Effect of Education Programme on improving knowledge, Attitude and Practice towards tetanus Immunization and clean Delivery, Elmanagil locality, Gezira state, Sudan (2010-2013)

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June 2013
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Date of Examination: June /2013
DEDICATION

This study is dedicated

To my

Children, family,

Friend and husband,

Mr. Abdel Ghani Mohamed

This is yours, as much as it is mine

Saida
ACKNOWLEDGMENTS

I wish to thank Allah for offering me good health, strength, wisdom and courage to carry out this study. Again I would like to thank Gezira University Faculty of Medicine primary health care - health education center for giving me this opportunity.

My thank to my supervisor Dr. Salwa Elsanousi and co. Supervisor Dr. Hamza Omer for their unlimited consultation and constructive criticism.

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Effect of Education Programme on Improving Knowledge, Attitude and practice towards Tetanus Immunization and Clean Delivery, El-Managil Locality, Gezira State, Sudan (2010-2013)

El-saida Abd Elmageed Elrufie Mohamed Ali

ABSTRACT

Tetanus is a leading cause of sickness and death of women worldwide. Neonatal tetanus remained a major public health problem in Sudan and its elimination a dire Challenge. Despite previous attempts at accelerated campaigns in the late 2000, very little impact was achieved 41%. The current maternal and neonatal tetanus (MNT) elimination initiative was adopted in 2005 as part of a five year plan of action. The research goal was to evaluate the effect of the health education program, on improving the knowledge, attitude and practice of the childbearing mothers towards, tetanus immunization and promotion of clean delivery at Al-Managil and Al-Huda and Al-kermet area during (2010-2013). This was interventional study in which total coverage (400) of child bearing mother were intervened, before and after educational program, (200) of them as intervention group and 200 was control group. Pre-tested questionnaire was used, in order to assess application of health education program addressing mainly tetanus toxoid immunization and clean delivery. Focus groups discussion was conducted among 4 groups in each camp with 6-9 participants each, aiming to identify the wrong concepts and practices. The study using community representatives established health education program addressing EPI goals. After memory gap. Of four month, post intervention survey was conducted. The study showed high illiteracy rate knowledge, about tetanus disease practicing clean delivery and the vaccination (98%) of mothers in both control and study groups in the baseline survey. There were statistical significant improvement of knowledge among study group, regarding the definition, symptoms and signs and mode of transmission and the preventive measures against tetanus disease, (compared to the control group) There was improvement among the intervention group on practicing clean delivery and the vaccination rate from (30%-65%) after correction the wrong concepts addressed by the study during health education program. In conclusion before the education program the people in this area doesn't know even what tetanus is and how clean delivery should be, but there was significant improvement regarding tetanus immunization and practicing clean delivery after it. The study recommended the following: Frequent Education program regarding Immunization in the nearby camps Offer women, guidelines for immunization doses, follow-up and give them their follow up cards. Include information about tetanus disease, clean delivery and other component regarding tetanus, risk factors related to tetanus disease. Future study to know their knowledge and attitude after the program. Involving community leaders during education and social mobilization.
اثر البرنامج التعليمي في تحسين المعارف والسلوكيات والمعارضات تجاه التحصين ضد التثبيس والولادة الأمنة في مناطق المنازل في ولاية الجزيرة

السيدة عبد المجيد الرفاعي محمد علي

ملخص الدراسة

يعتبر مرض الكاز من الأمراض الخطيرة للنساء عالمياً ومن الأسباب الرئيسية للوفاة لدائم النساء. في مختلف أنحاء العالم، يعتبر مرض الكاز (تشابتوس)حدى الولادات من المشاكل والمعضلات الطبية في السودان، بالرغم من الخطط والمحاولات الكبيرة السابقة لمعالجة هذا المرض منذ عام 2000. لكن درجة قليلة كانت نسبة 41% من الحصيلة قد تحققت البرامج القائمة الآن للقضاء.

على أن التحصين في سن الإنجاب وتحديد الولادة بداء من سن 2005 لمسة عشر سنوات في فترتين كل خمس سنوات اعتماً على المعلومات المتاحة على وزارة الصحة ومنطقة الدراسة. هناك حاجة ماسة لمراجعة نووية خاصة بالتعليم ضد مرض الكاز والولادة الأمنة في مناطق المنازل في السودان. ورغم ذلك، هذه المنطقة التي استخدمت البرامج التعليمية لم تتحسن.

استمرت حسب الإحصاءات، على التحصين المعرفي والمارسات نحو التحصين ضد مرض التثبيس، الولادة النظيفة في منطقة المنازل والولادة النظيفة في منطقتي-المنشأة والهادي- ومنطقة الكريست في الفترة 2010-2013. هذه دراسة تدخلية تمثل جملة مقابلات مع 400 من الأحمات في سن الإنجاب وتمت تعقيد هذا القرص لقياس النساء موضع الدراسة إلى مجموعتين (200) من مجموعة التدخل وال(200) المجموعة الضابطة.

استخدمت الدراسة الاستدلال العلمي، وقد تم إجراء (6) حلقات نقاش في كل إمكوطة ضمت 6-9 نساء عن المشاركين. وتحديف الفحوصات والممارسات الخاطئة. وظهرت الدراسة ارتفاع معدل الأمية وسط المشارك (8%) وسط المجموعة، كان هناك تحسن كبير في المعرفة، فيما يتعلق بمعرفة الأعراض، والعلامات، وطريقة انتقال مرض الكاز واتخاذ تدابير وقائية ضد منه. وكان هناك تحسن بين مجموعة التدخل على ممارسة الولادة النظيفة ومعاليم التشريع من (65%).

بعد التقييم للمؤشرات الخاطئة من قبل الدراسة، قبل البرنامج التثبيس كانت الأمهات لا يعرفن حتى ما هو الكاز كيف ينبغي أن تكون الولادة الأمنة والنظيفة، لكن يمكن هناك تحسن كبير فيما يتعلق بالتحصين ضد الكاز، وتمارض الولادة النظيفة بعد التثبيس الصحي، وعامة الدراسة: بإقامة حلقات تثبيتية فيما يخص مرض الكاز وممارسة الولادة النظيفة بعد التثبيس الصحي، توسيع الدراسة حيث تختص بعدة الجرعة والموضوعات والمضاعفات التي تصاحب التعليم، توسيع الدراسة بعملية ومتابعة المنطقة ببيروت منظمة.
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CHAPTER ONE
INTRODUCTION
CHAPTER ONE

INTRODUCTION

Tetanus related

Tetanus is a medical condition characterized by a prolonged contraction of skeletal muscle fibers. The primary symptoms are caused by tetanospasmin, a neurotoxin produced by the Gram-positive, obligate anaerobic bacterium Clostridium tetani. Infection generally occurs through wound contamination and often involves a cut or deep puncture wound. As the infection progresses, muscle spasms develop in the jaw (thus the name "lockjaw") and elsewhere in the body.[Wells CL, Wilkins TD (1996).] Infection can be prevented by proper immunization and by post-exposure prophylaxis.[CDC Pink Book2007.]

1.1. Maternal Mortality and Morbidity

Each year more than 600,000 women die from complications during pregnancy and Childbirth. (World Health Organization (2000)). On average, there are as many as 480 maternal deaths per 100,000 live births in developing countries. (WHO. Reduction of Maternal Mortality (World Bank (1999). Of these maternal deaths, 15 percent (90,000 women) result from puerperal infections, including 5 percent (30,000 women) from tetanus (Figure 1). (United Nations Children’s Fund (UNICEF), WHO, United Nations Population Fund (UNFPA). “Maternal and Neonatal Tetanus Elimination by 2005. (November 2000). The incidence of both puerperal infections and tetanus can be reduced through immunization and clean delivery practices.
1.2. Neonatal tetanus Mortality and Morbidity

Approximately nine million infant deaths occur each year. Of these, over half (53 percent) are neonatal, meaning that they occur during the first four weeks after birth, and more than one third (3.2 million) occur within the first week of life. Many of the neonatal deaths that take place after the first week result from events occurring during the period immediately before and after birth. (WHO. The World Health Report (1998).) One of the main factors contributing to the high incidence of neonatal and maternal tetanus is sepsis, that is because majority of deliveries take place under unclean circumstances. (WHO. “Care of the Umbilical Cord.”(1 June 2000). Globally, almost two-thirds of births occur at home, and half are attended by traditional birth attendants (TBAs). (WHO. “Essential Newborn Care: Report of (7 November 2000).)

1.3. Maternal and Neonatal Tetanus (Sudan)

The Expanded Program on Immunization (EPI) in Sudan began in July 1979 and, in 1986, made a response to the Universal Child Immunization goal. One of the four strategies is eliminating neonatal tetanus by 2008. Women of childbearing age are given vaccines that contain tetanus toxoid not only protecting women against tetanus, but also prevent neonatal tetanus in their newborn infants. In
June 2000, the 57 countries that have not yet achieved elimination of neonatal tetanus and Sudan was listed together with them, twenty other countries in Class A, a classification for countries close to maternal and neonatal tetanus elimination.

21 Countries eliminated MNT between 2000 & 2011
*(Plus 15 out of 33 States in India, all of Ethiopia except Somali Region, and 29 out of 33 provinces in Indonesia, leaving 38 countries yet to eliminate MNT)*

The Maternal and Neonatal Tetanus Elimination by 2005 issued by the United Nation Children’s Funds, World Health Organization and United Nations Population Fund on December 1999 during the World Health Assembly, aims Neonatal tetanus elimination will be reduced to less than one case per one-thousand live births in every district of every country. One-hundred four out of one-hundred-sixty-one developing countries have achieved elimination. However, because neonatal tetanus continues to be a significant problem in some countries, maternal tetanus has now been added to the elimination goal. Neonatal tetanus has remained a major public health problem in Sudan and its elimination a dire Challenge. Despite previous attempts at accelerated campaigns in the late 1990s, very little impact was achieved.

1.4. Objectives of the EPI 2001-05 plan
Achievement of objectives by end of 2005. Achieve 85% immunization coverage of all children less than one year old for all antigens by the end of 2005.

The Comprehensive Multi-Year National Immunization Plan 2006-2010

Based on the in-depth situation analysis, the new comprehensive multiyear national immunization plan was established in discussions and deliberations of senior EPI staff. Priorities and major objectives were set during a workshop held in Khartoum in
December 2005 with participation of representatives of federal and state ministries from North and South Sudan as well as of the Immunization partners such as WHO and UNICEF. Outline and structure of the plan follow them Global Immunization Vision and Strategy (GIVS) 2006-2015. The plan takes the EPI Five-Year Plan 2001-2005 forward. Some of the observations and conclusions of the former multi-year plan, which are still valid today, were carried over into the new plan.

**National Objectives 2006-2010**

1. Routine Coverage: By the end of 2010 Sudan will have a national DTP3 coverage of 90% with at least 80% coverage in each district.

1. MNT: By the end of 2010 neonatal tetanus elimination (<1 case per 1,000 live births) will have been achieved.

   2006: All localities at high risk of tetanus identified
   2007: Less than 10% of localities are at high risk of tetanus
   2008: 80% of newborns are protected at birth
   2010: Neonatal tetanus eliminated in every locality

The global strategy for tetanus elimination is defined as <1 case per 1000 live births consists of:

a. Campaign of 3 doses of Tetanus Toxoid (TT) (first 2 doses 1 month apart, third dose 6-12 months after the second) to all women of childbearing age in high-risk districts. This will protect women for 10-15 years and will substantially reduce the incidence of neonatal tetanus (NNT) for a period of 2 to 5 years.

b. Strengthen the routine coverage of pregnant women with TT.

c. Promote clean delivery practices.

**1.5. Justification of the study:**

1. It has been realized that TT coverage is low in the country mainly in al-managil (the study area) (41%). Both the MOH and UNICEF agree that social mobilization to raise demand for TT immunization has been lacking (statistics of the national ministry of health MOH 2010).
2. Depending on the statistics of the (national ministry of health MOH –EPI information and research,) a lot of cases reported on NT January Dec2010, Problem Relevant (appendex.1)

3. Tetanus is a deadly infectious disease for which immunization is available in EPI at both infant level and for females of reproductive age.

4. It was found that there was increased mortality and morbidity in children less than five years of age (a lot of cases) and the prevalence is high, problem relevant, weak coverage (see report annex 2). In al Gezira area (al-managil area) Implementation of the clean delivery component is still weak. More than 84% of women deliver at home with less than 75% attended by untrained health personnel (WHO. “Care of the Umbilical Cord.”(1 June 2000).

1.6. Objectives of the study:

**a. General Objective**

To assess the effect of Education program on improving knowledge, attitude, and practice towards tetanus immunization and clean Delivery among child bearing age in AL-managil locality , Gezira state, Sudan 2010-2013

**b. Specific Objectives:**

To identify the existing knowledge on tetanus immunization prior to the education program: Among child bearing mother (15-49).2010 -2013-Gezira state.

To evaluate the effect of the health educational program in:

a. correcting the wrong believe

b. promotion of safe delivery practices

To promote preventive benefits of safe delivery practices.
CHAPTER TWO

REVIEW OF RELATED LITERATURE

Tetanus

Muscular spasms (specifically opisthotonos) in a patient suffering from tetanus.

Tetanus is a medical condition characterized by a prolonged contraction of skeletal muscle fibers. The primary symptoms are caused by tetanospasmin, a neurotoxin produced by the Gram-positive, obligate anaerobic bacterium Clostridium tetani. Infection generally occurs through wound contamination and often involves a cut or deep puncture wound. As the infection progresses, muscle spasms develop in the jaw (thus the name "lockjaw") and elsewhere in the body. [Wells CL, Wilkins TD (1996).] Infection can be prevented by proper immunization and by post-exposure prophylaxis. [Wells CL, Wilkins TD (1996).]
**Signs and symptoms**

An infant suffering from neonatal tetanus.

Tetanus affects skeletal muscle, a type of striated muscle used in voluntary movement. The other type of striated muscle, cardiac or heart muscle, cannot be tetanized because of its intrinsic electrical properties. Mortality rates reported vary from 48% to 73%. In recent years, approximately 11% of reported tetanus cases have been fatal. The highest mortality rates are in unvaccinated people and people over 60 years of age.["Tetanus"). CDC Pink Book 2007]

![Fig 3 Risus sardonicus. (Kindly provided by Dr J. Farrar and Dr C. Parry of the University of Oxford Clinical Research Unit, Centre for Tropical Diseases, Ho Chi Minh City, Viet Nam.)](image)

The incubation period of tetanus may be up to several months but is usually about 8 days.(Vandelaer J; Birmingham M; at.el 2003) In general, the further the injury site is from the central nervous system, the longer the incubation period. The shorter the incubation period, the more severe the symptoms. [Farrar JJ; Yen LM; Cook T;at.el
In neonatal tetanus, symptoms usually appear from 4 to 14 days after birth, averaging about 7 days. On the basis of clinical findings, four different forms of tetanus have been described. ["Tetanus"). CDC Pink Book 2007]

Generalized tetanus is the most common type of tetanus, representing about 80% of cases. The generalized form usually presents with a descending pattern. The first sign is trismus, or lockjaw, and the facial spasms called risus sardonicus, followed by stiffness of the neck, difficulty in swallowing, and rigidity of pectoral and calf muscles. Other symptoms include elevated temperature, sweating, elevated blood pressure, and episodic rapid heart rate. Spasms may occur frequently and last for several minutes with the body shaped into a characteristic form called opisthotonos. Spasms continue for up to 4 weeks, and complete recovery may take months.

