Shendi University

Faculty of graduate studies & scientific research

Incidence and Barrier of HBV Vaccines among the Nurse Working in Alfoad Private Hospital Khartoum city-sudan

A Thesis Submitted as Partial Full filament of the requirements for the master degree in medical surgical nursing

BY

Shagan Almamon Ahmed

B.Sc. Khartoum University 2014

Supervised by:

Dr :Higazi mohammed ahmed abdullah awad

Associate professor –Shendi University

Nov. 2018

الآية

بِسْمِ اللَّهِ الرَّحْمَٰنِ الرَّحِيمِ

قال تعالى:

(وَفَوْقَ كُلِّ ذِي عِلْمٍ عَلِيمٌ)

صدق الله العظيم

سورة يوسف "76"

Dedication

For every one provided any type of help and gave ideal instruction we dedicated this research for my father who are not scant for us by anything at any time (his mercy and forgiveness)

For my mother who gave love and kindness.you gave support, advice, valuable information for all who crossed your path.

For my sisters and my brothers

For that man who gave me trust and confidence

For every one who teaches me litter that light my road, my teachers and all staff of Shandi University, my college and all staff in alfoad praivate hospital.

ACKNOWLEDGEMENTS

I would like to start by thanking ALLAH for his during all the conduction of this work, as little part of his generous help throughout my life.

A huge thank you to My Dr. Hejazy professor of Medical Surgical Nursing, Faculty of Nursing, Shandi University, for him continuous, support and guidance throughout this work. I am indebted to him continuous directions willingly offered to me all through the study, I am thankful to my mother Aiesha ,husband ,for a lifetime of love and support, and for instilling in me that great things come through perseverance; my son, girl , my college and staff in alfoad private hospital for sharing me so often with my work and studies and any one gave me support or help me for presented my study in a good and scientific state.

Abstract:

Hepatitis B is a serious liver disease caused by the hepatitis B virus (HBV), with an estimated 360 million chronic infections worldwide, about a million of which die each year from chronic liver diseases. Sudan is classified among the countries with high hepatitis B virus seroprevalence Chronic HBV carriers have the potential of transmitting HBV parent rally inthe hospital setting, thus health Nurses are at risk of contracting HBV, with the mostlikely exposure being via a needle stick injury (NSI). There is an effective vaccine against HBV which is recommended by the Department of Health, Aim and objectives: The study aimed to investigate the incidance and Barrier regarding hepatitis B vaccination amongst in the Nurses alfoad hospitals Objectives were todetermine: the level of incidance of about vaccine Nurses nation against HBV; the barrier of Nurses towards vaccination against HBV; Methodology This was adescriptive study which made use of a self-administered questionnaire that was done on alfoad hospital nurses ,Result :the study group were well qualified and expertise more the half of them were vaccinated(58,1%) while other were vaccinated but were not complete full dose ,while other were not vaccinated because they were fear, noncompliance and were think that is not important to vaccinated ,Recommendation: based on study result ,recommended that to provide Encourge nurses to follow international guid line for infection control program .Continous profitinal development program have to be stablish for update and tranning .Have to be protocal for using reporting any type of injures.

مستخلص

التهاب الكبد الوبائي هو مرض خطير في الكبد بسبب التهاب الكبد ب مع مايقدر بنحو 360 مليون التهاب مزمن .ويصنف السودان بين البلدان التي لديها معدل انتشار عالي , وبالتالي حاملي فيروس التهاب الكبد المزمن لديهم القدره على نقل المرض ,والممرضين في خطر الاصابه به مع التعرض الاكثر للابر.

الهدف :هدفت هذه الدراسه الي التعرف على مدى انتشتر المرض والحواجز فيما يتعلق بالتطعيم ضد التهاب الكبد الوبائي بين ممرضين مستشفى الفواد التخصصي.

المنهجيه:أجريت هذه الدراسه الوصفيه المقطعية في الفترة من 2018 من جميع الممرضين حيث تم جمع المعلومات بواسطة استبيان مغلق الاسئلة ومن ثم تم تحليل البيانات يدويا وبواسطة برنامج التحليل الاحصائي spss وتم عرض النتائج في جداول و اشكال.

النتيجه: توصلت الدراسه الي عدة نائج تمثلت في ان عينة الدراسة موهله تاهيلا جيدا وخبره وان اكثر من نصفهم تم تطعيمهم في حين لم يتم تطعيم البعض الاخر لانهم كانو خايفين ولم يكملو التطعيم وكانو يعتقدون انه ليس من المهم ان ياخذوا التطعيم.

التوصيات: استنادا الي النتيجه، اوصت الدراسه بان يتوفر برنامج التعليم والمعلومات حول التطعيم ضد التهاب الكبدب واوصت بوجود الحلول التي تعيق التطعيم وبرنامح التحكم في العدوى وغسل الايدي.

Table of contents

Subject **page No.**

Chapter Five

Discussion, Conclusion and recommendation

List of Table

List of Figure

List of abbreviations

Anti-HBs	Hepatitis B surface antibody
Anti-HBc	Hepatitis B core antibody
BBV	Blood-borne viruses
CDC	Centers for Disease Control
DNA	Deoxyribonucleic acid
DTP	Diphtheria, tetanus and peruses
EPI-SA	Expanded Programmers on Immunization-South Africa
FDA	Food and Drug Administration
HAV	Hepatitis A virus
HBV	Hepatitis B virus
HCV	Hepatitis C virus
HBe Ag	Hepatitis B endogenous antigen
HBIG	HBV immune globulin
HBs Ag	Hepatitis B surface antigen
HCW	Health care worker
HEI	Higher Educational Institutions
HIB	Homophiles influenza type B
HIV	Human immunodeficiency virus
IV	Intravenous
NDOH	National Department of Health
PCR	Polymerase chain reaction
PEP	Post exposure prophylaxis
NSI	Needle sticks injury
PHC	Primary hepatocellular carcinoma
SAVIC	South African Vaccination and Immunization Centre
SHEA	Society for Healthcare Epidemiology of America
WHO	World Health Organization

Chapter One

Introduction

Chapter One

Introduction

Introduction

Hepatitis B is a disease caused by the hepatitis B virus (HBV), which is transmitted through precutaneous or mucosal exposure to infectious blood or body fluids Center for Disease Control (CDC, 2006). It is a major problem because it can cause chronic infection, resulting in cirrhosis of the liver, liver cancer, liver failure, and death. In addition, several extra- hepatic lesions occur because of HBV infection, with this; there is deposition of immune complexes in different or guns of the body especially, the kidney (Beveller & Dibisceglie, the main reservoir for continued 2000). Persons with chronic infection also serve as chronic infection also serves as HBV transmission (CDC, 2006)

HBV account community-runic infections (World Health Organization [WHO], 2006) with about million who die each year from chronic liver diseases (South African Vaccination and Immunization Centre [SAVIC], 2008).

