



بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

Shendi University



Faculty of Graduate Studies and Scientific Research

Assessment of the Effectiveness of Immunization programme Among Children Under Five Years and their mothers in Shendi locality from 2016 – 2017

A thesis submitted in fulfillment for the requirements of Master's degree in public health

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قال تعالى :

﴿ يَا أَيُّهَا الَّذِينَ آمَنُوا قُوا أَنفُسَكُمْ وَأَهْلِيكُمْ نَارًا وَقُودُهَا النَّاسُ
وَالْحِجَارَةُ عَلَيْهَا مَلَائِكَةٌ غِلَاظٌ شِدَادٌ لَا يَعْصُونَ اللَّهَ مَا أَمَرَهُمْ
وَيَفْعَلُونَ مَا يُؤْمَرُونَ ﴾

سورة التحريم - الآية 6

Dedication

To those who taught me the high morals and the right path.
To the pulsating Nile, which is filled with love, as much as it is
full of courage and serenity.

To who sleepless nights for our sake, to the hands which have
given without limit a source of honor and pride.

My dear father...

To who instilled in my heart the love of God and the love of
knowledge.

To who was overwhelmed by purity and chastity.
To the spring of tenderness to the balm of healing to who tired
of my studies and was pleased to my happiness

My dear mother...

To the bright minds and hearts affectionate to those who believe
in their minds and hearts and were support me.

My Brothers and Sisters ...

To the right path, whom I cherish and boast
My grandparents - my grandmothers - my uncles - my aunts.
My beautiful memories formed and painted and lunged my life
with the colors of joy

My friends ..

To those who have made themselves a ladder, so that anyone
who wants to be enlightened with the light of knowledge will
rise up.

My dear teachers ..

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Thanks first and finally to God the Lord of the World

The sea we get it from the flood whenever we think of going into the depth and found it put in the surface what we want,
To all who light a candle in the path of our knowledge, and especially thanks to

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List of abbreviation

Abbreviation	Mean
BCG	Bacillus Clamette Guerin
CSF	Cerbro Spinal Fluied
DTAP	Diphtheria Tetanus and Pertussis
EMR	The Eastern Mediterranean Region
EPI	Expanded Program on Immunization
GIVS	Global Immunization Vision and Strategy.
HCV	Hepatitis C Virus
HDV	Hepatitis D Virus
HIB	Haemophilus Influenza Type b
IPV	Inactivated Polio Vaccine
OPV	Oral Polio Vaccine
PCV	Pneunococcal polysac Charrde Vaccine
PPSC	Pneumococcal Polysaccharrade Vaccine
SPSS	Statistical Package for Social Sciences
TB	Tuberculosis
TT	Tetanus Toxoid
WHO	World Health Organization

Abstract

This cross sectional descriptive study was conducted in order to assess of immunization effectiveness program among children under 5 years of age and their mothers in Shendi locality form 2016 – 2017.

Where the sample was selected by equation in 384 samples of mothers in Shendi locality, which were distributed by cluster sample. The locality was divided into five administrative units. The sample was taken according to the number of mothers in each unit as follows:

Shendi City 156 Samples, North Shendi 47 samples, South Shendi 46 samples, Kabushiya 59 samples, Hagar Elasal 76 samples.

The data were distributed randomly in the city,countries and villages. And mothers were visited in their houses.

The data were collected by observing and interviewing with the director of the (EPI) in the local area, as well as through the records of the program in the local area, and then downloading all the questionnaires in the Excel program and then transferring the answers numbers to the program (SPSS) and write all the variables and then analyze the data entered so that the results are published in the table forms for analysis and the most important findings of the study:

- All children were received vaccination targeted immunization services, this indicate changes in concept of mothers and their beliefs about vaccination which indicate the EPI effectiveness.
- (99.5%) of the children completed all vaccine.
- (0.5%) of children did not complete vaccination whom (50%) did not complete due to diseases and (50%) of them because of the lack of importance of vaccination, also concept of mother about vaccination.
- (95.3%) of children did not have any disease this indicate the role vaccination in reducing the spread of disease.

- (98%) and above were coverage for child immunizations in 2016 and 2017 while coverage was low for tetanus vaccination in 2016 and 2017, this showed the EPI effectiveness.

The rate of local paralysis is (2) cases reported in 2016 and 2017 at 150%.

- The rate of local measles is (7) cases reported by 85.7% in 2016 and 100% in 2017, this study found that effectiveness of surveillance program and notification.

According to result the study recommended the following:

- Federal administration of immunization program and at state level showed continues in support to improve and availability vaccination to all children and women in targeted group age.
- Administration of immunization program at locality level coordination with health promotion management to raise awareness among mothers and society to increase coverage by tetanus toxoid vaccine and necessary to take all doses especially measles and Penta valent reduce the infection of measles and whooping cough.

مستخلص الدراسة

أجريت هذه الدراسة الوصفية المقطعية بمحلية شندي بهدف دراسة فاعلية برنامج التحصين وسط الأطفال أقل من خمسة سنة وأمهاتهم بمحلية شندي في الفترة من 2016 إلى 2017م.

حيث تم اختيار 384 عينة بالمعادلة من الأمهات بمحلية شندي وتم توزيعها بالعينة العنقودية حيث تم تقسيم المحلية إلى خمسة وحدات إدارية وتم أخذ العينة بناءً على عدد الأمهات في كل وحدة كآتي:

مدينة شندي 156 عينة، شمال شندي 47 عينة، جنوب شندي 46 عينة، كبوشية 59 عينة، حجر العسل 76 عينة.

وتم توزيعها عشوائياً داخل الأحياء/ القرى وتمت زيارة الأمهات بالمنازل وأيضاً تم جمع البيانات عن طريق الملاحظة والمقابلة مع مدير برنامج التحصين الموسع بالمحلية وكذلك عن طريق السجلات الخاصة بالبرنامج بالمحلية. ومن ثم تنزيل جميع الاستبيانات في برنامج الإكسل وبعد نقل أرقام الأجوبة إلى برنامج تحليل الحزم الإحصائية للعلوم الاجتماعية وكتابة جميع المتغيرات وبعد ذلك تحليل البيانات المدخلة وبذلك تخرج النتائج في شكل جداول لتحليلها ومن أهم النتائج التي توصلت إليها الدراسة:-

- كل الأطفال تلقوا التطعيمات المستهدفة بخدمات التحصين، وهذا يدل على تغيير مفهوم الأمهات واعتقاداتهم حول التطعيم وأيضاً على فاعلية برنامج التحصين.
- (99.5%) من الأطفال أكملوا كل اللقاحات بينما (0.5%) لم يطعموا والذين لم يكملوا منهم (50%) بسبب المرض (50%) بسبب عدم أهمية التطعيم أيضاً يدل على تغيير مفهوم الأمهات.
- (95.3%) من الأطفال لم يصابوا بأي مرض، مما يوضح دور التطعيم في تقليل الأمراض.
- (98%) فما فوق كانت التغطية لتطعيمات الأطفال في العامين 2016م و2017م بينما كانت التغطية متدنية بالنسبة لتطعيم التيتانوس في الأمهات في العامين 2016م و2017م، مما يدل على فاعلية برنامج التحصين.
- حالات الشلل للمحلية هو (2) حالة تم التبليغ عنها خلال الأعوام 2016م و2017م بنسبة (150%) .

- حالات الحصبة هي (سبعة) حالات للمحلية وتم التبليغ عنها بنسبة (85.7%) في العام 2016م ونسبة (100%) للعام 2017م، هذا يدل على فاعلية برنامج التقصي والتطبيق.

وأوصت الدراسة بالآتي:-

- على إدارة برنامج التحصين الاتحادي والولائي الاستمرار في تقديم الدعم في تحسين وتوفير اللقاحات للأطفال والنساء في الفئة العمرية المستهدفة وكذلك زيادة التغطية في خدمات التحصين.

- على إدارة التحصين على المستوى المحلي التعاون مع إدارة تعزيز الصحة وذلك برفع الوعي وسط الأمهات والمجتمع تجاه تطعيم تيتانوس الأمهات وضرورة أخذ كل الجرعات خصوصاً الحصبة والخماسي لتقليل الإصابة بالحصبة والسعال الديكي.

Chapter One

Introduction

Problem statement

Justification

Hypotheses

Objectives

Chapter one

1.1. Introduction

The word immunization refers to children who are exposed to epidemic and infectious diseases at an early age. Hence, vaccines have been developed to immunize children against these diseases that have been affecting people and children of the world, such as polio, pertussis (*whooping cough*) and so on. (www.unicef.org)

Besides that , the first start of the expanded program of immunization in Sudan in 1976 targeting children under the year and not all of the diseases targeted at the time, but some, and later targeted 6 deadly diseases: tuberculosis, diphtheria, pertussis, ... etc. Studies have shown that these diseases are among the first leading causes of death for children under the age of six, and support has been provided to countries from (WHO, UNICEF and non-governmental organizations), including cold-chain equipment, transport and vaccines. (www.unicef.org)

In addition, the EPI program is called to the target of a continuous increase in population growth, because vaccines are added periodically, and in 1985 the measles vaccine was introduced. In 1999, hepatitis was added. In 2005, Hib B vaccine was added) in a five integrated vaccine against five deadly diseases (diphtheria, pertussis, tetanus, haemophilus influenza, hepatitis) and replaced the triple vaccine. Yemen had the lead among the countries of the region in introducing this combined vaccine.

Besides to campaigns against polio intensively to stop the disease in 2009.(www.unicef.org)

The Federal Ministry of Health announced the introduction of a new vaccine (Intra muscular polio vaccine) to vaccinate children against poliomyelitis, and at the time when the World Health Organization in 2018 a date for the declaration of the world free of poliomyelitis, and confirmed the ministry to provide the new vaccine within vaccines in health centers on the first

of next June, For global health commitments to eradicate the virus. (Mass media center , 2015)

"The World Health Organization decided to introduce myocardial infarction in order to eradicate the virus in Nigeria, Afghanistan and Pakistan, in preparation for the last step to eradicate the disease from the world," said Musab Brier, Director of Health Promotion at the ministry: "Sudan has been paralyzed for six years, except for some cases," he said.

The immunization official in the Ministry of Health: Sitna Ahmed El Sayed said that: the oral vaccine will be eliminate in 2016 and replaced by injecting muscle targeting children under the year as a first step to the beginning of the end of eradication.(mass media centre 2015)

1.2. Problem statement

There are threat to many of the health of the kids and may lead to death and injury not just in Sudan but also many countries of the world, newborn deaths represent about half (44%).

In 1976, only 10 children were vaccinated. The result was the outbreak of the pertussis epidemic in Japan and in 1979, where more than 13,000 children were infected and 41 children died. (www.uncief.org)

In Bangladesh, in 1990, the infant mortality rate was 100 deaths per 1,000 births. In the same period, the mortality rate among children under the age of five was 144 cases, at 72%. (www.unicef.org)

In sudan in 1980, before immunization spread coverage for measles ,there about 2.6 million death per year .Also there was reduction in polio infection (99%) from 1988 was 350.000 cases to 22 cases at 2017. Therefore, the lack of vaccination is a real problem to be identified. (www.unicef.org)

1.3. Justifications

A- vaccination here targets kids; the lack of resistance to their bodies and high injury ill. (Mass media center , 2015)

B- still, there are beliefs that have some people to vaccination lead to injury to the child paralyzed?

C- Some families delay the vaccination of the child, to years to the age of any child reaches a full year or about a year; one the pretext that the child is small cannot vaccination.

D- Represent the category of mothers and children 75% of the society; so a hention to the health of this chip represents a big a risk raising the level of health. (www.unicef.org)

E- Because kids are always the victim of any ignorance so there must be study to determine the importance of immunization have mother and their knowledge of the basic information on immunization and the destination is receiving information, they may be studying in one village they have to take a little moms, but may give an idea about the immunization in many village of the Sudan. (Mass media center, 2015)

1.4. Hypotheses

1. Most mothers start vaccinating their children after forty days.
2. There is great interest for families to vaccinate children up to 100%.
3. Most cases of childhood measles and whooping cough.

1.5. Objectives

1.5.1. General objective:

To assess of the effectiveness of immunization programme among children under five years and their mothers in Shendi locality from 2016 -2017.

1.5.2. Specific objectives:

1. To determine concept of mothers about immunization programme.
2. To determine the coverage with vaccines that targeted by immunization programme.
3. To identify on effectiveness of surveillance system in immunization programme.
4. To assess vaccination with tetanus toxoid vaccine among mothers.

Chapter Two

Literature Review

2. Literature review

2.1. Definition of vaccines:

The word " vaccine " originates from the Latin Variolae Vaccine (cow pox), which Edward Jenner demonstrated in 1794 could prevent small pox in humans. Today the term ' vaccine, applies to all the biological preparations, produced from living organism, that enhance immunity against disease and either prevent (prophylactic vaccines) or, in some ease, treat disease (therapeutic vaccines). Vaccines are administered in liquid form, either by injection by oral, or by intranasal routes. (WHO, 2012).

What is vaccine?

A vaccine is an non pathogenic antigen that mimics a particular pathogen in order to elicit an immune response as if that actual pathogen. Where in the body. (ahma20.Yolasite.com).

Vaccines are composed of either the entire disease causing micro organism or some of its components. . (WHO, 2012)

They may be constructed in several ways:

- From living organism that have been weakened, usually from cultivation under sub- optimal conditions (also called attenuation) or from genetic modification, which has the effect of reducing their ability to cause disease, inactivated by chemical, thermal or other means.
- From components of the disease – causing organism, such as specific proteins and polysaccharides, or nucleic acids.
- From inactivated toxin – producing bacteria.
- From the linkage (conjugation) of polysaccharides to proteins (this increases the effectiveness of polysaccharide vaccines in young children).

(WHO, 2012)

What does a vaccine contain?

In addition to the bulk antigen that goes into a vaccine, vaccines are formulated (mixed) with other fluids (such as water or saline), additives or preservatives, and sometimes adjuvant. . (WHO, 2012)

Collectively, these ingredients are known as the excipients, these ensure the quality and potency of the vaccine over its shelf – life. Vaccines are always formulated so as to be both safe and immunogenic when injected into humans.

