Knowledge Attitude and Practice of Mothers of Under Five towards Immunization at Alwarag Health Center, Southern Gezira Locality, Gezira State, Sudan, (2013)

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Holly Quran

قُرَآنَ كَرِيمًا

بسم الله الرحمن الرحيم

أَوَلَمْ يَرَ الْإِنْسَانُ أَنَّا خَلَقْنَاهُ مِنْ نُطْفَةٍ فَإِذَا هُوَ خَصِيمٌ مُبِينٌ

يس الاية (٧٧)
Dedication

To Allah, the most gracious, the most merciful.

To my parent, who brought me out to this world, encouraged me, supported me and made me what I am today, for standing by me until this day.

I dedicate this research to my husband, sun, sisters and brother who are never forget me in bad, good time and always there, where I want them to be, who tolerated my ups and downs, who gave me all the love and support that I needed throughout my study years. I would like also to dedicate this research to my relatives and friends who are in my heart all the time.
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I would like to thank Gezira University administration for giving me an opportunity to study in advance.

I especially give my thank to my teacher and supervisor, Dr. Salwa Alsanosi for her constant motivation and patience with me. And am greatly value your meticulous comments and corrections, without which this research would never have satisfied my initial wishes. I cherish the constant support you always have me even when things did not look too good and it seemed I would never go on.

I would like also to give my thanks to Family Medicine and community medicine staff in the Faculty of Medicine who gave us a glimpse of their superior knowledge and skills.
Knowledge Attitude and Practice of Mothers of Under Five towards Immunization at Alwarag Catchment Area, Southern Gezira Locality, Gezira State, Sudan, (2013)

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Abstract

Immunization of the infants and young children against serious infectious disease is among the most successful and cost effective interventions in preventive health care. This study was conducted to assess the knowledge, attitude and practices, beside fears and beliefs about immunization of children among mothers of under 5 years, and to identify the misconceptions about childhood immunization, to determine motivating and de motivating factors in seeking immunization for their children and to identify common sources of information about immunization among the children’s caretakers. It was a cross-sectional descriptive health center based study conducted in Alwarag health center, Gezira state – Sudan, all mothers who attended Alwarag health center seeking vaccination service for their under 5 years children during the study period and agreed to participate were included. The sample size was 80, based on comprehensive sampling, (total coverage during the period February to April 2013), the data collection carried out by a pretested structured questionnaire. 96.3% of the respondents completely immunized their children. All most all the mothers (97.5%) aware of the importance of immunization. The majority of the respondent (76.3%) had a good knowledge about diseases that can be prevented by immunization. 71.3% of them had a good knowledge about the doses of immunization and more than half (65.0%) had a good knowledge about the side effect of immunization. Post vaccination side effect (97.5%) was the most common reason of cessation of immunization followed by finding vaccine out of stock (30%) and transportation problems 16.2%. Television was the main source of information to the respondent, followed by doctors, Paramedics and community. The recommendation of this study is to ensure correction of misconception and fears from immunization among mothers. More health education about vaccination through mass media should be done. Vaccination personnel should be involved in giving information to the mother in every visit to stand beside the television in raising the knowledge of mothers and community about immunization and treating misconception among them, also posters and pamphlet should be available in the health centers to increase the mothers awareness about vaccination. Availability of valid vaccine all the times in the health centers is very important issue to motivate mothers to coming for vaccination. Out reach team should be increased to help the mothers who are facing transportation problems that prevent them from coming to the health centers in order immunize their children.
معارف واتجاهات وممارسات بجانب المخاوف والمعتقدات حول تطعيم الأطفال دون سن الخامسة (2013م)

ميادة أحمد حسن

ملخص الدراسة

تحصين الأطفال الرضع والأطفال الصغار ضد الأمراض المعدية والخطرة يعد من بين التدخلات الأكثر فعالية من حيث التكلفة في مجال الرعاية الصحية الوقائية. أجريت هذه الدراسة لتقييم المعرفة، الموافقة والممارسات بجانب المخاوف والمعتقدات حول تطعيم الأطفال دون سن الخامسة والبالغين، وتفهيم العوامل المترتبة والمثيرة في تطعيم الأطفال، مما يسمح للدراسة بتحديد أهداف مشاريع التثقيف عن التخزين. هذه الدراسة مقطوعة وصفية، أجريت في مركز صحي واقع، ولاية الجزيرة - السودان، لكل الأمهات اللاتي حضرن إلى المركز لتطعيم أبنائهن أثناء فترة الدراسة. وافقن على المشاركة بعد ادراجهن في الدراسة، بلغ عدد العينة 80 مشاركًا تم اختيارهم على أساس اختيار العينة الشاملة (التغطية الاجمالية خلال الفترة من فبراير - أبريل 2013). تم جمع البيانات عبر استبيان منصمة وتم تجريبه قبل التنفيذ، تم ادراجه في الدراسة. تم حجم العينة 80 مشاركًا تم اختيارهم على أساس اختيار العينة الشاملة (التغطية الاجمالية خلال الفترة من فبراير - أبريل 2013). تم جمع البيانات عبر استبيان منصمة وتم تجريبه قبل التنفيذ. 63.3% من المستجيبات قاموا بتقديم معلومات عن التخزين، من أهمية التخزين وكانت الغالبية من الأمهات (76.3%) لديهن معرفة جيدة عن الأمراض التي يمكن الوقاية منها عن طريق التخزين، وكان 71.3% لديهن معرفة جيدة عن جرعات التخزين، كما أن 65.0% لديهن معرفة جيدة عن الآثار الجانبية للتطعيم، وتم تمثل النسبة الأكثر شيوعًا في اقتف جرعات التخزين (57.5%), بليه عدم توفر الاتصالات بالنظام الاستراتيجي بالمركز (30%) في أغلب الأحيان، شكل التلفزيون المصدر الرئيسي للمعلومات التي تناقلها الأمهات عن التطبيق (65.2%). بليه الأطباء والمساعدات الطبية الفاعل، تم تقسيم هذه الدراسة إلى مراحل، 50% من الأمهات، 30% من التحصينات (16.2%). شكل التلفزيون المصدر الرئيسي للمعلومات التي تناقلها الأمهات عن التطبيق (65.2%), بليه الاطباء والمساعدات الطبية الفاعل، تم تقسيم هذه الدراسة إلى مراحل.
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List of Abbreviations

