Often, these diseases are hard to treat. For example, measles outbreak still occur in the U.S.[32]

## **2-1-5: Type of vaccine:**

### **Live attenuated vaccines:**

Bacterial: BCG, typhoid (oral), plagues.

Viral: oral polio, measles, mumps, rubella, yellow fever, influenza.

Rickettsia -Epi.typhus.

### **Killed or inactive vaccines:**

Bacterial: pertussis , typhoid, cholera, plague cs meningitis.

Viral: Rabies , hepatitis, (B) ,influenza, Salk polio.

Toxic: Bacterial, diphtheria and tetanus.

Cellular fractions: meningococcal and pneumococcal vaccines.

Combinations: DPT (diphtheria, pertussis, tetanus)

MMR (mumps, measles, rubella)

DT (diphtheria, tetanus)

HIB (H influenza a, Hepatitis (B) (33)

## **2-1-6: About vaccine-preventable childhood diseases:**

- Diphtheria is a serious disease caused by a poison made by bacteria. It causes a thick coating in the back of the nose or throat that makes it hard to breathe or swallow. It can be deadly (34)
- Hepatitis B is a serious infection that affects the liver.
- Homophiles influenza type B can cause severe pneumonia, meningitis and other serious diseases almost exclusively in children under the age of 5 (35)
- Measles is a highly contagious respiratory disease caused by a virus Measles causes fever, runny nose, cough and rashes all over the body. About one in 20

children with measles also gets pneumonia. For every 1,000 children who get measles, one or two will die.( 36)

- Pertussis (whooping cough) is a highly contagious respiratory disease, which produces violent, uncontrollable coughing which often makes it hard to breathe. Pertussis most commonly affects infants and young children and can be fatal, especially in babies less than 1 year of age.( 37)
- Pneumococcal disease can cause pneumonia, meningitis, or blood infection. In its worst forms, pneumococcal disease kills one in three people who contract it .( 38)
- Polio (poliomyelitis) mainly affects children under five years old. One in 200 infections leads to irreversible paralysis. Among those paralyzed, 5% to 10% die when their breathing muscles become immobilized( 39)
- Rotavirus is the leading cause of severe diarrhea in infants and young children. Globally, it causes more than half a million deaths each year in children under 5. ( 40)
- Children whose mothers have rubella during the early stages of pregnancy often contract congenital rubella syndrome. Children with congenital rubella syndrome are born with lifelong disabilities and are at risk for other developmental problems such as congenital heart disease and mental retardation.(41)
- Mothers and newborns contract tetanus, an extremely deadly and paralyzing disease, when deliveries happen in unhygienic conditions – as can be the case in remote and underdeveloped areas .(42)
- Tuberculosis (TB) is a disease that typically attacks the lungs. If not treated properly, Tuberculosis disease can be fatal .(43)

Yellow fever is found in tropical climates and is transmitted to humans by the bite of an infected mosquito. Illness ranges in severity from a self-limited febrile illness to severe liver disease with bleeding. Up to 50% of people who develop severe illness and are not treated may die. (44)

### **2-1-7: Contraindications:**

Permanent vaccine contraindications – only two conditions are generally considered permanent:

- Severe (anaphylactic) allergic reaction to a vaccine component or following a prior dose of a vaccine.
- Encephalopathy not due to another identifiable cause occurring within seven days of pertussis vaccination.

Temporary vaccine contraindications – two conditions are temporary contraindications to vaccination with live vaccines:

- Pregnancy
- Immunosuppressant(45)

### **2-1-8: provision of routine vaccination service:**

There are several strategies for the routine delivery of vaccination service from health facilities:

1-fix strategy:

A healthy foundation for debentures serve specific geographic area where vaccination services are provided by trained health staff with a refrigerator to save vaccines known schedule for citizens

2-outreachstrategy:

Is the location where vaccination services are provided to citizens outside the region holding the hard Center with device the cadre service are working hard with the status of health need to coordinate the time and place of vaccination services with local mobile

3-mobile strategy:

All team which cover areas where there are no health services in remote areas and the team is headed by local or administrative unit to demographic groups that are familiar with the need for coordination with the people of the region with a timeline panel usually consists of 4-6 members.(46)

## **2-1-9: Cold chain:**

A system for storing and transporting distribution 10 vaccines used in the expanded programmed on vaccination vaccine product factory beginning until it reaches the target child and seasoned with preserved in good condition, and effective throughout moved and stored in the different levels of cold chain is the cornerstone of EPI and guarantee the arrival of vaccines for children not properly. (29)

### **2-1-9-1: Levels of the cold chain:**

- Central level
- State level
- Local level
- Health units. (29)

### **2-1-9-2: Items of cold chain:**

First: equipment:

Devices and equipment for keeping and transporting vaccines from cool rooms- fridge-freezer-cooling boxes, packages-vaccine carriers. Indicators with thermometer and supervision Cold chain and icy enclosures

Second: individuals:

persons responsible for the management, storage, distribution and transportation and handling of vaccines this item is considered one of the most important elements of the cold chain so that without qualified and trained personnel for this work will be influenced by the cold chain system with the best equipment.