Neonatal tetanus is a form of generalized tetanus that occurs in newborns. Infants who have not acquired passive immunity because the mother has never been immunized are at risk. It usually occurs through infection of the unhealed umbilical stump, particularly when the stump is cut with a non-sterile instrument. Neonatal tetanus is common in many developing countries and is responsible for about 14% (215,000) of all neonatal deaths, but is very rare in developed countries.[ World Health Organization (2000-11-01) 2005]

Local tetanus is an uncommon form of the disease, in which patients have persistent contraction of muscles in the same anatomic area as the injury. The contractions may persist for many weeks before gradually subsiding. Local tetanus is generally milder; only about 1% of cases are fatal, but it may precede the onset of generalized tetanus.

Cephalic tetanus is a rare form of the disease, occasionally occurring with otitis media (ear infections) in which C. tetani is present in the flora of the middle ear, or following injuries to the head. There is involvement of the cranial nerves, especially in the facial area.

**Cause**

Tetanus is often associated with rust, especially rusty nails, but this concept is somewhat misleading. Objects that accumulate rust are often found outdoors, or in
places that harbor anaerobic bacteria, but the rust itself does not cause tetanus nor does it contain more C. tetani bacteria. The rough surface of rusty metal merely provides a prime habitat for a C. tetani endospore to reside, and the nail affords a means to puncture skin and deliver endospore into the wound. An endospore is a non-metabolizing survival structure that begins to metabolize and cause infection once in an adequate environment. Because C. tetani is an anaerobic bacterium, it and its endospores survive well in an environment that lacks oxygen. Hence, stepping on a nail (rusty or not) may result in a tetanus infection, as the low-oxygen (anaerobic) environment is provided by the same object which causes a puncture wound, delivering endospores to a suitable environment for growth.

**Pathophysiology**

Facial spasms called Risus Sardonicus—First Symptom of Generalized Tetanus.

Tetanus begins when spores of Clostridium tetani enter damaged tissue. The spores transform into rod-shaped bacteria and produce the neurotoxin tetanospasmin (also known as tetanus toxin). This toxin is inactive inside the bacteria, but when the bacteria die, the toxin is released and activated by proteases. Active tetanospasmin is carried by retrograde axonal transport (Farrar JJ; Yen LM; Cook Tat, el. 2000) to the spinal cord and brain stem where it binds irreversibly to receptors at these sites. It cleaves membrane proteins involved in neuroexocytosis, [Schiavo G; Benfenati F; et al. 1992] which in turn blocks neurotransmission. Ultimately, this produces the symptoms of the disease. Damaged upper motor neurons can no longer inhibit lower motor neurons (see Renshaw cells), plus they cannot control reflex responses to afferent sensory stimuli. [Farrar JJ; Yen LM; Cook Tat, el. 2000] Both mechanisms produce the hallmark muscle rigidity and
spasms. Similarly, a lack of neural control of the adrenal glands results in release of catecholamine’s, thus producing a hyper sympathetic state and widespread autonomic instability.

C. tetani also produces tetanolysin, another toxin whose role in tetanus is unknown.

**Diagnosis**

There are currently no blood tests that can be used to diagnose tetanus. The diagnosis is based on the presentation of tetanus symptoms and does not depend upon isolation of the bacteria, which is recovered from the wound in only 30% of cases and can be isolated from patients who do not have tetanus. Laboratory identification of C. tetani can only be demonstrated by production of tetanospasmin in mice.[“Tetanus”). CDC Pink Book.2007]

The "spatula test" is a clinical test for tetanus that involves touching the posterior pharyngeal wall with a sterile, soft-tipped instrument, and observing the effect. A positive test result is the involuntary contraction of the jaw (biting down on the "spatula"), and a negative test result would normally be a gag reflex attempting to expel the foreign object. A short report in The American Journal of Tropical Medicine and Hygiene states that in a patient research study, the spatula test had a high specificity (zero false-positive test results) and a high sensitivity (94% of infected patients produced a positive test result). [Nitin M. Apte and Dilip R. Karnad (1995-10).]

**Table (1) Objectives of the EPI 2001-05 plan**

<table>
<thead>
<tr>
<th>Objectives of the EPI 2001-05 plan</th>
<th>Achievement of objectives by end of 2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Achieve 85% immunization coverage of all children less than one year old for all antigens by the end of 2005.</td>
<td>DTP3 coverage estimate for Northern states: 80%</td>
</tr>
<tr>
<td>Eliminate maternal and neonatal tetanus (&lt;1 case/1000 live births) by the year 2005.</td>
<td>Not achieved</td>
</tr>
<tr>
<td>Ensure the safety of EPI injections</td>
<td>AD syringes and safety boxes supplied bundled with all vaccines</td>
</tr>
<tr>
<td>Improve surveillance system for the EPI targeted diseases</td>
<td>Partly achieved through inclusion of measles and MNT in AFP surveillance system</td>
</tr>
</tbody>
</table>

**Source. EPI 2001-05 plan**
Unlike many infectious diseases, recovery from naturally acquired tetanus does not usually result in immunity to tetanus. This is due to the extreme potency of the tetanospasmin toxin; even a lethal dose of tetanospasmin is insufficient to provoke an immune response.

**Treatment**

The wound must be cleaned. Dead and infected tissue should be removed by surgical debridement. Administration of the antibiotic metronidazole decreases the number of bacteria but has no effect on the bacterial toxin. Penicillin was once used to treat tetanus, but is no longer the treatment of choice, owing to a theoretical risk of increased spasms. However, its use is recommended if metronidazole is not available. Passive immunization with human anti-tetanospasmin immunoglobulin or tetanus immunoglobulin is crucial. If specific anti-tetanospasmin immunoglobulin is not available, then normal human immunoglobulin may be given instead. All tetanus victims should be vaccinated against the disease or offered a booster shot.

**Mild tetanus**

- Mild cases of tetanus can be treated with:
  - Tetanus immunoglobulin IV or IM,
  - Metronidazole IV for 10 days,
  - Diazepam,
  - Tetanus vaccination
- Severe tetanus

Severe cases will require admission to intensive care. In addition to the measures listed above for mild tetanus:

Human tetanus immunoglobulin injected intrathecally (increases clinical improvement from 4% to 35%)

Tracheostomy and mechanical ventilation for 3 to 4 weeks, magnesium, as an intravenous (IV) infusion, to prevent muscle spasm, diazepam as a continuous IV infusion, the autonomic effects of tetanus can be difficult to manage (alternating
hyper- and hypotension, hyperpyrexia/hypothermia) and may require IV labetalol, magnesium, clonidine, or nifedipine.

 Drugs such as diazepam or other muscle relaxants can be given to control the muscle spasms. In extreme cases it may be necessary to paralyze the patient with curare-like drugs and use a mechanical ventilator.

 In order to survive a tetanus infection, the maintenance of an airway and proper nutrition are required. An intake of 3500-4000 calories, and at least 150 g of protein per day, is often given in liquid form through a tube directly into the stomach (Percutaneous endoscopic gastrostomy), or through a drip into a vein (Total parenteral nutrition). This high-caloric diet maintenance is required because of the increased metabolic strain brought on by the increased muscle activity. Full recovery takes 4 to 6 weeks because the body must regenerate destroyed nerve axon terminals.

 Tetanus can be prevented by vaccination with tetanus toxoid.[ Hopkins, A.; Lahiri, T.; et al. 2006] The CDC recommends that adults receive a booster vaccine every ten years.[

^ "CDC Features - Tetanus: Make Sure You and Your Child Are Fully Immunized"] and standard care practice in many places is to give the booster to any patient with a puncture wound who is uncertain of when he or she was last vaccinated, or if he or she has had fewer than three lifetime doses of the vaccine. The booster may not prevent a potentially fatal case of tetanus from the current wound, however, as it can take up to two weeks for tetanus antibodies to form.[ "Maternal and Neonatal Tetanus (MNT) elimination". WHO.2000]. In children under the age of seven, the tetanus vaccine is often administered as a combined vaccine, DPT/DTaP vaccine, which also includes vaccines against diphtheria and pertussis. For adults and children over seven, the Td vaccine (tetanus and diphtheria) or Tdap (tetanus, diphtheria, and acellular pertussis) is commonly used. [Hopkins, A.; Lahiri, T.; et al. 2006]
Previous study

Epidemiology

Disability-adjusted life year for tetanus per 100,000 inhabitants in 2004.
no data ≤10 10-25, 25-50, 50-75, 75-100, 100-125, 125-150, 150-200
200-250, 250-500, 500-750, ≥750

Tetanus cases reported worldwide (1990-2004). Ranging from strongly prevalent (in dark red) to very few cases (in light yellow) (grey, no data).

Tetanus is an international health problem, as C. tetani spores are ubiquitous. The disease occurs almost exclusively in persons who are unvaccinated or inadequately immunized.[Wells CL, Wilkins TD (1996).] Tetanus occurs worldwide but is more common in hot, damp climates with soil rich in organic matter. This is particularly true with manure-treated soils, as the spores are widely distributed in the intestines
and feces of many non-human animals such as horses, sheep, cattle, dogs, cats, rats, guinea pigs, and chickens. Spores can be introduced into the body through puncture wounds. In agricultural areas, a significant number of human adults may harbor the organism. The spores can also be found on skin surfaces and in contaminated heroin.["Tetanus"). CDC Pink Book 2007] Heroin users, particularly those that inject the drug, appear to be at high risk for tetanus.

Tetanus – particularly the neonatal form – remains a significant public health problem in non-industrialized countries. The World Health Organization estimates that 59,000 newborns worldwide died in 2008 as a result of neonatal tetanus.["Maternal and Neonatal Tetanus (MNT) elimination". WHO2010] In the United States, 50-100 people become infected with tetanus each year.["Tetanus"). CDC Pink Book 2007] Nearly all of the cases in the United States occur in unimmunized individuals or individuals who have allowed their inoculations to lapse.["Tetanus"). CDC Pink Book 2007]

Tetanus is the only vaccine-preventable disease that is infectious but is not contagious.["Tetanus"). CDC Pink Book 2007]

**Table (2) Schedule of tetanus immunization**

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Minimum Age/Interval</th>
<th>Percent Protected</th>
<th>Duration of Protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>TT1</td>
<td>As early as possible during pregnancy</td>
<td>80%</td>
<td>protection for the mother for the first delivery</td>
</tr>
<tr>
<td>TT2</td>
<td>At least 4 weeks later</td>
<td>80%</td>
<td>infants born to the mother will be protected from neonatal tetanus gives 3 years protection for the mother</td>
</tr>
<tr>
<td>TT3</td>
<td>At least 6 months later</td>
<td>95%</td>
<td>infants born to the mother will be protected from neonatal tetanus gives 5 years protection for the mother</td>
</tr>
<tr>
<td>TT4</td>
<td>At least 1 year later</td>
<td>99%</td>
<td>infants born to the mother will be protected from neonatal tetanus gives 10 years protection for the mother</td>
</tr>
<tr>
<td>TT5</td>
<td>At least 1 year later</td>
<td>99%</td>
<td>gives lifetime protection for the mother all infants born to that mother will be protected</td>
</tr>
</tbody>
</table>

Source (WHO, 2010)
According to the World Health Organization (WHO, 2007) Tetanus commonly Known as lockjaw, is a disease particularly more common and serious in newborn babies ("neonatal tetanus"). Neonatal tetanus, which is mostly fatal, is particularly common in rural areas where deliveries are at home without adequate sterile procedures. It is acquired from spores of the bacterium Clostridium Tetani that infects a wound or the umbilical stump. It can be acquired through spores that can be found in soil, dust and animal wastes. World Health Organization has estimated that neonatal tetanus killed about 180,000 babies in 2002. Neonatal tetanus can be prevented through immunizing women of childbearing age with tetanus toxoid vaccine, either during pregnancy or outside of pregnancy. It protects mothers and also the infant, through a transfer of tetanus antibodies. Clean practices during delivery are also important to prevent neonatal and maternal tetanus.

The World Health Organization 2000 state that once infected with tetanus, mortality rates are extremely high, especially in areas where appropriate medical care is not available. However, these deaths can be easily prevented by either improving the hygienic conditions of the delivery and/or by immunizing the mothers. Neonatal tetanus continues to be a significant problem in some countries; maternal tetanus has now been added to the elimination goal.

Germ theory of disease by (Koch (1876) as cited by Tami Port (2007)

Germ Theory is the concept that microorganisms can cause disease, and this theory is the foundation of modern medicine. Tetanus is a disease that arises from a microorganism clostridium tetani and the natural habitat of this microorganism is the soil, animal waste and dust particles.

(Trevino ,Youngblood (1986) Baker, T. at,el 2006) developed and empirically tested a model of ethical decision making that predicted an interaction of individual and situational factors in determining ethical decision making in organization/group; they attempted to explain choice behavior involving value conflicts within organizations. Social norms is highly influential in our society, since Tetanus Toxoid immunization is being mandated by the government there for it is highly imperative that we follow what was presumed acceptable to us in our community. Systems theory according to
(Von Bertalanffy (1968) as cited by R. Riedl (2000) is a theory in which it describes the relationship between people, health and the environment.

This theory focuses on the exchange of energy between the individual and the environment and has its central concept that a person is a whole and more than a sum of its parts. The person interacts with the environment continuously in a reciprocal and open manner; that is, people influence and change their environment, and the environment influences and change the people. Health promotion activities thus result dorm client self-direction. The environment has an impact on the health promotion activities and direction that an individual chooses to take. Such as, in the case of mother has the ability to choose to follow the mandated tetanus toxoid vaccination since it is known to stop the spread of tetanus antigen that resides in soil, dust and animal wastes. She has the capability to go through what was mandated by the law or may choose to ignore it. When a woman eventually chose to go through the vaccination eventually she has created an energy field that results to changes in the health status. (Rogers’ Wu & Stanton (2005) protection motivation theory was developed as a fear driven model. It is proposed that a perceived threat to health activates thought processes regarding the severity of the threaten event, the probability of its occurrence and coping mechanism. The motivation to protect, results from the perception of the threat and the ability or self-efficacy for coping. This theory is orientated more toward disease prevention that health promotion such as in the case of the threat being imposed by tetanus to mothers who had been made aware by its fatality will then think of ways to protect themselves and their children from that illness.

This study focused on awareness and practice of people in their own community, Which will bring a change in their life, so the researcher sought to anchor this with theories to individual awareness, and practices like Somat Awareness Theory (Yong, G, et.al. (2003). this theory states that man is conscious in the environment, when a current perception roughly matches an encoded memory, it triggers a physical response based on the initial after the first occurrence.

The motivating components that, when process by the cognitive brain, will be perceived as an emotions. Florence Nightingale Environmental Theory (1860/1969)
states the act of utilizing the Tetanus is a disease that is mainly found in environment, in order to obtain good health we must therefore improve our environment and sanitation. Good health can be attained through a good outlook or decisions in life, mothers who acts or decides the fate of her and her child’s health is influenced by her ability to make that decision.