Most persons who become chronic carriers of the virus live in Asia and Africa (Braining Institute, 2006). These regions are said to be highly endemic for hepatitis B. In South Africa (SA), over 50% of the population have been infected by the virus, and at least 3milion people are chronic HBV carriers (SAVIC, 2008).

The major route of HBV transmission in sub-Saharan Africa is horizontal (i.e. transmission unrelated to recognized sexual, prenatal, or parenteral exposure) (CDC, 2002.) in children under 5 years of age; however,

Percutaneous /parenteral transmission is also an important mode of spread (Hollinger, 2001).

Nurses may be exposed to the risk of infection with blood-borne viruses (BBVs) such as HBV, hepatitis C virus (HCV) and human immunodeficiency virus (HIV) via contact with blood (and other body fluids) in the course of their work (SAVIC,2008). The form of exposure most likely to result in occupational BBV infection is a needle stick injury (NSI).

HBV can be prevented by strict adherence to standard microbiological practices and techniques, and routine use of appropriate barrier precautions to prevent skin and mucous membrane exposure when handling blood and other body fluids of all patients in health care settings (SAVIC,2008).

Following exposure to blood or body fluids, post-exposure prophylaxis can be administered as a combination of passive immunization with hepatitis B immunoglobulin (HBIG) and vaccination with the hepatitis B vaccine (SAVIC, 2008). However, the most cost-effective method to prevent and control hepatitis B is through pre-exposure vaccination (SAVIC, 2008)

It is important Nurses to know their HBV status by being screened for the HBV surface antigen (HBs Ag) antibody (anti-HBs), and to be vaccinated against hepatitis B if found to be unprotected. This will protect them from being infected, and prevent them from spreading the virus which can infect patients. The vaccine has been found to be safe and effective, and can protect one for a lifetime (SAVIC, 2008).

Education and prevention of infection with HBV should be emphasized, and all patients should be regarded as potential HBV carriers regardless of their medical history or condition. Hepatitis B Virus (HBV) may progress to serious consequences and increase dramatically beyond endemic dimensions that transmits to or from healthcare workers (HCWs) during routine investigation in their workplaces.(SAVIV,2008).

Basic aim of this study was to canvass the safety of HCWs and determine the prevalence of HBV and its possible association with occupational and non-occupational risk factors. Hepatitis B vaccination coverage level and main barriers to vaccination were also taken in account.(SAVIC,2008).

Objectives

General Objectives

The aim of this study was to investigate the incidance and barrier regarding hepatitis B vaccination among. Nurses in alfoad priavate hospitals.

Specifics Objectives :

- To identify the incidence about vaccination against HBV
- TO identify the barriers to words vaccination against HBV

Rationale

HBV is apriority occupationally acquired infection that is as associated with serious public and personal health consequences, and is considered to be the most important cause of occupationally acquired viral hepatitis amongst nurses are at an increased risk for exposure to HBV when they come into contact with human blood products, or potentially infectious bodily fluids. The level of risk depends on the number of patients with the infection in the healthcare facility, the precautions the nurses observe while dealing with these patients, and whether or not the nurses is successfully vaccinated against HBV.

Cheater Two

Literature Review

Cheater Two

Literature Review

Hepatitis:

Hepatitis is a viral infection of the liver associated with a broad spectrum of clinical manifestations from non-symptom-producing infection through interic hepatitis to hepatic necrosis. Five types of hepatitis virus have been identified. **(lippincott).**

Pathophisology of HBV:

- Hepatitis B (HBV) is a double-shelled particle containing DNA. This particle is composed of the following:
  - HBcAgâ€”hepatitis B core antigen (antigenic material in an inner core).
  - HBsAgâ€”hepatitis B surface antigen (antigenic material in an outer coat).
  - HBeAgâ€—an independent protein circulating in the blood.
- Each antigen elicits a specific antibody:
  - Anti-HBcâ€—persists during the acute phase of illness; may indicate continuing hepatitis B virus in the liver.
  - Anti-HBsâ€—detected during late convalescence; usually indicates recovery and development of immunity.
  - Anti-HBeâ€—usually signifies reduced infectivity.
- Significance:
  - HBcAgâ€—found only in liver cells, not serum.
  - HBsAgâ€—usually detected transiently in blood of 80% to 90% of infected persons; may be noted in blood for months or years, indicating that the patient has acute or chronic hepatitis B or is a carrier.

- HBeAgâ€”if absent, the patient is an asymptomatic carrier. If present, it indicates highly infectious period of acute, active hepatitis. If it persists, it indicates progression to chronic state.

- Mode of transmission is primarily through blood (percutaneous and permucosal route).
  - Oral route through saliva or through breast-feeding.
  - Sexual activity through blood, semen, saliva, or vaginal secretions. Hepatitis B is recognized as a sexually transmitted disease.
  - Gay men are at high risk.
- Incubation period is 2 to 5 months.
- Occurrence is for all ages, but mostly affects young adults worldwide.
- Mortality can be as high as 10%, with another 10% of patients progressing to carrier status or developing chronic hepatitis. It is the main cause of cirrhosis and hepatocellular carcinoma worldwide.

Epidemiology of HBV

The following factors have a significant impact on the host antibodies that are produced by the different HBV proteins: age at which the host gets infected the immune status of the host, and genetic factors such as the host's class II HLA genotype (Lok & McMahon
2007).

Antibodies to the core antigen (anti-HBc) and to the endogenous antigen (anti-HBe) are the first to be produced after an attack by HBV. Anti-HBc persists indefinitely while anti-HBe vanishes after some time. Recovery is anticipated once the aforementioned antibodies appear, but the appearance of antibodies to the surface antigen (anti-HBs) confirms convalescence. (Chen 2000).

The virus is destroyed when the anti-HBs binds to the major neutralizing epitomes on the HBs Ag. Life-long protection against HBV is provided

after this. Thus, HBs Ag is used in all HBV vaccines. A good response (i.e. ≥10 ml U/ml) will impart long-lasting immunity [Kane et al, 2000].

It is important to emphasize that adherence to licensed hepatitis B vaccination schedules results in a protective concentration of anti-HBs that is 10 ml U/ml in 90-100% of healthy infants; children and adults (Sheppard, 2006).