Third: a system of technical procedures:

The technical procedures for the management and control of the distribution and storage of vaccines serve as a guide for employees at various levels of the cold chain system. (29)

## **2-1-10: Vaccine refrigerator ranking health center on three basic criteria:**

1. Extent of vaccine resistance and stability when exposed to high temperatures.
2. Reliability of vaccine and its estimated when exposed to frost.
3. Vaccine sensitivity to light.

And this is put in the main section of the refrigerator as follows:

- Is placed at the top of the refrigerator (rack) shell oral children's vaccines, measles and viral trio or one of its components.
- Is placed in the Middle shelf of the fridge bacterial vaccines or quadriplegia Quintet, bacterial tetanus vaccine, Duo, and mitigation solutions.
- Water bottles are placed on the shelf below to maintain vaccine cooler while opening the fridge or refrigerator crashes during work.
- A thermometer is placed on the top shelf of the refrigerator.
- Taking into account the following:
- Vaccines are organized inside the refrigerator properly and correctly so that the cooling load evenly.
- Put only ice dispensers (pack Ice (and ice cubes (Ice cubes) in the cooling section (freezer) refrigerator.
- Must not be placed in the freezer door vaccines. (29)

## **2-1-11: Vaccine control methods:**

First: the cold chain monitor card (CCM):

Cold-chain monitor card is facilities for vaccines in its journey from the factory to the Central string State and local chain and even health center and in charge of vaccines not forget in any way move the observer vaccine when used outside the health center or when cleaning or maintaining your refrigerator.

Secondly: the vaccine vial monitor

Vaccine vial monitor vaccine is considered one of the most important developments in the history of the technology of the cold chain and had started using it worldwide

since 1996 with polio vaccine and a small box inside a circle in a paper glued on vaccine vial changes color if vaccine vials.

Thirdly: explosive from freezing:

A white paper with colored liquid fortified topic within very small container inside small plastic packaging themes. This indicator works on alarm of temperature drop below the required rates or freezing point to the following vaccines:

(Bacterial, bacterial duo, trio, tetanus vaccine, hepatitis b and Homophiles sustainable) if temperatures dropped below zero degrees Celsius for more than an hour and the degree to which these vaccines, freeze the liquid squirts out colored paper wet and stained.

Every refrigerator should contain also freeze and monitor must be placed this observer in vaccine funds portfolios when posting.

Fourthly: the freezing index advanced explosive:

Is a composite device that contains cold chain monitor card (Observer for high heat) and explosive antifreeze monitor Using the observer inside the refrigerator temperature control vaccine (-4 degrees Celsius, and the top + 10 ° c)

Fifthly: antifreeze scanner:

This other type of antifreeze scanners and listens and is composed of an electronic circuit for measuring temperature with signs of change if the temperature dropped to below zero to minus three hundred degrees for an hour the tags changed from (good) to (warning). This device also warns of freezing and must always be with vaccines (bacterial, bacterial duo trio, tetanus, and hepatitis).

Sixthly: test or mix the bottle:

This test is used to determine if the vaccine has been freezing for triple bacterial vaccines tetanus, Hepatitis B, diphtheria tetanus pertussis and derivatives.

If you froze a corkscrew, this test should work for all vaccines where freezing index positive for antifreeze.(29)

## Previous study (1)

The study done by Qutaiba B Al-lela et al. BMC Pediatrics 2014, 14:20 in Iraq

Are parents' knowledge and practice regarding immunization related to pediatrics' immunization compliance? a mixed method study.

**Results:** About half of studied child (n = 286, 56.3%) were immunized with all vaccination doses; these children were considered as having had complete immunization. 66.1% of the parents was found to have adequate KP scores. A significant association of immunization completeness with total KP groups ( $p < 0.05$ ) was found.

**Conclusions:** Future efforts are required to improve immunization rate and parents' knowledge and practice. The study results reinforce recommendations for the periodic assessment of immunization rate and the use of educational programs to improve the immunization rate, knowledge and practice.

## **Previous study (2)**

The study done by Nighat Nisar on: 27 May 2016 in Pakistan

Knowledge, Attitude and Practices of mothers regarding immunization of one year old child at MA watch Goth, Kamari Town, Karachi Article in Pakistan Journal of Medical Sciences Online March 2010.

Results: Majority of the mothers were illiterate, belonging to low-income group and not aware about the name of diseases in EPI Program. Majority (70%) of women started routine immunization of the child. The reasons for missing vaccination schedule were lack of understanding of next appointment, non-availability of health staff, mild flu and others reasons like household work. About thirty one percent mothers quit immunization after missing one dose. Health care staff was the main source of information. A positive attitude was reflected from both the parents towards immunization. A significant number stated that vaccination is contraindicated in mild illness of child.

Conclusion: The knowledge of our mothers about vaccination was found inadequate with strong positive attitude and limited practices.

# **Chapter Three**

**(Materials and Methods)**

### **3. Materials and Methods**

#### **3-1 Study design:-**

Descriptive cross sectional facility base study.