2.2. Conceptual Framework
The variable of the study are as follows;
Independent Awareness is the knowledge and understanding of an issue or situation. The awareness of the pregnant women with regards to their health and health of the babies is very much important. Their infants must be protected against the disease especially with neonatal tetanus, which is more common. Pregnant women must be aware and must have the knowledge on neonatal tetanus that includes; Risk factors. Women who have not been immunized with tetanus toxoid and has poor birthing practices such as the use of unsterilized equipments during home delivery; Causes. The exposure to clostridium tetani bacteria to the wound or a newly cut umbilical cord with unsterilized scissor will have a mortality effect to the neonate. If immunized, there will be substantial protection to both mother and infant; Effects. Difficulty in sucking due to spasms of the oral (masticating) muscles is often the first sign of neonatal tetanus. The child shows the first symptoms of widespread rigidity and trismus. Lips are pursed and the eyebrows are arched there is also Opisthotonos caused by spasms of the spinal muscles; Preventions. The two known prevention against neonatal tetanus is Immunization with Tetanus toxoid vaccine and safe clean practices during delivery;
Dependent: Compliance is the behavior of someone to obey what are the law and the rule. Aware and knowledgeable pregnant women should proceed to compliance of having tetanus toxoid immunization that enables them as well their babies to have protection against such deadly disease. The compliance to standard tetanus toxoid immunization for childbearing women.

According to Barrett (2005), health promotion and disease prevention are increasingly important aspect, as the public has become more interested in the relationship between lifestyle and illness. (De la Vega (2006) also said that the human life expectancy could result from factors such as improvement in health sanitation and nutrition. Future discoveries in disease management, prevention, and genetics will further
improve longevity. Good health is also a cornerstone for longevity. Health promotion strategies are not limited to a specific health problem, or to a specific set of behaviors. WHO or World Health Organization as a whole applies the principles of, and strategies for, health promotion to a variety of population groups, risk factors, disease, and in various settings. Health promotion, and the associated efforts put into education. Community development, policy, legislation and regulation, are equally valid for prevention of communicable disease, injury and violence, and mental problems, as they are for prevention of non-communicable disease (World Health Organization, 2004).

Health promotion requires credible evidence to identify relevant determinants of health, choose activities to promote health, and then evaluate the effectiveness if these chosen activities are valid. The issue of evidence in health promotion is a complex one that requires critical examination of what is meant by health promotion, the focus of health activities, and the ideological issues and principles that inform health promotion is important because health promotions needs justification for the decisions they make (Raphael, 2004). Coverage of tetanus toxoid among pregnant women and in high-risk areas, among all childbearing aged women, as well as achieving the goal (World Health Organization, 2002). In some ways, it is an ethical issue. Those affected by tetanus are often population in remote places in the poorest counties. Thus, these people are still not reached by routine immunization and often have little access to health care services. Second, Elimination of Maternal and Neonatal Tetanus is something preventable disease (Vandelaer, Birmingham, Gasse, Kurian, Shaw, & Garnier S, 2003). In the early 1980’s, there were eight-hundred thousand neonatal tetanus deaths and seventy-thousand maternal deaths from tetanus in one-hundred sixty developing countries. In 2001, tetanus killed two-thousand newborns and thirty-thousand mothers. These numbers maybe in higher because tetanus is an invisible killer; many deaths occur at home and ninety unreported (World Health Organization, 2002).

Estrada (2001) stated that the infection starts when the spores enter into the body through an open wound/ injury. The spores that had entered will release the active bacteria and will produce a neurotoxin or other term is “tetanospasmin”. The tetano spasm in is a protein that acts as a poison to the body’s nervous system.
Also stated this neurotoxin would affect the nerve endings wherein it blocks the nerve signals that cause stiffness. And the toxin can travel throughout the body via the bloodstream and lymph system where it interferes with the normal activity of nerves throughout the body (Smith, 2006). Types of Tetanus. According to (Sy (2007).

2.3. Risk factors of neonatal tetanus:

lack of tetanus toxoid immunization among mothers
Unclean/ unhygienic delivery practices and cord care practices that are unsafe and unclean. (Gitta, Mangen, Kitimbo and Pariyo (2003) The bacterium has infected the umbilical cord when the tool used to cut and its umbilical stump is unclean and that the baby was born in an unimmunized mother. (Dire (2001) states that Worldwide risk factors for neonatal tetanus includes unvaccinated mothers, home delivery, and unhygienic cutting of the umbilical cord aside from that there is also history of neonatal tetanus in a previous child; and Potentially infectious substances applied to the umbilical stump (eg, animal dung, clarified butter).

Effect the time between infection and first sign is 5 days to 15 weeks Smith (2006). According to Sy (2007), the hallmark feature of tetanus is muscles rigidity and spasms called “trismus” accompanied by difficulty in opening the mouth and difficulty in swallowing. Complaints include spasms on facial muscles that results to sardonic smile; stiffness of the neck muscles, chest muscles and abdominal muscles, fever, irritability, restlessness, loss of appetite, drooling and pain at the wound site. Smith, (Smith, 2006) also stated that tetanus bacteria could interfere with breathing. Spas mosaic contractions can be so powerful that they tear the muscles and cause fractures of the vertebrae. World Health Organization (2006) that a newborn neonatal tetanus would experience inability to suck followed by generalized stiffness or spasms. (O'Connor (2005) further states that the symptoms can be severe. Once the bacteria get underneath the skin, they produce toxins that attack the central nervous system, causing spasms and muscle rigidity all over the body, most frequently in the face.

According to (Dursin and Perlstein (2001) Tetanus (Lockjaw) tightening of the muscles, usually all over the body. It can lead to "locking" of the jaw so the victim cannot open his mouth or swallow. Tetanus leads to death in about 1 out of 10 cases. (Dire (2001) states that Neonatal tetanus presents with an inability to suck 3 to 1 days after birth. Aside from that there is also irritability, excessive crying, grimaces,
intense rigidity and opisthotonus (a state of a severe hyperextension and spasticity of the head, neck and spinal column).

Prevention of neonatal tetanus, according to (Klein H.et.al 2007) states that the neonatal Tetanus can be prevented by making sure that all pregnant women have had their 2 doses of tetanus toxoid immunizations; by delivering babies in sanitary conditions and by proper umbilical cord care. The routine immunizations for tetanus produce antibodies that mothers pass to their unborn babies. These maternal antibodies and sanitary cord care techniques have made newborn tetanus to be rare. Tetanus toxoid vaccine can help prevent tetanus.

According to Kennedy (2008) Tetanus immunoglobulin will neutralize the toxin that the bacteria have already released. Antibiotics such as penicillin, clindamycin, erythromycin or metronidazole also help kill the bacteria. Muscle relaxing drugs such as diazepam to control the muscles spasms and barbiturates for sedation. Another management of tetanus infection is respiratory support with oxygen, endotracheal tube and mechanical ventilation and surgery to clean and remove source of poison.

Similarly, (Smith, A. johon.F et.al 2006) says that Tetanus generally can be prevented by accurate Treatment of the lesion. The most capital measures are: to have the wound bleeding, rinse it copiously with hydrogen peroxide and keep it open to the air. Grazes or wide, bleeding wounds do not produce tetanus. The only risk is when the tetanus germ is locked into the wound and cut off from oxygen, which allows it to multiplicity and produce the feared toxin. Tetanus remains a dangerous condition that may result to death. Vaccination is a full medical act and is not to be underestimated as to its possible consequences. It should, therefore, be considered with utmost care and full knowledge of its side effects. (Conwell, Hoffman and Mannweiller, 2003).

2.4. Improving clean delivery practice

Delivery kits can increase awareness and use of clean delivery practices. The kits are designed for use in the home by untrained and trained birth attendants (TBAs) and women delivering alone which is suite my population. Basic delivery kits contain supplies that are essential for supporting clean delivery practices and providing clean cord care immediately after birth. While basic delivery kits are designed for use in the home.

I used delivery kit as: one component of a comprehensive safe motherhood program.
In addition, the delivery kit, I link it and integrated with clean delivery programs and tetanus toxoid immunization programs in a combined effort to improve and reduce maternal and neonatal tetanus and sepsis.

2.5. Causes of maternal death:

Most birth attendants have no training, each year an estimated 60 million women give birth with the help of an untrained TBAs or family member or with no help at all. Often the birth attendant is a relative or neighbor. In developing countries, an estimated 50 percent of deliveries are conducted by untrained TBAs who are poorly equipped to conduct the delivery. (WHO. “Coverage of Maternity Care: (2000). While TBAs are committed to positive delivery outcomes and perform some beneficial practices, they may unknowingly use harmful traditional practices.

In addition, they may not have access to clean water or the supplies necessary for clean delivery. (WHO. “Care of the Umbilical Cord: A Review of the Evidence.” (1 June 2000). Infants delivered at home without a TBA and without hygienic precautions are at particular risk for tetanus and sepsis infections, as are their mothers. (WHO, UNICEF. “Revised 1990) Estimates of Maternal Mortality: A New Approach by WHO and In home deliveries where a trained provider assists, the provider usually is a TBA. Training TBAs in clean delivery techniques and the correct use of basic delivery kits can help improve delivery outcomes. Governmental support of clean delivery practices and training of TBAs is key to the success of this effort.

2.6. Principles of clean delivery:

According to WHO, s six principles of cleanliness at birth,” the hands of the birth attendant must be washed with water and soap, as well as the perineum of the woman. The surface on which the infant is delivered must be clean. Instruments for cutting the cord and cord care (razorblade, cutting surface, cord ties) should be clean. Nothing should be applied either to the cutting surface or to the stump .the stump should be left uncovered to dry and to mummify"

The six principles of cleanliness include:

1- Clean hands
2- Clean perineum
3- Nothing unclean introduced into the vagina
4- Clean delivery surface.
2.7. Improving the situation: Safe Motherhood Initiative

The Safe Motherhood Initiative was launched in 1987 by an alliance of international agencies committed to improving maternal health and reducing maternal mortality worldwide.

The member agencies work together to raise awareness, set priorities, implements research and interventions, and share information. Specific program priorities identified by the Safe Motherhood Initiative include having:

1) Skilled attendants present at birth;
2) Access to midwifery care in the community.

The program focus in community behavior change strategies urging prevention of infection and clean delivery practices. This includes the reduction of harmful traditional practices, and promotion of community-based health education activities.

One way of supporting clean delivery practices in the community is the development of clean delivery programs that raise the awareness of local leaders, mothers, and pregnant women and their husband. Delivery kit can be used as one component of integrated safe motherhood and clean delivery.

Based on information obtained from the study area they need educational
2.8. Program on the two subject matter:
Which immunization knowledge attitude and practice clean delivery. Where unhygienic practices are widespread.
Inexpensive basic delivery kits designed to suit local needs and tastes can contribute to a reduction in infection. If clean cutting implements are already used, special kits may not add much benefit.
Although management of cord cutting is a critical step, what is put on the cord afterward in terms of foreign substances or cloth dressings is also important.
The kit can provide the necessary components to make compliance with hygiene messages easier

2.9. Reducing Tetanus and Other Infections

Delivery kit guide Improving clean practices in home deliveries by supporting the use of simple, disposable delivery kits; and promoting clean delivery messages in communities. WHO. “Essential Newborn Care: Report (2000).
The Cord Is Key According to WHO, clean delivery and cord care mean observing principles of Cleanliness throughout labor and delivery, and after birth until the separation of the cord stump. WHO. “Essential Newborn Care: (7 November 2000).
Clean cord care includes washing hands with clean water and soap before delivery, laying the newborn on a clean surface, washing hands again before tying and cutting the cord, cutting the cord with a clean instrument, and clean stump care.( WHO. “Care of the Umbilical Cord: (1 June 2000).
Cord infections frequently result from a lack of hygienic cord-cutting practices or inadequate care of the cord stump. WHO states that “The use of simple, disposable delivery kits will help achieve as clean a delivery as possible.” To this end, WHO recommends that a delivery kit should contain, at a minimum:
a piece of soap for cleaning hands and perineum;
a plastic sheet of about one square meter to provide a clean delivery surface;
a clean razor blade for cutting the umbilical cord; and clean cord ties.
These materials should be packaged in a box or sealed plastic bag with illustrated instructions on how to wash hands thoroughly before delivery and again before handling the infant’s umbilical cord, and on how to use other items in the package.(WHO 2007).
The pictorial instructions are key to reinforcing clean techniques such as hand washing and to guiding correct use of kit components by kit users of all literacy Levels.

The immediate benefits of supplying the essential items in one kit are:

All the essential items are conveniently available at the time of delivery, Decreasing the likelihood that unclean items will be used.

All the materials are new, clean, and provided in adequate quantities.

The use of single-use, disposable delivery kits by trained midwives may Enhance the credibility of the kits in the community and encourage wider Acceptance and use.

**Who can use delivery kit?**

Basic delivery kits can be used by mothers or anyone assisting with a delivery, including:

- Mothers delivering alone;
- Trained and untrained TBAs;
- Occasional birth attendants such as relatives or neighbors; and
- Midwives. Mothers-in-law often assist in deliveries and are potential Kit purchasers.

Through the implementation of SIAs from 1999 to 2011, about 118 million childbearing age women (CBAW) have been protected against tetanus

Between 1999 and 2011, the TT SIAs that were implemented targeted in total 142 million women of child bearing age with three doses of TT. Of these, about 80% actually received two or more doses of TT, which is sufficient to protect them and
their off spring against tetanus during several years During 2012, 10 countries will implement TT-SIAs: Central African Republic, Chad, Haiti, Kenya, Mali, Niger, Nigeria, Papua New Guinea, Philippines and Sudan.
CHAPTER THREE

METHODOLOGY

3.1 Introduction

It has been realized that TT coverage is low in the country. Both the MOH and UNICEF agree that social mobilization to raise demand for TT immunization has been lacking. Accordingly this study was conducted at Community level in rural areas, to assess the situation in some selected areas where campaigns on TT have been conducted and in those that TT campaigns have not been conducted at all. The study addressed the following issues: Preventions. The two known prevention against neonatal tetanus were Immunization with Tetanus toxoid vaccine and safe, clean practices during delivery; in community and follow participants to receive at least three doses in Gezira State. Number of the participants 400 women, period from April 2010 to April 2013 whole period of the study.

3.2. Study design:

This study was an interventional study in Aljazeera area (Alkeramit& Alhuda) area in 6 camps:total sampling technique was used for the study Al-managil (Al-keramit-Alhuda) 6 camps was randomly chosen. At 1st stage of the sampling, three camps from each area were selected randomly for study (camp Bihary, Silk, and Falata), while the other three camps for control (camp Khadiga, Abu groun, KamilNomak). Total number of participant were 420 but 20 was drop.

The research design was case control interventional study in which, questionnaire with child bearing mother's age (15-49), Focus group discussions (FGD) with married women of child bear age mother, husband and mother in law. Were interviewed by the researcher before and after educational program.

An experimental group of study group subjected to the new educational methodology (used education behavioral community change BCC). The program focus in community behavior change strategies urging following mother's to reach at least three doses of tetanus vaccine, prevention of infection and safe delivery practices. This includes the reduction of harmful traditional practices, and promotion of
community-based health education activities. One way of supporting safe delivery practices in the community is the development of clean delivery programs that raise the awareness of local leaders, mothers, and pregnant women and their husband. Delivery kit can be used as one component of integrated safe motherhood and clean delivery.

3.3 Study area (Setting)

Al Jazirah state: Gezira is one of the 15 states of Sudan. The state lies between the Blue Nile and the White Nile in the east-central region of the country. It has an area of 27,549 km². Wad Madani is the capital of the state. It is a well-populated area suitable for agriculture. The area was at the southern end of Nubia and little is known about its ancient history and only limited archaeological work has been conducted in this area. It was part of the kingdom of Alodia for several centuries and with that state's collapse in the early sixteenth century became the centre of the Funj Kingdom of Sennar.