Prevalence of HBV infection in Ireland, Europe and the world the prevalence of HBV in the general population in Ireland is low. However, HBV is more prevalent in certain sub-groups of the population.6 The prevalence of HBV is higher in injecting drug users, people born in countries of intermediate (2-7%) or high (>8%) hepatitis B endemicity, MSM, people with multiple sexual partners, household or sexual contracts of known cases.(annual report)

The prevalence of HBV infection is generally lowest in the blood donor population, followed by the general population, then pregnant women, then high-risk groups. To determine the risk of HBV in migrant populations, it is necessary to look at data on their country of origin. in the general population in Ireland is estimated to be 0.1%. Ireland and the Netherlands have the lowest prevalence of HBV infection in Europe. It also reported that the HBsAg prevalence rates in blood donors and pregnant women in Ireland are among the lowest rates in Europe.

Global distribution

The global prevalence of chronic HBV infection (based on % of population HBsAg positive) is as follows (WHO 2004).

High prevalence (≥8%): sub-Saharan Africa, South-East Asia, the Eastern Mediterranean countries, south and western Pacific islands, the interior of the Amazon basin and certain parts of the Caribbean.

Moderate prevalence (2–7%): in south-central and south-west Asia, eastern and southern Europe, the Russian Federation and most of central and South America.

Low prevalence (<2%): Australia, New Zealand, northern and western Europe, and North America.

Transmission (virus practical)

HBV has been found in virtually all body secretions and excretions. However, only blood, body fluids containing visible blood, semen and vaginal secretions represent a risk of transmission. HBV is transmitted by percutaneous and mucosal exposure to infective blood or body fluids. Major modes of HBV transmission include sexual or close household contact with an infected person, perinatal mother to infant transmission, injecting drug use and nosocomial exposure. (APHA 2008).

Percutaneous exposures that have resulted in HBV transmission include transfusion of unscreened blood or blood products, sharing unsterilised injection needles for IV drug use, haemodialysis, acupuncture, tattooing and injuries from contaminated sharp HBV is stable on environmental surfaces for at least 7 days and is 100 times more infectious than HIV instruments sustained by hospital personnel (WHO 2002).

Serological markers for HBV

HBsAg: Hepatitis B surface antigen is a marker of infectivity. Its presence indicates either acute or chronic infection.

HBeAg: Hepatitis B e antigen is a marker of a high degree of infectivity and correlates with a high level of HBV replication

Anti-HBs: Antibody to hepatitis B surface antigen is a marker of immunity, either an immune response to HBV infection or to vaccination.

Anti-HBc: Antibody to hepatitis B core antigen is a marker of HBV infection (who 2008).

In persons who recover from HBV infection, HBsAg is eliminated from the blood; anti-HBs develop within 3-4 months. The presence of anti-HBs indicates immunity from HBV infection. Persons who recover from natural infection will be positive for both anti-HBs and anti-HBc, whereas persons who respond to hepatitis B vaccine have only anti-HBs. Persons who become chronically infected, HBsAg and anti-HBc persist for life (mahon et al 2001).

Medical Management

The goals of treatment are to minimize infectivity and liver inflammation and decrease symptoms. Of all the agents that have been used to treat chronic type B viral hepatitis, alpha-interferon as the single modality of therapy that offers the most promise. A regimen of 5 million units daily or 10 million units three times weekly for 16 to 24 weeks results in remission of disease in approximately one third of patients. A prolonged course of treatment may be protein by products is impaired. Measures to control also have additional benefits and currently under study.

Interferon must be administered by injection and has significant side effects, including fever, chills, anorexia, nausea, myalgias, and fatigue. Delayed side effects are more serious and may necessitate dosage reduction or discontinuation.

These include bone marrow suppression, thyroid dysfunction, alopecia, and bacterial infections. Several recombinant forms of alpha-interferon are also available, including the pegylated form (Pegasys), with once-weekly dosing .Two antiviral agents, lamivudine (Epivir) and adefovir (Hepsera), oral nucleoside analogs, have been approved for use in chronic hepatitis B in the United States. Studies have revealed improved seroconversion rates, loss of detectable virus, improved liver function, and reduced progression to cirrhosis with lamivudine. It can be used for

patients with decompensated cirrhosis who are awaiting liver transplantation. Adefovir may be effective in people who are resistant to lamivudine.

Bed rest may be recommended, regardless of other treatment, until the symptoms of hepatitis have subsided. Activities are restricted until the hepatic enlargement and levels of serum bilirubin and liver enzymes have decreased.

Gradually increased activity is then allowed.

Adequate nutrition should be maintained. Proteins are restricted if symptoms indicate that the liver's ability to metabolize the dyspeptic symptoms and general malaise include the use of antacids and antiemetics, but all medications should be avoided if vomiting occurs. If vomiting persists, the patient may require hospitalization and fluid therapy. Because of the mode of transmission, the patient is evaluated for other blood borne diseases (eg, HIV infection)(brunner 12 edition).

Immune modulators:

They are aimed at helping the human immune system to mount a defense against the virus.(Mayo clinic, 2006).

Prevention and Control:

General precautions in the health care setting.

Injection safety

The WHO defines safe injection as one that does not injure the recipient, does not expose the HCW to any preventable risk, and does not result in any waste that is likely to cause great harm to the community (Simonsen, 2000).

The following recommendations apply to use of needles, cannulas that replace needle; and where applicable, intravenous delivery systems:

1) Use aseptic techigue. 2) Do not adminster medication from syring to multiple patients, single use item they should not be reused for another patient. 3) Use fluid infusion and adminstratration sets for one patient only. 4) Use single dose vials for parenteral medications whenever possible. 5) If multidose vials must be used, both the needle or cannula and syringe use to access the multidose vial must be sterile.

6) Do not keep multidose vials in the immediate patient tretment area

7) Do not use bags or bottles of intravenous solution as acommon source of supply for multiple pations. 8) Do not adminsiter medications from single dose vials or ampules to multiple patients (CDC 2007).

There is no harm caused by a safe injection. Harm only results once safe control measures are not practiced, predisposing to severe infections. Harm results when syringes and needles are re-used in the absence of sterilization as seen in some areas in developing countries. Unsafe injection use occurs when needles or syringes have been repeatedly used, a practice that often occurs in impoverished countries (Kermode, 2005).

Prevention

The prevention of HBV infection has become ahigh pririty in the global community.(mahony fg).

Immunization with HBV vaccine is the most effective means of preventing HBV infection and its consequences.

HBV protects by passive immunization if give shortly before or soon after exposure to preventing HBV transmission during early childhood is important because of the substantial likelihood of HBVthat occurs when childern less than 5 years Rotine screeing of blood donors and universal precautions should be used when handling human blood or any fluids specific precuations include the use of the gloves ,protective garments, masks ,when handling potentially infectious or contaminated materials (lippincot)

There is no substitute for good personal hygiene, strict surveillance, and appropriate environmental control measures to limit transmission.