#### **3-2 Study area:-**

##### **bahary locality :**

Geographical information:

Basic information of the state:

Location: Northern part of Khartoum

Area: 4559.7 km

Population: roughly 799244 inhabitants

There is 88 centers in it, 12 from it is governmental center

in this study 3 from the governmental center were chooser because it was high prevalent of mothers :

Alkhatmia, Hashim mustafa and Alshabia.

#### **3-3 Study period:-**

-the whole duration of study from ( 2016-2017)

#### **3-4 Study population:-**

All mothers how have child in age of vaccination come to the centers during study period .

### **3-5 Sampling and Sampling size:-**

All the sample size was taken from this center alternated per week as total coverage(150) for the mothers whom were coming for the vaccination during the period of study and whom were agreed to participate in this study .

### **3-6 Data collection tool:**

Interview structured questionnaire consist of two part personal data and, knowledge of vaccination (benefit, source of information, and compliance by vaccination schedule)

### **3-7 Data collection technique:**

By asking question and interview

### **3-8 Data analysis and processing:-**

Data was analyzed by using the computerized program (statistical package for social science (spss) by mean and percentages presented in form of tables and figure.

### **3-9 Data presentation:-**

Data was presented in form of simple frequency statistical tables and graphic.

### **3-10: Ethical consideration:-**

Approval from national Ribat University, ministry of health research department, and from health centers.

Research purpose and objectives was explained to the mothers in clear simple words.

Mothers has right to withdraw at any time without any deprivation.

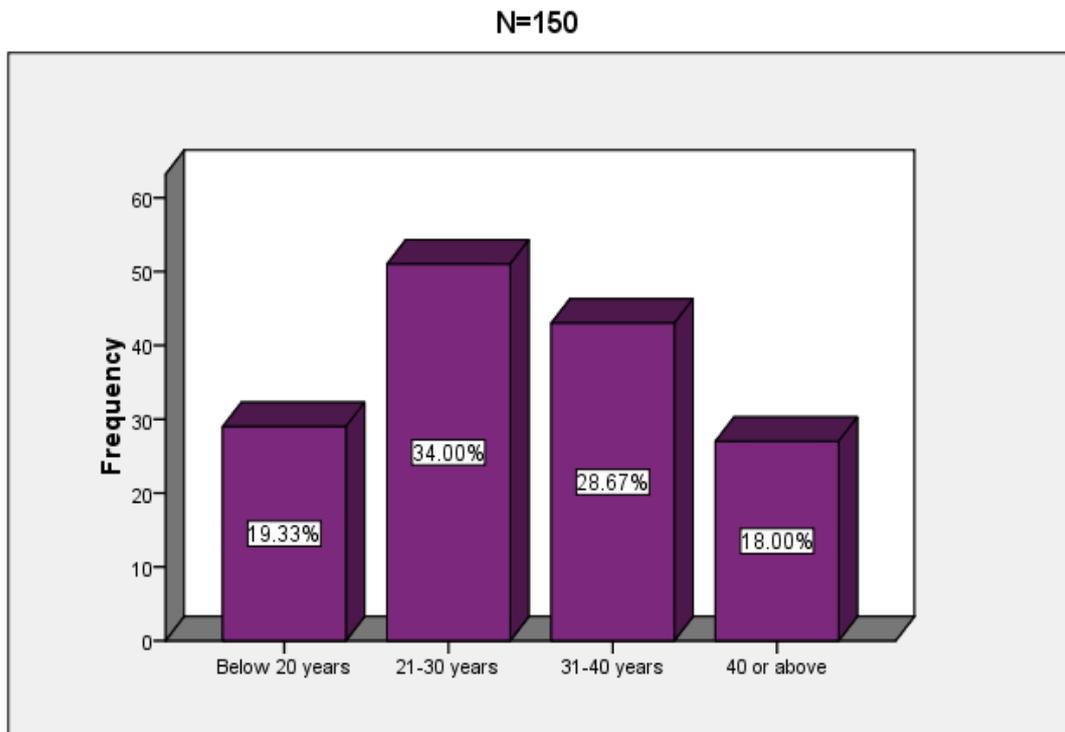
Mothers has right to no harm (privacy and confidentiality by using coded questioner).

Mothers has right to benefit from the researcher knowledge and skills .