The region has benefited from the Gezira Scheme, a program to foster cotton farming begun in 1925. At that time the Sennar Dam and numerous irrigation canals were built. Al Jazirah became the Sudan's major agricultural region with more than 2.5 million acres (10,000 km2) under cultivation. The initial development project was semi-private, but the government nationalized it in 1950. Cotton production increased in the 1970s but by the 1990s increased wheat production has supplanted a third of the land formerly seeded with cotton.

The research took place in Gezira State in al-managil, is the largest city of Al Gazera State. It is located at north of Wadmadani, population of128297 people al-keram it: its lies at north east of al-managil locality 22k, far from al-managil population of 18000 people .it belong to Almanagil study done , at, cambo silk,- cambo bhaiy and cambo falata ( intervention group) and in al-kiraemit area at Cambo abo groun, kamil nomak and cambo khadija (as control group) at (al-huda during 2010-2013).

Al-huda lies in the Far East region of Gezira – its under al-managil locality It consist a groups of villages, all they arrange in shape of a circle.
3.4. Study population:

Study population was women who were resident in unstable building (temporary building), building from mud and huts, people were Falata, Bargo, Howsa, Tama and other, tribes, illiterate women, usually were farming, and men stay at home.

All married mother' of childbearing age (15-49 years) to evaluate their knowledge attitude and practice towards immunization and safe delivery.

3.5. Inclusion criteria

All married mothers of childbearing age (15-49 years).

3.6. Exclusion criteria

- Women who is not married.
- Women who is age more than 50 years

3.7. Sample size:

Total coverage was taken, door to door for childbearing mother's during the study period (2010 – 2013), sample from the six camps: Bihary camp, silk camps, falata camp, kamil nomak camp, khadiga camp, abugroun camp was obtained 420 married women at child bearing.

3.8. Sampling procedure:

After the presentation of the Researcher proposal, she was directed by the committee to contact immunization program in Khartoum Ministry of health, immunization program (MOH) Khartoum, advice her to go to Gazera state because they have out break of tetanus in Gazera state (Al-managil) see appendix(3) letter was given to the researcher directed to MOH Gazera state for permission.

Total sampling technique was used for the study at Al-managil (Al-keramit- Alhuda) area, 6 camps was randomly chosen, total target population was found to be 420 married women at child bearing age.
1st stage of the sampling, three camps from each area (Al-keramit- Alhuda) was selected randomly,

2nd stage of sampling, a list of these six camps from the both selected area during the first stage was drawn up.

3rd stage of sampling, three camps from each area (Alkeramit& Alhuda) selected randomly to be studied Al-keramit area (camp Bihary, Silk, and Falata), while the other three selected randomly for control, Alhuda area, (camp Khadiga, Abu groun, Kamilnomak).

Total number of participant were 420 but 20 was drop, study group educated used behavioral community change (BCC) method, the (interventional group) camp Falata, Bihari, Silk while the other group was not receive any intervention camp Khadiga, Abugroun and Kamilnomak. The outcome of the intervention was measured by comparing the two groups later. A total of 400 study group enrolled; 200 in the interventional group and 200 in the Control Group.

Based on information obtained from the study area they need educational program on the two subject matter, which immunization, knowledge attitude and practice and safe delivery. Where unhygienic practices, was used.

The purpose of this design was to examine the effects of education program outcomes compared with non-educational group (control group).

3.9 Study period:

Study period was a whole duration of the project from April 2010 - 2013.

3.10. Data collection technique and tool

Pre-tested and modified structure questionnaire was used. The questionnaire was divided into 5 sections to collect information on the following topics: social, demographic and education level, number of deliveries; information about tetanus disease. Knowledge about TT vaccination, clean delivery and the reasons for non-vaccination. The questions were closed-ended open ended. At the start of interview
the purpose of the survey was explained to the interviewees and informed verbal consent was taken. The interviewees were assured about the confidentiality of their identity.

Focus groups discussion was conducted among 12 groups contained 6-9 participants. Each, from the local community, comprising married women of child-bearing age, husbands of the women and mother in laws, aiming to identify the wrong concepts and practices. Questionnaires and focus group discussions (FGD) guidelines were developed by the researcher.

Researcher was select and trained one member from PHC centre (al-kremit health centre) specially allocated for the FGD as assistant moderator also directed to data collection for delivering the FGD.

3.11. Instruments and staff

The discussions were conducted by a researcher accompanied by one staff from PHC who help in recorded. A total of 12 FGDs were conducted, 4 FGD in each camp, all in study area, within the public area. At the start of the discussion, the participants were told about the objectives of holding the FGD and value of their views about TT vaccination and clean delivery. The participants were told about the importance of their suggestions for improving TT vaccination coverage and clean delivery. The researcher (moderator) started the discussion using guidelines prepared in advance. The discussion revolved around knowledge about tetanus and its vaccination, reasons for not getting the vaccination, clean delivery and suggestions for improvement of vaccination coverage and clean delivery. The information collected was analyzed by the standardized analytical methods for qualitative data.

Data was collected by: Standardized, close–ended and open ended Questionnaire through direct interview by the researcher, respondents was married women at child bearing age.
2. Intervention to study group through: Education programs for child bearing married mother regarding clean delivery and tetanus immunization. FGD then Home visits for education, demonstration of how to use birthing kit.

3.12. Data analysis and processing:

The Data was analyzed by computer (stata 20 program). Data were compared by using Chi – test.

Data analysis FGDs

IDIs and FGDs were transcribed and translated. Content analyses of key themes, phrases and practices, I used to organize data into behavioral. Knowledge and practices were then categorized based on their potential impact on immunization knowledge and clean delivery (annex 3).

3.13. Pilot Study

Pilot Study was done on a sample of 20 clients, the aim was to test the validity and feasibility of the questionnaire instrument, according to the result obtained some questions were restructuring, and rephrased to give the most accurate response and result.

3.14. Data presentations:

Data presented in the form of simple frequency, tables and graphs. Statistical significance stata 20 were used to test the impact of the intervention.

3.15. Ethical consideration

Official letter was taken from Gezira University to Gezira State ministry of health D.G .office, immunization program authorities, committee at Wad Madani, and the Gezira State ministry of health D.G .office at Al-managil & immunization program authorities, committee at al-managil. Permission to conduct the study from all above mentioned parties is given to the researcher (see appendices No. 3).
The goal of the research has been explained to respondents participating in both parts, and they were informed of their right to participate voluntary and confidentiality is ensured.

3.16. Data quality control

To assure the quality of data the questionnaire has been tested and modified. Data collection tool translated to "local Arabic" and retranslated to English and Arabic. On spot, correction was made by researcher during data collection period.

3.17. Phases of the study:

a. Phase One:

1. Pre assessment survey was conducted for both groups (Initial evaluation of knowledge, attitude, risky behaviors and wrong believes among study and control group). (Questionnaire). (Sep- to Dec -2010).

b. Phase two: (intervention phase):

2. Intervention to the study group education program and FGD :( 2010-2012)

   Educational programs (appendix3), about tetanus disease tetanus and tetanus taxoid immunization knowledge attitude and practice. Training in how to use delivery kit at home, FGD was conducted, in small group to all intervention groups, Home visits for demonstration on hand washing and delivery kit was applied by the researcher.

Phase three:

Post intervention evaluation of knowledge, attitude and practice, risky behaviors and wrong believes by using the same previous Questionnaire, comparing the two groups. Based on the result of assessment of mother the researcher, designed and applied health education program. Simplified session was conducted utilizing the relevant language assisted by camps leaders. The objectives of this program includes

Sessions: (2 sessions per week 2 hour per each) on( objectives of the study) e.g what is tetanus? How does the infection happen and what are the symptoms? (details in annex 5)
Posters addressing picture of the delivery kit (annex 6)
Video using personal laptop the researcher demonstrated hand washing before and after open birthing tool was used and before and after cutting umbilical cord. Researcher demonstrated hand washing to use delivery kit.
Handbook regarding what is tetanus? How does the infection happen and what are the symptoms? What are the ways to avoid the infection?
What is safe delivery?

**Goal of the program:**

To assess the existing knowledge and practice of women towards tetanus immunization, clean delivery and effects of introduction of educational program in improvement of knowledge, and practice of married women at childbearing age at Al-managil, Gazira state Sudan 2010-2013 before and after health education program

To measure the degree of improvement, practice and correcting the wrong believes.

To follow EPI program (see table 2)

1. Strengthen the routine coverage of pregnant women with TT.
2. 2-To promote the tt immunization & clean delivery practices.
3. 3-To increasing knowledge and awareness, enabling women to take preventive measures against tetanus, and promoting access to health care. Enabling women to change their behaviors.

First version of the program was implemented with support from al-managil authorities (during Sep –Des2010-) to fill base line questionnaire (control and study group), information about the tetanus vaccine their knowledge, attitude and practice regarding vaccination and clean delivery.

Second part of the program focused on health education and community awareness& development of the child bearing mother’s with limited education and women who need education through (Jan 2011 Jan 2013). at al-magil Locality (Al-kremit area)
CHAPTER FOUR

RESULTS

Table (4-1): Distribution of study population according to their age, (case & control) from 2010 to 2013

<table>
<thead>
<tr>
<th>Age group</th>
<th>Case</th>
<th></th>
<th>Control</th>
<th></th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Count</td>
<td>%</td>
<td>Count</td>
<td>%</td>
<td>No</td>
</tr>
<tr>
<td>15-30</td>
<td>148</td>
<td>74%</td>
<td>142</td>
<td>71%</td>
<td>290</td>
</tr>
<tr>
<td>31-49</td>
<td>52</td>
<td>26%</td>
<td>58</td>
<td>29%</td>
<td>110</td>
</tr>
<tr>
<td>Total</td>
<td>200</td>
<td>100%</td>
<td>200</td>
<td>100%</td>
<td>400</td>
</tr>
</tbody>
</table>

P – Value: 0.2

socio –demographic characteristics among the study group (case & control) (case & control) , with regard to their age, more than two third (74,71%) in the both studied groups and control group were in the age of 15 – 30 years. the mean age was 20.25 for both group.

Table (4-2): Distribution of study population according to their Education level (case & control) from 2010 to 2013

<table>
<thead>
<tr>
<th>Educational status</th>
<th>Case</th>
<th></th>
<th>Control</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Percent</td>
<td>Number</td>
<td>Percent</td>
</tr>
<tr>
<td>Illiterate</td>
<td>196</td>
<td>98%</td>
<td>192</td>
<td>96%</td>
</tr>
<tr>
<td>1-5 years schooling</td>
<td>4</td>
<td>2%</td>
<td>7</td>
<td>3.5%</td>
</tr>
<tr>
<td>6-11 years schooling</td>
<td>0</td>
<td>%</td>
<td>1</td>
<td>0.5%</td>
</tr>
<tr>
<td>11 years or more schooling</td>
<td>0</td>
<td>0%</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Total</td>
<td>200</td>
<td>100%</td>
<td>200</td>
<td>100%</td>
</tr>
</tbody>
</table>

p value 0.3

Most of the study group were illiterate 98% of the intervention group ,96 % of the control group, there is strong statistical significant association between knowledge of immunization and clean delivery and level of education.
Table (4-3): Distribution of study population according to their Employment (case 200 & control 200) from 2010 to 2013

<table>
<thead>
<tr>
<th>Employment</th>
<th>Case</th>
<th>%</th>
<th>Control</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employered</td>
<td>8</td>
<td>4%</td>
<td>9</td>
<td>4.5%</td>
</tr>
<tr>
<td>Not Employed</td>
<td>192</td>
<td>96%</td>
<td>191</td>
<td>95.5%</td>
</tr>
</tbody>
</table>

Table (3) shows that the majority were unemployed (96%) (95%). in both was high.

Table (4-4): Distribution of study population according to their Marital status (case & control) from 2010 to 2013

| Marital status | Case    | Percent | Control | Percent |
|               | Number  | %       | Number  | %       |
| Married       | 196     | 98%     | 193     | 96.5%   |
| Widower       | 1       | .5%     | 3       | 1.5     |
| Divorced      | 3       | 1.5%    | 4       | 2%      |
| Total         | 200     | 100%    | 200     | 100%    |

P = 0.42
The majority of women were married in both groups, 98% of the intervention group and 96.5% among control group almost the same this variation was insignificant.

Table (4-5): Distribution of study population according to their number of deliveries (case & control) from 2010 to 2013

<table>
<thead>
<tr>
<th>Number of deliveries</th>
<th>Case</th>
<th>%</th>
<th>Control</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-3 deliveries</td>
<td>74</td>
<td>37%</td>
<td>80</td>
<td>40%</td>
</tr>
<tr>
<td>4-6 deliveries</td>
<td>89</td>
<td>44.5%</td>
<td>76</td>
<td>38%</td>
</tr>
<tr>
<td>7 or more deliveries</td>
<td>37</td>
<td>18.5%</td>
<td>44</td>
<td>22%</td>
</tr>
<tr>
<td>Total</td>
<td>200</td>
<td>100%</td>
<td>200</td>
<td>100%</td>
</tr>
</tbody>
</table>

P – Value: 0.2

Table (5) shows that the majority of responders were, 1-3 deliveries in both study groups study (74%), and control group (71%), which shows statistical significant associated between age and numbers of deliveries. Pre & post intervention
Table 4-6: Distribution of study population according to their knowledge about transmission of tetanus disease, (case& control from 2010 to 2013(n=400) :

<table>
<thead>
<tr>
<th>knowledge about transmission of tetanus disease</th>
<th>Case</th>
<th></th>
<th></th>
<th>Control</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre</td>
<td>Post</td>
<td>pre</td>
<td>Post</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Count</td>
<td>%</td>
<td>count</td>
<td>%</td>
<td>count</td>
<td>%</td>
</tr>
<tr>
<td>Through wound</td>
<td>10</td>
<td>5%</td>
<td>80</td>
<td>40%</td>
<td>12</td>
<td>6%</td>
</tr>
<tr>
<td>By unsterile equipment during delivery</td>
<td>5</td>
<td>2.5%</td>
<td>65</td>
<td>32.5%</td>
<td>7</td>
<td>3.5%</td>
</tr>
<tr>
<td>Unimmunized person</td>
<td>10</td>
<td>5%</td>
<td>45</td>
<td>22.5%</td>
<td>13</td>
<td>36.5%</td>
</tr>
<tr>
<td>Don't know</td>
<td>175</td>
<td>87.5%</td>
<td>10</td>
<td>5%</td>
<td>168</td>
<td>84%</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100%</td>
<td>100</td>
<td>100%</td>
<td>200</td>
<td>100%</td>
</tr>
</tbody>
</table>

P=0.000  \( \text{Chi}^2 = 2.49 \)

Table (6) shows that (87%) of the study group before education and control group don't know about How the infection happens versus only (5%) of the study group after education. This variation was highly significant (P=0.000)

Table 4-7: Distribution of study population according to their knowledge of tetanus seriousness (case & control) from 2010 to 2013(n=400)