Autoclaving and the use of ethylrn oxide gas are accepted methods for disinfecting metal objects,instrument ,or heatsensetive equipment.

The expense and difficulitey of treating hepatitis Bmedically and by hepatic transplantion is in contrast with the fact that the infection can be prevented by vaccination.(lipincot)

Vaccination program

Unversal vaccination is acritical part of quality health care and should be accomplished through routine and catch up vaccination provided in physician,s offices ,puplic health clinic , and otherappropriate settings. In the US vaccination is consider primarily the responsibility of individual health care providers and health care systems serving patients.

Certen programs and other efforts attempt to ensure all patients receive the full schedule of appropriate vaccinations by remove barriers posed by access to immunization, cost or other factors.

In the US vaccinations programs have eliminated many vaccine preventable diseases and markedly reduce the incidence of other (JAMA 2007).

Vaccinations are recommended throughout life including during adolescence the age rang it define as 11-21 y by many professional associations

All vaccin doses should be administered according to ACIP vaccine – specific statements and with the most recent schedules for both routine and cath-up vaccination before living any visits for additional vaccine doses needed (ACIP 2015).

Vaccines

Hepatitis Bvaccine preventable disease, put although global control of hepatitis B is achievable, it has not been attained yet. (CDC)

HB vaccine is the first and currently the only vaccine against amjor human cancer vaccienation is the most effective tool in preventing the transmission of HBV vaccine are composed of the surface antigen of HBV and are produced by two different methods :plasma derived or recombinant Daphne administered properly, hepatitis B vaccine induces protection in about 95%.

Asafe and effective vaccine against HBV infection has been available for 20 yeares .HB vaccine is effective in preventing HBV infections when it is given either before exposure or shortly after exposure at least 85-90% of HBV assosiated deaths are vaccine perventable.

Systemic hepatitis B vaccination of newborn renders the screening of pregnant women for HbsAG status before delivery superfluous.(mahoney fJ)

WHO recommended that Hb vaccine be included in routine immunization services in all countries. the primary objective of hepatitis B immunization is to prevent chronic HBV infections which result in chronic liver disease later in life .

Plasma derived vaccines

This vaccines derived from the plasma of HbsAg positive doners consist of highly purifieded, formalin inactivated and heat activeted (mahoney fj).

Combination vaccines

The HbsAg vaccines can be combined with other vaccines and cane be introduse in australia canada some ciuntres in europe .

Hepatitis B infected Nurse's:

There are guidelines in place restricting the working practices of certain hepatitis B infected nurses. The guidelines aim to reduce further the risk of transmission of infection from providers to patients. Additional tests are recommended on hepatitis B infected nurses who are also HBeAg negative. When these nurses perform exposure prone procedures, they should have their working practices restricted if their viral load is elevated. Hepatitis B infected Nurses refer to those who are HBsAg positive.

The Society for Healthcare Epidemiology of America (SHEA) emphasizes the use of appropriate infection control procedures. They recommend that HBeAg positive nurses should routinely use double gloves and should not perform those activities that have been identified epidemiologically as associated with a risk for provider-to-patient HBV transmission despite the use of appropriate infection control procedures.

The Centers for Disease control and Prevention (CDC), issued guidelines for HIV and HBV infected nurses. This was done in July 1991 after the national and international publicity surrounding iatrogenic HIV infection associated with a Florida dentist (CDC, 2000).

Amongst the guidelines issued, there is one where there is a need to classify a subset of invasive procedures as ‘’exposure-prone.’’ These procedures is where the workersgloved hands may be in contact with sharp instruments, needle tips, or sharp tissues inside a patients open body cavity, wound, or confined anatomical space where the hands or fingertips may not be completely visible at all times. These procedures should not be performed by a nurses who is HBeAg positive (UK DoH, 2001).

This is because there is a markedly high viral burden that is associated with e-antigen positivity (100 million to 10 billion HBV particles per milliliter of blood) (CDC, 1985).

As a result, barriers may not be relatively effective in preventing transmission. All nurses should be:

Educated to understand the mechanisms of blood borne pathogen transmission Shown methods to prevent transmission, and

How to use those methods in all circumstances.

The principle that ‘’all blood and hazardous body fluids must be considered infectious, irrespective of a patient's diagnosis’’, applies also to nurses infected or potentially infected with BBD.

If an unvaccinated nurses find himself exposed to blood or body fluid of an individual known to be positive for HBV, he should then receive the first dose of the vaccine andone dose of HBIg within 24 hours if possible, and the remaining 2 doses to be given 1 and 6 months after the first dose. He should then be tested 1-2 months after the vaccine doses have been completed. Even if the hepatitis B status of the source is unknown, the nurses should commence hepatitis B vaccine doses as soon as possible. Thereafter, testing of protective antibodies should be done (CDC, 2001).

Occupational HBV exposure:

Introduction:

According to the WHO, the estimated global number of Doctors& nurses is between 35 million to 100 million when including all health care related staff such as doctors, nurses and midwives who are in active practice. Assuming that the HBV prevalence rate is similar to that of the general population, it is thus obvious that the number of infected Doctors& nurses is a cause for concern, especially in under-resourced health systems (Viral Hepatitis Prevention Board [VHPB], 2005).

The risk of transmission of HBV to nurses from patients is higher than that of nurses to patients (VHPB, 2005).

It has been demonstrated that the risk of transmission varies greatly amongst different disciplines, with surgery, gynecology, and orthopedic services having the greatest risk (Maugham et al, 2007).

Needle stick injuries, especially those involving hollow needles, have been reported as the most common route of transmission (Alam, 2002; De Villiers et al, 2007).

It is essential that nurses acknowledge the risk, and exercise caution, nurses have to be taught about all potential sources of risk, not only the most common or important, andwhen injuries occur, it is important that they are reported and Post Exposure Prophylaxes provided. Standardization of the reporting procedures would help theprocess of data collection and analysis considerably.A number of studies on the prevalence and barrier practices of nurses regarding HBV infection from around the globe have been reviewed, since all of these studies includeHBV vaccination as the most important practice in preventing the occupational risk of HBV infection

Prevalence:

Prevalence about occupational risks:

Nurses tend to underestimate the prevalence of HBV infection at the work place, as well as the risk for exposure. This is illustrated by a Bloemfontein study, where doctors were more worried about HIV than HBV. Amongst doctors who had been exposed to the HBV, 59.8% did not see the need to take PEP, and those who did, did not always complete the course of treatment. It was also found that there were two Doctors& nurses that had seroconvert to HBV that were reported, as compared to

none from HIV signifying that HBV was more infectious than HIV. (De Villiers et al, 2007).