# **Chapter Four**

**(Result)**

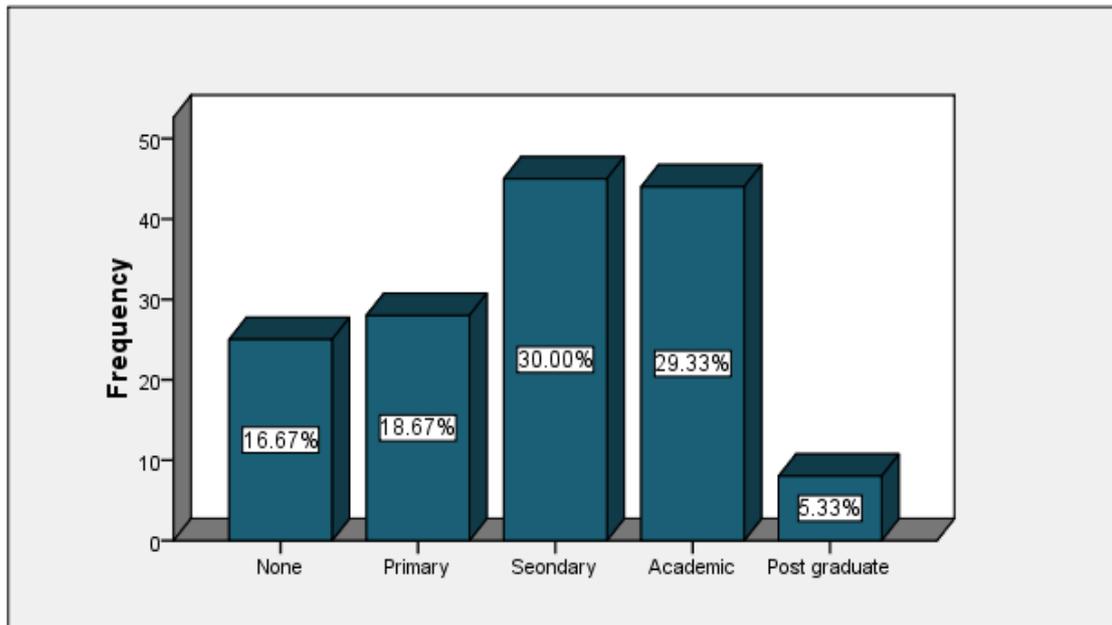
## 4: Results:



**Fig (4-1): age of the mother:**

According to the analysis there were 150 mothers participated in the study .their mean age was 24.5 years .Majority (51%) of the respondents were from 21 to 30 years and (43%) were from 31 to 40 Years of age. Only (29%) and 27% were below 20years and above 40years respectively.

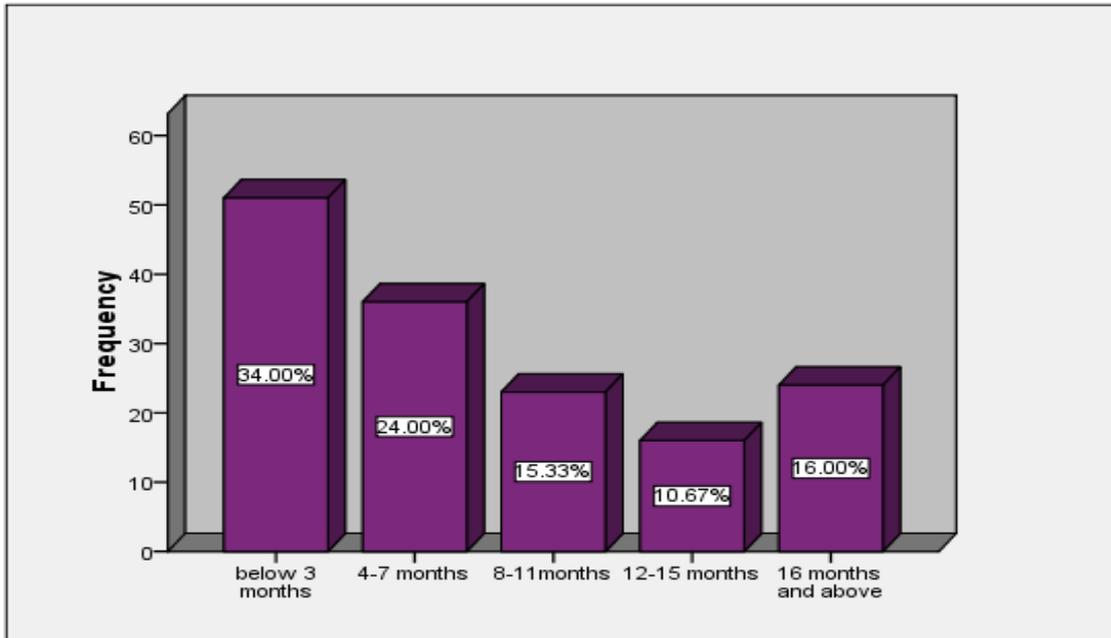
N=150



**Fig (4-2) Educational level of the mothers under study:**

most of the mothers had secondary education( 30%) and about (29.3%) had Academic education, while ( 18.7%) had primary education, (16.7%) not educated and only (5.3%) Post graduate.