EMR  Electronic Medical Record
EPI  Expanded Program for Immunization
GAVI Global Alliance for Vaccines and Immunization
SPSS Statistical Package and Social Sciences
UAE  United Arab Emirate
WHO  World Health Organization
DPT  Diphtheria Tetanus Pertussis
HIB  Haemophilus influenzae type b
FM   Family Medicine
Chapter One

Introduction

Introduction:

Immunization is a proven tool for controlling and eliminating life-threatening infectious diseases and is estimated to avert between 2 and 3 million deaths each year. It is one of the most cost-effective health investments, with proven strategies that make it accessible to even the most hard-to-reach and vulnerable populations. It has clearly defined target groups; it can be delivered effectively through outreach activities; and vaccination does not require any major lifestyle change.¹

The first diseases targeted by the EPI were diphtheria, whooping cough, tetanus, measles, poliomyelitis and tuberculosis. Global policies for immunization and establishment of the goal of providing universal immunization for all children by 1990 were established in 1977, this goal was considered an essential element of the WHO strategy to achieve health for all by 2000.²

In 2010, an estimated 85% of children under one year of age globally had received at least three doses of DPT vaccine. Additional vaccines have now been added to the original six recommended in 1974. Most countries, including the majority of low-income countries have added hepatitis B, Haemophilus influenzae type b (Hib) and rotavirus vaccine to their routine infant immunization schedules and an increasing number are in the process of adding pneumococcal conjugate vaccine to their schedules.²

The Expanded Program on Immunization remains committed to its goal of universal access to all relevant vaccines for all at risk. The program aims to expand the targeted groups to include older children, adolescents and adults and work in synergy with other public health programs in order to control disease and achieve better health for all populations, particularly the underserved populations.²
An immunization campaign carried out by the World Health Organization (WHO) from 1967 to 1977 resulted in the eradication of smallpox. When the program began, the disease still threatened 60% of the world's population and killed every fourth victim. Eradication of poliomyelitis is now within reach. Since the launch by WHO and its partners of the Global Polio Eradication Initiative in 1988, infections have fallen by 99%, and some five million people have escaped paralysis. Between 2000 and 2008, measles deaths dropped worldwide by over 78%, and some regions have set a target of eliminating the disease. Maternal and neonatal tetanus has been eliminated in 20 of the 58 high-risk countries.³
LITERATURE REVIEW

Immunization Program in Sudan

The implementation of the expanded program of immunization in Sudan was in 1976, where the program enters the six basic vaccinations BCG, polio, diphtheria, tetanus, pertussis with measles vaccine as the last of the vaccines was introduced in 1985. The campaign aims that are performed by the program from time to time to strengthen the routine immunization program and enhance immunity in children against the six childhood diseases and come within the system of polio eradication programs, the elimination of measles and neonatal tetanus. In early 2005, with the support of the Global Alliance for Vaccines and Immunization (GAVI), the program enter a vaccine Hepatitis in three states, under a plan to disseminate vaccination against hepatitis in 9 other states by the end of the year 2005, and the introduction of the rest of the states by the end of the year 2006.

Vaccine:

Vaccine is a biological preparation that improves immunity to a particular disease. A vaccine typically contains an agent that resembles a disease-causing microorganism and is often made from weakened or killed forms of the microbe, its toxins or one of its surface proteins. The agent stimulates the body's immune system to recognize the agent as foreign, destroy it, and keep a record of it, so that the immune system can more easily recognize and destroy any of these microorganisms that it later encounters. Vaccines may be prophylactic (example: to prevent or ameliorate the effects of a future infection by any natural or "wild" pathogen), or therapeutic (e.g., vaccines against cancer are also being investigated.

Types of vaccine:

- Killed: Examples are the influenza vaccine, cholera vaccine, bubonic plague vaccine, polio vaccine, hepatitis A vaccine, and rabies vaccine.
- Attenuated: Examples include the viral diseases yellow fever, measles, rubella, and mumps, and the bacterial disease typhoid.

- Toxoid: Examples of toxoid-based vaccines include tetanus and diphtheria.

- Protein subunit: Examples include the subunit vaccine against Hepatitis B

- Conjugate: This approach is used in the Haemophilus influenzae type B vaccine.

**The vaccines used in EPI Sudan:**

*BCG vaccine:*

Life attenuated vaccine of bovine type of mycobacterium tuberculosis, is given from the time of birth to 1 year, kept in temperature from 0-8 c is given intradermally 0.05 ml once in the upper part of left forearm. It is side effect include:

I. Persistent ulcer in the site of administration

II. Regional suppurative lymphadenitis

*Poliomyelitis vaccine:

Oral polio vaccine (sabin) is live attenuated vaccine, kept between 0-8 c, targeted disease is poliomyelitis, it is 4 doses given as oral drop, the dose should be repeated if the child have diarrhea, it has no side effect

*Pentavalent vaccine:*

The vaccine is a homogeneous liquid containing purified diphtheria and tetanus toxoids, inactivated whooping cough (pertussis) organisms, highly purified, non-infectious particles of hepatitis B surface antigen (HBsAg) and Hib component as a bacterial subunit vaccine containing highly purified, non-infectious Haemophilus influenzae type b (Hib) capsular polysaccharide chemically conjugated to a protein. The potency of the vaccine per single human dose is at least 4 IU for pertussis, 30 IU for diphtheria, 60 IU for tetanus (determined in mice) or 40 IU (determined in guinea pig). The liquid vaccine vial should be shaken before use to homogenize the suspension. The vaccine should be
injected intramuscularly. The anterolateral aspect of the upper thigh is the preferred site of injection, dose is 0.5ml.