In contrast, 82% of nurses in a study done in Dublin, Ireland, knew that HBV transmission was 100 times more infective than HIV (Mc. Grane et al, 2003).

These findings are supported by those from other countries, with only 21.4% nurses from Iran and the UK respectively, knowing that HBV can be transmitted by NSI (Maugham et al, 2007; Stein et al, 2003).

In the study done in Iran, only 21.4% of surgeons demonstrated good knowledge about seroconversion rates of HBV after a NSI, with most (77.9 %) of them not knowing the seroconversion rate after a NSI from HBV infection. This is a worrying finding.

Prevalence about the hepatitis B vaccine:

In a study conducted in Egyptian nurses where poor vaccination coverage was reported, it was found 38% did not know how effective the vaccine is, whilst 47% were not sure of how long they would be protected by the vaccine (El-Awady, 2000).

In contrast, vaccine effectiveness, and the belief that they were at risk of exposure were cited as reasons for being vaccinated by registered nurses in a study from Houston, USA, where high vaccination coverage was reported (McEwen et al, 2005).

In addition, a study done in Nigeria showed a variation in knowledge about the hepatitis B vaccine amongst nurses with doctors showing better knowledge than nurses, 48% and 36% respectively (Adebamowo et al, 2000).

In an earlier study from the same author on Nigerian surgeons, it was found that lack of awareness about the vaccine was one of the factors leading to poor vaccination rates (Adebamowo et al, 2000).

A study in Dublin, Ireland, found that whilst the majority of nurses were vaccinated against HBV and also checked their immunity, this was influenced by the knowledge about the benefits given by the vaccine (McGrane et al, 2003).

However, in contrast to these findings, a Nigerian study on hospital personnel foundthat knowledge is inversely related to practice, since those with the least knowledge(non-clinical workers) were more likely (69.5 -76.3%) to be fully vaccinated than doctors (40.3%) and nurses (39.7%) (Fatusi et al, 2000).

The study shows that slightly more surgeons wore gloves based on the appearance of the patient, with 92.1% of surgeons wearing gloves when the patient had active hepatitis as compared to 89.4% when a patient was a hepatitis B carrier. Patients with active hepatitis B look clinically ill, there is gradual onset of tiredness, abdominal discomfort, decreased appetite, the liver becomes enlarged, and sometimes become jaundiced and may develop painful joints, skin rashes or inflammation of the liver, whereas a patient where a carrier state exists is not clinically ill (Prometheus Healthcare, 2001

Barrier towards vaccination:

The main barrier to compliance with the guidelines to vaccination in a study done in Sweden was the employers willingness to pay for the hepatitis B vaccine, with about77% of unvaccinated staff showing interest to be vaccinated against HBV if it was offered to them for free by the employer (Dannetun et al, 2006).

Similarly, a study in Dublin, Ireland, found that the vaccine being offered free of charge influenced staff to be vaccinated against HBV (Mc. Grane et al, 2003).

In contrast, in a study done in Nigeria on surgeons, it was found there was generally poor perception of risk of infection by HBV. However, in

agreement with the previous studies, the costs of vaccines were cited as another reason for not being vaccinated (Adebamowo et al, 1997).

Another Nigerian study (where all interested employees at a teaching hospital were provided with a free recombinant hepatitis B vaccine under a vaccination programmer which was conducted within the hospital grounds) demonstrated that 91.9% of the participants received at least one dose of the vaccine, and 53.8% managed to receive all three doses of the vaccine (Fatusi et al, 2000).

The study further pointed out that amongst the participants, workers thought to have greater knowledge about HBV infection (doctors and nurses) were the one who wireless interested in receiving the vaccine. Non-clinical workers (medical record personnel [76.3%] and engineering staff [69.5%]) demonstrated greater compliance, whilst clinical professionals (nurses [39.7%] and doctors [40.3%]) showed less compliance (Fatusi et al, 2000).

This study highlighted greater apathy to the vaccination programmer amongst clinical professionals, and that it was not about the cost of the vaccine, in contrast to the findings of the Swedish and Nigerian studies (Dannetun et al, 2006).

In the study done by EL-Awady, 80.9% of participants felt that the work place was the best place to issue HB vaccine. The majority of the participants, 95.2%, gave their final opinion that the vaccine should be funded and only 60.9% thought the vaccine was unaffordable.

In a study done in Texas, USA, 8% of participating registered nurses were not willingto be vaccinated against hepatitis B, since they perceived themselves to be at low risk asthey stated they were not practicing as nurses, they also declined because of concerns about side effects, lack of concern about getting the illness, and doubts about thevaccines' effectiveness. Participants who were willing to be vaccinated believed

that the vaccine was effective and also perceived them to be at risk of exposure, and the fact thatthe vaccine was provided free of charge also influenced their decision. (McEwen et al, 2005).

This was supported by a study done in Dublin where 83% of staff were vaccinated with all the required 3 doses of hepatitis B vaccine. Reasons to be vaccinated were their understanding of the benefits provided by the vaccine and that it was issued free of charge (McGrane et al, 2003).

A study done in Thailand where the vaccine was issued free of charge, their initial acceptance rate for vaccination was 65.7%, with 10.0% non-acceptance and 24.3% of nurses being undecided. Those that accepted the vaccine had confidence in the vaccine efficacy and in its safety, whereas those that refused had different types of fear (Israsena et al, 2001).

In developed countries, the safety of staff has been promoted by applying different interventions, namely, Universal Precautions, provision of personal protective equipment, routine hepatitis B vaccination, PEP, engineered safety devices, injury surveillance, and enactment of relevant legislation (Kermode et al, 2005).

In sub-Saharan Africa, the aforementioned practices are lacking despite a high prevalence of diseases caused by BBVs. Infection control practices in these countries are not optimized in that there is no available information on the reporting of occupational exposure to infected blood (Kermode et al, 2005).

In a study done in Saudi Arabia, 52 subjects (74%) out of 70 had experienced a NSI, and of those 34 (67%) had 1-2 pricks per year. Out of these, only 4 subjects (8%) reported the injuries to get PEP. A majority of them (48/52 [92%]) did not report the incident (Alam, 2002).

Similarly, an Iranian study found that only 3.2% of surgeons stated they always reported NSIs, 6% sometimes, 12.4% occasionally, 19.9% rarely, and 59.6% never reported NSIs (Maugham et al, 2007).

This was despite the fact that 100% of them said they knew that HBV was transmitted through a NSI; only 27% said they wore gloves all the time for Phlebotomy procedure, 69% said occasionally and 4% stated they did not wear gloves at all (Maugham et al, 2007).