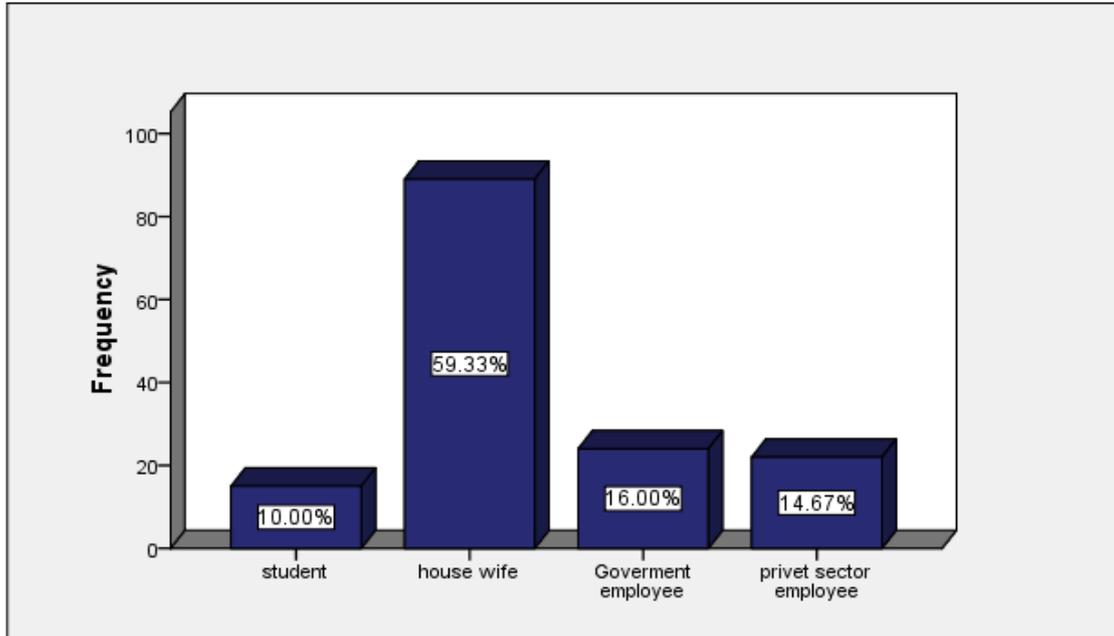
N=150



**Fig (4-3); child's age in months;**

As shown figure (4-3) more than (70.3%) of the children whose mothers took part in this study were below one year of which (34%) were below three months where as only (26.67%) were above 12 months.

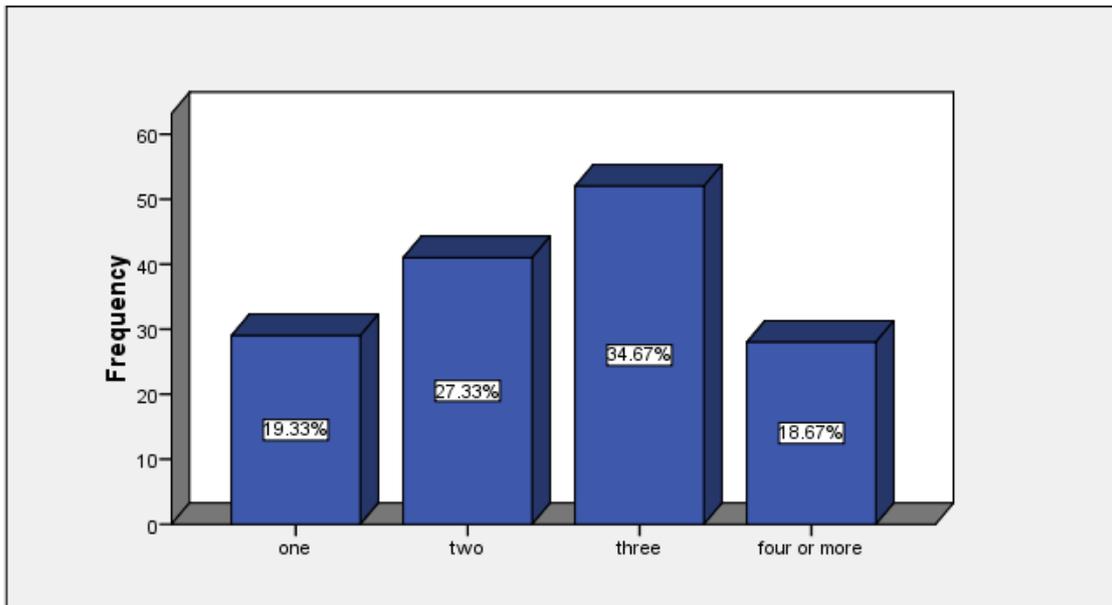
N=150



**Fig (4-4) employment status:**

Most of the mothers (59.33%) were housewife whereas (16% ) were Government employee and (14.7%) were in privet sector employee. Only few (10%) were student.