Vaccines are usually formulated as liquids, but may be freeze, dried (lyophilized) for reconstitution immediately prior to the time of injection.

(WHO, 2012)

How do vaccine work?

When inactivated or weakened disease causing micro organisms enter the body, they initiate an immune response. This response mimics the body's natural response to infection. But unlike disease – causing organisms, vaccines are made of components that have limited ability, or are completely unable, to cause disease. (WHO, 2012)

The components of the disease – causing organisms or the vaccine components that trigger the immune response are known as " antigens " these antigens trigger the production of " antibodies " by the immune system.

Antibodies bind to corresponding antigens and induce their destruction by other immune cells. The induced immune response either a disease causing organism or to vaccine configures the body's immune cells to be capable of quickly recognizing, reacting to, and subduing the relevant disease causing organism. When the body's immune system is subsequently exposed to same disease causing organism, the immune system will contain and eliminate the infection before it can cause harm to the body. (WHO, 2012)

2.2. Immunology:

In status of living organism impregnable who is not able to protect himself from injury elements considered by the body strange and injurious such as microbes. (EMAAD,2015)

2.3. Types of immunization:

A. Active immunization:

It consists of inducing the body to develop defense against diseases by administration of vaccine or toxoid that.

Vaccine a suspension of attenuated live or killed micro organism or antigenic portion of these agents presented to potential host to induce immunity and prevent disease. (Gupta, et al , 2007)

Toxoid a modified bacterial toxin that has been made non-toxic but retains the capacity to stimulate the formulation of antitoxin.

Immune globulin an antibody containing solution derived from human blood by cold ethanol fractionation of large pools of plasma and used primarily for maintenance of the immunity of immuno deficient persons or for passive immunization. (Gupta, et al , 2007)

Antitoxin an antibody derived from the serum of animals after stimulation with specific antigens and used to provide passive immunity.

Stimulates the immune system to produce antibodies and cellular immune response that protects against the infectious agent. The principal approaches to active immunization are use of live, usually attenuated infectious agents (oral polio vaccine, measles vaccine) and use of inactivated or detoxified agents (DPT vaccine), or specific products of recombination (Hepatitis B).

- (i) Live attenuated vaccines induce an immunologic response more like that elicited by natural infection.
- (ii) Inactivated or killed vaccine consist of inactivated whole cell vaccine (pertussis vaccine), detoxified exotoxins (tetanus toxoid), endotoxine linked to carrier protein, soluble capsular material (pneumococcal vaccine) or conjugated casular material (Hib conjugate vaccine), recombinant extract of some components (Hepatitis B) or component of organism (sub unit influenza vaccine).

(Gupta, et al , 2007)

B- Passive immunization.

It consists of providing temporary protection through administration of exogenously produced antibodies.

Examples include administration of specific immunoglobulin in tetanus and diphtheria. Mechanic. (Gupta, et al, 2007).

2.4. Expanded programme immunization in the world:

WHO/ Global immunization vision and strategy (GIVS) in response to challenges in global immunization, WHO and UNICEF developed the **Global immunization vision and strategy, 2006 – 2015:**

In brief, GIVS aims to immunize more people, from infants to seniors, with a greater range of vaccines. Its chief goal is to, by 2015 or earlier, reduce illness and death due to vaccine – preventable diseases by at least two thirds compared to 2000 levels. ([http:// www.who.int](http://www.who.int))

GIVS has four main aims:

- (1) To immunize more people against more disease.
- (2) To introduce a range of newly available vaccines and technologies.
- (3) To provide a number of critical health interventions and surveillance with immunization.
- (4) To manage vaccination programmes and activities within the context of global interdependence.

It provides almost 25 strategies from which countries can choose for implementation according to their specific needs. ([http:// www.who.int](http://www.who.int))

Goals:

Between 2006 and 2015, all those working in immunization and related product development should strive to prevent morbidity and mortality by achieving the following goals and targets. ([http:// www.who.int](http://www.who.int))

By 2010 earlier:

- (1) Increase coverage.

Countries will reach at least 90% national vaccination coverage and at least 80% vaccination coverage in every district or equivalent administrative unit.

- (2) Reduce measles mortality.

Globally, mortality due to measles will have been reduced by 90% compared to the 2000 level. ([http:// www.who.int](http://www.who.int))

By 2015 or earlier (as the case may be):

- (1) Sustain coverage.
- (2) Reduce morbidity and mortality.
- (3) Ensure access to vaccines of assured quality.
- (4) Introduce new vaccine. (<http://www.WHO.int>)

2.5. Expanded program on immunization in Sudan:

Expanded program on immunization (EPI) was established in Sudan in 1976 in a few states but it eventually expanded geographically to cover the whole of the country, the EPI offer 5 vaccines " BCG, OPV, pentavalent (DTP/ HepB Hib) Rota virus and measles " that protect children against a childhood diseases. These vaccines target children under the age of one year; in January 2012 the programme introduced a booster measles dose and will continue to introduce new vaccines in the future, pregnant women an women of child bearing age are also protected through vaccination with tetanus toxoid. (www.unicef.org)

The EPI also implement global initiative such as the eradication of poliomyelitis, and elimination of measles and neonatal tetanus and has hence entered every house hold in the country even in the most remote areas. Sudan started celebrating a vaccination day since 2006 on 17 July 2006 as this day marked the vaccination of the first child in Sudan. (www.unicef.org)

In 2010, the eastern Mediterranean region (EMR) started celebrating a vaccination week and Sudan changed its original date to that chosen by EMR which is 24 April in 2012.

The EPI with introduce of the hepatitis B vaccine in 2005 and with the haemophilus influenza b (Hib) conjugate vaccine. In 2008 Hib will be delivered as part of the pentavalent vaccine comprising diphtheria, tetanus, pertussis, Hib, hepatitis B. (www.unicef.org)

EPI programme achieves reduction in morbidity and mortality through mass routine immunization campaigns to increase coverage rates with in children, the Sudanese government's contribution to EPI activities remains

limited to covering salary and some operational costs as consequence. The EPI in Sudan continues to principally funded by the generous support of external donors. (www.unicef.org).

The expanded immunization program, the WHO is initiative to improve immunization coverage, focuses on the following four items:

- 1- Standardizing immunization schedules.
- 2- Promoting safe injection technologies.
- 3- Improving the stocking and availability of vaccines.
- 4- Protecting vaccines potency through cold chain management.

(ahma 20.yola site.com)

The objective of EPI:

- 1- To increase coverage of immunization for eligible children.
- 2- To reduce the incidence if immunizable diseases among children below five year of age.
- 3- Promoting safe injecton techniques.
- 4- Improve the stocking and availability of vaccines.
- 5- Protecting vaccine potency through cold chain management.
- 6- To prepare for introduction of new vaccines (ahma 20.yolasite.com)

2.6. Childhood diseases:

2.6.1. Poliomyelitis:

Poliomyelitis is an acute viral infection caused by an RNA virus. It is primarily an infection of the human alimentary tract but the virus may infect the central nervous system in a very small percentage (about 1 percent) of cases resulting in varying degrees of paralysis and possibly death. (park, 2011).

Mode of transition:

Transmitted by person to person contact, though faeco-oral route or oral-oral route. (Poorun, 2010).

Incubation period:

Usually 7 to 14 days (range 3 to 35 days) (Park, 2011).

Early symptoms:

- High fever, headache, stiffness in the back and neck.
- A symmetrical weakness of various muscles, sensitivity to touch, difficulty swallowing, muscle pain, loss of superficial and deep reflexes, paraesthesia (pins and needle).
- Irritability, constipation, or difficulty urinating. (Poorun, 2010)

Type of poliomyelitis:

1- Paralytic polio:

- Incidence and extent increase with age.
- In children, non paralytic meningitis – most likely consequence, and paralysis – only 1 in 1000 cases.
- In adults, paralysis 1 in 75 cases.
- In children < 5 years, paralysis of one leg is most common; in adult, extensive paralysis of the chest and abdomen and quadriplegia is more likely.

Highest rates of paralysis (1 in 200) associated with polio virus type 1, the lowest rates (1 in 2.000) associated with types 2. (Poorun, 2010)

▪ 2- Spinal polio:

- Most common form of paralytic poliomyelitis.
- Viral invasion of the motor neurons of the anterior horn cells, or the ventral gray matter section in the spinal column, which are responsible for movement of the muscles, including those of the trunk, limbs and the inter costal muscles.
- Without nerve stimulation the muscles atrophy, (weak, floppy and poorly controlled).
 - Progression to maximum paralysis rapid (2 to 4 days).
 - Associated with fever and muscle pain.
 - Sensation not affected.
 - The extent of spinal paralysis depends on region of cord affected (cervical, thoracic, or lumbar).

- Asymmetrical paralysis – only limb or combination of limbs may be affected – one leg, one arm, or both legs and both arms. More severe proximally than distally (finger tips and toes). (Poorun, 2010)

3- Bulbar polio:

The bulbar region is a white matter path way that connect cerebral cortex to the brain stem.

Bulbar polio:

Destruction weakens the muscles supplied by the cranial nerves, producing symptoms often cephalitis, and causes difficult breathing, speaking and swallowing. (Poorun, 2010)

Nerves affected:

- Glossopharyngeal nerve – difficult swallowing, impaired throat, tongue movement and taste.
- Vagus nerve – the heart, intestines, and lungs.
- Accessory nerve – upper neck movement.
- Trigeminal nerve and facial nerve – the cheeks, tearducts, gums, muscles of the face, double vision; difficulty in chewing; abnormal respiratory rate, depth. Rhythm – respiratory arrest.

Pulmonary edema and shock also possible, and may be fatal. (Poorun, 2010)

4- Bulbo spinal polio:

- Cervical spinal cord (C3 – C5) and paralysis of the diaphragm occurs.
- Nerves affected are the phrenic nerve – which drives the diaphragm to inflate lungs, and those that drive the muscles needed for swallowing.
- Breathing affected – ventilator needed.
- Paralysis of the arms and legs and heart functions (Poorun, 2010).

Diagnosis:

Paralytic poliomyelitis may be clinically suspected individuals experiencing acute onset of flaccid paralysis in one or more limbs with decreased or absent tendon reflexes in the affected limbs that cannot be

attributed to another apparent cause, and without sensory or cognitive loss. ([http:// www.en.m.wikipedia.org](http://www.en.m.wikipedia.org))

A laboratory diagnosis is usually made based on recovery of poliovirus from stool sample or a swab of the pharynx.

Antibodies to polio virus can be diagnostic, and are generally detected in the blood of infected patients early in the course of infection. ([http:// www.en.m.wikipedia.org](http://www.en.m.wikipedia.org))

Analysis of the patient's cerebro spinal fluid (CSF), which is collected by a lumbar puncture (spinal tap), reveals an increased number of white blood cells (primarily lymphocytes) and a mildly elevated protein level.

Detection of virus in the CSF is diagnostic of paralytic polio, but rarely occurs.

If polio virus is isolated from a patient experiencing acute flaccid paralysis, it is further tested through oligonucleotide mapping (genetic fingerprinting), or more recently by PCR amplification, to determine whether it is " wild type" (that is, the virus encountered in nature) or " vaccine type " (derived from a strain of poliovirus used to produce polio vaccine). ([http:// www.en.m.wikipedia.org](http://www.en.m.wikipedia.org))

It is important to determine the source of the virus because for each reported case of paralytic polio caused by wild polio virus, an estimated 200 to 3,000 other contagious asymptomatic carriers exist.

(<http://en.m.wikipedia.org>).

Treatment:

- No cure.
- Supportive measures.
 1. Relief of symptoms – analgesics, antibiotics.
 2. speeding recovery.
 3. prevent complications – moderate exercise, nutritious diet. (Vinta poorun, 2010).

Prevention:

There are two types of vaccines are used throughout the world; they are:

1- Inactivated (salk) polio vaccine (IPV).

2- Oral (sabin) polio vaccine (OPV).

(PARK, 2011).

Global initiative to eradicate poliomyelitis

1908 Global public health assembly first session adopted are solution to eradicate polio world wide; this has led to the launch of the Global initiative to eradicate polio under the auspices of both national governments and the world health organization the launch of the initiative after the certification of the eradication of small pox in 1980 and the progress made airing the eighties towards elimination of the polio virus in the Americas and the commitment of Rotary international mutatis mobilize funds to protect all children from the disease.

Progress:

It saw the total number of cases decreased by pathological provide 99% of the launch of the global initiative to eradicate Parkinson and today is no longer endemic in only two countries in the world, namely Pakistan, Afghanistan in 1994, the officially. Free certification for the Americas region of the OSCE of paralysis, followed by the west pacific region in 2002 and then organized the Aruban province in July 2002. 27 March 2014 was certification of the absence of south East Asian region.

That means he was the interruption of polio virus wild paralysis.

Block of 11 countries stretching from India to Indonesia this achievement is a leap for world. Where 80% of the world's population lives in areas that have been certified for freedom for paralysis. (Mass media center, 2015)

2.6. 2. Tuberculosis:

Tuberculosis is specific infectious disease caused by M. tuberculosis. The disease primarily affects lungs and causes pulmonary tuberculosis. It can also affect intestine, meninges, bones and joints, lymph glands, skin and other tissues

of the body. The disease is usually chronic with varying clinical manifestations. The disease also affects animals like cattle; this is known as " bovine tuberculosis ", which may sometimes be communicated to man. Pulmonary tuberculosis the most important form of tuberculosis which affects man will be considered here (park, 2013).

Mode of transmission:

Tuberculosis is transmitted mainly by droplet infection and droplet nuclei generated by sputum, positive patient with pulmonary tuberculosis, to transmit infection, the particles must be fresh enough to carry viable organism. Coughing generates the largest number of droplets of all sizes. The frequency and vigour of cough and the ventilation of the environment influence transmission of infection. Tuberculosis is not transmitted by fomites, such as dishes and other articles used by the patient. Sterilization of these articles is there for of little or no value. Patients with extra pulmonary tuberculosis or smear-negative tuberculosis constitute a minimal hazard for transmission of infection. (park, 2013)

Incubation period:

The time from receipt of infection to the development of a positive tuberculin test ranges from 3 to 6 week, and there after, the development of disease depends up on the closeness of contact, extent of the disease and sputum positivity of the source case (dose of infection) and host parasite relation ship. Thus the incubation period may be weeks months or years. (PARK, 2013).