In the same study, only about 13 % of surgeon's nurses used double gloves when performing a surgical procedure based on the perceived risk of transmission. The findings were worse with older surgeon's nurses who were found never to use double gloves (Maugham et al, 2007).

Chapter Three

Methodology

Chapter Three

Methodology

The aim of this study was to investigate the incidence and barrier regarding hepatitis B vaccination amongst nurses in the Alfoad private hospitals.

Technical design

1. Study design:

A descriptive study cross-sectional was conducted. The study followed a quantitative approach, and participants completed a self-administered questionnaire to assess their incidence and barrier regarding HBV vaccination. Done during period from sebteamder to novermber.

2. Study area

The study was conducted in Khartoum state is located in the heart of Sudan at the confluence of the white Nile and the blue Nile ,where the two rivers unite to form the river Nile the confluence of the rivers creates a unique effect

3. Setting:

The study was conducted in the Alfoad private hospital in the Khartoum state He is private hospital it contain medical, surgical, Obs, peadatric part, nursery room.

4. Study population

All nurses working at Alfoad private hospital Khartoum state who consented to take part in this study were included.

Execution criteria

National Service, training and nursing in holyday.

5. Sampling

A. Sampling technique

Total coverge method used to determine Number of participated nurses

B. Sample size:

30 nurses whose working in Alfoad private hospital in all part of hospital.

6. Data collection tools

a) Data was collected through a questionnaire which was formulated by the researcher, based on the literature review. The questionnaire was divided into three sections.

A. Demographics

Questions comprised of respondents age, gender, qualification, duration as health care worker (years).

B. Exposure to and Protection against HBV

C. Barrier.

7. Data collection technique

A questionnaire, designed by the researcher to collect data on HBV incidence and barrier was printed. For nurses working Atalfoad hospitals, the selected participants were initially informed about the study at their place of work, and those who consented were given a questionnaire. and left with the sisters in charge of the different departments and was collected during their rest time after explanation the purpose of the study and the date will be confidential and ever nurse by allow time to fill questionnaire and collected the following three day. Data from the questionnaires were captured using SPSS 16.6. These included answers. to questions on demographics, incidence and barrier about hepatitis B vaccination.

8. Data Analysis

Data was coded analyzed manually by using master sheets then by computer program or SPSS.

Different statically measure used frequency, percentage, , and CHI test then presented in table and figure.

9. Ethical Considerations

The proposal was approved by the Ethical Scientific Committee, permit ion was taken from the director of the hospital and head nurse and also permit ion from participant verbal and take chance to stop or refused.