Side effect of the vaccine: Some temporary swelling, tenderness and redness at the site of injection together with fever occur in a large proportion of cases. Occasionally severe reactions of high fever, irritability and screaming develop within 24 hours of administration. Hypotonic-hyposensitive episodes have been reported. Febrile convulsions have been reported.

**Rotavirus vaccine:**

rotavirus vaccine protects children from rotaviruses, which are the leading cause of severe diarrhea among infants and young children. There are two effective rotavirus vaccines: Rotarix by GlaxoSmithKline and RotaTeq by Merck. A vaccine has recently been developed in India. Phase III trials have been conducted for the vaccine, RotaTeq is a live, oral pentavalent vaccine that contains five rotaviruses produced by reassortment. The rotavirus parent strains of the reassortants were isolated from human and bovine hosts. rotavirus vaccine have shown that it can prevent about 74% of rotavirus infections.

**Measles vaccine:**

Measles vaccine is a highly effective vaccine used against measles, the vaccine acts by stimulating the innate immune response and provides long term protection against the disease. The onset of the protection is slow but the effect is long lasting. It is dose is 0.5 ml intramuscularly in the upper part of the right arm. Side effect of the vaccine includes: fever and skin rash resemble the measles rash after one week from the vaccination.

- **The infectious diseases that can be prevented by vaccination:**
  1. Tuberculosis
  2. Poliomyelitis
  3. Diphtheria
  4. Tetanus
  5. Pertussis (whooping cough)
  6. Hepatitis B
7. Diarrheal diseases
8. Pneumonia and meningitis
9. Measles

- **The possible side effect following vaccination:**
  1. Fever
  2. Diarrhea
  3. Vomiting
  4. Convulsion
  5. Local reaction in the site of infection
  6. Bleeding in the site of administration
  7. Abscess
  8. Skin rash

**EPI schedule of under five children in Sudan:**

<table>
<thead>
<tr>
<th>18 months</th>
<th>9 months</th>
<th>14 weeks</th>
<th>10 weeks</th>
<th>6 weeks</th>
<th>At birth</th>
<th>Type of vaccine</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>The only dose BCG vaccine</td>
</tr>
<tr>
<td>Dose 3</td>
<td>Dose 2</td>
<td>Dose 1</td>
<td>Dose 0</td>
<td></td>
<td></td>
<td>Polio vaccine</td>
</tr>
<tr>
<td></td>
<td>Dose 2</td>
<td>Dose 1</td>
<td></td>
<td></td>
<td></td>
<td>Rota vaccine</td>
</tr>
<tr>
<td>Dose 3</td>
<td>Dose 2</td>
<td>Dose 1</td>
<td></td>
<td></td>
<td></td>
<td>Pentavalent vaccine</td>
</tr>
<tr>
<td>Dose 2</td>
<td>Dose 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Measles vaccine</td>
</tr>
</tbody>
</table>
Strengthen routine immunization

With Allah help, and cooperation partners, including the Global Alliance for Vaccines and Immunization (GAVI), was achieved most of the goals set for the five-year plan (2001-2005), where the percentage of immunization coverage vaccine trio (DPT3) in Sudan from 46% in 2002 to 79% by the end of the year 2004 and to 83.5% by the end of the year 2005 as the highest coverage rate for three-c 3 in Sudan since the program was established in the year 1976. States also rose which has achieved a coverage rate of 80% and above from 7 states in 2002 to 10 states in 2003 and then to 14 states in 2004 and finally to 15 states by the end of the year 200

Objectives of EPI

The Federal Ministry of Health ratify the recent five-year plan for the expanded program of immunization and polio eradication in Sudan and for the years 2001 - 2005, The objectives of the plan are as follows:

• Achieve coverage already released at least 90% of all vaccinations and for children less than age.

• Eradicate polio from Sudan by the end of 2005.

• Elimination of maternal tetanus and neonatal and achievement rate not exceeding the rate of one case per 1000 live births in all localities.

• Achieving a 90% decline in measles infections and 95% lower rate of death resulting therefrom, compared with rates in 2000.

In addition to increase coverage and objectives of eradication and elimination of diseases, the plan also included the following objectives:

• Capacity building and strengthening management systems and planning at the municipal level.

• Rehabilitation, renovation and expansion of the cold chain to cover all the people who can access them.
• The introduction of new vaccines such as hepatitis vaccine pattern (b) in the national immunization schedule.

**Strategies of EPI**

Included strategies adopted by the Federal Ministry of Health to upgrade EPI services include:

• Providing EPI services through fixed vaccination sites and sub-sustainable and phones.

• The development of cold chain and strengthen vaccine management systems at various levels.

• Strengthen the municipal level and capacity building of health cadres different program.

• Increased coordination and cooperation amid partners.

• strengthen the system of information and research for the program

**Structure and Organization of EPI Sudan**

Expanded Program for Immunization (EPI) represents a public administration departments for primary health care. The program manages qualified national cadre tasks, were distributed among the various levels. The federal level is the level that is holding the development of policies and national strategic plans and routers technical cooperation with States, and then be downloaded to all levels, and is located on the federal administration of the program as well as the responsibility of training the trainers, provide technical support, supervision, monitoring and evaluation of all activities that are performed at the states level.5

**Infrastructure to EPI**

Vaccines are considered weak and very sensitive to temperature, so you must save it at0-8 degrees Celsius in the cold chain for this purpose. Cold chain is the backbone of the EPI, it is a network of equipment such as freezer rooms and cooling, Freezers and
refrigerators pipes and solar power and cold boxes and pregnant vaccines and supervised by trained personnel to deal with the vaccines and monitors the temperature of the moment it leaves the factory all over the world. In addition, via the introduction of advanced techniques to monitor the temperature and power supply vaccines kept in warehouses Federal cooling according to World Health Organization standards.