Sign and symptoms:

The main symptoms of variants and stages of tuberculosis are given with many symptoms overlapping other variants, while other are more (but not entirely) specific for certain variants. Multiple variants may be present simultaneously.

Tuberculosis may infect any part of the body, but most commonly occurs in the lungs (known as pulmonary tuberculosis) Extra pulmonary TB occurs

when tuberculosis develops out side of the lungs, although extra pulmonary TB may coexist with pulmonary TB. (<http://en.m.wikipedia.org>)

General sign and symptoms include:

Fever, chills, night sweats, loss of appetite, weight loss, and fatigue significant nail clubbing may also occur. (<http://en.m.wikipedia.org>)

Pulmonary:

Symptoms may include: chest pain and a prolonged cough producing sputum. About 25% of people may not have any symptoms. (ie. Remain " a symptomatic ").

Occasionally, people may cough up blood in small amounts and in vary rare causes, the infection may erode into the pulmonary artery or a Rasmussen's aneurysm, resulting in massive bleeding.

Tuberculosis may become a chronic illness and extensive scarring in the upper lobes of the lungs. The upper lung, lobes are more frequently affected by tuberculosis than the lower ones.

The reason for this difference is not clear. It may be due to either better air flow, or poor lymph drainage with in the upper lungs.

(<http://en.m.wikipedia.org>)

Extra pulmonary:

In 15 – 20% of active cases, the infection spreads out side the lungs, causing other kinds of T.B. these are collectively denoted as " extra pulmonary tuberculosis " extra pulmonary TB occurs more commonly in immuno suppressed person and young children.

In those with HIV, this occurs in more than 50% of cases. Notable extra pulmonary infection sites include: the pleura (in tuberculosis pleurisy), the central nervous system (in tuberculosis meningitis), the lymphatic system (in scrofula of the neck), the genitourinary system (inurogenital tuberculosis), and the bones and joints (in poth disease of the spine), and the bones and joints (in potl disease of the spine), among other. When it spread to the bones, it also known as " osseous tuberculosis. A form of osteomyelitis. Some times, bursting

of tuberculosis abscess through skin results in tuberculosis ulcer. (<http://en.m.wikipedia.org>)

An ulcer originating from near by infected lymph nodes is painless, slowly enlarging and has an appearance of " wash leather " A potentially more serious widespread form of TB is called " disseminated tuberculosis " also known as military tuberculosis. Military TB makes up about 10% of extra pulmonary cases. (<http://en.m.wikipedia.org>)

Diagnosis:

Tuberculosis is diagnosed by finding mycobacterium tuberculosis bacteria in clinical specimen taken from the patient. While other investigations may strongly suggest tuberculosis as the diagnosis, they cannot confirm it. A complete medical evaluation for tuberculosis (TB) must include a medical history a physical examination, a chest x-ray and microbiological examination (for sputum or some other appropriate sample). It may also include tuberculin skin test, other scans and X-ray, surgical biopsy. (<http://en.m.wikipedia.org>)

Treatment:

Refer to the medical treatment of the infectious disease tuberculosis. The standard (short) course treatment for TB is isoniazid (a long with pyridoxal phosphate to abviate peripheral neuropathy causes by isoniazid), rifampicin (also known as rifampin in the united states), pyrazinamide, and ethambutol for two months, then isoniazid and rifampicin alone for a further four months. The patient is considered to be free of living bacteria after six months (Although there is still a relapse rate of up to 7%). For latent tuberculosis, the standard treatment is six to nine months of daily isoniazid alone or three months of weekly (12 doses total) of isoniazid / rifampicin combination. If the organism is known to be fully sensitive, then treatment is with isoniazid, rifampicin, and pyrazinamide for two months, followed by isoniazid and rifampicin for four months Ethambutol need not be used.

(<http://en.m.wikipedia.org>).

Prevention:

- 1- Careful to vaccinate children at birth BCS in the nearest health center.
- 2- Preventive dose for children contacts (5 years old).

2.6.3. Diphtheria:

Is an acute infectious disease caused by toxigenic strains of coryne bacterium diphtheria. (PARK, 2011).

Mode of transmission:

Diphtheria is transmitted by person to person spread by respiratory droplets and close physical contact, rarely, transmission may occur by contact with articles soiled with excretions of infected persons.

([Http://www.phac.aspc.gc.ca/publicat/cig.gei/po4.eng](http://www.phac.aspc.gc.ca/publicat/cig.gei/po4.eng)).

Immunized individuals can still be infected by C. diphtheria and can come a symptom at carriers of toxin, producing strains.

Cutaneous carriage of C. diphtheria is an important source of person – to person transmission of the pathogen, particularly in communities where vaccination coverage is low.

Transmission from coetaneous diphtheria, lesions can cause both respiratory and cutaneous disease in susceptible contacts.

(European centre for diseases prevent and control, 2015).

Cutaneous lesions appear to be important in transmission in warm climates or under condition of poor hygiene.

(Elsevier Saunders inc, 2013).

Handling of infected dairy animals and consumption of contaminated milk have been associated with respiratory diphtheria – like disease caused by C.ulcerans and C. pseudo tuberculosis. (European Center for disease prevention and control, 2015).

Transmission C. ulcerans from a cat:

(Huber I, et al, 2011), dogs (Berger A ., et al, 2012). And a pig (Schuhegger R, et al, 2009).

In abation period: 2 to 6 days. Occasionally longer.

Sign and symptoms:

Patients with pharynx go tonsillar diphtheria usually have a sore throat, difficulty in swallowing, and low grade fever at presentation, mild erythema, localized exudates, or a pseudomembrane, posterior pharynx or tonsil.

(PARK, 2011).

Diagnosis:

Is based on observation of a whitish / grayish membrane, especially if extending to the uvula and soft palate, in association with tonsitis, pharyngitis or cervical lymphadenopathy.

Acceptable specimens include throat, nasopharyngeal. Or ear swabs or a swab from skin lesion in transport medium. If possible, swabs should also be taken from beneath the membrane, or piece of the membrane should be removed and submitted. Swabs should be taken before antibiotic therapy is initiated.

Treatment:

Diphtheria antitoxin (DAT) the dose of antitoxin depends on the site and size of the diphtheria membrane, duration illness, and degree of toxic effects.

(Manitoba public health branch, 2016).

Prevention:

- Antitoxin combined with the pertussis and tetanus antitoxin. (Nj Health, 2013).
- Cases / carriers who are not hospitalized should be advised to restrict contact with other until completion of an appropriate course of antibiotics.
- Cases / carriers should be instructed to pay strict attention to personal hygiene by:
 - Covering nose and mouth with tissue when coughing.
 - Disposing of all contaminated tissue directly into garbage containers.
 - Washing hands with soap and water cleaning hands with alcohol based hands rub after contact with respiratory secretions or infected wounds . (Manitoba, 2016).

2.6.4. Whooping cough:

An acute infectious disease, usually of young children, caused by *B. pertussis*.

Mode of transmission: whooping cough is spread mainly by droplet infection and direct (contact. Each time the patient coughs, sneezes or taksm the bacilli are sprayed into the air. Most children contract infection from their play mates who are in the early stages of the disease.

The role of forties in the spread of infection appears to be very small, unless they are freshly contaminated. Incubation period: usually 7 to 14 days, but not more than 3 weeks.

Sign and symptoms:

It is characterized by it is insidious onset, lacrimation, sneezing and coryza, anorexia and malaise, a hacking nigh cough that becomes diurnal.

A paroxysmal stage, lasting for 2 – 4 weeks. It is characterized by bursts of rapid, consecutive coughs followed by a deep, high pitched inspiration (whoop). It is usually followed by vomiting, in young infants it may cause cyanosis and apnoea.

In adult and adolescent, uncharacteristic, persistent cough may be the only manifestation of the disease, and (C) convalescent stage, lasting for 1 – 2 weeks, the illness generally lasts 6 to 8 weeks.

(PARK, 2011).

Diagnosis:

- History of typical signs and symptoms.
- Physical examination.
- Laboratory test which involves taking a sample of micus from the back of the throat through the nose.
- Blood test.

Treatment:

The recommended antimicrobial agents for treatment or chemoprophylaxis of pertussis are azithromycin, clarithromycin, and erythromycin.

Trimethoprim – sulfamethoxazole can also be used.

Prevention:

The best way to prevent pertussis among babies, children, teens, and adults is to get vaccinated. Also keep babies and other people at high risk for pertussis away from infected people. The recommended pertussis vaccine for babies and children is called DTaP. This is a combination vaccine that helps protect against three diseases: diphtheria, tetanus, and pertussis. (CDC, 2017).

2.6.5. Tetanus:

An acute disease induced by the exotoxin of *Clostridium tetani*.

Agent: *Clostridium tetani*.

Mode of transmission:

Infection is acquired by contamination of wounds with tetanus spores. The range of injuries and accidents which may lead to tetanus. Comprise a trivial pin prick, skin abrasion, puncture wounds, burns, human bites, animal bites and stings, unsterile surgery, intra-uterine death, bowel surgery, dental extractions, injections, unsterile division of umbilical cord, compound fractures, otitis media, chronic skin ulcers, eye infections, and gangrenous limbs.

Incubation period:

The incubation period is usually 6 to 10 days. However, it may be as short as one day or as long as several months. Long incubation is probably explained by the spores lying dormant in the wounds. Incubation is also prolonged by prophylaxis.

Type of tetanus:

1. Traumatic: trauma is a major and important cause of tetanus. Some times tetanus may result from most trivial or even unnoticed wounds.

2. Puerperal: Tetanus follows abortion more frequently than a normal labour. A post abortal uterus is of avourable site for the germination of tetanus spores.
3. Otogenic: ear may be a rare portal of entry. Foreign bodies such as infected pencils, matches, and beads may introduce the infection. Otogenic tetanus is a pediatric problem, but cases, may occur in adults also.
4. Idiopathic: in these cases there is no definite history of sustaining an injury. Some consider it to be the result of microscopic trauma. Others hold the view that it is due to the absorption of tetanus toxin from the intestinal tract. A third view is that the tetanus spores may be inhaled and may start the infection.
5. Tetanus Neonatorum:

In many countries, neonatal tetanus kills about 85 percent of those afflicted. The common cause is infection of the umbilical stump after birth, the first symptom being seen about the 7th day. There for tetanus is known as " 8th day disease " in Punjab. In any country where hygiene is poor, neonatal tetanus may be common. Sign and symptoms: characterized by muscular rigidity which persists throughout illness punctuated by painful paroxysmal spasms of the voluntary muscles, especially the masseters (trismus or " lock-jaw "), the facial muscles (risus sardonicus), the muscles of the back and neck (opisthotonus), and those of the lower limbs and abdomen. (PARK, 2009).

Diagnosis:

No laboratory finding characteristic of tetanus, the diagnosis is entirely clinical C. tetanus is recovered from wounds in only about 30% of cases.

Serologic results obtained before treatment.

(Kretsinger, et al., 2008).

Treatment:

Antibiotic treatment: metronidazole is preferred 500mg every six hours intravenously or by mouth; penicillin of (100.000 – 200.0000 IU/ kg/ day intravenously, given in 2 – 4 divided doses).

Tetracyclines macrolides, clindamycin, cephalosporins and chloramphenicol are also effective. (WHO communicable disease working group on emergencies., et al, 2010).

Prevention:

The tetanus vaccine is routinely given to children as part of the DTAP vaccine, diphtheria and tetanus toxoid and cellular pertussis (MNT. Hourly medical News, January 2013).

2.6.6. Haemophilus influenza type (b):

Haemophilus influenza type b (Hib) is bacterium that causes range of clinical syndromes such as meningitis, pneumonia and epiglottitis, particularly among young children.

Causative agent: haemophilus influenza is bacterium that exists in two forms = capsular. Mode of transmission.

Hib enters the body through the upper respiratory tract via droplets, after direct contact with either asymptomatic carriers or patients with Hib disease. When the organism enters the blood stream or the lungs it causes serious disease.

Incubation period = of the disease is short, around 2 – 4 days.

Sign and symptoms:**Hib disease can also cause:**

- Pneumonia.
- Severe swelling in the throat, making it hard to breathe.
- Infections of the blood, joints, bones and covering of the heart (INCIRS, 2009).

Diagnosis:

Confirming a case of Hib disease requires culturing and isolating the bacteria from a normally sterile body site. Include CSF, blood, joint fluid, pleural effusion, pericardial effusion peritoneal fluid subcutaneous tissue fluid placenta, and amniotic fluid.

All Hi isolates should be tested for antimicrobial. (Igbal, et al., 2008).

Treatment: zanamivir and oseltamivir. (Barammer, et al., 2008).

Prevention:

The WHO recommends a pertavalent vaccine combining vaccine against diphtheria, tetanus, pertussis, hepatitis B and Hib. (www.wikipedia.org).

2.6.7. Viral hepatitis:**What is hepatitis ?**

Hepatitis refers to an inflammatory condition of the liver. It is commonly caused by viral infection, but there are other possible causes of hepatitis these include auto immune hepatitis and hepatitis that occurs as a secondary result of medications, drugs, toxins, and alcohol.

Auto immune hepatitis is disease that occur when your body makes antibodies against your liver tissue. (park, 2011)

The 5 types of viral hepatitis:

Viral infections of the liver that are classified as hepatitis include hepatitis A, B, C, D and E. a different virus is responsible for each type of virally transmitted hepatitis.

Hepatitis A is always an acute, short term disease, while hepatitis B, C and D are most likely to become ongoing and chronic. Hepatitis E is usually acute but can be particularly dangerous in pregnant women. (park, 2011)

Hepatitis A: is caused by an infection with the hepatitis A virus. This type of hepatitis is most commonly transmitted by consuming food or water contaminated by feces from a person infected with hepatitis A. (park, 2011)

Hepatitis B:

Is transmitted through contact with infectious body fluids, such as blood, vaginal secretions, or semen, containing the hepatitis B virus injection drugs use, having sex with an infected partner, or sharing razors with an infected person increase your risk getting hepatitis B.