Chapter Four

Result

Chapter Four

Result

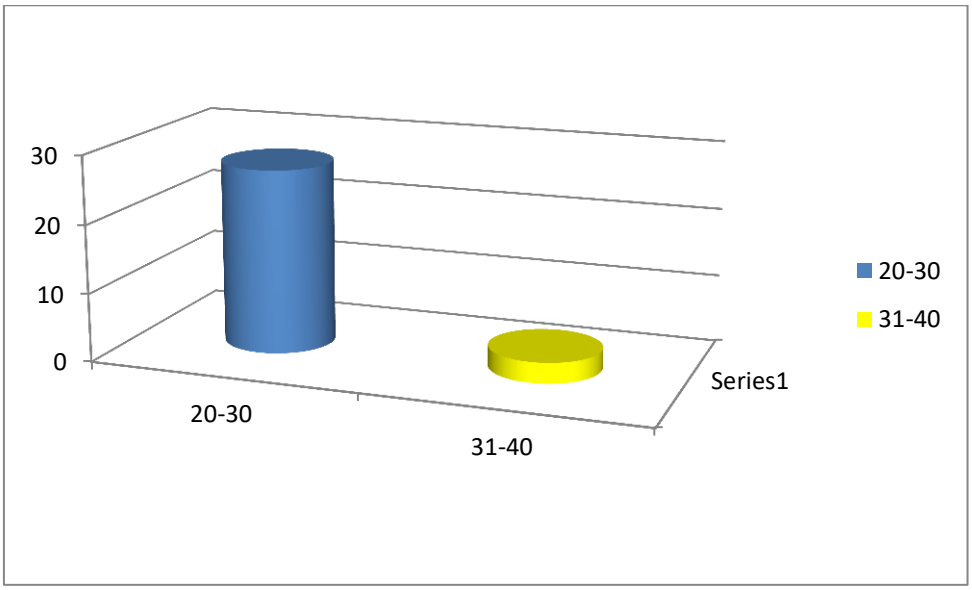

Figure 1: showed the age of the study group

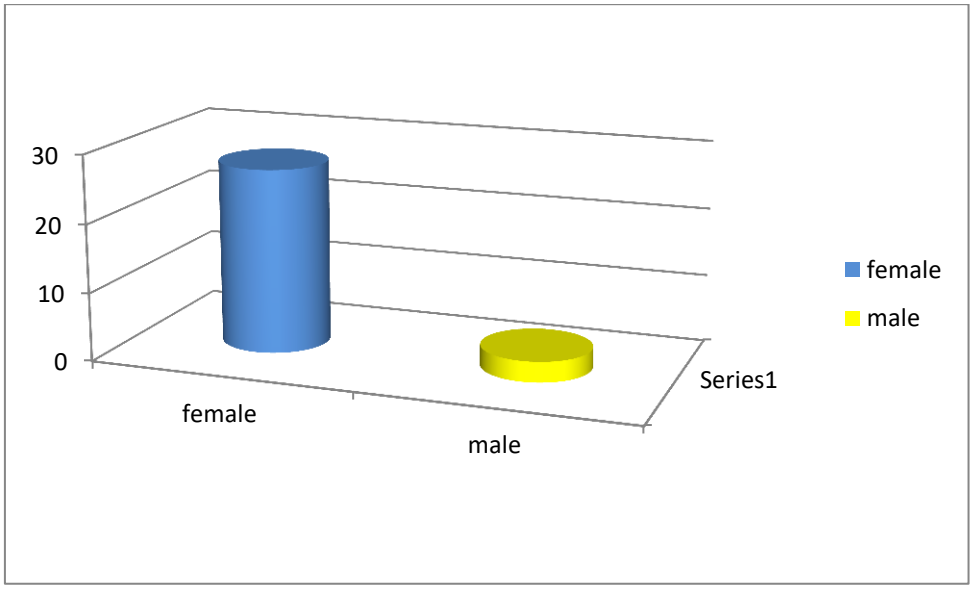

Figure 2: showed the gender of the study group

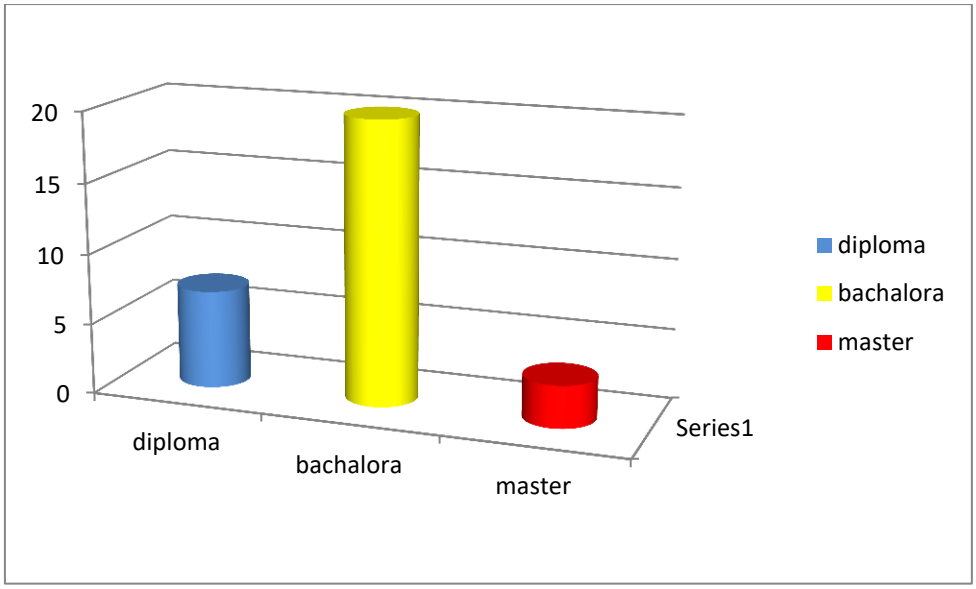

Figure 3: showed the gualification of the study group

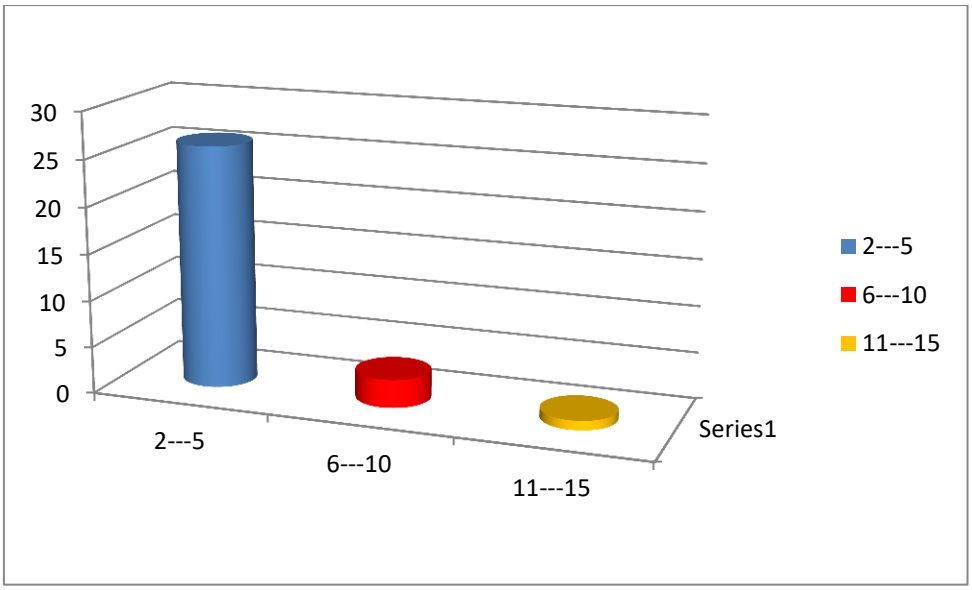

Figure 4: showed the duration of work of the study group

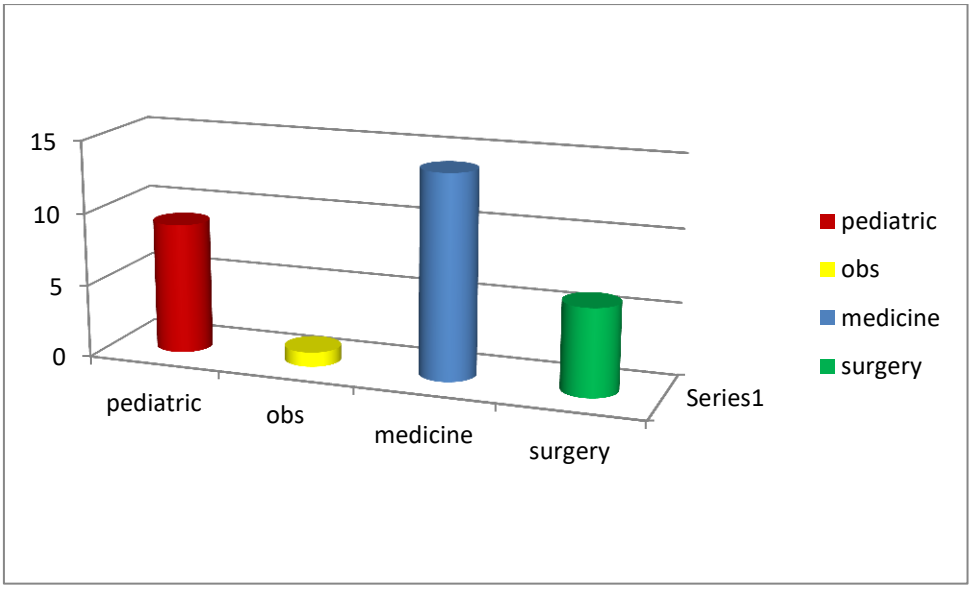

Figure 5: showed the duration of health site of the study group

Table 1: frequency distrubuation of nurses by number of doses of HBV

	frequancy	percent
on	4	12,9
One dose	3	9,7
Tow dose	1	3,2
Full dose	22	71%
total	30	96,8

Table 2: frequancy distribution of nurses whom check for HBV befor dose

	frequancy	percent
Not checked	2	6,5
protected	17	54,8
Not comment	10	32,3
total	30	96,8

Table 3: frequency distribution of nurses whom experienced aneedle stick or sharp injury

	frequancy	percent
never	12	38.7
one	5	16.1
2-5	1	3.2
>6	1	3.2
No comment	11	35.5
total	30	96.8