During the years 2003 and 2004 began the program in terms of cold chain in rehabilitation at the state level which led to an increase in the efficiency of the cold chain from 50% in 2001 to 80% in 2004. On the other hand also been expanded network of service in the EPI, where it was an increase in stationary (1153 fixed) by 25% and further increase by 42% in mobile teams (327), with the provision of cold chain equipment and means of deportation appropriate. Services and the performance of EPI

The five-year plan was formulated initial EPI in the period (1985-1990). By the end of this period amounted immunization coverage for children in the age group less than a year to 62.4% for the three third dose. In the period between 1990-1994, the program coverage rate declined to 51% due to the absence of financial and material support from the Government of Sudan and donors because of U.S. sanctions on the country. It must be noted here that before the year 2005 and so far do not receive three southern states (Warrap, Lakes, and Western Equatoria) is under the control of the SPLM, did not receive any services from EPI Federal Ministry of Health, where the immunization activities in these three states plus for other regions under the control of movement in southern Sudan, managed directly by the UNICEF in Nairobi through the so-called Operation Lifeline. In the period between 1995 - 2001 could not be sustainable coverage where she remained oscillating between 50 - 70%, above and down at different periods, reflecting the failure to ensure the sustainability of immunization services in the country and that percentage because the program is entirely dependent on external support, while limited contribution to meet the salaries of government employees to the program and weak negligible contribution in the ongoing operating cost. There are other factors led to the volatile weak coverage, including the following:

• Difficult access to some areas.
• Migration from rural to urban areas.

• Natural disasters and civil war.

As a result, there is a wide variation in access to service, immunization coverage, and morbidity between regions within a country. Where there is estimated 50% of the population access to immunization services firm and regularly throughout the known and identifiable centers. When available, deportations and mass movement mobile teams implementing immunization activities in remote areas on a regular basis.

**Vaccination in Gezira state:**

**Geographical information:**

- Location: Located in central Sudan, and is the third of the states of Sudan, where the population density, Area: 35304 sq. km administrative division: Number of sweeteners: 7, number of administrative units: 40 Number of villages: 2446.

**Main objective of EPI Gezira:**

Upgrade and improve the health of children under a year by reducing the rate of injuries and fatalities from childhood diseases that can be prevented by vaccination.

**Specific objectives:**

- Immunization coverage of not less than 95% for each of vaccinations in all localities.

- Eradication of polio from Sudan.

- The elimination of measles by the end of 2015

- Eliminate Tetanus of the newborn.
Strategies of service:

- Fixed centers.
- Sub-centers.
- Mobile teams.
- Campaigns

The total vaccination coverage in Gezira state in 2013 was 97.2%. many campaigns were implemented during 2013 targeting poliomyelitis as a part of the state strategy of eradication of poliomyelitis and other campaign of measles, in June 2013 new pneumococcal vaccine added in the EPI programme to be give in three doses for under five children.

In a study implemented in Albeida Libya To identify maternal knowledge, attitude and practice (KAP) about immunization and to determine maternal characteristics and the determinants of full immunization status among respondents of children age (2-24 months) revealed that The child's gender, education, residence and job of the mother did not affect the pattern of immunization, while negative attitude (mothers afraid from vaccination) significantly affected the immunization status. This signifies the incomplete knowledge and inappropriate practice of the people.

Extra effort is need to raise the knowledge and break the old beliefs of the people. Appropriate information dissemination, aggressive campaigning and family involvement are crucial to the success of the programme.

Other study done in Alain city UAE aims to assess knowledge attitude and practice of mother in traditional city towards children immunization and estimated the prevalence of a positive attitude towards immunizations. Knowledge and attitude variables as well as factors related to these variables were explored. It is revealed that mothers Having a positive attitude towards immunizations 93% of mothers. Three factors significantly related to a positive attitude arose: knowledge, education and Arab nationality. Three factors associated with knowledge also arose: education, receipt of information on immunizations from health professionals and, again, Arab nationality. So Despite of the
currently highly prevalent positive attitude towards immunizations in the United Arab Emirates, information by health professionals should focus more on parents with lower education and those of non-Arab nationality.\textsuperscript{7}

In other study done in KSA to evaluate the quality of utilization and documentation of the required process of well-baby care (WBC) visits and immunizations in primary health care centers (PHCCs). Resulted that The utilization level of WBC visits is lower than recommended. Careful well organized continuous field training of staff and parents' education programs are needed.\textsuperscript{8}
Rationale:

Being immunized is important for at least two reasons: to protect yourself and to protect those around you. Vaccines are the best way we have to prevent infectious diseases. Infectious diseases are a major public health concern worldwide, contributing to increased morbidity, mortality, and health care costs. As a consequence of changes in health care delivery and increasing demands on infection prevention, targeted surveillance has become common in the world, focusing on the factors that affecting the programme A successful immunization program depends on the co-operation of every person. strengthening advocacy, communication and social mobilization will enhance informed and willing participation in vaccination programme and that vaccination strategies are likely to be more successful if they are based on an understanding of sociocultural behaviour. since factors influence the sociocultural behaviour such as(knowledge attitude and practice) is greatly vary from one region to another, there for this simple operational local research aiming to identify maternal knowledge attitude and practice towards under five children immunization beside evaluation of the immunization was been implemented.
Objectives:

General objective:
1. To assess the knowledge, attitude and practice, beside fears and believes about immunization of children among mothers in Alwarag health center.

Specific objectives:
1. To determine the knowledge of mothers of under five children towards immunization
2. To evaluate the current immunization status of her present child
3. To assess the mothers attitude towards immunization
4. To determine motivating and demotivating factors in seeking immunization for their under five children.
5. To evaluate the immunization services in alwarag health center
Chapter Two

Methodology

- **Study design:**

  Cross-sectional descriptive health center based study.