It is estimated by the CDC that 1 – 2 million people in the united states and 350 million people world wide live with this chronic disease. (park, 2011)

Hepatitis C: comes from the hepatitis C virus, hepatitis C is transmitted through direct contact with infected body fluids, typically through injection drug use and sexual contact. HCV is among the most common blood borne viral infectious in the united states. Approximately 2.7 to 3.9 million. Americans are currently living with chronic from of this infection. (park, 2011)

Hepatitis D:

Also called delta hepatitis, hepatitis D is a serious liver disease caused by the hepatitis D virus. HDV is contracted through direct contact with infected blood. Hepatitis D is rare from of hepatitis that only occurs in conjunction with hepatitis B infection. The hepatitis D virus can't multiply with out the presence of hepatitis B. it's very un common in the united states. (park, 2011)

Hepatitis E:

Is water borne disease caused by the hepatitis E virus. Hepatitis E is mainly found in areas with poor sanitation and typically result from ingesting fecal matter that contaminates the water supply. This disease is uncommon in the united states. However, cases of hepatitis E have been reported in the middle east Asia, central America and Africa, according to the CDC. (park, 2011)

Causes of noninfectious hepatitis:

- Alcohol and other toxins.
- Autoimmune system response.

Acute hepatitis appear quickly. They include:

- Fatigue.
- Flulixe symptoms.

- Pale stool.
- Abdominal pain.
- Loss of appetite.
- Unexplained weight loss.
- Yellow skin and eyes, which may be signs of jaundice.

Chronic hepatitis develops slowly, so these signs and symptoms may be too subtle to notice. (park, 2011)

Diagnosis:

- History and physical exam.
- Liver function tests.
- Other blood test.
- Ultrasound.
- Liver biopsy. (park, 2011)

Treatment:

Hepatitis A: usually doesn't require treatment because it's short – term illness Bed rest may be recommended.

Hepatitis B: acute hepatitis B doesn't require specific treatment.

Chronic hepatitis B is treated with antiviral medications.

Hepatitis C: Antiviral medications are used to treat both acute and chronic forms of hepatitis C.

Hepatitis D: No antiviral medications exist for treatment of hepatitis D at this time.

Hepatitis E: Currently, no specific medical therapies are available to treat hepatitis E.

Autoimmune hepatitis:

(1) Azothioprine (Imuran) (2) cyclosporine (prograf) (3) mycophenolate.
(park, 2011)

Prevention:

Hygiene: practicing good hygiene is one key way to avoid contracting hepatitis A and E. if you're traveling to developing country, you should avoid:

- Local water.
- Ice.
- Raw or under cooked shall fish and oysters.
- Raw fruit and vegetables.

Hepatitis B and C and D contracted through contaminated blood can be prevented by:

- Not sharing razors.
- Not using some one elseis tooth brush.
- Not touching spilled blood. (park, 2011)

Vaccines:

Vaccinations are available to prevent. The use of vaccines is an important key to preventing hepatitis A. experts are currently developing vaccines against hepatitis C. the development of hepatitis A and B.

But it isn't available in the united states, for hepatitis E exist in china vaccination. (park, 2011)

2.6.8. Measles:

An acute highly infectious disease of childhood caused by a specific virus of the group myxoviuses.

(PARK, 2011).

Mode of transmission:

Measles is highly infectious disease due to a virus spread by droplets in the air. (WHO, 2004).

Infection through conjunctiva is also considered likely as the virus instilled into the conjunctiva can cause infection. (PARK, 2011).

In culation period:

Time from exposure to onset of symptoms is generally 8 to 12 days.

Sign and symptoms:

Initially the child with measles has running nose – fever – cough white spots inside the mouth and sore eyes. White spots inside the mouth are known as Koplik's spots and are only seen in measles. A skin rash develops after a few days, first across the forehead and behind the ears, then all over the face and down over the body and limbs. It begins to fade after three or four days, often leaving staining or peeling of the skin (WHO, 2004).

Diagnosis:

Conventional laboratory confirmation of suspected case of measles is based on the detection of virus. Specific immunoglobulin M (IGM) in single serum sample collected soon after the onset of symptoms, in addition detection of viral RNA by reverse transcription, polymerase chain reaction (RT. PCR), usually in a throat swab or urine sample, and subsequent genotyping of strains is valuable for diagnosis and molecular epidemiology. (CDC, 2008).

Treatment:

A number of preparations, such as interferon, thymic humoral factor, thymostimulin, levamisole, ribavirin and IG, have been used to treat measles, none of these is commonly used to treat uncomplicated measles, although limited studies with ribavirin have shown reduced duration of illness. Ribavirin and interferon may be effective in treating severe measles in immunocompromised persons. High doses of vitamin A have been shown to decrease mortality and morbidity in young children hospitalized with measles in developing countries. (Papania, et al., 2007).

Prevention:

Measles vaccine is recommended a first dose at 12 – 15 months of age with a second dose at school entry 4 – 6 years. (Dayan MD, et al., 2008).

2.6.9. Rota virus Gastro Enteritis:

Rota virus GE is the most common cause of severe diarrhea in infants and young children all over the world, and is an important public health problem particularly in developing countries. The only control measure likely to have a

significant impact on the incidence of severe disease, is vaccination natural infection protects children against subsequent severe disease, in Sudan, it is estimated that rota virus cause 25% of all deaths due to diarrhea diseases and 6% of all deaths in children under five.

(Elsayed, et al., 2012).

Mode of transmission:

Transmitted primarily or exclusively the faecal oral route. Faecal oral transmission may be water borne; food borne, or direct transmission which implies an array of other faecal oral routes such as via fingers, or fomites, or direct which may be ingested by young children (PARK, 2009).

Sign and symptoms:

Rota virus infection can range from being a mild to a very severe illness. The main symptoms are fever, vomiting and watery diarrhea which can lead to dehydration and rapid weight loss, symptoms start suddenly, between one to three days after being infected and usually last four to six days. (center for disease control, 2015).

Diagnosis:

Laboratory testing for Rota virus confirmation for Rota virus infection by laboratory testing of focal specimens is necessary for reliable rota virus surveillance can be useful in clinical setting. Rota virus is shed in high concentration in the stool with gastroenteritis, so the most widely available method is antigen detection in the stool an antigen common to all group A Rota viruses.

(CDC, 2006).

Treatment:

Any one with vomiting or diarrhea should extra fluids to avoid dehydration. It is recommended that parent give oral glucose/ electrolyte solution to babies and Young children with gastroenteritis. Medicines to present vomiting or diarrhea should not be given, especially to children, except when prescribed by doctor (CDC, 2015).

Prevention:

Rota virus vaccines are very effective at preventing rota virus disease. Children should get either of two available rota virus vaccine:

- Rora Teg ® (RV5) is given 3 doses at ages 2 months, 4 months and 6 months.
- Rota rix ® (RV 1) is given 2 doses at ages 2 month and 4 months. (CDC, 2016).

2.6.10. Streptococcus pneumonia:

Is a gram positive en capsulated coccus. Based on differences in the composition of the polysaccharide capsule, about go sero types are identified. This capsule is an essential virulence factor (Elsayed, et al., 2012).

Pneumococcal disease is an infection caused by streptococcus pneumonia bacteria, these bacteria cause many type of illness including: pneumonia (infection of lungs), ear infections, sinus infections, meningitis (infection of the covering around the brain and spinal cord) and bacteremia (blood stream infection).

Mode of transmission:

Person to person through close contact via respiratory droplets. In cubation period: short, about 1 to 3 days (CDC, 2015).

Sign and symptoms:**Include:**

- Fever and chills.
- Cough.
- Rapid breathing or difficulty breathing.
- Chest pain.

Older adults with pneumococcal pneumonia may experience confusion low alertness, rather than the more common symptoms listed above pneumococcal meningitis is an infection of the covering of the brain and spinal cord symptoms includes:

- Stiff neck.

- Fever.
- Headache.
- Pain when looking into bright lights.
- Confusion.

In babies meningitis may cause poor eating and drinking low alertness and vomiting pneumococcal bacteremia and sepsis are blood infections symptoms include:

Fever, chills, low alertness.

Pneumococcus bacteria causes up to half of middle ear infections symptoms include: ear pain, a red, swollen ear drum, fever, sleepiness.

Diagnosis:

1. Isolation of *S.pneumonia* from blood or cerebrospinal fluid.
2. Intermediate and high – level resistance of the *S.pneumoniae* isolate to at least one antimicrobial agent currently approved for use in treating pneumococcal.

Gram stain may be helpful in interpreting cultures of expectorated sputum; finding a predominance of gram positive diplococci and more than 25 leukocytes fewer than 10 epithelial cells per high power field on microscopic examination supports the diagnosis of pneumococcal pneumonia.

(Tamarapillishvili, et al, 2008).

Treatment:

Penicillin, cephalosporins, and meropenems, Pneumococcal meningitis include: Vancomycin or a fluoroquinolone plus a third generation cephalosporin (CDC, 2015).

Prevention:

They are two kinds of pneumococcal vaccines available in the United States:

- pneumococcal conjugate vaccine (PCV 13).
- Pneumococcal polysaccharide vaccine (PPSC 23).

(CDC, 2016).

2.6.11. Meningitis disease:

Definition: the brain and spinal cord are surrounded by a lining called the meninges. Infection or inflammation of the meninges is called meningitis. There is normally a fluid between the meninges and the brain or spinal cord called cerebrospinal fluid (CSF). In meningitis, the CSF becomes infected.

Causes of meningitis:

Is due to infection with either viruses or bacteria, much rarer causes include: fungi or malignant (cancer) cells, in general, meningitis due to bacteria (bacterial meningitis) is more severe than meningitis caused by viruses (viral meningitis). Most children with viral meningitis recover completely. Some children with meningitis may have long term problems, but this depends on the cause of the infection and the age of the child. (www.chw.edu.au).

Mode of transmission: the disease spreads mainly by droplet infection, the portal of entry is the nasopharynx.

Incubation period: usually 3 to 4 days but may vary from 2 to 10 days (PARK, 2011).

Common symptoms are:

1. High fever.
2. irritability.
3. lethargy and drowsiness.
4. vomiting and loss of appetite.
5. headache.

Other symptoms may include:

- 1- In young babies, the soft spot (fontanelle) may bulge.
- 2- Rash (either dots or bruises).
- 3- Fits (seizures).
- 4- Stiff neck.
- 5- Complaining that the light hurts their eyes (photophobia).
- 6- Confusion.
- 7- Change in breathing pattern (fast or slow).

8- Difficulty walking or calf pain. (www.chw.edu.au)

Initial investigation:

Lumbar puncher.

Other investigation: FBC, plate lets, white cell, differential count serum Na+, K+, glucose, urea, creatinine, cadillary gas. And oximetry, or arterial gas, blood cultures, coagulation studies if suspicion of coagulopathy, PCR for meningitis if per treated.

Management:

- Specific therapy for bacterial meningitis.
- Dexamethasone.
- Vancomycin.
- Amoxycillin (Lesley voss, Rossni cholson, 2009).

Prevention:

Vaccination can also protect against certain types of meningitis. Vaccines that can prevent meningitis include the following:

- Haemophilus influenzae type B (Hib) vaccine.
- Preumococcal conjugate vaccine.
- Meningococcal vaccine. (www.health.com).

2.7. Doses vaccines:

2.7.1. Polio vaccine:

There are two types: one that uses inactivated polio virus an is given by injection (IPV).

(<http://en.m.wikipedia.org>).

IPV provides serum immunity to all three type of polio virus. (WHO, 2017) as an intra muscular injection. In the leg or arm, is available single antigen.

Doses: three doses of IPV alone vaccine should be given at 6 week, 10 weeks and 14 weeks of age.

(vaccine box. Com).

OPV: taken by mouth, polio vaccine may be given at the sometime as other vaccine (www.vaccine.gov).

Pharmaceutical from liquid:

Presentation: 20 doses voil (WHO, 2015).

Oral polio virus vaccine is composed of live attenuated vaccine strains known as sabin 1, 2,3. polio vaccine should be given at 6 week, 10 weeks, 14 weeks of age. (vaccine box. Com).

2.7.2. BCG vaccine:

BCG disease tuberculosis, the type of vaccine live attenuated variant, Dose O, 05ml, Rout of administration is injection in left for arm at birth and at six week, ten weeks, fourteen weeks. (hma 20 Yolasit. Com).

2.7.3. Penta Valent vaccine:

Target disease is diphtheria, whooping cough, tetanus, haemophilus influenza type b, hepatitis B. and the type conjugate vaccine (<http://en.m.wikipedia.org>).

Dose 0.5ml (ahma 20.yolast.com) routes of administration is intramuscular the conjugated liquid vaccine. (<http://en.m.wikipedia.org>).

Doses: 3 dose 6 week, 10 weeks, 14 weeks. (ahma20.yolasite.com).

2.7.4. Tetanus vaccine:

Women is child bearing 5 dose (any time at first contact or early as possible during pregnancy.

TT2 one month after the first visit (TT1).

TT3 six months after TT2 or during subsequent pregnancy.

TT4 one year after TT3 or during subsequent pregnancy.

TT5 one year after TT4 or during subsequent pregnancy.

(ahma20yolasite.com)

2.7.5. Measles vaccine:

Prevention of disease measles, type of vaccine live attenuated, mode of administration is subcutaneous, dose = 0.5ml (ahma20 yolasite.com). The preferred injection site in small children is the interolateral aspect of the thigh.

The posterior triceps aspect of the upper arm is the preferred site for older (CDC, 2016). The dose is nine month of age (hamo50 Yolasite.com).

2.7.6. Rota vaccine:

Rota oral, type of vaccine:

1. Rota rix (GSK) attenuated human strain R1X 4414 of G1P (8) strain.
2. Rota teg (CSL, merck) penta valent rota virus reassortant with human G1, G2, G3, G4 and P (8).
(WHO, 2014).

Two brands of rota virus vaccine are available your body will get either 2 or 3 doses, depending on which vaccine is used = Dose are recommended of age.