<table>
<thead>
<tr>
<th>knowledge of tetanus risk</th>
<th>Case</th>
<th></th>
<th></th>
<th>Control</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PRE</td>
<td>POST</td>
<td>PRE</td>
<td>POST</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Count</td>
<td>%</td>
<td>Count</td>
<td>%</td>
<td>Count</td>
<td>%</td>
</tr>
<tr>
<td>Yes</td>
<td>12</td>
<td>6%</td>
<td>116</td>
<td>58%</td>
<td>16</td>
<td>8. %</td>
</tr>
<tr>
<td>No</td>
<td>26</td>
<td>13%</td>
<td>35</td>
<td>17.5%</td>
<td>140</td>
<td>70%</td>
</tr>
<tr>
<td>Don't know</td>
<td>162</td>
<td>81%</td>
<td>49</td>
<td>24.5%</td>
<td>43</td>
<td>22. %</td>
</tr>
<tr>
<td>Total</td>
<td>200</td>
<td>100%</td>
<td>200</td>
<td>100%</td>
<td>200</td>
<td>100%</td>
</tr>
</tbody>
</table>

(p=.0002 ) \( \text{Chi}^2 = 1.21 \)

Table (7) shows that knowledge about seriousness of tetanus disease was higher among the intervention group after the intervention (58.0%) while (8%) among control group. This variation was highly significant (p=.00002)
Table (4-8): Distribution of study population according to their knowledge of tetanus signs among study group (case & control) from 2010 to 2013

<table>
<thead>
<tr>
<th>Knowledge of tetanus sign</th>
<th>Case</th>
<th></th>
<th>Control</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PRE</td>
<td>POST</td>
<td>Pre</td>
<td>Post</td>
</tr>
<tr>
<td></td>
<td>Count</td>
<td>%</td>
<td>Count</td>
<td>%</td>
</tr>
<tr>
<td>muscle spasms</td>
<td>4</td>
<td>2%</td>
<td>29</td>
<td>14.5%</td>
</tr>
<tr>
<td>Painful muscle contraction</td>
<td>0</td>
<td>0%</td>
<td>12</td>
<td>6%</td>
</tr>
<tr>
<td>Lock-jaw</td>
<td>6</td>
<td>3%</td>
<td>21</td>
<td>10.5%</td>
</tr>
<tr>
<td>1, 2, 3</td>
<td>5</td>
<td>2.5%</td>
<td>38</td>
<td>19%</td>
</tr>
<tr>
<td>Unable to breast feed</td>
<td>15</td>
<td>7.5%</td>
<td>89</td>
<td>44.5%</td>
</tr>
<tr>
<td>Don't now</td>
<td>170</td>
<td>85%</td>
<td>11</td>
<td>5.5%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>200</td>
<td>100%</td>
<td>200</td>
<td>100%</td>
</tr>
</tbody>
</table>

P = 0.00 \quad \text{Chi}^2 = 2.47

Table (8) shows that the majority of responders were, unaware of what the tetanus disease sign, in both groups study (85%), and control group (67%), which shows statistical significant associated between both group before education. There was significant improvement in knowledge about tetanus sign among intervention after training program.
Table (4-9): Distribution of study population according to their delivery practice, knowledge about the preventive measures against tetanus disease (case 200 & control 200) from 2010 to 2013

<table>
<thead>
<tr>
<th>delivery practice</th>
<th>Case</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PRE</td>
<td>POST</td>
</tr>
<tr>
<td></td>
<td>Count</td>
<td>%</td>
</tr>
<tr>
<td>By immunization against tetanus disease</td>
<td>15</td>
<td>7.5%</td>
</tr>
<tr>
<td>Midwife use sterile birthing hits</td>
<td>9</td>
<td>4.5%</td>
</tr>
<tr>
<td>TBA use unsterile material</td>
<td>3</td>
<td>1.5%</td>
</tr>
<tr>
<td>. 1&amp; 2,</td>
<td>3</td>
<td>1.5%</td>
</tr>
<tr>
<td>Don't now</td>
<td>170</td>
<td>85%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>200</td>
<td>100%</td>
</tr>
</tbody>
</table>

P = 0.00  Chi² = 2.72

It can be seen in table (9) before intervention that (85%) of both, study and control groups don't know the way to prevent tetanus disease but after training program only (11.5%) of intervention group doesn't know the way to prevent tetanus disease. The variation was highly significant 85% know.
Table (4-10): Distribution of study population according to their knowledge about if tetanus disease is serious. (case & control) from 2010 to 2013.

<table>
<thead>
<tr>
<th>knowledge about if tetanus disease, is serious</th>
<th>Case</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PRE</td>
<td>POST</td>
</tr>
<tr>
<td></td>
<td>Count</td>
<td>%</td>
</tr>
<tr>
<td>Yes</td>
<td>59</td>
<td>29.5%</td>
</tr>
<tr>
<td>No</td>
<td>10</td>
<td>5%</td>
</tr>
<tr>
<td>Don’t know</td>
<td>131</td>
<td>65.5%</td>
</tr>
<tr>
<td>Total</td>
<td>200</td>
<td>100%</td>
</tr>
</tbody>
</table>

P = 0.00  Chi² = 1.42

Table (10) showed that majority of both group before education was not aware of tetanus disease if its seriousness or not while there was significant improvement in knowledge about seriousness of the disease among the intervention group after training program.

Table (4-11): Distribution of study population according to their knowledge if tetanus disease as preventable disease. (case & control) from 2010 to 2013.

<table>
<thead>
<tr>
<th>knowledge of if tetanus disease as preventable</th>
<th>Case</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PRE</td>
<td>POST</td>
</tr>
<tr>
<td></td>
<td>Count</td>
<td>%</td>
</tr>
<tr>
<td>Yes</td>
<td>16</td>
<td>8%</td>
</tr>
<tr>
<td>No</td>
<td>59</td>
<td>29.5%</td>
</tr>
<tr>
<td>Don't now</td>
<td>125</td>
<td>625%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>200</td>
<td>100%</td>
</tr>
</tbody>
</table>

P = 0.00  Chi² = 1.27

It can be seen in table (11) that there was significant improvement in knowledge about tetanus as a preventable disease among the intervention group, 8% pre intervention and 82% post intervention, versus 49.0% of the control group doesn’t know if its preventable or not. The variation was significant.
Table (4-12): Distribution of study population according to their knowledge about immunization as preventive measure against tetanus disease (case & control) from 2010 to 2013.

<table>
<thead>
<tr>
<th>Knowledge if of tetanus immunization as preventive measure</th>
<th>Case</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PRE</td>
<td>POST</td>
</tr>
<tr>
<td></td>
<td>Count</td>
<td>%</td>
</tr>
<tr>
<td>Yes</td>
<td>14</td>
<td>7%</td>
</tr>
<tr>
<td>No</td>
<td>86</td>
<td>43.5%</td>
</tr>
<tr>
<td>Don't know</td>
<td>100</td>
<td>50%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>200</td>
<td>100</td>
</tr>
</tbody>
</table>

P = 0.00  Chi² = 2.41

Table (12) show improvement about tetanus immunization as preventive measure among the intervention group after training program.

Table (4-13): Distribution of study population according to their knowledge about safe delivery. (case & control) from 2010 to 2013.

<table>
<thead>
<tr>
<th>Safe delivery practice</th>
<th>Case</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PRE</td>
<td>POST</td>
</tr>
<tr>
<td></td>
<td>Count</td>
<td>%</td>
</tr>
<tr>
<td>At home with trained midwife</td>
<td>8</td>
<td>4%</td>
</tr>
<tr>
<td>At home with TBA</td>
<td>95</td>
<td>47.5%</td>
</tr>
<tr>
<td>At home by your self</td>
<td>93</td>
<td>46.5%</td>
</tr>
<tr>
<td>At hospital</td>
<td>4</td>
<td>2%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>200</td>
<td>100</td>
</tr>
</tbody>
</table>

P = 0.00  Chi² = 1.09

Table (13) show the preference of delivery with midwife after training program significant improved from 4% before training and 58% after training program.
Table (4-14): Distribution of study population according to their delivery practice. (case & control) from 2010 to 2013.

<table>
<thead>
<tr>
<th>Knowledge of Delivery practice</th>
<th>Case</th>
<th></th>
<th>Control</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Percent %</td>
<td>Number</td>
<td>Percent %</td>
</tr>
<tr>
<td>with TBA</td>
<td>40</td>
<td>20%</td>
<td>32</td>
<td>16%</td>
</tr>
<tr>
<td>with village midwife</td>
<td>5</td>
<td>2.5%</td>
<td>7</td>
<td>3.5%</td>
</tr>
<tr>
<td>at home with your self</td>
<td>150</td>
<td>75%</td>
<td>158</td>
<td>79%</td>
</tr>
<tr>
<td>at hospital</td>
<td>5</td>
<td>2.5%</td>
<td>3</td>
<td>1.3%</td>
</tr>
<tr>
<td>Total</td>
<td>200</td>
<td>100%</td>
<td>200</td>
<td>100%</td>
</tr>
</tbody>
</table>

\[ P = 0.587 \quad \text{Chi}^2 = 1.93 \]

Table (14) shows that 75% of study group gave birth at home with self or help from family, while the control group, 79% did the same gave birth at home alone with them self:

Table (4-15): Distribution of study population according to their practice of tetanus vaccination (case & control) from 2010 to 2013.

<table>
<thead>
<tr>
<th>Practice of tetanus vaccine</th>
<th>Case</th>
<th></th>
<th>Control</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre</td>
<td>POST</td>
<td>Pre</td>
<td>Post</td>
</tr>
<tr>
<td></td>
<td>Count</td>
<td>%</td>
<td>count</td>
<td>%</td>
</tr>
<tr>
<td>Yes</td>
<td>33</td>
<td>16.5</td>
<td>169</td>
<td>84.5%</td>
</tr>
<tr>
<td>No</td>
<td>167</td>
<td>83.5</td>
<td>31</td>
<td>15.5</td>
</tr>
<tr>
<td>Total</td>
<td>200</td>
<td>100</td>
<td>200</td>
<td>100</td>
</tr>
</tbody>
</table>

\[ P = 0.00 \quad \text{Chi}^2 = 1.69 \]

Table (15) shows that (84.0%) of the study group has vaccinated, after training program versus only (21%) of the control group. This variation was highly significant (P=0.000).
Table (4-16): Distribution of study population according to their practice of receiving tt vaccine, (case & control) from 2010 to 2013.

<table>
<thead>
<tr>
<th>Do you have received any tt vaccine?</th>
<th>Case</th>
<th></th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre</td>
<td>POST</td>
<td>Pre</td>
</tr>
<tr>
<td></td>
<td>count</td>
<td>%</td>
<td>count</td>
</tr>
<tr>
<td>Yes</td>
<td>35</td>
<td>17.5</td>
<td>158</td>
</tr>
<tr>
<td>No</td>
<td>167</td>
<td>83.5</td>
<td>42</td>
</tr>
<tr>
<td>Total</td>
<td>200</td>
<td>100</td>
<td>200</td>
</tr>
</tbody>
</table>

P = 0.00     Chi² = 1.126

Table (16) shows significant improvement in practice of tt vaccination, among intervention group after the training program, (79%). Compared to Control group.

Table (4-17): Distribution of study population according to their practice of tetanus toxoid doses received by respondent (case & control) from 2010 to 2013.

<table>
<thead>
<tr>
<th>How many tetanus toxoid</th>
<th>Case</th>
<th></th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre</td>
<td>POST</td>
<td>Pre</td>
</tr>
<tr>
<td>Doses received by respondent</td>
<td>Count</td>
<td>%</td>
<td>Count</td>
</tr>
<tr>
<td>not any</td>
<td>99</td>
<td>45.5</td>
<td>15</td>
</tr>
<tr>
<td>Once 1st dose only</td>
<td>16</td>
<td>8</td>
<td>135</td>
</tr>
<tr>
<td>Twice 2nd dose</td>
<td>14</td>
<td>7</td>
<td>135-40</td>
</tr>
<tr>
<td>three times 3rd dose</td>
<td>12</td>
<td>6</td>
<td>185-10</td>
</tr>
<tr>
<td>Don't now</td>
<td>55</td>
<td>27.5</td>
<td>7</td>
</tr>
</tbody>
</table>

P = 0.00     Chi² = 1.62

Table (17) shows significance difference between intervention and control group regarding tetanus toxiod vaccination. Is more among intervention group after training program.
Table (4-18): Distribution of study population according to their practice: reasons of not being vaccinated (case & control) from 2010 to 2013(n=400)

<table>
<thead>
<tr>
<th>If ever you don’t had tetanus vaccine why?</th>
<th>Case</th>
<th></th>
<th>Control</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre</td>
<td>POST</td>
<td>Pre</td>
<td>Post</td>
<td></td>
</tr>
<tr>
<td>Count</td>
<td>%</td>
<td>count</td>
<td>%</td>
<td>Count</td>
<td>%</td>
</tr>
<tr>
<td>I Don’t heard about it</td>
<td>60</td>
<td>30%</td>
<td>6</td>
<td>3%</td>
<td>67</td>
</tr>
<tr>
<td>I’m not ill so it’s not necessary</td>
<td>20</td>
<td>10%</td>
<td>14</td>
<td>7%</td>
<td>18</td>
</tr>
<tr>
<td>Not suggested by my doctor or a nurse</td>
<td>39</td>
<td>19.5%</td>
<td>4</td>
<td>23%</td>
<td>36</td>
</tr>
<tr>
<td>Bad attitude of doctors / nurse</td>
<td>16</td>
<td>8%</td>
<td>20</td>
<td>10%</td>
<td>11</td>
</tr>
<tr>
<td>Cultural reason (sterility, contraceptive)</td>
<td>65</td>
<td>32.5%</td>
<td>47</td>
<td>23.5%</td>
<td>68</td>
</tr>
<tr>
<td>Total</td>
<td>200</td>
<td>100</td>
<td>200</td>
<td>100</td>
<td>200</td>
</tr>
</tbody>
</table>

Table (18) Responses varied widely. The most common reason (32%) was the Cultural / reason, that was sterility, they consider it like contraceptive third of the study group did not heard about the TT vaccination (30%), followed by other reasons are listed in Table (19).