- **Study Area:**

  Alwarag catchment area, southern Gezira locality, Gezira state - Sudan.

**Alwarag:**

Alwarag catchment area is located in Gezira state in Southern Gezira locality, about 18 kilometers west of the Wad Medani, bordered from the north by Daffa Allah village, from the east by Baika village and from the south and west by the agricultural land of Gezira scheme.

Its population is of about 1574 inhabitants, mostly work in agriculture, trade and a small number are staff in government and private sector, the total number of under 5 in Alwarag catchment area is 136 child, also there is 2 schools (boys and girls), 2 mosque and 3 drinking water wells, cultural and sports activity through Alwarag Youth Center.

- **Study setting:**

  Alwarag health center

**Health center:**

The health center is providing many health services.

It consist of a clinic for the physician and another clinic for the medical assistant, a laboratory and clinic for immunization and nutrition, 2 short stay rooms, a pharmacy with a fence surrounding the center and there are male and female toilets.

Number of working staff is 13 workers and are distributed as follows:
1 doctor (FM), medical assistant, lab technician, malaria examiner, lab operator, clinic receptionist, insurance officer, 1 nutritionist, 2 immunization technician, One midwife, Sentry, 2 office worker, and 2 nurses.

- **Study Population:**

  All mothers of under five children who attended Alwarag health center seeking vaccination services and agreed to participate.

- **Study sample and technique:**

  The total sample size was 80, based on comprehensive sampling. (Total coverage during the period the 1st of February to the end of April 2013)

- **Data collection:**

  The data collection carried out by a pretested structured questionnaire and evaluation check list.
### Evaluation Checklist for Vaccination Services in Alwarag Health Center:

<table>
<thead>
<tr>
<th>Category</th>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safe vaccine storage and solvent</td>
<td>Vaccine vial monitor, Freezing monitor, Cold chain monitor, Suitable refrigerator, Sterile solvent</td>
</tr>
<tr>
<td>Safe injection and dose</td>
<td>Autodistuction sterile syringe, Antiseptic and cotton ball, Trained personnel given right dose in the right place</td>
</tr>
<tr>
<td>Proper disposing system</td>
<td>Safety box, Vaccine drawn up out of the sight</td>
</tr>
<tr>
<td>Documentation</td>
<td>Up dated vaccination cards, Vaccine registering files, Side effect documentation</td>
</tr>
<tr>
<td>Information and communication</td>
<td>Information about the dose, Information about target disease, Information about next dose time</td>
</tr>
<tr>
<td>Vaccination room</td>
<td>Information about possible side effect and way of it is management, Adequate room, Comfortable right sided seat for the mother and her child</td>
</tr>
</tbody>
</table>
- **Study variables**: socio-demographic variables of mother and her accompanied child
   Knowledge variables, attitude variables and practice variables.

- **Guide lines for analysis: (Operational definition)**
  - The knowledge of under 5 mothers about diseases that can be prevented by immunization:
    has good knowledge if she know more than 7 diseases  
    has average knowledge if she know 5 to 7 diseases  
    has poor knowledge if she know 1 to 4 
    has no knowledge if she don’t know any disease
  - The knowledge of mothers about the possible side effects following vaccination:
    has good knowledge if she know more than 6 side effects  
    has average knowledge if she know 4 or 5 side effects  
    has poor knowledge if she know 1 to 3 side effects 
    has no knowledge if she don’t know any side effect
  - the knowledge of under 5 mothers about doses of each vaccine:
    has good knowledge if she know the doses of all 5 vaccine  
    has average knowledge if she know 3 or 4 vaccines doses  
    has poor knowledge if she know 1 or 2 side effects 
    has no knowledge if she don’t know any vaccine doses

- **Ethical consideration**:
  No child identification and individual mother details were published; permission of the mothers was taken as a verbal consent to use the data.

- **Data processing and analysis:**
  All data was stored on a personal computer and was analyzed using the Statistical Package for Social Sciences (SPSS).
Chapter Three

Results

The following results were obtained from the questionnaire to assess different factors related to child immunization, 80 mothers were interviewed, and the following is the results:

\[\text{Table 1: Age of mother among the study population - } N = 80\]

<table>
<thead>
<tr>
<th>Age of mother</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>15- &lt;25</td>
<td>16</td>
<td>20.0</td>
</tr>
<tr>
<td>26- &lt;35</td>
<td>31</td>
<td>38.8</td>
</tr>
<tr>
<td>36- &lt;45</td>
<td>19</td>
<td>23.8</td>
</tr>
<tr>
<td>&gt; 45</td>
<td>14</td>
<td>17.4</td>
</tr>
<tr>
<td>Total</td>
<td>80</td>
<td>100.0</td>
</tr>
</tbody>
</table>

\[\text{Most of the interviewed mothers falls between (26-<35) age group}\]

\[\text{Table 2: Mother's education among the study population – } N = 80\]

<table>
<thead>
<tr>
<th>Mother education</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illiterate</td>
<td>3</td>
<td>3.8</td>
</tr>
<tr>
<td>Primary</td>
<td>17</td>
<td>21.3</td>
</tr>
<tr>
<td>Secondary</td>
<td>51</td>
<td>63.8</td>
</tr>
<tr>
<td>University</td>
<td>9</td>
<td>11.1</td>
</tr>
<tr>
<td>Total</td>
<td>80</td>
<td>100.0</td>
</tr>
</tbody>
</table>

\[\text{Most of the studied mothers were secondary level educated}\]
Figure 1: Mother's Occupation among the study population - N = 80

All most all the mother are housewifes

Table 3: Mother’s number of children among the study population - N = 80

<table>
<thead>
<tr>
<th>Number of children</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>36</td>
<td>45.0</td>
</tr>
<tr>
<td>2</td>
<td>23</td>
<td>28.7</td>
</tr>
<tr>
<td>3 or more</td>
<td>21</td>
<td>26.3</td>
</tr>
<tr>
<td>Total</td>
<td>80</td>
<td>100.0</td>
</tr>
</tbody>
</table>