Second dose = 4 months.

First dose = 2 months of age.

Second dose = 4 months of age.

Third dose = 6 month of age (if needed).

Your child must get the first dose of rota virus vaccine before 15 weeks of age and last by age 8 months. Rota virus vaccine many safely be given at the as other vaccine. (WHO, 2015).

2.7.7. Pneumococcal vaccine:

Target disease: streptococcus pneumonia.

Type: conjugate vaccine.

- Prevnar 13: this vaccine is given in three – dose primary series starting at 2 months of age.

(National center for immunization respiratory disease, 2016)

- Pneumonvax23: for intra muscular and subcutaneous injection.

Administration: pneumonvax23 intramuscularly or subcutaneously into the deltoid muscle or lateral mid – thigh.

Administer a single= 0.5 ml dose (<http://www.merck.vaccine.com>).

2.7.8. Meningococcal vaccine:

There are three types of meningococcal vaccines in the United States:

1. Meningococcal conjugate (menactra, menvco and menlibrix).
 2. meningococcal polysaccharide vaccine (menomune).
 3. serogroup B meningococcal vaccines (Bexsero and Trumenba).
- (National Center of Immunization and Respiratory Disease, 2016).

Route, site, and needle size: meningococcal conjugate and serogroup B should be administered by the intramuscular route. The preferred site for infants and young children is the vastus lateralis muscle in the anterolateral thigh. The preferred injection site in older children and adults is the deltoid.

Serogroup meningococcal vaccines:

- Bexsero: administer two doses (0.5 to 1 month after first dose).
 - Trumenba: administer two or three doses.
 - administer two doses (0.6 to 1 month after first dose) to healthy adolescents who are not at increased risk.
 - Administer three doses 1 to 2 months after first dose.
- (<http://www.Cdc.gov/vaccines/vpd/menigthcp..>)

2.8. Vaccine side effects:

Common side effects occur soon after vaccination and last to 2 days:

- (1) Mild fever (38.5°C).
- (2) unhappy or sleepy.
- (3) Where the needle was given there is pain, redness, burning, or swelling for 1–2 days and/or small hard lump for a few weeks.

Vary rare vaccine side effects requiring immediate medical attention:

1. Febrile convulsion.
2. the baby suddenly becomes pale.
3. Bowel black.
4. inflammation of nerve in the arm.
5. a severe allergic reaction.

6. Gillian – Barre syndrome = causes ascending paralysis and sometimes numbness. In the past it has been linked with influenza vaccine either rarely if at all.

(<http://www2.health>).

2.9. Cold chain vaccines:

What is cold chain? Cold chain refers to the process used to maintain optimal conditions during the transport, storage, and handling of vaccines and biologics, starting at the manufacture and ending with the administration of the patient or client. There are three basic elements needed to ensure that vaccines and biologics are handled properly:

1. Well trained staff.
2. the right equipment.
3. standard operating procedures guidelines.

Storage issues can occur as a result malfunctioning equipment or human error.

Vaccines and biologics are sensitive, their potency and effectiveness may be negatively impacted if they are exposed to:

- Freezing temperatures.
- Heat.
- Direct sun light or fluorescent light.

Packing storage and handling:

The following packing recommendations for the transport of vaccines and biologics to off – site are based on research conducted by the Bc, CDC, the guidance provided by the national Guidelines, the Bc, CDC cold Guidelines, and the CDC Atlanta cold chain Guidelines.

Basic principles:

An insulated container should be used and temperature monitored for frequency of temperature monitoring.

Pack enough refrigerated and / or frozen. Packs to maintain cold chain.

During transport in personal vehicle.

- Do not place container in trunk.

- Avoid placing container in direct sunlight, in line with heater or air conditioner.
 - Only pack the quantity of vaccines and biologics that is expected to be used, only a brief period out of the refrigerator can be tolerated.
 - Ensure stock rotating principles are in place. Stock that has been transported and returned from clinics should be marked and used first.

Equipment for transport:

- Insulated containers (coolers).
- Hard – sided insulated containers or newer Styrofoam coolers with at least two. (2) inch thick walls.
- Large enough to store vaccines and biologics, insulating materials, and ice packs during transport.
- Tight fitting lid and strong handles for carrying and/ or weels.
- Ice packs.
- Keep enough ice packs frozen.
- Do not place indirect contact with product (s) may freze; place insulating materials and fillers, if required, between ice packs and product.

Insulating materials:

- Flexible insulating blankets, get packs, shrelded paper, card board, bubble wrap, or Styrofoam.
- Flexible insulating blankets or gel packs conditioned fridge temperatures can be used to wrap a round the vaccines and biologics during transport.
- Temperature monitors.
- The use of amin/ max thermometer or data logger is recommended for monitoring. Temperature in side the cooler during all off site clinics.
- The temperature monitor should be placed nex to the produects and should not come into contact with trozen packs. (monitoba, 2017).

2.10. Previous studies:

1. Mothers and vaccination knowledge, attitudes and behaviour in Italy by (Angelillo (et al) showed that mothers knowledge about vaccination was significantly greater among those with a higher rather than lower educational level and among those mothers who were older at the time of the child's birth. (Bulletin of the WHO, 1999).

2- Determinants of child immunization under expanded programme on immunization EPI in a rural setting of Bangladesh. By (ADHIKARY M and et al), studied that the vaccination coverage is highest among children whose mothers have secondary or higher education. (Jhaka med coll, 2013).

3- Knowledge attitude and practices of mothers regarding immunization of one year at mawatch Goth, kemari town, Karachi by (Nisar (etal)) revealed that successful immunization depends parents positive attitude and knowledge. (Pakjmed sci, 2010).

4- Knowledge attitude and practice of mothers of alwarage catchment area, sawthern Gezira locality Gazira state Sudan by Myada Ahmed: they found that 65% of mothers had a good knowledge about the side effect of immunization post vaccination, side effect was most common reason of cessation of immunization. (Myada Ahmed Alshaikh, 2013).

5- Role of immunization in the recent decline in childhood mortality and the changes in the female/ male mortality ratio in rural sengal by Desgrees dulon (etal) study in eastern sengal reported that mortality of the children declined 31% after immunization an especially measles immunization is likely to have been the most important vaccination.

The decline was stronger in villages that maintained high coverage after the initial national campaign, whereas mortality increased again in the villages where the coverage declined. (American Journal of Epidemiology, 1995).

6- Tetanus immunization in pregnant women: evaluation of maternal tetanus vaccination status and factors effecting rate of vaccination coverage By IMaral. Study conducted at hospital in Ankara to determine the tetanus vaccination.

Showed that the rates for unvaccinated 53.3% and vaccination women were 46.7%. (Science Direct Public health, 2001).

7-Assessment of Rota vaccine coverage in Almatama locality By (Osman Magzoub) the study indicated all mothers that vaccination had side effects, 15.7 % of children had side effects after vaccination such as fever, the study also showed that 48.5 % had home remedies in case of side effects (Osman Magzoub, 2018).

8-Assessment of expanded programme on immunization performance in shendi localtiy By (Madina ALshiekh) the study result revealed that 96% of children were fully immunized, 2% were partially immunized , while 2% never received any immunization.

The major reasons behind partially immunized children and those never received immunization were the lack of awareness among mothers, immigration population movement, and fathers faired of immunization (Madina Alshiekh, 2015)

9- Assessment of measles second dose in shendi locality By (Ibrahim Khalid)

The study found that the percent identify of mothers to measles disease employee vaccine reached 98.1%. (Ibrahim Khalid,2016)

Chapter Three

Methodology

3. Material and methods

3.1. Study design:

This study was conducted in descriptive cross-sectional study aims to assess the effectiveness of immunization programme among children under 5 years and their mothers in Shendi locality from 2016 - 2017

3.2. Study area:

Shendi Locality located in the southern of the River Nile State and on the east bank of the Nile River between latitudes 17 and 18 degrees north and longitude 23 and 24 degrees east , from the Musiktab south and even the Aldayga village with local borders Damer locality in the north, bordered to the east lining the Albutana northeast Khartoum is about 170 km and connects it with Khartoum, the capital, the northbound railway as well as an tracked paved road (Al Tahadi Road).

An area of 145.96 km and dry desert climate by a number of five administrative units with a population of 270.473 inhabitants and is located (10) hospitals and a number (6) Health centers and (15) Health units and there are a number of educational institutions, namely: (187) government basic schools and (13) private basic schools. on the private secondary schools include (30) secondary schools and (8) private secondary schools, and kindergartens all well (271) government and (34) private, and it also Khalawi where numbering (178) and (308) mosque and one university, (Shendi University).

There are government departments of education and health, and the National Electricity corporation, which also has Telecommunications (3 centers). *(Interviewed with the manager of statistic office in Shendi Locality, 2016)*

3.3. Study population:

Mothers and children under five years (at vaccination age) – Health director , immunization director and statistical officer in shendi locality

3.4. Inclusion criteria:

All children under five years, and their mothers.

3.5. Exclusion criteria:

all mothers & children not have permanent residence in Study area. And children over five years and their mothers

3.6 Samples size:

The sample size was determined by the following formula.

$$n = \frac{z^2 \cdot P \cdot q}{d^2}$$

Where:

z = the value in normal cure corresponding to level of confidence 95% = 1.96.

P = expected prevalence.

q = (1 - p) not expected prevalence.

d = margin of error = 0.05.

$$\frac{(1.96)^2 \times (0.5 \times 0.5)}{(0.05)^2}$$

After calculation sample size = 384

3.7. Sample technique:

The sample was selected by above equation and in 384 samples of mother in Shendi locality which were distributed by cluster sample the locality was divided five administrative unit, the sample was taken according to the number of mother in each unit as follows:

Administrative unit	No. of sample	%	Total No of mothers
A - Shendi City	156	41%	4661
B - North Shendi	47	12%	1370
C - South Shendi	46	12%	1406

D – Kabushiya	59	15%	1765
E – Hagar Elasal.	76	20%	2.276
Total	384	100%	11.478

In any unit administrative unit selection simple random sampling (identify number of squares (blocks) or village in each unit). *(interviewed with Health manager , Director of the local immunization department , 2016)*

3.8. Data collection:

The data were collected by the following methods:

1. questionnaire: It designed according to aims of study . (see appendix No 6.2)

2.Interview.

3. Observation.

4. Records.

3.8. Data Analysis and Management:

Data analyzed by computer using both Microsoft Excel and Statistical Package for Social Sciences Program Version (18) and the result were presented in tables.

3.9. Ethical consideration:

The written consent of the manager of (EPI) in Shendi locality has been taken for the research procedure and purposes (see appendixes No 6.3). In other side also a verbal individual approval from mother was done to make interview and questionnaire filling for study purposes.

Chapter Four

Results

4. Results

Part (1)

Table No (1) Show the age and the education level of the mother:

The age of mother		
Variable	Frequency	Percent %
15 – 20 years	37	9.6%
21 – 30 years	187	46.4%
31 – 40 years	142	37.0%
41 – 49 years	27	7.0%
Total	384	100%
The educational level of the mother		
Variable	Frequency	Percent %
Illiterate	28	7.3%
Khalwa	1	0.3%
Basic	118	30.7%
Secondary	131	34.1%
Graduate and post graduate	106	27.6%
Total	384	100.0%

Table above show that 46.4% of mothers in age group (21–30 years), 7% of mothers age more from 40 years old, and 34.1% educational level of mother secondary and 0.3% educational level of mother khalwa.

The study appeared that 100% mother with children under 5 years (at vaccination age)

Table No (2) Show the age of the children:

Variable	Frequency	Percent %
Less than 1 year	100	26.0%
1 – 2 years	96	25.0%
3 – 4 years	140	36.5%
5 years	48	12.5%
Total	384	100.0%

Table above show that 36.5% children in age group (3 – 4 years) and 12.5% children in age group 5 years.

Table No (3) Show the start periods of the children vaccine and the number of uncompleted vaccinated children:

The start the children vaccine		
Variable	Frequency	Percent %
Since birth	69	18%
After 40 days	181	47%
After 2 months	125	33%
After more than 3 months	9	2%
Total	384	100.0%
The number of uncompleted vaccine children		
Variable	Frequency	Percent %
Two	1	50.0%
More than three	1	50.0%
Total	2	100.0%

Table above appear 47% of mothers vaccinated their children after 40 days of birth, while 2% of mothers vaccinated their children after more than three months and 50% from children uncompleted vaccine total two and 50% from children uncompleted vaccine total more than three children.

Table No (4) Show the Show children completed all vaccines and reasons for incompleteness vaccine:

Children completed all vaccines		
Variable	Frequency	Percent %
Completed all vaccine	382	99.5%
uncompleted vaccine	2	0.5%
Total	384	100.0%
Reasons for completeness vaccine		
Variable	Frequency	Percent %
Disease	1	50.0%
Unimportant	1	50.0%
Total	2	100.0%

Table above show that 99.5% children completed all vaccines and 0.5% children did not receive vaccination, and 50% did not receive vaccination due to the disease and 50% of them because of the lack of importance of vaccination.

Table No (5) Show statues of vaccination among children and place receive of immunization services:

Statues of vaccination among children		
Variable	Frequency	Percent %
Children vaccine	382	100.0
Children un vaccine	0	0
Total	382	100
Place receive of immunization services		
Variable	Frequency	Percent %
General hospital	126	33.0%
Health center	84	22.0%
Dispensary	7	1.8%
Mobile team	3	0.8
Mother and child welfare center	162	42.4%
Total	382	100.0%

Table above show that 100% of children received vaccines targeted by immunization program, and 42.4% of the community receive immunization services mother and child welfare center and 0.8% where revive vaccination mobile team.

Table No (6) Show children were vaccinated within the prescribed time for taking dose and reason for delayed dose:

Children were vaccinated within the prescribed time for taking dose		
Variable	Frequency	Percent %
Prescribed dose vaccine	372	97.4%
Delayed dose vaccine	10	2.6%
Total	382	100.0%
Reason for delayed dose		
Variable	Frequency	Percent %
Disease	5	50.0%
The vaccination center far a way	4	40.0%
Un important	1	10.0%
Total	10	100.0%

Table above revealed that 97.4% of children were vaccinated within the prescribed time for taking doses and 2.6% was delayed the vaccination dose, and 50% delay dose due to the disease and 10% due to dose lack of knowledge of the importance of the dose dates.