Table (4-19): Distribution of study population according to their practice of health facilities visit during pregnancy for tetanus immunization (case & control) from 2010 to 2013(n=400)

<table>
<thead>
<tr>
<th>practice of health facilities visit for</th>
<th>Case</th>
<th></th>
<th>Control</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre</td>
<td>POST</td>
<td>Pre</td>
<td>Post</td>
<td></td>
</tr>
<tr>
<td>count</td>
<td>%</td>
<td>count</td>
<td>%</td>
<td>Count</td>
<td>%</td>
</tr>
<tr>
<td>Immunization</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>46</td>
<td>23%</td>
<td>115</td>
<td>57.5%</td>
<td>38</td>
</tr>
<tr>
<td>No</td>
<td>154</td>
<td>77%</td>
<td>85</td>
<td>42.5%</td>
<td>162</td>
</tr>
<tr>
<td>Total</td>
<td>200</td>
<td>100</td>
<td>200</td>
<td>100</td>
<td>200</td>
</tr>
</tbody>
</table>

P = 0.00  \( \text{Chi}^2 = 45.02 \)

Table (19) shows the rate of visit to health facility for tt immunization was increased among the study group after training program 57% compared to control group.
Table (4-20): Distribution of study population according to their Practice of Doses takes by responders. (case & control) from 2010 to 2013(n=400)

<table>
<thead>
<tr>
<th>Practice of Doses takes by respondents</th>
<th>Case</th>
<th></th>
<th></th>
<th>Control</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PRE</td>
<td>POST</td>
<td>Pre</td>
<td>Post</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Count</td>
<td>%</td>
<td>Count</td>
<td>%</td>
<td>Count</td>
<td>%</td>
</tr>
<tr>
<td>Once 1st dose only</td>
<td>35</td>
<td>17.5%</td>
<td>110</td>
<td>55%</td>
<td>39</td>
<td>19.5%</td>
</tr>
<tr>
<td>Twice 2nd dose</td>
<td>25</td>
<td>12.5%</td>
<td>75</td>
<td>37.5%</td>
<td>21</td>
<td>10.5%</td>
</tr>
<tr>
<td>Three times 3rd dose</td>
<td>18</td>
<td>9%</td>
<td>10</td>
<td>5%</td>
<td>21</td>
<td>10.5%</td>
</tr>
<tr>
<td>Four doses</td>
<td>5</td>
<td>2.5%</td>
<td>7</td>
<td>3.5%</td>
<td>3</td>
<td>1.5%</td>
</tr>
<tr>
<td>Five doses</td>
<td>1</td>
<td>5%</td>
<td>2</td>
<td>1%</td>
<td>2</td>
<td>1%</td>
</tr>
<tr>
<td>Not any</td>
<td>116</td>
<td>58%</td>
<td>6</td>
<td>3%</td>
<td>114</td>
<td>57%</td>
</tr>
<tr>
<td>Total</td>
<td>200</td>
<td>100</td>
<td>200</td>
<td>100</td>
<td>200</td>
<td>100</td>
</tr>
</tbody>
</table>

P = 0.00  \[\text{Chi}^2 = 1.58\]

Table (20) there was significance improvement among the intervention group regarding the number of tt doses received after training program.

Table.  (4-21): Distribution of study population according to their wrong believes sterility/miscarriage. (case & control) from 2010 to 2013.

<table>
<thead>
<tr>
<th>Does TT cause sterility/miscarriage?</th>
<th>Case</th>
<th></th>
<th></th>
<th>Control</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PRE</td>
<td>POST</td>
<td>Pre</td>
<td>Post</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Count</td>
<td>%</td>
<td>Count</td>
<td>%</td>
<td>Count</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>61</td>
<td>30.5%</td>
<td>17</td>
<td>8.5%</td>
<td>75</td>
<td>37.5%</td>
</tr>
<tr>
<td>No</td>
<td>36</td>
<td>18%</td>
<td>133</td>
<td>66.5%</td>
<td>60</td>
<td>30%</td>
</tr>
<tr>
<td>Don't know</td>
<td>103</td>
<td>51.5%</td>
<td>40</td>
<td>20%</td>
<td>65</td>
<td>38%</td>
</tr>
<tr>
<td>Total</td>
<td>200</td>
<td>100</td>
<td>200</td>
<td>100</td>
<td>200</td>
<td>100</td>
</tr>
</tbody>
</table>

P = 0.00  \[\text{Chi}^2 = 53.02\]

Table (4-21) shows that: there was improvement in knowledge and misconception regarding tt vaccine as contraceptive after training program among the intervention group.
Table (4-22): Distribution of study population according to their knowledge and information about tetanus immunization (case & control) from 2010 to 2013.

<table>
<thead>
<tr>
<th>knowledge and information about tetanus immunization</th>
<th>Case</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PRE</td>
<td>POST</td>
</tr>
<tr>
<td></td>
<td>Count</td>
<td>%</td>
</tr>
<tr>
<td>Yes</td>
<td>7</td>
<td>3.5</td>
</tr>
<tr>
<td></td>
<td>163</td>
<td>81.5</td>
</tr>
<tr>
<td>No</td>
<td>193</td>
<td>86.5</td>
</tr>
<tr>
<td></td>
<td>37</td>
<td>18.5</td>
</tr>
<tr>
<td>Total</td>
<td>200</td>
<td>100</td>
</tr>
</tbody>
</table>

P = 0.00       Chi² = 2.15

Table (22) there was significance improvement regarding information about tetanus immunization after training program among the intervention group the improvement from 3.5% before the training to 80% after training which if very and highly significant.

Table (4-23): Distribution of study population according to their Source of knowledge (case & control) from 2010 to 2013(n=400)

<table>
<thead>
<tr>
<th>Source of knowledge</th>
<th>Case</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PRE</td>
<td>POST</td>
</tr>
<tr>
<td></td>
<td>Count</td>
<td>%</td>
</tr>
<tr>
<td>from a friend</td>
<td>3</td>
<td>1.5%</td>
</tr>
<tr>
<td>From family members</td>
<td>9</td>
<td>4.5%</td>
</tr>
<tr>
<td>from a Health Worker</td>
<td>30</td>
<td>15%</td>
</tr>
<tr>
<td>doctor from a nurse / a</td>
<td>10</td>
<td>5%</td>
</tr>
<tr>
<td>from advertisement</td>
<td>12</td>
<td>6%</td>
</tr>
<tr>
<td>Not any</td>
<td>136</td>
<td>68%</td>
</tr>
<tr>
<td>Total</td>
<td>200</td>
<td>100</td>
</tr>
</tbody>
</table>

P = 0.00       Chi² = 2.11
Table (23) there was no any available information for the public regarding tt vaccine before the training program. But there was significant improvement after training program; the study group shows big knowledge difference which was highly significant.

Table (4-24): Distribution of study population according to their Information regarding the Source of Knowledge (case & control) from 2010 to 2013.

<table>
<thead>
<tr>
<th>Source of knowledge</th>
<th>Case</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PRE</td>
<td>POST</td>
</tr>
<tr>
<td></td>
<td>Count</td>
<td>%</td>
</tr>
<tr>
<td>from Pamphlet</td>
<td>3</td>
<td>1.5%</td>
</tr>
<tr>
<td>Radio</td>
<td>32</td>
<td>16%</td>
</tr>
<tr>
<td>Newspaper</td>
<td>2</td>
<td>1%</td>
</tr>
<tr>
<td>in services</td>
<td>9</td>
<td>4.5%</td>
</tr>
<tr>
<td>Not any</td>
<td>154</td>
<td>77%</td>
</tr>
<tr>
<td>Total</td>
<td>200</td>
<td>100%</td>
</tr>
</tbody>
</table>

P = 0.00  \text{ Chi}^2 = 2.69

Table (24) shows that the main sources of information of tetanus were the in-services (79.5%) and the radio (17.0%) among the intervention group, after training program while control group they don't have any sources for information73% This difference was highly significant.
Table (4-25): Distribution of study population according to their knowledge of immunization against tetanus disease (case & control) from 2010 to 2013.

<table>
<thead>
<tr>
<th>knowledge of immunization against tetanus disease</th>
<th>Case</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PRE</td>
<td>POST</td>
</tr>
<tr>
<td>Count</td>
<td>%</td>
<td>Count</td>
</tr>
<tr>
<td>Yes</td>
<td>26</td>
<td>13%</td>
</tr>
<tr>
<td>No</td>
<td>19</td>
<td>9.5%</td>
</tr>
<tr>
<td>Don't now</td>
<td>155</td>
<td>77.5%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>200</td>
<td>100</td>
</tr>
</tbody>
</table>

P = 0.00  \( \text{Chi}^2 = 1.27 \)

Table (25) there was knowledge improvement among intervention group after training program regarding immunity by tt vaccine, if we can immune against tetanus disease. 72.0% of study group said we can immune while only 17.5 % of control groups said we cannot immune.

Table (4-26): Distribution of study population according to their knowledge of number of tetanus vaccine doses a woman should have in life time (healthy woman). (case & control) from 2010 to 2013(n=400)

<table>
<thead>
<tr>
<th>knowledge of tetanus vaccine doses</th>
<th>Case</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PRE</td>
<td>POST</td>
</tr>
<tr>
<td>Count</td>
<td>%</td>
<td>Count</td>
</tr>
<tr>
<td>One dose only</td>
<td>45</td>
<td>22.5%</td>
</tr>
<tr>
<td>Two doses</td>
<td>24</td>
<td>12%</td>
</tr>
<tr>
<td>Three doses</td>
<td>10</td>
<td>5%</td>
</tr>
<tr>
<td>Four doses</td>
<td>2</td>
<td>1%</td>
</tr>
<tr>
<td>Not any</td>
<td>99</td>
<td>45.5%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>200</td>
<td>100</td>
</tr>
</tbody>
</table>

P = 0.00  \( \text{Chi}^2 = 1.38 \)

Table (26) there was knowledge deficit regarding numbers of doses that showed be received, before training program among both control and study group but after
training program there was improvement of knowledge about how number of doses showed be received among the intervention group after.

Table (4-27): Distribution of study population according to their knowledge about benefit from tt vaccine (case & control) from 2010 to 2013.

<table>
<thead>
<tr>
<th>knowledge about benefit from tt vaccine</th>
<th>Case</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PRE</td>
<td>POST</td>
</tr>
<tr>
<td></td>
<td>Count</td>
<td>%</td>
</tr>
<tr>
<td>to protect herself from tetanus vaccination</td>
<td>24</td>
<td>12%</td>
</tr>
<tr>
<td>to protect her baby</td>
<td>30</td>
<td>15%</td>
</tr>
<tr>
<td>To protect herself and her baby</td>
<td>10</td>
<td>5%</td>
</tr>
<tr>
<td>Don't Know</td>
<td>136</td>
<td>68%</td>
</tr>
<tr>
<td>Total</td>
<td>200</td>
<td>100</td>
</tr>
</tbody>
</table>

P = 0.00  Chi² = 1.06

Table (27) shows that there was significance improvement of intervention group after training program regarding the benefit of tetanus vaccine.
Table (4-28): Distribution of study population according to their knowledge about tt side effects. (case & control) from 2010 to 2013.

<table>
<thead>
<tr>
<th>knowledge about tt side effects</th>
<th>Case</th>
<th></th>
<th>Control</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PRE</td>
<td>POST</td>
<td>Pre</td>
<td>Post</td>
</tr>
<tr>
<td></td>
<td>Count</td>
<td>%</td>
<td>Count</td>
<td>%</td>
</tr>
<tr>
<td>Pain</td>
<td>30</td>
<td>15%</td>
<td>20</td>
<td>10%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>24</td>
<td>12%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>28</td>
<td>14%</td>
</tr>
<tr>
<td>Fever and head ache</td>
<td>29</td>
<td>14.5%</td>
<td>40</td>
<td>20%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>20</td>
<td>10%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>37</td>
<td>18.5%</td>
</tr>
<tr>
<td>Allergy</td>
<td>10</td>
<td>5%</td>
<td>12</td>
<td>6%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>21</td>
<td>10.5%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>18</td>
<td>9%</td>
</tr>
<tr>
<td>1,2,3</td>
<td>39</td>
<td>19.5%</td>
<td>50</td>
<td>25%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>65</td>
<td>32.5%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>57</td>
<td>28.5%</td>
</tr>
<tr>
<td>Not any</td>
<td>92</td>
<td>46%</td>
<td>78</td>
<td>39.3%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>70</td>
<td>35%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>60</td>
<td>30%</td>
</tr>
<tr>
<td>Total</td>
<td>200</td>
<td>100</td>
<td>200</td>
<td>100</td>
</tr>
</tbody>
</table>

P = 0.244  \text{Chi}^2 = 5.456

It can be seen that from table (28) that both study and control group perceived and believe that tt injection is painful (15of the study and 14% of the control while they answer no side effect in both group (46%) The answer was of minor variations comparing the two groups (insignificant).
Table (4-29): Distribution of study population according to their practicing fear to take TT Immunization. (case & control) from 2010 to 2013.

<table>
<thead>
<tr>
<th>Practicing fear to take TT Immunization</th>
<th>Case</th>
<th></th>
<th></th>
<th>Control</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PRE</td>
<td>POST</td>
<td>Pre</td>
<td>Post</td>
<td>Pre</td>
<td>Post</td>
</tr>
<tr>
<td></td>
<td>Count</td>
<td>%</td>
<td>Count</td>
<td>%</td>
<td>Count</td>
<td>%</td>
</tr>
<tr>
<td>Yes</td>
<td>41</td>
<td>20.5%</td>
<td>30</td>
<td>15%</td>
<td>65</td>
<td>32.5%</td>
</tr>
<tr>
<td></td>
<td>60</td>
<td>30%</td>
<td>60</td>
<td>30%</td>
<td>60</td>
<td>30%</td>
</tr>
<tr>
<td>No</td>
<td>159</td>
<td>79.5%</td>
<td>170</td>
<td>85%</td>
<td>135</td>
<td>67.5%</td>
</tr>
<tr>
<td></td>
<td>140</td>
<td>70%</td>
<td>140</td>
<td>70%</td>
<td>140</td>
<td>70%</td>
</tr>
<tr>
<td>Total</td>
<td>200</td>
<td>100%</td>
<td>200</td>
<td>100%</td>
<td>200</td>
<td>100%</td>
</tr>
</tbody>
</table>

P = 0.00  \( \chi^2 = 12.90 \)

It can be seen from table (29) that the majority (79.5 %) were not a faired to take TT immunization among both group case and control group. The answer was of minor variations comparing the two groups (insignificant).

Table (4.30): Distribution of study population according to their information need about tetanus and vaccination (case & control) from 2010 to 2013.

<table>
<thead>
<tr>
<th>If you need more information about tetanus</th>
<th>Case</th>
<th></th>
<th></th>
<th>Control</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PRE</td>
<td>POST</td>
<td>Pre</td>
<td>Post</td>
<td>Pre</td>
<td>Post</td>
</tr>
<tr>
<td></td>
<td>Count</td>
<td>%</td>
<td>Count</td>
<td>%</td>
<td>Count</td>
<td>%</td>
</tr>
<tr>
<td>Yes</td>
<td>122</td>
<td>56%</td>
<td>147</td>
<td>73.5%</td>
<td>106</td>
<td>53%</td>
</tr>
<tr>
<td></td>
<td>98</td>
<td>49%</td>
<td>98</td>
<td>49%</td>
<td>98</td>
<td>49%</td>
</tr>
<tr>
<td>No</td>
<td>78</td>
<td>39%</td>
<td>53</td>
<td>26.5%</td>
<td>94</td>
<td>47%</td>
</tr>
<tr>
<td></td>
<td>102</td>
<td>51%</td>
<td>102</td>
<td>51%</td>
<td>102</td>
<td>51%</td>
</tr>
<tr>
<td>Total</td>
<td>200</td>
<td>100%</td>
<td>200</td>
<td>100%</td>
<td>200</td>
<td>100%</td>
</tr>
</tbody>
</table>

P = 0.00  \( \chi^2 = 25.29 \)

It can be seen in table (30) that an intervention group needs more information after the training program, 56% versus 49% of control group. The variation was insignificant.
Women do not discuss prevention of diseases. Women give vaccination for the kids because they think that it is necessary for the child health only; they do not think that diseases can be prevented by the vaccine.

Health education was very poor and in fact one can say it hardly exists.

All mothers in the areas give birth at home. Attempts are being made to make delivery safe by giving training to traditional birth attendants. However, some birthing tools were distributed that make delivery safe.

Delivery is mostly conducted in the old ways. Consequently mothers and neonates are exposed to tetanus infection. It has been reported that many mothers and neonates die within the first few weeks of birth. Some mothers during FGD describe the symptoms of the killer disease to be similar with that of tetanus. The concept of sterilizing tools by putting in boiling water was not mentioned at all.

Most mothers in the area where TT study were conducted have not heard of tetanus and tetanus toxoid immunization. Few of women in reproductive age took TT during the pregnancy.