N=150

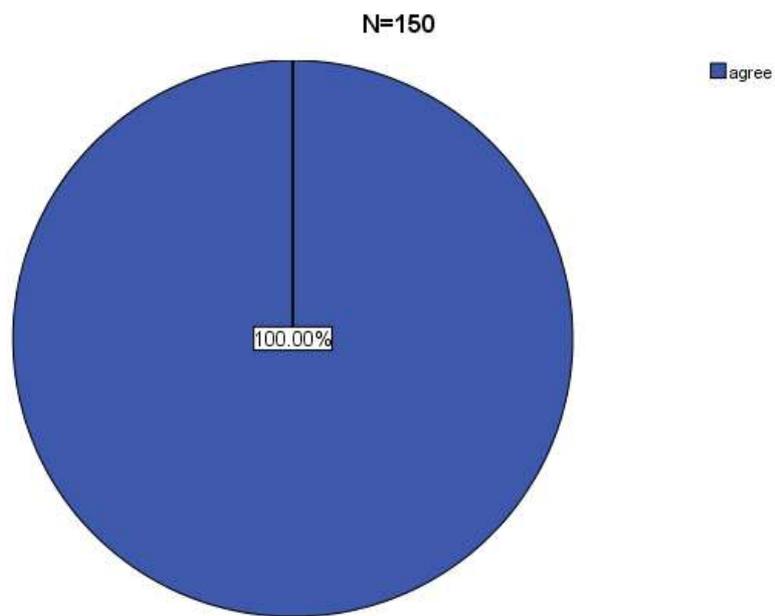


**Fig (4-5) number of children:**

Majority of the mothers had three children (34.7%), with only (28%) having 4 or more children.

**Section (1) presents results of mothers' knowledge on childhood vaccination:**

-childhood vaccination beneficial



**Fig (4-6):**

All of the mothers (100%) agree that the vaccination is beneficial to them.

**Table (4-1) show the knowledge of mothers regarding the main source of vaccinations information in bahry locality center:**

N = 150

Item	Yes	No	Uncertain
Mass media:	109 %73	18 %12	23 %15
Family & friends	109 %73	18 %12	23 %15
Antenatal centers:	98 %65	22 %20	30 %20
other:	77 %51.3	20 %13.3	35 %35.4
Mean	65.5%	57.3%	21.35%

The above table shows the mass media and family & friends is more source of vaccination information (73%).

**Table (4-2) show the knowledge of mothers about the vaccination which received by their children in the last visit bahary center:**

N = 150

Item	Yes	No	Un certain
BCG	27 %18	6 4%	117 %78
OPV	39 %26	5 %3.3	106 %70.7
Penta	53 %35	14 %9	83 %55.3
Pneumococcal	67 %44.4	17 %11.3	66 %44
Rota	65 %43.4	16 %10.7	96 %46
Measles	60 %40	34 %22.7	56 %37.3
Mean	34.4%	% 61	%55.3

In the above table show that more than half of mothers (55.21) did not know which vaccine that given for their children in the last visit. That mean they are poor knowledge regarding names of vaccine

**Section (2) the reason for complete or incomplete te schedule:**

This section presents respondents' motivations for completing or not completing vaccination schedules for their children.

Table (3) vitrifies vaccination status from vaccination card:

N = 150

Item	Frequency	Percent	Mean	Std. Deviation
Complete	116	77.3		
Incomplete	34	22.7	42008	42008
Total	150	100.0		

In above table ( 77.3%) distribution of the mothers had either completed or were up to date with all vaccination schedules and22.7% of the mothers either missed or had incomplete vaccination schedule

**Table (4): show the reason that influence lead the mothers to complete vaccination schedules.**

N = 150

Items	Yes	No	Uncertain
easy access to vaccination center	81 %54.0	29 %19.3	6 %4.0
is free vaccination services	79 %52.7	31 %20.7	6 %4.0
fear of my child contracting infectious diseases and death	99 66%	12 %8	5 %3.3
education from the mass media	82 %54.7	22 14.7%	12 8.0%
is advice from family partner or friends	82 54.7%	22 %14.7	12 8.0%
is well co-ordinate vaccination services	80 53.3%	26 17.3%	10 6.7%
Mean	55.9%	15.7%	28.4%

In the above table Fear of children contracting infectious diseases was the most cited reason for children on time and completing the schedule this was indicated (66%). Other reasons include advice from family and friends (54.7%) and easy access to vaccination (54%), free vaccination service (52.7%), education from the mass media(54.7%), well coordination vaccination service(53.3%).

**Table (5) shows the reason that prevents the mothers to complete vaccination for their children:**

N = 150

Item	Yes	no	Uncertain
<b>is busy work schedule</b>	14 %9.3	16 10.7%	4 2.7%
<b>is long waiting in queue at the vaccination center</b>	9 %6.0	21 14.0%	4 2.7%
<b>sick or on admission</b>	26 %17.3	5 3.3%	3 2.0%
<b>child developed side effect after last visit</b>	15 %10.0	14 %9.3	5 3.3%
<b>was too small to be taken out</b>	7 4.4%	21 14.0%	6 4.0%
<b>is had no money for transport to the centre</b>	6 %4.0	21 %14.0	7 %4.7

<b>is did not know the next schedule date or forgot the date</b>	11 %7.3	18 %12	5 %3.3
<b>is older child had side effect for particular vaccine so have decided not to immunize my children that vaccine</b>	12 %8.0	14 %9.3	8 %5.3
<b>Total</b>	8.2%	10.8%	3.5%

In the above table (17.3%) mothers said that when a child sick or on admission they would not continue to the vaccination schedule, also if the child develop side effect from last visit, (10%) Did not know the next schedule date and forgetting about the next schedule date ,( 7.3%) long waiting in queue at the vaccination center ,( 6.0%) because they were busy at work schdule9.3%, had no money for transport to center( 4.0%), was too small to be taken out and (4.4%) of the mothers said that older child had side effect for particular vaccine so she decided not to vaccinate her child that vaccine .