The majority of participant had only one child
Table 4: Age of the child brought with mother for immunization in months among the study population - \( N = 80 \)

<table>
<thead>
<tr>
<th>Age of child</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 2</td>
<td>9</td>
<td>11.3</td>
</tr>
<tr>
<td>2-&lt;12</td>
<td>15</td>
<td>18.7</td>
</tr>
<tr>
<td>12-60</td>
<td>56</td>
<td>70</td>
</tr>
<tr>
<td>Total</td>
<td>80</td>
<td>100</td>
</tr>
</tbody>
</table>

**Most of the studied children were in the range between 12-60 months**

Table 5: Gender of present child among the study population - \( N = 80 \)

<table>
<thead>
<tr>
<th>Gender of child</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>37</td>
<td>46.3</td>
</tr>
<tr>
<td>Female</td>
<td>43</td>
<td>53.7</td>
</tr>
<tr>
<td>Total</td>
<td>209</td>
<td>100</td>
</tr>
</tbody>
</table>

**Female gender was the dominant one in this study**
Table 6: Place of delivery of present among the study population - N = 80

<table>
<thead>
<tr>
<th>Place of delivery</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health institution</td>
<td>54</td>
<td>67.5</td>
</tr>
<tr>
<td>Home</td>
<td>26</td>
<td>32.5</td>
</tr>
<tr>
<td>Total</td>
<td>80</td>
<td>100</td>
</tr>
</tbody>
</table>

- Children that borne in Health institution more than that delivered at home among the studied under five.

Table 7: Completely vaccinated studied children up to their age among the study population - N = 80

<table>
<thead>
<tr>
<th>Complete of vaccination</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>77</td>
<td>96.3</td>
</tr>
<tr>
<td>No</td>
<td>3</td>
<td>3.7</td>
</tr>
<tr>
<td>Total</td>
<td>80</td>
<td>100</td>
</tr>
</tbody>
</table>

- This good attitude towards immunization which is 96.3% of studied children were completely vaccinated up to their age
Table 8: Intension to vaccinate coming babies among the study population - N = 80

<table>
<thead>
<tr>
<th>Intension to vaccination</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>80</td>
<td>100.0</td>
</tr>
<tr>
<td>No</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Total</td>
<td>80</td>
<td>100</td>
</tr>
</tbody>
</table>

❖ All included mothers 100% will vaccinate their coming babies that reflecting good attitude

Table 9: are you find the vaccine Available in your current visit for vaccination among the study population - N = 80

<table>
<thead>
<tr>
<th>Availability of vaccination</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>75</td>
<td>93.7</td>
</tr>
<tr>
<td>No</td>
<td>5</td>
<td>6.3</td>
</tr>
<tr>
<td>Total</td>
<td>80</td>
<td>100</td>
</tr>
</tbody>
</table>

❖ 75% of studied mothers were find the vaccine available in their current visit for vaccination.
Table 10: knowing the Side effect after vaccination among the study population - N = 80

<table>
<thead>
<tr>
<th>Side effect after vaccination</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>78</td>
<td>97.5</td>
</tr>
<tr>
<td>No</td>
<td>2</td>
<td>2.5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>80</td>
<td>100</td>
</tr>
</tbody>
</table>

<::> 97% of under 5 mothers were know the side effect following vaccination reflecting good knowledge

Table 11: Opinion of Mothers about completion of vaccination among the study population - N = 80

<table>
<thead>
<tr>
<th>Completion of vaccination</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Important</td>
<td>78</td>
<td>97.5</td>
</tr>
<tr>
<td>Not important</td>
<td>2</td>
<td>2.5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>80</td>
<td>100</td>
</tr>
</tbody>
</table>

<::> Most of studied mothers 97.5% think that immunization for under 5 children is important. this reflecting positive attitude towards immunization.
Table 12: Source of information regarding vaccination among the study population - N = 80

<table>
<thead>
<tr>
<th>Source</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>TV</td>
<td>42</td>
<td>52.5</td>
</tr>
<tr>
<td>Doctors</td>
<td>22</td>
<td>27.5</td>
</tr>
<tr>
<td>Paramedics</td>
<td>11</td>
<td>13.8</td>
</tr>
<tr>
<td>Community</td>
<td>3</td>
<td>3.7</td>
</tr>
<tr>
<td>Others</td>
<td>2</td>
<td>2.5</td>
</tr>
<tr>
<td>Total</td>
<td>80</td>
<td>100</td>
</tr>
</tbody>
</table>

- Television were the main source of information to respondent (52.5%) followed by doctors, Paramedics and community.

Table 13: Knowledge about diseases preventable by immunization among the study population - N = 80

<table>
<thead>
<tr>
<th>Knowledge level</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good</td>
<td>61</td>
<td>76.3</td>
</tr>
<tr>
<td>Average</td>
<td>15</td>
<td>18.7</td>
</tr>
<tr>
<td>Poor</td>
<td>3</td>
<td>3.7</td>
</tr>
<tr>
<td>No</td>
<td>1</td>
<td>1.3</td>
</tr>
<tr>
<td>Total</td>
<td>80</td>
<td>100</td>
</tr>
</tbody>
</table>

- 76.3% of the participant knew diseases that can be prevented by immunization.

So good knowledge were observed
Table 14: Knowledge about doses of immunization among the study population - *N = 80*

<table>
<thead>
<tr>
<th>Knowledge level</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good</td>
<td>57</td>
<td>71.3</td>
</tr>
<tr>
<td>Average</td>
<td>9</td>
<td>11.3</td>
</tr>
<tr>
<td>Poor</td>
<td>11</td>
<td>13.7</td>
</tr>
<tr>
<td>No</td>
<td>3</td>
<td>3.7</td>
</tr>
<tr>
<td>Total</td>
<td>80</td>
<td>100</td>
</tr>
</tbody>
</table>

- Knowledge of the majority of mothers about immunization doses it seems to be good.