Table No (7) Show the study group here side effect of received vaccines and type of side effect of received vaccines and reason of side effect and action of mother towards the side effect:

Study group here side effect of received vaccines		
Variable	Frequency	Percent %
The side effect	142	37.2%
Have no side effect	240	62.8%
Total	382	100.0%
Type of side effect of received vaccines		
Variable	Frequency	Percent %
Severe fever	134	94.4%
Cramps	5	3.5%
Abscess	3	2.1%
Total	142	100.0%
Reason of side effect		
Variable	Frequency	Percent %
BCG	7	4.9%
Penta valent	130	91.5%
Measles	3	2.1%
Pneumococcal	2	1.4%
Total	142	100.0%
Action of mother towards the side effect		
Variable	Frequency	Percent %
Working of compresses	122	85.9%
Notification	1	0.7%
Go to the doctor	11	7.7%
Didn't do any thing	8	5.6%
Total	142	100.0%

Table above show 62.8% did not have any side effect during or after the vaccination and 37.2% of the side effect during or after vaccination, and show that 94.4% of the severe fever during or after the vaccination, and 2.1% of the abscess during or after the vaccination and 91.5% due to pentavalent and 1.4% due to Pneumococcal and 85.9% of mother acted as addicts while 0.7% were notification of the vaccination center.

Table No (8) Show the children suffering from child hood disease and the type of disease:

The children suffering from child hood disease		
Variable	Frequency	Percent %
Incidence of childhood disease	18	4.7%
Didn't have childhood disease	366	95.3%
Total	384	100.0%
The type of disease		
Variable	Frequency	Percent %
Whooping cough	4	22.2%
Measles	14	77.8%
Total	18	100.0%

Table above show that 95.3% of the children did not have a child hood disease and 4.7% showed the incidence of child hood disease and 77.8% of the children were infected with measles and 22.2% had whooping cough.

Table No (9) Show children taken additional dose of vaccine and the type additional dose, reason of not take additional dose in campaigns and the number of additional dose:

Children taken additional dose of vaccine		
Variable	Frequency	Percent %
Accept	140	36.5%
Refuse	244	63.5%
Total	384	100.0%
The type additional dose		
Variable	Frequency	Percent %
Measles	10	7.1%
Polios	106	75.7%
Meningitis	6	4.3%
All of the above	18	12.9%
Total	140	100.0%
Reason of not take additional dose in campaigns		
Variable	Frequency	Percent %
Not satisfied	5	2.05%
Not available	188	77.05%
Not important	6	2.5%
Adequate routine immunization	45	18.4%
Total	244	100.0%
The number of additional dose		
Variable	Frequency	Percent %
Two dose	99	70.7%
Three	30	21.4%
Four	4	2.9%
More than four	7	5%
Total	140	100.0%

Table above show 63.5% of children did not receive any additional doses, and 36.5% of children received extra doses and 75.7% have receive additional dose of polio and 4.3% was meningitis and 77% of them not receive dose due to unavailability and 2.05% not satisfied and 70.7% were taken two doses during the campaigns and 2.9% were taken four additional dose.

Table No (10) Show the mother receive tetanus toxoid vaccine, number tetanus toxoid doses received by mothers, reasons of mothers not vaccinated with tetanus vaccine, continue to take the dose on time according to mothers and mother reason not taking the dose on time:

Mother receive tetanus toxoid vaccine		
Variable	Frequency	Percent %
mother receive tetanus toxoid	371	96.6%
mother not receive tetanus toxoid	13	3.4%
Total	384	100.0%
Number tetanus toxoid doses received by mothers		
Variable	Frequency	Percent %
One	14	3.8%
Two	38	10.2%
Three	73	19.7%
Four	40	10.8%
Five	206	55.5%
Total	371	100.0%
The reasons of mothers not vaccinated with tetanus vaccine		
Variable	Frequency	Percent %
Lack of service	2	15.4%
Beliefs	1	7.7%
Un important	10	76.9%
Total	13	100.0%
Continue to take the dose on time according to mothers		
Variable	Frequency	Percent %
Mothers continuous T.T	282	76%

Mothers not continuous T.T	89	24%
Total	371	100
Mother reason not taking the dose on time		
Variable	Frequency	Percent %
Forget	13	14.6%
Lack of pregnancy <i>(lack of attendance due to lack of pregnancy)</i>	66	74.2%
Not important	10	11.2%
Total	89	100.0%

The table above show 96.6% of the mother were vaccinated with tetanus and 3.4% do not vaccinate, and 55.5% of mothers receive five doses of tetanus toxoid and 3.8% receive one dose tetanus toxoid, and 76.9% due to not important and 7.7% due to beliefs, and 76% have been taking doses and 24% did not continue to take the vaccine and 74.2% lack of attendance due to lack of pregnancy and 11.2% due to lack of importance.

Part (2):

Table No (11) Relationship between age and educational level of mother:

Age	Level education of mother					
	Illiterate	Khalwa	Basic	Secondary	University and graduate	Total
Less than 20 years	2	0	17	16	2	37
21 – 30 years	16	1	62	48	51	198
31 – 40 years	8	0	28	61	45	142
41 – 49 years	2	0	11	6	8	27
Total	28	1	118	131	106	384

P. value (0.05) significant

This indicates that there is significant association between age of mother and educational level of mother.

Table No (12) Relationship between educational level of mother and children completed all vaccine:

Educational level of mother	Children completed all vaccine		Total
	Yes	No	
Illiterate	28	0	28
Khalwa	1	0	1
Basic	117	1	118
Secondary	131	0	131
University and graduate	105	1	106
Total	382	2	384

P. value (0.836) not significant

The above table show that no significant association between level educational of mother and children completed all vaccine.

Table No (13) Relationship between educational level of mother and vaccinating children on time to give the vaccination dose:

Educational level of mother	Children completed all vaccine		Total
	Yes	No	
Illiterate	28	0	28
Khalwa	1	0	1
Basic	117	1	118
Secondary	131	0	131
University and graduate	105	1	106
Total	382	2	384

P. value (0.159) not significant

This indicates that there is no significant association between level education of mothers and vaccinating children on time to give the vaccination dose.

Table No (14) Relationship between where do you receive immunization services and reason for delayed dose:

Where receive immunization services	If answer no in (15) what reason delayed dose			Total
	Diseases	Vaccination center is for a way	Unimportant	
Health center	0	4	1	5
Mother and child welfare center	5	0	0	5
Total	5	4	1	10

P. value(0.007) significant

Show that there is significant relationship between where do you receive immunization services and reason for delayed dose.

Table No (15) Relationship between children suffering from child hood diseases and receive additional dose:

Do you one of your children get suffering from childhood disease	Receive additional dose		Total
	Yes	No	
Yes	8	10	18
No	132	234	366
Total	140	244	384

P. value(0.471) not significant

Show that there are no significant association between children suffering from child hood diseases and receiving of additional dose.

Table No (16) Relationship between side effect during or after vaccination and not receiving any additional dose:

Side effect during or after vaccination	If answer (No) 23 why not take any addition dose				Total
	Not satisfied	Not available	Not important	Adequate routine immunization	
Yes	1	82	2	8	93
No	3	106	3	31	143
Total	4	188	5	39	236

P. value (0.056)not significant

This indicates that there is no significant association between side effect during or after vaccination and not receiving any additional dose.

Table No (17) Relationship between mother's age and tetanus toxoid:

Age	Vaccinated tetanus vaccine		Total
	Yes	No	
Less than 20 years	37	0	37
21 – 30 years	173	5	178
31 – 40 years	136	6	142
41_49 years	25	2	27
Total	371	13	384

P .value (0.374) not significant

This indicates that there is no significant association between mother's age and tetanus toxoid.

Part (3):**Table (18) Shows coverage with vaccines in 2016:**

Vaccines	Target in 2016	Coverage in 2016	%
BCG	11624	11692	100.5%
Polio first dose	10560	10699	101.3%
Polio second dose	10560	10391	98.4%
Polio third dose	10560	1352	98%
Penta valent first dose	10560	10699	101.3%
Penta valent second dose	10560	10391	98.4%
Penta valent third dose	10560	10352	98%
Rota first dose	10560	10699	101.3%
Rota second dose	10560	10391	98.4%
Streptococcus pneumonia first dose	10560	10699	101.3%
Streptococcus pneumonia second dose	10560	10391	98.4%
Streptococcus pneumonia third dose	10560	10352	98%
Measles first dose	10560	10511	99.5%
Measles second dose	10560	9526	90.2%
Meningitis	-	-	-
Tetanus toxoid for women pregnant first dose	11624	3920	33.7%
Tetanus toxoid for women pregnant second dose	11624	3243	27.8%
Tetanus toxoid for women pregnant third dose	11624	22.99	19.7%
Tetanus toxoid for women pregnant fourth dose	11624	1716	14.7%
Tetanus toxoid for women pregnant fifth dose	11624	1262	10.8%

Table (19) Shows notification centers in year 2016 and 2017:

Notification centers		Target	Implementation	%
Surveillance priority	The number			
High priority	2	104	104	100
Medium priority	-	-	-	-
Low priority	-	-	-	-
Additional centers	5	2600	2600	100
Notification centers		Target	Implementation	%
Surveillance priority	The number			
High priority	2	104	104	100
Medium priority	-	-	-	-
Low priority	-	-	-	-
Additional centers	5	2600	2600	100

- ❖ The number high priority are Shendi teaching hospital + Almek Nimer.
- ❖ Notification center the additional are Hosh banaga hospital + Almesaktab + Kabushiya + Albasabeer + Hagar Elasal.

Table (20) Shows Surveillance program: in year 2016 and 2017:

Disease	Required cases	Informed cases	%
Detection of measles	7	6	85.7%
Cases of soft paralysis	2	3	150%
Disease	Required cases	Informed cases	%
Detection of measles	7	7	100%
Cases of soft paralysis	2	3	150%

Table (21) Shows coverage with vaccines in 2017:

Vaccines	Target in 2017	Coverage in 2017	%
BCG	10777	12078	112.1%
Polio first dose	10699	11184	104.5%
Polio second dose	10699	10627	99.3%
Polio third dose	10699	10624	99.6%
Penta valent first dose	10699	11184	104.5%
Penta valent second dose	10699	10627	99.3%
Penta valent third dose	10699	10654	99.6%
Rota first dose	10699	11184	104.5%
Rota second dose	10699	10627	99.3%
Streptococcus pneumonia first dose	10699	11184	104.5%
Streptococcus pneumonia second dose	10699	10627	99.3%
Streptococcus pneumonia third dose	10699	10654	99.6%
Measles first dose	10699	11021	103%%
Measles second dose	10699	10031	93.8%
Meningitis	10699	11021	103%
Tetanus toxoid for women pregnant first dose	10777	4184	35.5%
Tetanus toxoid for women pregnant second dose	10777	3583	33.2%
Tetanus toxoid for women pregnant third dose	10777	2682	24.9%
Tetanus toxoid for women pregnant fourth dose	10777	1904	17.7%
Tetanus toxoid for women pregnant fifth dose	10777	1415	13.1%

Part (4):

A numerous of interviews were implemented with a number of persons such as:

- 1- Manager of immunization in Shendi Locality to obtain on certain data such as number of children and mothers and also some information about completion of the structure of the ration and the provision of adequate supply of the vaccine and the provision of adequate storage capacity in the program as well as the maintenance and effectiveness of detection and reporting and identify problems and seek to resolve.
- 2- In other side we met manager of general directorate of public health Shendi Locality to collect some data the serve research.
- 3- Manager of statistical office in Shendi Locality to collect some data the serve research such as number of population, the study area.

Chapter Five

Discussion

Conclusion

Recommendations

5.1. Discussion

The study showed that 46.4% of mothers are in the age group (21-30) years and 7% of mothers ages group (41-49) years old. The old ages show increased awareness and attention opposite young, and also help mothers pay attention to immunization services and maintain dose completion, thus ensuring comprehensive coverage of immunization (vaccination doses).

The study showed that 34.1% of mothers were secondary education the attention of mothers immunization services, while 0.3% of the mothers of their education retreat, increasing participation in the immunization program.

This agree with Angelillo et al studied that: mothers knowledge about vaccination was significantly greater among those with a higher rather than lower educational level and among those who were older at the time of the child's birth), and (This agree with ADHIKARY M and et al) studied that the vaccination coverage is highest among children whose mothers have a secondary or higher education).

The study indicated that 99.5% of the children completed all vaccines. While 0.5% of children did not complete vaccinations also indicates changing the concept of mothers and beliefs about vaccination (This agree with Nisar, et al, found that: successful immunization depends on parents positive attitude and knowledge) and (this disagree with Madina revealed that: 96% of children were fully immunized, while 2% never received any immunization, the major reason behind partially immunized children and those never received immunization were the lack of awareness among mothers, immigration population movement and fathers faired of immunization).

Also they found that 50% of those who did not complete vaccinations due to the disease and 50% of them because of the lack of importance of vaccination, which is a barrier to society.

And 0.5% who were not complete vaccine have no acquired immunity to the contrary, 99.5% of children who have completed their vaccinations, where

they have acquired immunity, these vaccines are considered safe way to expose the body to pathogens.

And 50% of non-children's uncompleted vaccine more than three children , and 50% of children is two vaccinated of their number.

The study revealed that 47% of mothers vaccinated their children after 40 days of birth, indicating interest in vaccination, while 2% of mothers vaccinated their children after more than three months, indicating the lack of awareness of mothers in maintaining the health of children.

The beginning of immunization for children is very important, because children have a small resistance to it is given vaccine tuberculosis and paralysis zero since birth and each vaccine a specific time to be committed to him referred to him (WHO, 2015).

The study appeared that 100% of children received vaccinations targeted for immunization services, which indicates an increase in coverage (and this is consistent with what The EPI records are reported in Shendi Locality in 2016 and coverage in 2017).