## DISCUSSION

This study conducted among mother knowledge and compliance regarding child vaccination.

Vaccination is an important public health interventions strategy to reduce the morbidity and mortality associated with infectious diseases. ; The finding is compared with previous study. There were 150 mothers participated in this study, their age was 21-30 years (34%) which compares with the study done by Doris Haganmay 2014 in at Kumasi metropolis in Ghana average age was 21-30 years (64.3%) Most of mother were secondary level of education (45%) and only (8%) was postgraduate, compared with Doris Haganmay 2014 in at Kumasi metropolis in Ghana study Majority (58.4%) of the mothers had primary education and about (9.8%) had tertiary education that mean Most of mother was educated . The majority of the mothers (89%) were housewife, consist with study done by Doris Hagan may 2014 in at Kumasi metropolis in Ghana study majority of them were self-employed (60.2%), Most of mothers (52%) had three children , in Doris Hagan may 2014 in at Kumasi metropolis in Ghana study majority (35.2%) of mothers had one child.

The study assessed the knowledge and compliance of the mothers who's came to the center to vaccinate their child.

The study revealed good level of knowledge on benefit of vaccination among mothers. This can explain that parents have personally experienced the about the benefits of vaccination for their children Thus, mothers were positively decide to vaccine their child.

mothers' sources of information or awareness of vaccines were mass media and family & friend are considered the most important source for vaccine information in current study that explain that mothers did not visit the ante natal center continually and they dependents to get the information in Sudan from the communities. This not consist with study done by Doris Hagan may 2014 conducted in at Kumasi metropolis in Ghana also identified the source of vaccination, which reveal that vaccine information obtain from antenatal center ,that explain that the mother visit the ante natal center continually.

regarding the name of vaccine which received by their children (55.2% ) that most of the mothers had limited knowledge the items of vaccine so this may affect their continuity for vaccination , that consist with the study that done by Doris Hagan May 2014 at Kumasi metropolis in Ghana which reveal that the majority of the mothers (68.8%) did not know the names of the vaccines which given for their children .

## **Section (2) the reason for complete or incomplete the schedule:**

Results from this study indicated (77.33%) of the mothers complete the vaccination for their children or were up to date with the vaccination schedule. This is consistent with the study done by Doris Hagan May 2014 at Kumasi metropolis in Ghana who found a high percentage (84%) is completed or up to date vaccination. The high vaccination status in these study's may be due to the mothers awareness regarding the vaccination benefits .Also the mothers completing vaccination schedule because they were fear from infectious diseases (66%) , received advice from family and friends(54.7%) , and easy access to vaccination center(54%) well coordinate of vaccination service (53.3%) , free vaccination service(52.7%). However, fear from infectious diseases was the most reason for immunizing their children on time and completing the schedule. (66%).And that is similarly with study done by Wu et al. (2008) reported that, majority of parents immunized their children to prevent them from getting vaccine preventable diseases.

Current study explored reasons that could stop parents from immunizing their children if the child develop side effect after the last visit (10.10%) this can be linked with finding done by Doris Hagan May 2014 at Kumasi metropolis in Ghana that few of the mothers disclosed that if their children developed side effects from the last vaccines they would stop immunizing them.

The next reason for in completing vaccination schedule the mother were busy(9.3%) and if the older child had side effect for particular vaccine that also can be cause for in complete vaccination schedule (8%).Another reason for incomplete vaccination schedule is did not know the next item of vaccination or forget the date (7.3%).some mothers(6%) said that the long waiting in queue at the vaccination center is reason for incomplete vaccination schedule ,

few mothers believe the child is too small to be taken out (4.4%)the last reason for incomplete vaccination schedule is had no money for transport to the center (4.0%)

there is study done by Janie et al (2008) is partial consist with the current study in the part of long waiting in queue in vaccination center (9%).

### **Conclusion:**

In current study more than half of mothers did not know regarding vaccination :(the name of vaccine the child received in the last visit (55.21%).

Also the mothers have knowledge regarding the benefit of vaccination, and most of the mothers (77.3%) have complete vaccination schedule

## **Recommendations**

The following recommendation is made to improve vaccination coverage in bahry locality:

1. Health education for the mothers about important of vaccination to enhance coverage in bahry locality centers.
2. Educate the mothers to keep record regarding vaccine, which received.
3. Health worker should explain the current dose of vaccine.
4. The health worker should reminders and explains to the mothers about the next time of vaccine, essential information about vaccination and time of the next dose of vaccine
5. Health facilities in bahry locality should ensure that mothers are given essential information on various type of vaccine

# **Chapter Five**

**(Appendixes)**

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46. Bahrey locality

## DATA COLLECTION INSTRUMENT

Code for Health facility..... Date.....