Most mothers in the areas have not known about tetanus and tetanus toxoid immunization.

Tetanus and tetanus toxoid immunization have not been taken as important issue for discussion across all caps visited. Most mothers' have seen tetanus patients and do not take the disease seriously and do not take it as a serious problem.

Most responders do not make a link between tetanus and unclean delivery.

Tetanus toxoid immunization is associated with pregnancy. Responders think that pregnant women take it as an aspect of a medical procedure. They do not associate it with immunity. In fact, immunization does not seem to exist in camps. It has been observed that mothers think of curative treatments, not of preventive measures.

All responders take all vaccination to be one and the same. They confuse for example polio, measles, and meningitis against each other. They also confuse the diseases, too. They think that any vaccine is good for health, but they do not know what vaccine immunizes a person against what disease.
Focus group discussions

In the FGDs most women confessed that they did not know about TT and its dangerous outcome. A few women had only heard about its signs and symptoms from other women and believed that these signs were due to evil look of devils, jinn and other evil creatures.

Some of the women showed apprehension about TT being a contraceptive injection. A few women said that mother-in-laws were a barrier to getting vaccinated due to jealousy or desire to control daughter-in-laws. Older women consider vaccination of no value because they had experience of giving birth to children without TT vaccination and did not face a problem.

Most people do not make a link between tetanus and unclean delivery. Infections caused after delivery are associated with exposures to evil spirits and consequently are not considered for medical treatment. Symptoms of tetanus are taken as indicators that an evil spirit possessed the patient. People believe that it is not medically treatable. Hardly discuss the cause of the death. In most cases the patient is kept at home till death; in some cases people try traditional treatments such as making the patient inhale smokes of burning herbs, using holy water and reciting verses from the Koran. Patients die and people take the death for granted; they do not bother to explain the cause of the death. Tetanus prevalence is estimated to be high. Tetanus infection that happens in relation to delivery is hardly reported in the study areas.

Tetanus toxoid immunization is associated with pregnancy. People think that pregnant women take it as an aspect of a medical procedure. They do not associate it with immunity. In fact, immunization does not seen to exist. It has been observed that people think of curative treatments, not of preventive measures.

Many people take all vaccination to be one and the same. They confuse for example polio, measles, and meningitis against each other. They also confuse the diseases, too. They think that any vaccine is good for health, but they do not know what vaccine immunizes a person against what disease.

The level of health education is poor and most people particularly those live in the study camps lack of correct information on tetanus and tetanus toxoid immunization.
Misconceptions of TT due to lack of information and health education. One of misconception is that TT is a contraceptive. This misconception became wide spread when the government announced that women in reproductive age are eligible to take the vaccine. People immediately associated it with contraceptive method as the message coincided with that of family planning education. This misconception was reinforced by the researcher. Very few people feared of needle injection refused to take it by associating fear and allergy.
CHAPTER FIVE

DISCUSSION

Using demographics data as a starting point, the education levels of the mothers was the most significant predictor of poor immunization behavior – the more Illiterate a mother was, the more likely not use immunizations as a means of protection from disease, in this study illiteracy rate of these mothers was very high. (Mark R, Darden P (1999). In Their research indicate that if mothers have been well schooled have subsequently adopted the regimens accounts for the high level of immunization behavior. The more educated a mother was, the more likely she was to use immunizations as a means of protection from disease.

The result of this study revealed that the use of skilled birth attendants is significantly influence by level of education, this finding is in line with most maternal and child health studies conducted in developing countries (Abbas H 1986), this may be because education is likely to enhance the status of women and enable them to develop greater confidence.

Providing information about TT immunization during pregnancy by health officials when the mother checked her pregnancy at the primary health care has a significant relation with the acceptance of immunization, and capacity to make decisions about their own health.

The study showed that increasing knowledge about tetanus is important to improve the coverage of tetanus toxoid as stated by (Kidane T. Factors influencing TT immunization coverage and protection at birth coverage in Tslemeti Distric, Ethiopia. Ethio J Health Dev 2005). State the same with my study that, Knowledge is a factor that greatly affects pregnant women to receive TT immunization during pregnancy.

With regard to awareness of mothers, place of residence home deliveries conducted by untrained personnel in unsanitary conditions and maternal education are predictors for TT immunization status, same thing stated by. ( Ali M, Mazhar, et al 2002).

We determent to have our respondent, in rural areas where the population were not immunized, and deliveries are at home conducted by untrained in unsanitary conditions, without adequate sterile procedures. Confirm with Vandelaer, Birmingham, Gasse, Kurian, Shaw, & Garnier S, 2003).
Those affected by tetanus are often population in remote places in the poorest counties. Thus, these people are still not reached by routine immunization and often have little access to health care services. Second, Elimination of Maternal and Neonatal Tetanus is something preventable disease (World Health Organization (WHO, 2007) Tetanus commonly known as lockjaw, is a disease particularly more common and serious in newborn babies ("neonatal tetanus"). Neonatal tetanus, which is mostly fatal, is particularly common in rural areas where deliveries are at home without adequate sterile procedures. The World Health Organization also cited that once infected with tetanus, mortality rates are extremely high, especially in areas where appropriate medical care is not available. However, these deaths can be easily prevented by both improving the immunizing of the mothers and hygienic conditions of the delivery.

Data showed considerable knowledge deficits among control population notably, the questions referring specifically if any relation between tetanus immunization and clean delivery had one of the highest proportions of knowledge deficits responses. These responses suggest that women don't know linkage between immunizations, clean delivery, other study were presented by a research conducted by (Baig L, at el 2001;51:367–9). They suggested that improvement of women's understanding of the linkage between immunization and clean delivery. (WHO, UNICEF, UNFPA .Maternal mortality 1995). Our research result showed that majority of responders, have not been previously immunized study by [Englund JA. The influence of maternal immunization J Comp Pathol 2007; 137 Suppl 1:S16.] Stated the same, More than 95% of patients who develop tetanus have not been previously immunized. Major burden of the morbidity and mortality of tetanus is shared by developing countries without an immunization program.(Ahmed SI, Baig L, et al 2001;51:367–9). In the present study, only few of all mother gave birth in health facilities; this indicates that majority of them preferred home delivery. This finding is consistent with other studies conducted by WHO, Home delivery is the norm in many developing countries mortality tend to be the highest where this is the case (WHO,UNICEF,2001) in their study only 1.7% of all mothers gave birth in health facilities; whereas only 3% of our study used health facilities. This indicates that majority preferred home delivery (Kebede Y ,thesis 1997 ). Other studies conducted from Bangladesh and Indonesia reported confirm with study finding (Wolde Michael ,1997).all of those studies
reported that large numbers of women are delivering at home under the care of untrained traditional birth attendants, alone and relatives (Tessema F, Asefa M, et al, 2002)

The intervention group demonstrated a significant knowledge about immunization and clean delivery after the program, while control group showed gaps in understanding regarding immunization and clean delivery. Thus, the knowledge differences we observed have been due to education. It is known that education and skills have paramount effect on prevention of diseases determinants. (Tslemeti District, Ethiopia. Ethio J Health Dev 2005).

This study reflected concerns about the pain and discomfort during immunization, a need for better communication between health care providers and study group, a desire for more information on the immunization and its side effects, questions regarding the importance of the immunization and clean delivery, a need for information about this issue.

The interventional group’s responses to FGD afforded them the opportunity to express their health beliefs in their own words and on their own terms.

When first asked to explain their beliefs about the causes of tetanus disease, Approximately a three quarter reported that don't know and quarter of the sample attributed to other factors such as jin devil eye. However, when probed further about the sign and symptoms of the tetanus disease, the majority of respondents answered that they don't know, just few of responder know. Finally, the importance of education now makes perfect sense, Preventative potential of the disease and the benefits of immunization are learned. Respondents don't believe that immunization contained a number of benefits; and not importantly, their beliefs is that no any preventative nature of vaccination and no any association with immunization and clean delivery. Part of this study that there were, in fact, barriers to immunization, the most common barriers included, “lack of knowledge about immunization,” “lack of knowledge about tetanus disease,” and “lack of knowledge about clean delivery”. This has been improved after the training program conducted by the researcher.
CHAPTER SIX

CONCLUSION & RECOMMENDATION

The study results showed a big gap regarding immunization and clean delivery before the education session. The study, as well, has shown the need for intensive education among child bearing mothers undergoing immunization, and delivery. Improving knowledge regarding immunization, and clean delivery, may enhance knowledge of the vulnerable population. The intervention group demonstrated a significant knowledge about immunization and clean delivery after the program, while control group showed gaps in understanding regarding immunization and clean delivery. In conclusion before the education program the people in this area doesn't know even what tetanus is and how clean delivery should be, but there was significant improvement regarding tetanus immunization and practicing clean delivery after it.

- knowledge attitudes, and practice related to tetanus and TT immunizations was improved
- beliefs and practices related to clean delivery was Promoted

They apparently succeeded in making every woman take the vaccine at least in the camps included in the study (30%-65%)

The study revealed that An awareness of immunization and clean delivery was very poor.

- Fears and concerns of study population were not addressed; attempts were not made to explain to mother’s in the camps and most of them took for a contraceptive method;
- The cultural beliefs about immunization were not considered; and

✓ An awareness of immunization and clean delivery will help to initiate research protocols for the identification of the low percentage of immunization coverage factors. These valuable researches will help in developing better ways for disease prevention and programs for clean delivery. Immunization is a challenge but possible to achieve coverage if we raise the awareness of the targeted group.

✓ Research has shown that one of the biggest contributions in achieving coverage in the future will come from development in campaign for immunization-clean delivery is new a priority in Sudan. Targeting mainly the study population in the camps, through education session, FGD, and training to delivery kits. Much work
will be required to convince both male and female population that tetanus immunization and clean delivery can only benefit the population as a whole.

✓ Preventing tetanus disease has enormous benefits not only for women’s health, but also for the well-being of families and communities and help in increasing universal coverage of tetanus toxoid immunization.

The level of health education is poor; they lack of correct information on tetanus and tetanus toxoid immunization.

Based on the research results, the recommendation will be concerned about the:

- Frequent Education program regarding Immunization in the nearby camps
- Offer women, guidelines for immunization doses, follow-up and give them their follow up cards. Include information about tetanus disease, clean delivery and other component regarding tetanus, risk factors related to tetanus disease.
- Future study to know their knowledge and attitude after the program.
- Involving community institutions and leaders during social mobilization
- Strengthening the health sector to respond to the demand of the people
- Using the mass media to pass messages
- Health providers have to be given refreshing training particularly on the psychology of the clients, and how to manage clients, such as giving advice, making them feel at ease; being friendly and showing concern for client’s fears and worries.
- Communities education to change their believe, and encourage premarital tetanus toxoid immunization.
- Ministry of health to Include tetanus toxoid immunization in the school health programme to continue the remaining booster doses if started already by adding 4th dose at age 4-7 and the 5th at age 12-15.
- Health authority (for policy makers,) to modify or Change the national policy regarding issuance of birth certificates that no original birth certificates will be issued unless the applicant shows a written documentation (i.e immunization card) that her/his child and herself has received the required doses.
- Only trained traditional birth attendants will deliver safe services to most of the mothers. This calls for community involvement and awareness in the area through health education at community level and counseling of pregnant mothers.
at individual level to encourage safe delivery practices in general and use of a clean delivery surface in particular, Skilled attendants present at birth.

Empowerment of camps habitant through training is one of the strategies that can increase TT coverage in this underserved population.


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Pearce JM (1996). "Notes on tetanus (lockjaw)". J Neurol Neurosurg Psychiatry 60 (3): 332. doi:10.1136/jnnp.60.3.332. PMC 1073859. PMID 8609513.


Ray B, Balmer P, Roper MH. [(15 November 2009, date last accessed)]. Immunological basis for immunization - Module 3: Tetanus (Revision)


Rosenstock IM. Why people use health services. Milbank Memorial Fund Q. 1966;44 (part2); 94-124. 40


Schiavo G; Benfenati F; Poulain B; Rossetto O; Polverino de Laureto P; DasGupta BR; Montecucco C (October 29, 1992). "Tetanus and botulinum-B neurotoxins block neurotransmitter release by proteolytic cleavage of synaptobrevin". Nature 359 (6398): 832–5. doi:10.1038/359832a0. PMID 1331807.


The healthy people 2010. Office of Disease Prevention and Health Promotion.


WHO. “Coverage of Maternity Care: A Listing of Available Information, Fourth Ed.”


APPENDICES
Appendix (1) :

Pilot study
Pilot study results
Our pilot study was filled by twenty responders, from the pilot study review we observe that question #2
Age groups they don't specifying their age, then point explain to the responders.
Question # (16) do you know about tetanus? (Did you receive any vaccine)?
Question # (19) who informed you about vaccination?
The solution for those problems:
1. The responder told to tell what age group.
2. They think that no need for the vaccine then this question explains and clarified.
3. About question (19) the client thinks that the last person should be the one so this point explains to the responders.
Appendix (2)

Fact Sheet

The training package:

The responders should be able to describe the following
1- knowledge:
What is tetanus? How does the infection happen and what are the symptoms?
What are the ways to avoid the infection?
What is safe delivery?
What is TT vaccine and why do we take it?
Does TT cause sterility/ miscarriage?
Why women in reproductive age have to take it and need to demand it?
What are the side effects of taking the injection?
How long can a pain last?
What has to be done if a vaccinated woman shows allergy

Training schedule:

Minimum period of education was five days increase as a client’s need A learning outcome can be described as an objective. An example would be: "why we take tt how many doses should we take will be able to differentiate between why we take it and the # of doses." These clear learning outcomes/objectives help define when the learning has occurred. The lesson is not complete until the objective has been met. Depending on learner variables, such as practice and prior knowledge base, completion of the objective ranges from immediate to prolong.

Follow up Care

Reinforcement of the education out come

Regular home visits to make sure that clients know hand washing and how clients can use birthing tool

Evaluating this training program by :

Client's outcomes:

When you will take the vaccine
The duration between each dose
Number of Immunization received
Proper hand washing
How to use birthing tool
Relation between immunization and clean delivery

**After training:-**

**Responders** should be able to describe the following:

What is tetanus?

When you will have vaccination

How you wash your hands and use birthing tool

**Responders should be able to perform the following:**

received three doses of tt at least

Know how to use birthing tool

To know how to Wash their hands before and after open breathing tool and before and after cutting umbilical cord.

Care for their baby umbilical cord.

Five cleans (principles of the cleanness) must be practiced during delivery: i.e. Clean hands, Clean surface, Clean new blade, Clean cord tie and Clean cord stump (do not apply anything on the stump).