Table 15: Knowledge about side effects of immunization among the study population - *N = 80*

<table>
<thead>
<tr>
<th>Knowledge level</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good</td>
<td>52</td>
<td>65.0</td>
</tr>
<tr>
<td>Average</td>
<td>11</td>
<td>13.8</td>
</tr>
<tr>
<td>Poor</td>
<td>15</td>
<td>18.7</td>
</tr>
<tr>
<td>No</td>
<td>2</td>
<td>2.5</td>
</tr>
<tr>
<td>Total</td>
<td>80</td>
<td>100</td>
</tr>
</tbody>
</table>

- Good knowledge about post vaccination among studied mothers observed.
Table 16: Actively seeking information regarding immunization among the study population - N = 80

<table>
<thead>
<tr>
<th>Seeking knowledge</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>75</td>
<td>93.8</td>
</tr>
<tr>
<td>No</td>
<td>5</td>
<td>6.2</td>
</tr>
<tr>
<td>Total</td>
<td>80</td>
<td>100</td>
</tr>
</tbody>
</table>

93% of mothers were actively seeking information regarding immunization from vaccinator. In spite of that reflecting good mothers practice but it also reflect that there is weak role of vaccinator in giving information to mothers.

Table 17: Reasons preventing mothers from vaccinating their children among the study population - N = 80

<table>
<thead>
<tr>
<th>Reason</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transportation problem</td>
<td>13</td>
<td>16.2</td>
</tr>
<tr>
<td>It is not necessary</td>
<td>9</td>
<td>11.3</td>
</tr>
<tr>
<td>Husband disapproval</td>
<td>6</td>
<td>7.5</td>
</tr>
<tr>
<td>Vaccines out of stock</td>
<td>24</td>
<td>30.0</td>
</tr>
<tr>
<td>Others</td>
<td>28</td>
<td>35.0</td>
</tr>
<tr>
<td>Total</td>
<td>80</td>
<td>100</td>
</tr>
</tbody>
</table>

- Finding vaccines out of date and transportation problem were the main reason prevent mothers from vaccination and some time lead to it cessation.

- evaluation Check list
for vaccination services in Alwarag health center:

<table>
<thead>
<tr>
<th>Safe vaccine storage and solvent</th>
<th>Vaccine vial monitor</th>
<th>✓</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Freezing monitor</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Cold chain monitor</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Suitable refrigerator</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Sterile solvent</td>
<td>X</td>
</tr>
<tr>
<td>Safe injection and dose</td>
<td>Autodistuction sterile syringe</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Antiseptic and cotton ball</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Trained personales given right dose in the right place</td>
<td>✓</td>
</tr>
<tr>
<td>Proper disposing system</td>
<td>Safety box</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Vaccine drawn up out of the sight</td>
<td>X</td>
</tr>
<tr>
<td>Documentation</td>
<td>Up dated vaccination cards</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Vaccine registering files</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Side effect documentation</td>
<td>X</td>
</tr>
<tr>
<td>Information and communication</td>
<td>Information about the dose</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Information about target disease</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Information about next dose time</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Information about possible side effect and way of it is management</td>
<td>✓</td>
</tr>
<tr>
<td>Vaccination room</td>
<td>Adequate room</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>Comfortable right sided seat for the mother and her child</td>
<td>✓</td>
</tr>
</tbody>
</table>
Chapter Four

Discussion, Conclusion and Recommendations

Discussion

Immunization is an important public health intervention strategy to reduce the morbidity and mortality associated with infectious diseases. Over two million deaths are delayed through immunization each year worldwide. Despite this, vaccine preventable diseases remain the most common cause of childhood mortality with an estimated three million deaths each year. Uptake of vaccination services is dependent not only on provision of these services but also on other factors including knowledge, attitude and practice of mothers, density of health workers, accessibility to vaccination clinics and availability of safe needles and syringes.

In the current study most of the children were completely vaccinated (96.3%), this similar to study done by Mabroka A.M Bofraaj in Albeida Libya which is shown that (81%) of children were regularly vaccinated in contrast to other studies done on India and Karachi which shown that percentage of complete immunization 44% and 50% respectively. This high coverage among the studied under five children indicating that all effort taken by the government and international agencies is very good but, yet there is need for continuous motivation, regular supervision and continuous monitoring and evaluation to detect any declines in vaccination and to reach 100% coverage.

Nearly half of the mothers in this study (52.5%) get their information about immunization from media (Television), this is consistent with the finding of other study done in United Arab Emirate which show (56%) of mother get their information from media like Television, and this in contrast to other study implemented in Al-Beida City, Libya reflecting that More than half of the studied mothers of completely immunized children received the information from health care workers, this means that health worker in alwarag health center are not well trained to made the information available and more accessible to the mothers, so training in provision of a client based approach by health care workers in order to provide the correct and most up-to-date information to the parents, must be done.
Of mother (30%) were found the vaccine out of stock this the main reason of cessation of immunization, in contrast to study done in Kingdom of Comodia showed post vaccination side effect such as fever and cough is the main reason (43%) of cessation of immunization, this brought attention to that the vaccines provision and storage is in appropriate which is leading to loss of vaccine, financial loss and missed or drops immunization doses among under five children.

A good number of mothers (76%) had a good knowledge about immunizable disease and (65%) of them had a good knowledge about the vaccination side effect, this adverse to the result of the research done in Lagos, Nigeria that half of the respondent (51%) did not know any information about the preventable diseases and vaccination side effect (35%).

This present study revealed that most mothers (71%) had a correct knowledge about the dose of immunization in contrast to the study done by Freeman et. al (1992) that showed (58%) of the respondent did not know the doses of immunization and it is time schedule, also another study done in Nigeria, Lagos shown that about half of the respondents did not know the formulation type and the dose of vaccine. Thus, they think vaccine could come in syrup formulation mothers think their children are receiving immunization when being given syrup medication for other purposes.