The study showed that 42.4% of the community receive immunization services at mother and child welfare center while 0.8% revived immunization through the mobile teams. That indicates the place of receiving the service is very important for vaccination, so must be determined where and when the service was received and the presence of trained staff and be known to the citizens. Care must be taken of the proximity of the place to be easiest for immunization services for completely coverage and thus the effectiveness of the program is realized (consistent with the interview with the immunization director).

The study found that 97.4% of children were vaccinated within the prescribed time for taking doses, indicating the society's interest in immunization and the awareness of mothers. (This agree with Ibrahim the study that percent identify of mother about measles disease from employee vaccine 98.1%). While 2.6% was delayed The vaccination dose , 50% delay due to the

disease and 10% due to lack of knowledge of the importance of the dose dates, indicating a lack of awareness.

The study revealed that 62.8% did not have any side effects during or after the vaccination due to lack of knowledge and understanding of the side effects of vaccination (this disagree with Osman the study indicated that all mothers that vaccination had side effect), while 37.2% of children suffered from side effects during or after vaccination, indicating the success of the vaccination dose as well as knowledge of the mother side effects, Talk Side effects which indicates the effectiveness and success of the vaccine as in the vaccine (BCG), pentavalent and measles (This disagree with Myada Hhmed Alshakh study that: 65% of mothers had a good knowledge about the side effect of immunization, Post vaccination side effect was most common reason of cessation of immunization).

The current study also appeared that 85.9% of mothers acted as poultice while 0,7% were notified of the vaccination center, which indicated raising awareness about immunization .

It also showed that 95.3% of the children did not have a childhood disease, indicating the role of vaccination in reducing the spread of diseases, while 4.7% showed the incidence of childhood diseases, (this agree with Journal of Media Center, 2015), the role of vaccination in reducing the spread of diseases and seek to eradicate them .

The study showed that 77.8% of the children were infected with measles and 22.2% had whooping cough, which indicates the role of vaccination in reducing diseases, which among all childhood diseases, the infection is concentrated in measles and whooping cough.

The exposure of children to one of the childhood diseases is a threat to society, leading to the spread of the disease epidemiological in the absence of action, so it is necessary to pay attention to vaccination to prevent the infection of those diseases (This agree with ADes gress dulon, et al, study in eastern Senegal reported that: mortality of the children declined 31% after immunization

specifically measles immunization is likely to have been the most important vaccination).

The study showed that 63.5% of children did not receive any additional doses this shows a lack of knowledge of the importance of additional doses in reducing disease, while 36.5% of children received extra doses which help reduce diseases, in addition to the 75.7% the dose of polio, which contributes to the eradication While 4.3% was Meningitis and this helps to reduce disease and mortality, and 63.5% who did not receive any additional doses 77.05% of them not received a dose due to unavailability while 2.05% due to the lack of not satisfied showing a lack of awareness. while 36.5% who received additional doses of whom 70.7% were taken two doses during the campaigns, and 2.9% were taken four additional doses, which contribute to reducing disease and increasing immunity (This agree with ADes grees dulong, et al, study in eastern Senegal reported that: the decline was stronger in villages that maintained high cover age after the initial national campaign, whereas mortality increased again in the villages where the cover age declined).

The study showed that 96.6% of the mothers were vaccinated with tetanus, indicating that mothers awareness about severity of the disease and their knowledge about the role of vaccination in reduction the incidence and mortality of diseases, and 3.4% do not vaccinated, which affects the health of mother and child and because children are the victims of any ignorance, so must pay attention to their health (This disagree with IMaral study conducted at hospital in Ankara to determine the tetanus vaccination. Showed that: the rates for unvaccinated 53.3% and vaccination women were 46.7%). And the number of doses taken by the mother during pregnancy is very important in the acquisition of immunity because the immunity is after the second dose and increase by the increase of doses up to five doses and these doses have a fixed time.

The present study showed that 55.5% of mothers received five doses of tetanus vaccine, indicating that mothers gained lifelong immunity and increased

awareness of the importance of the vaccine, while 3.8% of mothers received one dose Of tetanus vaccine is insufficient and does not give immunity.

Comparing the result of the study 55.5% of mothers who received five doses (found not consistent with the coverage of the immunization program for the fifth dose in 2016, a 10.8% and in 2017, a 13.1% coverage of that the program records are very weak compared with the result of the study).

And 3.8% who received one dose of the vaccine, of whom 76% have been taking doses on fixed time and this helps to supplement the immunity of mother and child.

While 24% did not continue to take the vaccine. This indicates the formation of immunity for a specified period, 74.2% lack of attendance due to lack of pregnancy and 11.2% due to the lack of importance of perseverance in the supplement dose.

And 3.4% who women did not vaccinated against tetanus, of whom 76.9% due to the reason that it is un important and 7.7% due to the beliefs and that indicate to lack of awareness and understanding.

The rate of local paralysis is (2) cases reported in 2016 and 2017 at 150%.

The rate of local measles is (7) cases reported by 85.7% in 2016 and 100% for 2017.

And also indicates the effectiveness of the system of inquiry (and this is consistent with what was said in the interview with the director of immunization Shendi locality).

The completion of the structure of the ration and the provision of adequate supply of the vaccine and the provision of adequate storage capacity in the program as well as the maintenance and effectiveness of detection and reporting and identify problems and seek to resolve, which indicates the effectiveness of the program (and this is consistent with what was stated in the interview with the director of the program of immunization at the local level).

The study showed that no relationship between educational level of mother and completed all vaccine, (this disagree with ADHIKARY M (et al)

studied that the vaccination coverage is highest among children whose mothers have a secondary or higher education).

The study found that there are relationship between place of receiving immunization services and reason for delayed dose (This agree with Desgrees Dulon, et al, studied that the decline was stronger in villages that maintained high coverage after the initial national campaign, whereas mortality increased again in the villages where the coverage declined).

The study revealed that there are relationship between age of mothers and educational level of mothers. (This agree with Angelillo, et al, they found that: mothers knowledge about vaccination was significantly greater among those with a higher rather than lower educational level and among those who were older at the time of the child's birth).

5.2. Conclusion

The study revealed on the following findings :

- 1- All children were received vaccines that targeted with immunization program, this indicates an increase in coverage, also the EPI effectiveness.
- 2- (99.5%) of the children completed all vaccines, the indicates a change in concept of mothers and their beliefs about vaccination.
- 3- (95.3%) of children not infected with any disease of childhood diseases, this indicating the role of vaccination in reducing the spread of disease.
- 4- (4.7%) describes the incidence of childhood diseases such as measles disease represents (77.8%) and (22.2%) incidence of whooping cough, also role of vaccination in reducing the spread of disease.
- 5- (98%) and above were coverage of vaccinations of children in the years 2016 and 2017 and also at these time the coverage was low for tetanus vaccination, this showed the EPI of effectiveness.
- 6- The rate of local paralysis is (2) cases reported in 2016 and 2017 at 150%.
- 7- The rate of local measles is (7) cases reported by 85.7% in 2016 and 100% for 2017, this is that effectiveness of surveillance program and notification.
- 8- The study found that there are relationship between immunization services' place and reason for delyed dose. Also no relationship between educational level of mother and complete all vaccine.

5.3. Recommendations

According to findings the study, recommend the following:

- 1- Federal administration of immunization programme should continue accessing technical and logistic support for immunizations Services to improve availability of vaccination to all children and women in targeted group age.

- 2- Administration of immunization programme at state level should give local support for Shendi Locality and access manpower and capacity building to increase coverage by immunization services at whole locality.

- 3- Administration of immunization programme at locality level coordination with health promotion management and community mobilization should raise the awareness among mothers and society to increase coverage by immunization services at whole locality for all vaccines specially tetanus toxiod vaccine .

- 4- Administration of immunization programme at locality level should encourage and motivate the community to take all doses of vaccines (basic & additional doses) , especially the measles vaccine and penta valent. to reduce the infections by childhood diseases such as of measles, whooping cough and poliomytisis.

Chapter Six

References

Appendices

6.1. References

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6.2. Appendix

Shendi University

Faculty of Graduate Studies and Scientific Research

Master of Public Health

Assessment of the effectiveness of immunization program among children under 5 years and their mothers in Shendi locality from 2016 – 2017

1 / Name:

2 / Administrative unit :

A - Shendi City (b) - North Shendi () C - South Shendi () D - Kabushiya ()
E – Hagar Elasal ()

3 / Age of mothers:

A- 15 – 20 years () B - 21 - 30 years () C - 31 - 40 years ()
D – 41 – 49 years ()

4 / Educational level of the mother:

A - Illiterate () B - Khalwa () C - Basis () D - Secondary ()
E - University and postgraduate ()

5 / Do you have children under the age of 5 years?

A - Yes () B - No ()

6 / If the answer yes in the previous question how old?

A - less than one year () B - 1 - 2 years () C- 3 - 4 years () D -5 years ()

7 / Have the children competed all vaccine?

A - Yes () B - No ()

8 / If the answer is yes. When did you start vaccinating?

A - since birth () B - After 40 days () C - After two months ()
D - After more than three months ()

9 / If the answer is not in question (7), what is the reason for not vaccinating?

A - lack of service () (B) Poor service () C - disease ()
D - occurrence of side effect () E - unimportant ()

10 / If the answer is not in question (7) how many children are unvaccinated?

A - One () B - Two () C - Three () D - more than three ()

11 / Have all your children received vaccinations and targeted vaccines?

A - Yes () B - No ()

12 / If the answer is not in question (10), what are the vaccinations that they did not take?

A - BCG () B - paralysis () C – Pentavalent () D - Rota ()
E – measles one dose () F –measles two dose () G – Pneumococcal ()
H- meningitis ()

13 / If the answer is not in (10) What is the reason for not taking the vaccine?

A Not available() B-The center is far away() C- the emergence of side effect()
D -Disease () E - unimportant ()

14 / Where do you receive immunization services?

A - General Hospital () B - Health Center () C - Dispensary ()
D - Mobile Team () E- Mother and Child Welfare Center ()

15 / Are you vaccinating your children on time to give the vaccination dose?

A - Yes () B - No ()

16 / If the answer is not in (15), what is the reason for delayed dose?

A - lack of service () B - disease () C - Travel ()
D - The vaccination center is far away () E - unimportant ()

17 / Did any of your children have a side effect during or after vaccination?

A - Yes () B - No ()

18 / If the answer is yes in (17) what kind of side effect?

A - severe fever () B - cramps () C - shock () D - abscess ()

19 / If the answer is yes in (17) what is the cause of the side effects?

(A) BCG () B - Pentavalent () C - Rota () D - Measles () E - paralysis ()
F- Pneumococcal () G – Meningitis ()

20/ When the side effects of your child as a result of vaccination What did you do?

A- Working of compresses () B - Notification () C - Go to the doctor ()
D - I did not do anything ()

21 / Did you get one of your children suffering from childhood diseases?

A - Yes () B - No ()

22 / If the answer is yes in (21) any disease was injured?

A - tuberculosis () B - Pertussis () C - Diphtheria () D - Tetanus ()
E - measles () F- Meningitis () G - Soft paralysis ()

23/ Do your children receive any additional doses other than routine vaccinations?

A - Yes () B - No ()

24 - If the answer is yes in (23) What are the additional doses that he took?

A - Measles () B - paralysis () C - Meningitis () D - All of the above ()

25 - If the answer is not in (23) Why not take additional doses in campaigns?

A - Not satisfied () B- Not available () C - Not important ()
D - Adequate routine immunization ()

26. If additional doses are taken in campaigns - How many doses have been taken?

A - Two doses () B - three () C - Four () D - more than four ()

27 / Have you taken Tetanus toxoid vaccine?

A - Yes () B - No ()

28 / If the answer is yes in (27) How many doses did you take?

A - One () B - Two () C - Three () D - Four () E - five ()

29 / If the answer is not in (27) what is the reason for not vaccinating in tetanus?

A - lack of service () B - beliefs () C - unimportant ()

30/ In the case of tetanus vaccinations, did you continue to take the doses on time?

A - Yes () B - No ()

31. If the answer is not in (30), what is the reason for not taking the dose?

A - lack of a pregnancy () B - lack of service () C – Forget ()
D- Not important ()

جامعة شندي

كلية الدراسات العليا والبحث العلمي

ماجستير الصحة العامة

استمارة تقييم فاعلية برنامج التحصين وسط الأطفال أقل من 5 أعوام
وأمهاتهم بمحلية شندي في الفترة من 2016 – 2017

- 1/ الاسم :
- 2/ الوحدة الإدارية :
- أ- مدينة شندي () ب- شمال شندي () ج- جنوب شندي () د- كبوشية ()
هـ- حجر العسل ()
- 3/ أعمار الأمهات :
- 15 - 20 سنة () ب- 21 - 30 سنة () ج- 31 - 40 سنة () د- 41 - 49 سنة ()
- 4/ المستوي التعليمي للأم:
- أ- أمي () ب- خلوة () - أساس () ج- ثانوي () هـ- جامعي وفوق الجامعي ()
- 5/ هل لديكم أطفال أقل من عمر 5 سنة ؟
أ- نعم () ب- لا ()
- 6/ إذا كانت الإجابة بنعم في السؤال السابق كم أعمارهم ؟
أ- أقل من سنة () ب- 1 - 2 سنة () ج- 3 - 4 سنة () د- 5 سنة ()
- 7/ هل أطفالك أكملوا كل التطعيمات ؟
أ- نعم () ب- لا ()
- 8/ إذا كانت الإجابة بنعم. متى بدأت التطعيم؟
أ- منذ الولادة () ب- بعد 40 يوم () ج- بعد شهرين () د- بعد أكثر من ثلاثة شهور ()
- 9/ إذا كانت الإجابة بلا في السؤال (7) ما هو سبب عدم التطعيم ؟
أ- عدم وجود الخدمة () ب- رداءة الخدمة () ج- المرض () د- حدوث أثر جانبي ()
هـ- غير مهم ()
- 10/ إذا كانت الإجابة بلا في السؤال (7) كم عدد الأطفال الغير مطعمين ؟
أ- واحد () ب- اثنين () ج- ثلاثة () د- أكثر من ثلاثة ()
- 11/ هل كل أطفالك تلقوا واخذوا التطعيمات المستهدفة بخدمات التحصين ؟
أ- نعم () ب- لا ()
- 12/ إذا كانت الإجابة بلا في (10) ما هي التطعيمات التي لم يأخذوها ؟