Place of delivery to be kept warm and free from draught.
البرنامج التثقيفي للنساء في سن الاجب عن مرض الكراز

معلومات عن مرض الكراز:

الكراز هو مرض نادر لكن بالرغم من ندرته فإنه خطير. ما هو مرض الكراز ولا إسبابه؟

هو عبارة عن مرض يصيب الأعضاء والعضلات ويعد من الأمراض القاتلة وينتج عن ذلك تشنجات البكتيريا الجسمية للمرض: هي كلوستريديوم وثورة البكتيريا تعيش عادة في التراب والأراضي الزراعية

مرض الكرز هو مرض خطير يصيب الكبار والصغار يحدث عن طريق الجروح بالعاج والجروح وفوقها مريضة بيد وعند الإصابات بالمرض. عادة عند الأطفال، استخدام الآلات الأخرى تجنح أثناء الولادة

ما هي اعراض مرض الكرز وعلاجاتها؟

من عواصف مرض الكرز - تصلب عضلات الجسم حركة مؤلمة لا أرادة في العضلات تصلب الكيفين عند القدم على الرضاعة

بالإمكانيات مكافحة مرض التنفس وذلك عن طريق التطعيم والولادة بداية فائقة وتهذيب الجروح الاستعمال الأدوات غير متعددة أثناء الولادة

المعرفة بالولادة الأمنة

الولادة الأمنة هي أن تلقى في جو نظيف معدات نظيفة ومعدات السورص بفطنة وطعع الحبل السري بالامة

المعرفة بتطعيم مرض الكراز:

التطعيم ضد مرض الكراز للصغار والنساء في سن الاجب (15-49) يخض بعد الحمل ثلاث أشهر وهذه فرصة أولى الفرصة الثانية بعد ست أشهر وفترة الثالثة الرابعة بعد ستة أشهر والشمية (للحامل) حلاً أن الكرز التطعيم الوحيد اللي يعطي للحامل.

معتقدات أخيلة

بعض الناس لديهم معتقدات خاطئة ان التطعيم ضد مرض الكراز يسبب العقم أو الإجهاض وعوائد الكراز:

1/ البالغين:

كما ذكرنا سابقاً عن طريق الجروح الملتوية، يكون على شكل إنقباضات مولمة لعضلات الفك والعنق

وكمل:

2/ حديثي الولادة:

سبب حدوثها هو ولادة الطفل في جو غير صحي ومهمها كالولادة في البيئة واستخدام أدوات غير معدة خاصة عند قطع الجلد السري بعد الولادة قبل إعطاء الطفل المناعة (تطعيمات تعطى لتقديم مناعة الطفل) ويعتبر الكرز عند حديثي الولادة مرض قاتل فغالياً مايتسبب الأطفال وتحدد الوفاة غالباً من سن 3 إلى 28 يوم من يوم الولادة لذا يجب أخذ الحذر من المعدات التي يتم استخدامها أثناء الولادة.
أعراضه عند الأطفال بشكل عام:
1. عدم القوة على الرضاعة.
2. بكاء بشكل غير طبيعي.
3. وتشنج عضلي حاد.
الأعراض والعلامات:
1. بيدا الكزاز عادةً تشنج عضلي في القلب والوجه.
2. صعوبة في البلع.
3. ألم وتصاب في عضلات الوجه والأكتاف والظهر.
4. ممكن تكون الانقباضات شديدة وسريعاً تتنتقل إلى عضلات البطن والذراعين والفحذين.
الأعراض تظهر بعد الإصابة بـ 3 إلى 14 يوم.
علاج مرض الكزاز:
عندما يتم اكتشاف المرض بسرعة يتم علاجه بسهولة على الأقل 4 إلى 6 أسابيع.
 أما الحالات التي لم يتم اكتشافها بسرعة يتم علاجها في المستشفى في وحدة العناية المركزة.
إعطاء جرعات كبيرة من العضادات الحيوية لقتل البكتيريا و السرورة التي تتسرعها إعطائهما أدوية.
للتخفيف انقباضات العضلات.
كيفية متعددة:
أول طريقة لمنعه هي التأكد من أخذ جميع جرعات التطعيم لتعطى مناعة ضد المرض أخذ جرعته أخرى كعملية كل 10 سنوات الاهتمام بالجرح ونظافتها، أما بالنسبة للكزاز عند حدوث الولادة يجب التأكد من أن الأم عندها مناعة من مرض الكزاز لأن الأم تكسب طفلاً مناعة لمدة سنة. أشهر بعد الولادة، لتعطيم الكزاز هو التطعيم الوحيد الذي يمكن إعطائه للمرأة أثناء الحمل.
فترة حضانة المرض:
للاطفال من 4 إلى 21 يوم.
 filmmakers الولادة اليومين الأولي بعد الولادة.
الأشياء التي يمكن أن تكون من خلالها المرض في حالة وجود جروح أو تقويب أو حوادث الطين والتراب.
وإذا على الحيوانات مرض الكزاز لا يمكن أن ينتقل من شخص لأخر.
كيفية إخذ التطعيمات:
يعطى في شهرين و4 و6 و18 شهر و من 4 إلى 6 سنوات، ويكون ثلاثي الكزاز مع السعال الجبلي.
والประโยقية وتكير الجرعه بعد عشر سنوات.
أما الأطفال الذين أكثر من 7 سنوات وأخذهم أبدا من تعطيمات الثلاثي تعطيمهم بسن كزاز ودفتيكيا وتشكل ثلاث جرعات الجرعين الأولي خلال 8 - 4 أسابيع بعد 6 - 12 شهر من الجرعه الثاني تشير الثالثة أما الجرعات الكزاز مثقبة للام الحامل (عليا إن الكزاز.
التطعيم الوحيد التي يعطي للحامل:
Appendix (3)

Contents: Questionnaire

QUESTIONS

Community Health
Primary Health Care Centre
Faculty of Medicine
University of Gezira
الأسئلة:

المعلومات الشخصية:

- إلى أي فئة عمرية تنتمين؟
  1-15-30
  2-31-45
  3-46-60

- الحالة التعليمية
  1-غير متعلمة
  2-4 سنوات دراسية
  3-6 سنوات دراسية

- العمل أو الوظيفة
  1-موظف
  2-لا يوجد

- الحالات الاجتماعية
  1-مطلقة
  2-متزوجة
  3-أرملة

- عدد مرات الولادة
  1-0
  2-1
  3-2
  4-3
  5-4
  6-5
  7-6

- المعرفة بمرض التنانوس:
  1-لا
  2-لا أعلم

- هل ت言った لشخص يصاب بمرض التنانوس؟
  1-لا
  2-لا أعلم

- ما هي أعراض التنانوس؟
  1-تسلب عضلات الجسم
  2-حركة مؤلمة لا ارادية
  3-تسلب الفك

- هل تعتقد أن مرض التنانوس خطير؟
  1-لا
  2-لا أعلم
4- إذا كانت الإجابة بنعم لماذا تعتقدن إن مرض التنينوس خطير؟

<table>
<thead>
<tr>
<th>رقم</th>
<th>السؤال</th>
<th>بنعم</th>
<th>لا</th>
<th>لا أعلم</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>هل بالإمكان مكافحة مرض التنينوس؟</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>13</td>
<td>هل تعتقدن أنه يمكن الوقاية من مرض التنينوس؟</td>
<td></td>
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<tr>
<td>14</td>
<td>ما هي الولادة الآمنة؟ في البيت بداية قانونية في البيت بنفسك في المستشفى</td>
<td></td>
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<tr>
<td>15</td>
<td>كيف كانت طريقة اخر و ولادة لك؟</td>
<td></td>
<td></td>
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<tr>
<td>16</td>
<td>هل سمعت بالتطعيم ضد مرض التنينوس؟</td>
<td></td>
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<td>17</td>
<td>هل قمت بالتطعيم ضد مرض التنينوس</td>
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<td>18</td>
<td>كم مرة تتطعيمي ضد مرض التنينوس؟</td>
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<tr>
<td>19</td>
<td>إذا لم تقوم بالتطعيم ضد مرض التنينوس ما السبب في ذلك؟</td>
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<tr>
<td>20</td>
<td>هل زرتي المستشفى لتطعيم التنينوس قبل الحمل أو أثناء الحمل؟</td>
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<tr>
<td>21</td>
<td>إذا كانت الإجابة بنعم ، كم جرعة اختها؟</td>
<td></td>
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<tr>
<td>22</td>
<td>هل تطعيم التنينوس بسبب العقم أو الاجهاض؟</td>
<td></td>
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</tr>
<tr>
<td>23</td>
<td>هل لديك معلومات عن تطعيم التنينوس؟</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
24- من أي المصادر تعرف على التطعيم ضد التنين؟

- 1/ من صديق
- 2/ من أحد أفراد الأسرة
- 3/ من أحد العاملين في مجال الصحة
- 4/ من طبيب أو ممرضة
- 5/ من أجهزة الإعلام
- 6/ لا يوجد

25- ما هي الطرق المتاحة لكي تحصلين على معلومات عن تطعيم مرض (الكاز) التنين؟

- 1/ المطويات
- 2/ الراديو أو التلفاز
- 3/ الصحف والمجلات
- 4/ المحاضرات
- 5/ لا يوجد

26- هل تعلم أن التطعيم ضد مرض التنين يقلل من الإصابة بالتنين؟

- 1/ نعم
- 2/ لا
- 3/ لا أعلم

27- كم عدد المرات التي يجب للمرأة السليمة أن تقوم بأخذ التطعيم ضد مرض التنين في حياتها؟

- 1/ مرة واحدة
- 2/ أثنين
- 3/ ثلاثة
- 4/ أربعة
- 5/ خمسة جرعات
- 6/ لا أعرف

28- لماذا عليك الانجاب في عمر الإنجاب أن تتطعيم ضد التنين؟

- 1/ لا أعرف
- 2/ لوقايتها لمريضها
- 3/ لوقاية طفلها

29- ما هي مضاعفات التطعيم ضد مرض التنين؟

- 1/ الألم
- 2/ الحمى والصداع
- 3/ الحساسية
- 4/ كل من 1 و 2 و 3
- 5/ لا يوجد

30- هل تخافين من التطعيم؟

- 1/ نعم
- 2/ لا

31- هل تحتاجين إلى معلومات إضافية عن تطعيم التنين؟

- 1/ نعم
- 2/ لا
- 3/ لا أعلم

32- إذا كانت الإجابة بنعم ما هي المعلومات المطلوبة؟

33- هل لديك أي تعليق أو إضافات؟

- 1/ نعم
- 2/ لا

وشكرًا...
Community Health Primary Health Care Centre 
Faculty of Medicine 
University of Gezira

Kindly spend some time to answer the questions below. The information gathered will be confidential and will be use to improve the quality of health care and prevention of tetanus. If you need to know the result of this research welcome you can contact me at mobile # 0929754846

Thank you……

Demographic characteristics of participants

1/ To which age group do you belong?
   a. 15-30 □   b. 31-49 □

2. Educational status:
   1. No education □       2. 1-5 years schooling □
   3. 6-11 years schooling □ 4. 11 years or more □

3. Employment
   1. employee □ 2. None employee. □

4. Marital status:
   1- Married □ 2. Divorced/other □

5. Number of deliveries
   1. 1-3 deliveries □ 2. 4-6 deliveries □ 3. 7 or more deliveries □

Knowledge on tetanus disease

6. What is tetanus disease? ..............................................................

7. How is tetanus disease happen?
   1. Through wound □       2. Through unsterile material used during delivery □
   3. Unimmunized □       4. Don't know

8. Are you at risk for tetanus?
   Yes □ b. No □ c. don’t know □

9. What are the symptoms of tetanus disease?
   a. stiffness of the muscle □   b. Pain full involuntary movement □
   c. Lockjaw, □   d. unable to suck □   e. 1, 2,3. □  f. Don't know □

10. That are the ways to protect yourself from tetanus infection?
   a. taking TT immunization □   b. Using sterile material and clean delivery □
   c. Deliver with TPA. □   d. I, 2, 3, □ e. don't know □
11. Do you think that tetanus disease was dangerous?
   a. Yes □   b. No □   c. Don't know □
11.a if answer in question 11 is yes why you think tetanus disease is dangerous?----------
----------------------------------------------------------------------------------------------

12. Do you think tetanus is preventable?
   a. Yes □   b. No □   c. Don't know □
13. Do you think we can immune from tetanus disease?
   a. Yes □   b. No □   c. Don't know □

Knowledge on safe delivery
14. What is safe delivery in your point of view?
   a. at home with midwife □   b. at home with TPA □
   c. at home with yourself □   d. at health center □
15. How can your last delivery?
   a. with TPA □   b. with midwife □
   c. at home with yourself □   d. at health center □

Knowledge on tetanus vaccination
16. Have you heard about the tetanus disease?
   a. Yes □   b. No □
Do you vaccinated against tetanus disease? 17
   a. Yes □   b. No □
18. How many doses of tetanus toxoid vaccine received by respondents?
   a. Not any □   b. One dose □   c. Two doses □
   d. Three doses □   e. Or four doses □   f. don't know □
19. If ever you don’t had tetanus vaccine why?
   1. I don't hear about it □   2. I’m not ill so it’s not necessary □
   3. Not suggested by my doctor or a nurse □

Knowledge Practice
20. Do you visit health facilities during pregnancy for tetanus immunization?
   a. Yes □   b. No □
21. If the answers yes in question #20 how many doses you received?
   a. One dose □   b. Two doses □   c. Three doses □
   d. Four doses □   f. five doses □
22. Does TT cause sterility/ miscarriage?
   a. Yes  
   b. No  
   c. I don’t know

23. Do you have any information about tetanus toxoid vaccination?
   a. Yes  
   b. No  

24. From where did you know about tetanus vaccine?
   1. From a friend  
   2. From family members  
   3. From a nurse / a doctor  
   4. Others (radio, TV / newspaper)  
   5. Not any

25. What public education materials are available to inform you about tetanus and its vaccine?
   1. Pamphlet  
   2. Radio/ TV  
   3. Newspaper  
   4. In cervices  
   5. Not any

26. Do you know that tetanus vaccination will reduce tetanus disease?
   a. Yes  
   b. No  
   c. I don’t know

27. How many doses of tetanus toxoid vaccine should be received by respondents?
   a. One dose  
   b. Tow doses  
   c. Three doses  
   d. Four doses  
   e. don’t know

28. Why women in reproductive age have to take it and need to demand it?
   a. to protect herself  
   b. to protect her baby  
   c. to protect herself and her baby  
   d. don't know

29. What is the side effect of tetanus vaccination?
   a. pain  
   b. fever and head ache  
   c. allergy  
   d. 1,2,3  
   e. not any

30. Are you feared to take TT?
   a. Yes  
   b. No

32. If yes what information you want to heard about?

33. Did you have any comment to add?

31. Do you need more information about tetanus and its vaccination?
   a. Yes  
   b. No

Thank you!!!
Appendix (4)
National Ministry of Health
Appendix.4
(National ministry of health MCH –EPI information and research,) a lot of cases report on NT January Dec2010, Problem Relevant
Appendix (5)

prevalence is high, problem relevant, weak coverage. In al gaziera area (al-managil area)
Appendix (6)

Official letter from Gezira University to Gezira State ministry of health D.G office, immunization program authorities, committee at Wad Madani, and the Gezira State ministry of health D.G office at Al-managil & immunization program authorities, committee at al-managil. Permission to conduct the study from all above mentioned parties is given to the researcher.
Appendix (7)

Posters addressing picture of the delivery kit
Appendix (8)

Figure hand washing
Appendix (9)

Content of FGD

What is tetanus? How does the infection happen and what are the symptoms?
What are the ways to avoid the infection?
What is safe delivery?
What is TT vaccine and why do we take it?
Does TT cause sterility/ miscarriage?
Why women in reproductive age have to take it and need to demand it?
How many times TT should be taken to help develop reliable immunity, what are the side effects of taking the injection,
How long can a pain last?
What has to be done if a vaccinated woman shows allergy
Five cleans (principles of the cleanliness) must be practiced during delivery: i.e. Clean hands, Clean surface, Clean new blade, Clean cord tie and Clean cord stump (do not apply anything on the stump).