Although all the respondent (100%) had a positive attitude towards immunization which reflect high intend to vaccinate their coming babies and is consistent with the result of study done in UAE yet (81%) has a negative attitude towards immunization as appear in study done Lagos Nigeria

Evaluation check list was been formed to evaluate the vaccination cervices in Alwarag health center which revealed that applied immunization cervices were not meeting the national stander, this in contrast with study done in Almsaodia –Sudan which shown that services provided in Almsaodia health center are conducted according to national standards.
Conclusion

This study showed that the knowledge, attitude and practice of mothers in Alwarag health center appear to be good. Post vaccination side effect on child health founded to be the main fear and misconception regarding vaccination and lead to cessation of vaccination.

Founding vaccine out of stock and transportation problems were the major demotivating factors. Television were the main source of the information about immunization among respondent.

The vaccination services in alwarag health center is not conducted according to the national stander.

Recommendation

- To insure correction of misconception and fears from immunization among mothers more health education about vaccination through mass media should be done.
- Vaccination personnel’s should be involved in giving information to mother in every visit to stand beside the television in raising the knowledge of mothers and community about immunization and treating misconception among them, also posters and pamphlet should be available in health centers to increase the mothers awareness about vaccination.
- Availability of valid vaccine all the times in the health centers is very important issue to motivate mothers to coming for vaccination.
- Out reach team should be increased to help the mothers who facing transportation problems that prevent them from coming to the health centers in order immunize their children.
- The health services in alwarag health center should be improve to reach the national stander so more client satisfaction and better immunization coverage will develop.
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7- www.jimvaccine.com/penta
8- www.episudan.info/epi-vaccinehtm
9- Mabrouka A. M Bofarraj. KAP of mothers regarding immunize of infant and preschool children at AlBeidaaly, Libya (2008)
10- Roos M. Berresen, Fatmah P. Al-Zahmi, KAP Towards immunization among mother in Attraditional City, United Arab Emirate , 2011.
11- Janice E. Graham, Alexander Borda-Rodriguez, Farah Huzair, Emily Zinck. Capacity for a global vaccine safety system: The perspective of national regulatory authorities. Technoscience and Regulation Research Unit, Department of Pediatrics (Infectious Diseases), Faculty of Medicine, Dalhousie University, NS, Canada.
Annex

جامعة الجزيرة - كلية الطب
برنامج طب الأسرة والمجتمع

إستبيان جمع بيانات التحصين من أمهات الأطفال دون سن الخامسة - مركز صحي الوراق

<table>
<thead>
<tr>
<th>الرقم المتسلسل:</th>
<th>..................................................</th>
</tr>
</thead>
<tbody>
<tr>
<td>الاسم:</td>
<td>...................................................................</td>
</tr>
<tr>
<td>عمر الأم:</td>
<td>...................................................................</td>
</tr>
<tr>
<td>مستوى تعليم الأم:</td>
<td>(1) أمي (2) أساسي (3) ثانوي (4) جامعي</td>
</tr>
<tr>
<td>وظيفة الأم:</td>
<td>(1) ربة منزل (2) طالبة (3) موظفة</td>
</tr>
<tr>
<td>عدد الأطفال لديك:</td>
<td>(1) طفل (2) طفلين (3) ثلاثة أو أكثر</td>
</tr>
<tr>
<td>عمر هذا الطفل بالأشهر:</td>
<td>..................................................</td>
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<tr>
<td>نوع الطفل:</td>
<td>(1) ذكر (2) أنثى</td>
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<tr>
<td>مكان ميلاد الطفل:</td>
<td>(1) منزل (2) منشأة صحية</td>
</tr>
<tr>
<td>هل هذا الطفل مكمل التحصين:</td>
<td>(1) نعم (2) لا</td>
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<tr>
<td>هل لديك الرغبة في تطعيم الأطفال القادمين:</td>
<td>(1) نعم (2) لا</td>
</tr>
<tr>
<td>هل وجدتي التحصين متوفر في هذه الزيارة:</td>
<td>(1) نعم (2) لا</td>
</tr>
<tr>
<td>هل تعرف نوع الطبلة لآثار طفلك في هذه الزيارة:</td>
<td>(1) نعم (2) لا</td>
</tr>
<tr>
<td>هل تعتقد أن إكمال جرعات التطعيم للأطفال مهم:</td>
<td>(1) نعم (2) لا</td>
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<tr>
<td>هل قام الطبيب (3) الكوادر الصحية (4) المجتمع (5) أخري بالإبلاغ عن التطورات الأخيرة في دليل التطعيم؟</td>
<td>(1) نعم (2) لا</td>
</tr>
<tr>
<td>ما هي الأمراض التي يمكن الحماية منها بالتطعيم:</td>
<td>(1) ممتازة (2) متوسطة (3) ضعيفة (4) لا تعرف</td>
</tr>
<tr>
<td>ما هو عدد جرعات كل لقاح من لقاحات التطعيم:</td>
<td>(1) ممتازة (2) متوسطة (3) ضعيفة (4) لا تعرف</td>
</tr>
<tr>
<td>هل تتناولون تمثيلات لأجهزة تطعيم للأطفال؟</td>
<td>(1) نعم (2) لا</td>
</tr>
<tr>
<td>هل تم تدريبكم على المعلومات المتعلقة بالتحصين من فني التحصين:</td>
<td>(1) نعم (2) لا</td>
</tr>
</tbody>
</table>

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21- في اعتقاداتك ما هو السبب الذي يمنع الناس من تطعيم أطفالهم:

(1) صعوبة المواصلات
(2) الأمهات لا يعتقدن أنه ضروري
(3) الأب لا يوافق
(4) المصل غير متوفر أو منتهي الصلاحية
(5) أخرى