### **Section A- Background Information**

Please answer the following questions, assure you that your response will remain anonymous. Your co-operation is appreciated.

#### **1. What is your age group?**

A/ Below 20years

B/ 21-30years

C/ 31-40years

D/ 40 or above

#### **2. What is your level of education?**

A/ None

B/ Primary

C/ Secondary

4/ academic

D/ Post graduate

#### **3. Child's age in months**

A/ Below 3months

B/ 4-7 months

C/ 8-11 months

D/ 12-15 months

E/ 16 months and above

**4. What is your employment status?**

A/ Student

B/housewife

C/ governmental employee

D/ Private sector employee

**5. Number of children**

A/ One

B/ Two

C/ Three

D/ Four or more

**Section B- This section explores knowledge on childhood immunization and their benefits.**

**6. Is childhood immunization beneficial?**

A/ Yes

B/ No

C/uncertain

If yes answer question 7, if No move to question 8.

**7. Which of these is the main source of information on childhood immunizations?**

1/Antenatal

A\Yes

B\No

C\uncertain

2/Family & friends

A\Yes

B\No

C\uncertain

3/Mass media

A\Yes

B\No

C\uncertain

4/Health educator

A\Yes

B\No

C\uncertain

5/Other

A\Yes

B\No

C\uncertain

**8. What is the name of the vaccine your child received at your last visit?**

1/BCG

A\Yes

B\No

C\uncertain

2/OPV

A\Yes

B\No

C\uncertain

3/Penta Valent

A\Yes

B\No

C\uncertain

4/Pneumococcal

A\Yes

B\No

C\uncertain

5/Rotavirus

A\Yes

B\No

C\uncertain

6/Measles

A\Yes

B\No

C\uncertain

7/Do not know

A\Yes

B\No

C\uncertain

**9. Immunizations are for healthy children only.**

A\Yes

B\No

C\uncertain

**10. The child can get the disease even if she/he is immunized against that disease.**

A\Yes

B\No

C\uncertain





## أقرار موافقه الشخص الخاضع للبحث:

لقد اطلعت علي المعلومات الحالية والتي تم شرحها لي واتيح لي طرح الأسئلة كيفما شئت وقد تلقيت الاجابات الوافية عن كل الأسئلة و انا اقر بالموافقة علي المشاركة الطوعية في هذه الدراسة واعلم بحقي التوقف عن المشاركة في اي وقت دون ان يؤثر ذلك علي حقوقي في مثلا ( تلقي العناية الطبية اللازمة في اي وقت لاحقا)

رمز المشارك:

اسم المشارك:

توقيع المشارك:

رمز من ينوب عن المشارك (في حال الطفل او المعاق زهينا ...)

توقيع من ينوب عن المشارك شرعا:

عنوان من ينوب عن المشارك:

في حاله عدم قدره المشارك على قراءه الاقرار ويحتاج الي من يشرح او يترجم له:

اسم الشارح(المترجم):

عنوان الشارح او (المترجم):

توقيع الباحث:

## استمارة موافقه:

الشخص المشارك في البحث او من ينوب عنه:

انا الباحثة هديل محمد صالح فقير طالبة دراسات عليا بجامعة الرباط الوطني نقوم ببحث او دراسة عن مدي معرفه الام عن التطعيم ومدي التزامها بالزمن المحدد للجرعات

لقد تم اختيارك لتشارك في هذا البحث انت وطفلك ومعك عدد اخر من المشاركين من المداومين على هذا المركز ممن لهم اطفال في سن التطعيم.

نتوقع مشاركتك انت والمشاركين الاخرين على ان نتحصل على نتائج تمكن الموظفين القائمين على المركز من معرفه العوامل التي تؤثر في معرفتكم بالتطعيم واسباب عدم اكمال جرعات التطعيم و بالتالي تحسين المعرفة عن التطعيم والمساعدة على اكمال الجرعات.

خلال هذه الدراسة سأقوم بطرح عدد من الأسئلة عليك وسأقوم بتدوين اجابتك على الاستمارة المرفقة . هذه المعلومات ستحفظ بطريقه سريه. ولن يظهر اسمك في اي استمارة ونود ان نشير كذلك ان المشاركة في البحث طوعيه وان رفضك في المشاركة في البحث لا تفقدك الحق في المتابعة والعلاج بذا المركز ولن تؤثر في نوعيه الرعاية الصحية المقدمة اليك.

يجب التأكد علي انه لن يتم منحك اي قيمه نقدية مقابل المشاركة في هذا البحث وانه بمشاركتك ستكون احد المتطوعين اللذين يشملهم البحث وعددهم حوالي 150 مشارك متطوع.

كما نؤكد لك امكانيه الانسحاب من البحث في اي وقت تشاء ودون ابداء توضيح لأسباب الانسحاب . ويتم ذلك بالتوقيع علي طلب الانسحاب ولن يؤثر ذلك ايضا علي حقك في المتابعة والعلاج بهذا المركز ولن تؤثر علي نوعيه الرعاية الصحية المقدمة لطفلك.