- أ- BCG () ب- الشلل () ج- الخماسي () د- الروتا ()
هـ- الحصبة جرعة أولى () و- الحصبة جرعة ثانية () ز- المكورات () ح- السحايا ()
- 13/ إذا كانت الإجابة بلا في (10) ما هو سبب عدم اخذ اللقاح ؟
أ. غير متوفر () ب- بعد المركز () ج- ظهور أثر جانبي ()
د- المرض () هـ- غير مهم ()
- 14/ أين تتلقى خدمات التحصين ؟
أ- مستشفى عام () ب- مركز صحي () ج- مستوصف () د- فريق جوال ()
هـ- مركز رعاية الأمومة والطفولة ()
- 15/ هل تحرصي على تطعيم أطفالك في المواعيد المحددة لإعطاء الجرعة التطعيمية ؟
أ- نعم () ب- لا ()
- 16/ إذا كانت الإجابة بلا في (15) ما هو سبب تأخير إعطاء الجرعة ؟
أ- عدم توفر الخدمة () ب- المرض () ج- السفر () د- بعد مركز التطعيم ()
هـ- غير مهم ()
- 17/ هل حدث لأي واحد من أطفالك أثر جانبي أثناء أو بعد التطعيم ؟
أ- نعم () ب- لا ()
- 18/ إذا كانت الإجابة بنعم في (17) ما هو نوع الأثر الجانبي ؟
أ- حمى شديدة () ب- تشنجات () ج- صدمة () د- خراج ()
- 19/ إذا كانت الإجابة بنعم في (17) ما هو السبب في حدوث الآثار الجانبية ؟
أ- BCG () ب- الخماسي () ج- الروتا () د- الحصبة () هـ- الشلل ()
و- المكورات () ز- التيتانوس () ح- السحايا ()
- 20/ عند حدوث آثار جانبية لطفلك نتيجة التطعيم ماذا فعلت ؟
أ- عمل مكدمات () ب- تبليغ () ج- الذهاب للطبيب () د- لم أعمل شيء ()
- 21/ هل حصل أن أصيب أحد أطفالك بواحد من أمراض الطفولة ؟
أ- نعم () ب- لا ()
- 22/ إذا كانت الإجابة بنعم في (21) بأي مرض أصيب ؟
أ- سل () ب- سعال ديكي () ج- دفتريا () د- تيتانوس () هـ- حصبة ()
و- سحائي () ز- شلل رخو ()
- 23/ هل تلقي أطفالك أي جرعات إضافية غير التطعيمات الروتينية ؟
أ- نعم () ب- لا ()
- 24- إذا كانت الإجابة نعم في (23) ما هي الجرعات الإضافية التي أخذها ؟
أ- حصبة () ب- شلل () ج- سحائي () د- كل ما سبق ()

- 25- إذا كانت الإجابة بلا في (23) لما لم يأخذ جرعات إضافية في الحملات ؟
أ- عدم القناعة بها () ب- عدم توفرها () ج- غير مهمة () د- كفاية التطعيم الروتيني ()
- 26- في حالة اخذ جرعات إضافية في الحملات - كم جرعة تم أخذها ؟
أ- جرعتان () ب- ثلاثة () ج- أربعة () د- أكثر من أربعة ()
- 27/ هل أخذت لقاح التيتانوس توكسيد ؟
أ- نعم () ب- لا ()
- 28/ إذا كانت الإجابة بنعم في (27) أخذتي كم جرعة ؟
أ- واحد () ب- اثنين () ج- ثلاثة () د- أربعة () و- خمسة ()
- 29/ إذا كانت الإجابة بلا في (27) ما هو سبب عدم التطعيم في التيتانوس ؟
أ- عدم توفر الخدمة () ب- المعتقدات () ج- غير مهم ()
- 30/ في حالة التطعيم ضد التيتانوس هل وازبت على اخذ الجرعات في مواعيدها ؟
أ- نعم () ب- لا ()
- 31- إذا كانت الإجابة بلا في (30) ما هو سبب عدم المواظبة في أخذ الجرعات ؟
أ- عدم حدوث حمل () ب- عدم توفر الخدمة () ج- النسيان () د- عدم أهميته ()

6.3. Appendix

Interview with the director of the local immunization department

Q 1: Is the functional structure complete?

Yes () No()

Q2: Is the vaccine sufficient?

Yes () No()

Q3: Is the storage sufficient?

Yes () No()

Q4: Is there periodic maintenance of cold chain equipment?

Yes () No()

Q5: How effective is the vaccination program?

.....

Q6: Are there problems with the investigation program?

Yes () No()

Q7: If yes, what are the problems facing the immunization program?

.....

Q8: Are there problems with immunization program?

Yes () No()

Q 9: If yes, what are these problems?

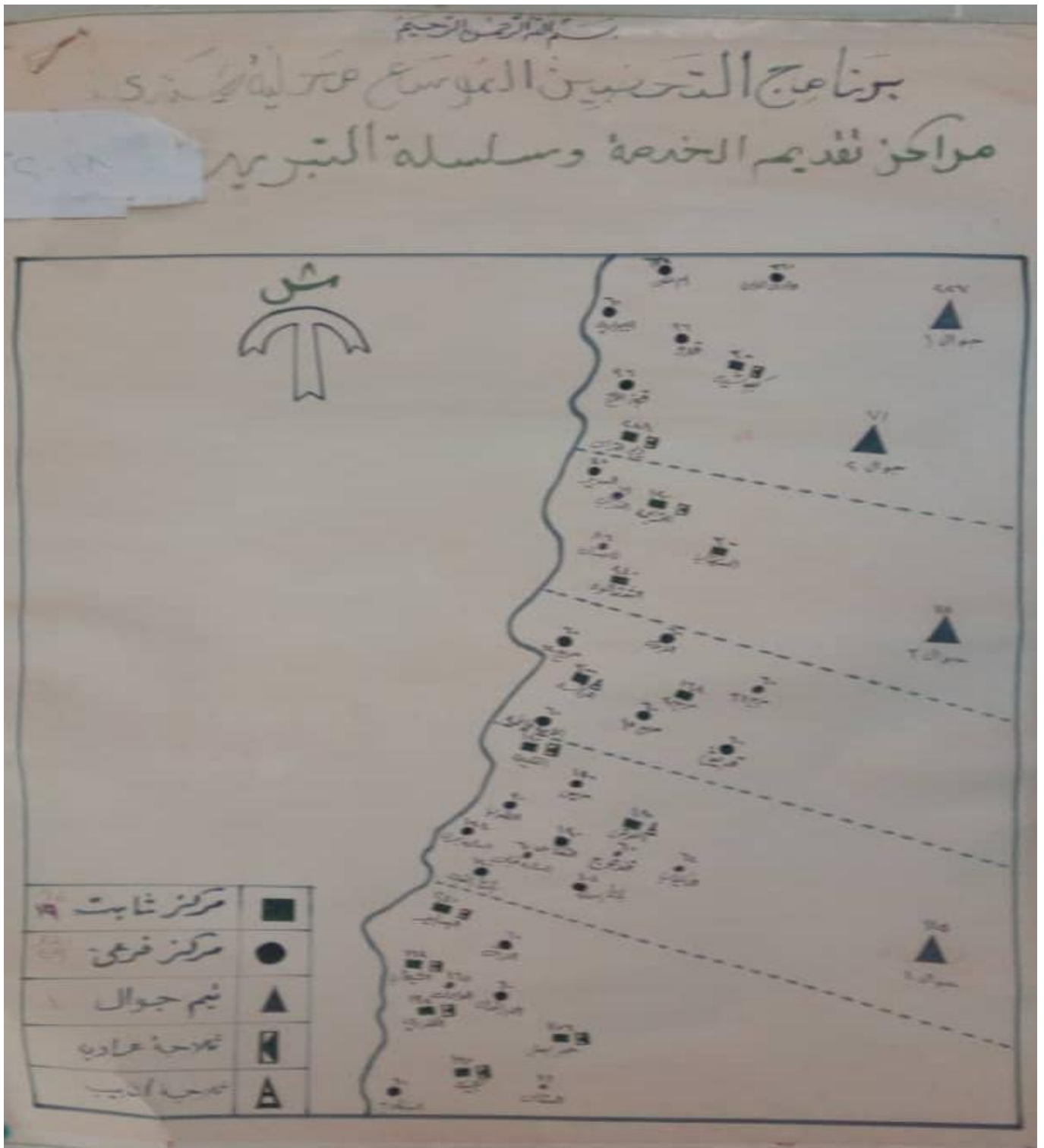
.....

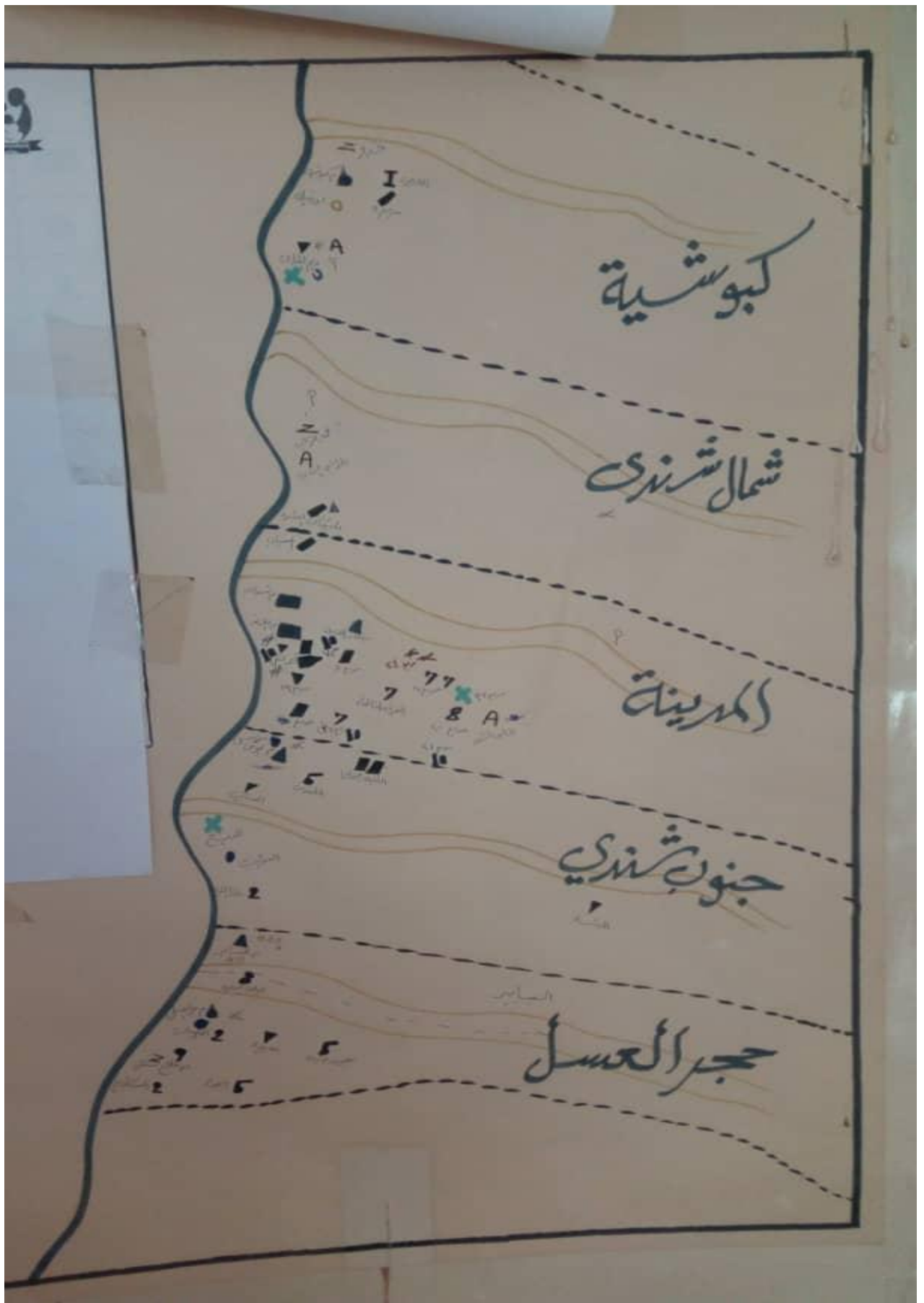
استمارة مقابلة مدير إدارة التحصين بالمحلية

- س1: هل الهيكل الوظيفي مكتمل ؟
نعم () لا ()
- س2: هل الإمداد باللقاح كافي ؟
نعم () لا ()
- س3: هل السعة التخزينية كافية ؟
نعم () لا ()
- س4: هل توجد صيانة دورية لمعدات سلسلة التبريد ؟
نعم () لا ()
- س5: مدي فعالية نظام التقصي لبرنامج التحصين ؟
.....
- س6: هل توجد مشاكل في برنامج التقصي ؟
نعم () لا ()
- س7: إذا كانت الإجابة بنعم ما هي المشاكل التي تواجه برنامج التحصين ؟
.....
- س8: هل توجد مشاكل في برنامج التحصين ؟
نعم () لا ()
- س9: إذا كانت الإجابة نعم ما هي تلك المشاكل ؟
.....

6.4. Appendix

Map of study area





6.5. Appendix

Approval letter

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ
بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

التاريخ: ١٥/٣/٢٠١٨م

السيد/ ضابط عمليات التحصين الموسع

السلام عليكم ورحمة الله وبركاته

الموضوع طلب معلومات

اقيد سيادتكم بانني طالبيه رساله الماجستير واحتاج لمعلومات

من ادارتكم العامرة في الاتي :

- معلومات من السجلات .

- معلومات من المقابله

عليه ارجو كريم تعاونكم معي .

وجزاكم الله خيراً

طالبه الماجستير
الشيخ
احمد بن فضل الله

كلماتي =
اراهم طالبي الماجستير
سيد امان بن يحيى
مجلسه نسائي
حاجه كبرى، التاريخ :
التحصين الموسع