Table 4: frequency distribution of nurses whom if have experienced aneedle stick or sharp injury were reporte

	frequancy	percent
report	7	22.6
never	23	74.2
total	30	96.8

Table 5: frequancy distribution of nurses whom experienced blood Or body fluid

	frequancy	percent
never	10	32
once	5	16.1
5	7	22.6
<10	8	25.8
total	30	96.8

Table 6: frequancy distribution of nurses if wearing protective clothing when handling blood or body fluid

	frequancy	percent
always	11	35.5
Some time	14	45.2
never	5	16.1
total	30	96.8

Table 7: frequancy distrubuation of nurses whom don,t vaccinated

	frequancy	Percent
fear	4	12.9
cost	3	9.7
avalblitey	5	16.1
No comment	18	58.1
total	30	96.8

Table 8: frequancy distrubuation of the nureses to exposure to HBV

	AGREE		NEGLECT		FEAR		DISTRUSTED	
	frequancy	percent	F	P	F	P	F	P
expensive	12	40	12	40	3	10	3	10
hurts	3	10	19	63.4	4	13	1	3.4
Iam not at risk because always carefully	18	60	8	26.6	2	6.6	2	6.6
Healthy person	9	30	15	50	3	10	3	10
Don,t trust	5	16.6	21	70	1	3.4	3	10
Against religon	3	10	24	80			3	10
Compulsory for nurses	8	26.6	19	63.4			3	10

Table 9: Crosstabulation between study group gender & report of injury

gender	reported	never	P value
male	3	0	0.09
female	4	23	
Total	7	23	

*For significant ** highly sigificant

Table 10: Crosstabulation between study group gender andexpresed blood

gender	never	once	2-5	<6	P-value
male	3	0	0	0	.083
femal	7	5	7	8	
total	10	5	7	8	

Table 11: Crosstabulation between study group gender and wear protect cloth

gender	always	Some time	never	P-value
male	3	0	0	.056
femal	8	14	5	
total	11	14	5	

Table 12: Crosstabulation between study group gender and don,t vaccinated

gender	fear	cost	availability	P value
Male	3	0	0	000
Female	1	3	5	
total	4	3	5	

Table 13: Corsstabulation between study group qualification and sharp instrument

qualification	never	once	2-5	<6	P value
diploma	7	0	0	0	.021
bachalora	5	5	1	1	
master	0	0	0	0	
total	12	5	1	1	

Table 14: Crosstabulaton bettwen study group qulification and report injury

qulificatoin	reported	never	P value
diploma	7	0	.000
bachalora	0	20	
master	0	3	
total	7	23	

Table 15: Crosstabulatio bettwen study group qulification and expressed blood

quilification	never	once	5	>10	P value
diploma	7	0	0	0	.000
bachalora	3	5	7	5	
master	0	0	0	3	
total	10	5	7	8	

Table 16: Crosstabulation bettwen study group quilification and wear protect cloth

quilification	always	Some time	never	P value
diploma	7	0	0	.000
bachalora	4	14	2	
master	0	0	3	
total	11	14	5	

Table 17: Crosstabulation bettwen study group quilification and don,t vaccination

quilification	fear	cost	availablty	P value
diploma	4	3	0	.000
bachlora	0	0	5	
master	0	0	0	
total	4	3	5	

.

Chapter Five

Discussion, Conclusion and recommendation

Discussion

Hepatitis B is a disease caused by the hepatitis B virus (HBV), which is transmitted through percutaneous or Mucosal exposure to infectious blood or body fluids, Based on study result the study group were well qualified and expertise, the study showed that the age group of nurse range (20-30) is more than half and most of them were female and there qualification was bachalorea more than half, regarding of the duration the more than half in age between 2-5years. The above result indicated that there level of knowledge and years of expertise were allowed them to know the important of vaccinated by HBV vaccination.

the result showed that most of the nurses take full dose of vaccine about HBV, the study refle if your immunity check and protect or not ,the result showed more than half of nurses are check, but small number less than quadrant are not checked and more than half of nurses are protected and less than quadrant are not comment , so more than one third of theses group are protected them self from sharp instrument buts less than quadrant of these group of nurse are exposed for injuries ,present reported of experienced to needle stick or sharp injury , and the result showed more than two third of these group don't reported and less than quadrant are reported, in time expressed blood or body fluid, the result showed the more than one third of these nurses are answers never expressed for blood or body fluid and little of them are expressed more than two third are expressed for blood.

In addition to that do you wear protective clothing when handling blood or body fluid while the majority of nurses are wear protected cloth (>85)so these nurses are more educated and less than quadrant are don't wear protected cloth , in present nurses that don't vaccinated against HBV, the result showed less than two third are vaccinated (58,1%)and more than one third don't vaccinated because it fear ,cost ,availability of

HBV. In the present agree or disagree (neglect or fear or distrusted) the result showed these group of nurses are more knowledgeable for important of vaccination and majority of them are neglect for all question. Moreover, inspide of there was no significant statistical relationship between gender and their exposed of blood but more than two third exposed to blood more than five time these mean that infectious related will be high on patient staff and good media for hospital acquire infection manily viral, inspide of there no relation between gender and report injury but less than quadrant don't reported so these group are accept to injures, inspide of there no significant relation between gender and protect cloth but the majority of them are wear protect cloth that mean more educated and less infectious, while in correlate between qualification and exposed of blood these is no significant relation but less than two third have express and can increased risk of infection, inspide of no significant relation between quilification and wear protect cloth, no significant relation between qualification and don't vaccination, no significant between qualification and report injury.

Conclusion

Based on study group result, the study were well qualified and experitise and more than half of them were take full dose of vaccine 71% while other were not vaccinated because they were fear ,noncompliance and were think that is not important to take vaccine.

Recommendation

Encourage nurses to follow international guide line for infection control program, Continuous prophetical development program have to be establish for update and tranning .Have to be protocal for using reporting any type of injures .

-Screeing protocol shoud be applied.

Reference

1. ALM M (2002) :KAP among health worker on needle-stick injuries, Annals of
Saudi Med,22:5-6.

2. Barker EM, de Bruijn BM, Immelman EJ, Presbury DGC, van den Berg, Pinkney-AtkinsonVJ(2001) :Universal precautions for the prevention of HIV and HBV infection in health care setting,SAMJ,85.

3. Breining Institut: Hepatitis B Fact sheet (2008), Available at www.addictionspecialists.com , Accessed July 21.

4. Bhimma R, Coovadia HM, Adhikari M, Connolly CA (2003): The impact of the HBV Vaccine on the Incidence HBV-Associated Membranous Nephropathy, Arch Pediatric Adolescent Med,157:1025-1030.

5. Center for Disease Control (2000): Immunization of health care workers; recommendation of the Advisory Committee (HICPAC), Morbidity and Mortality Weekly Report 1997,46:1-34.

6. Center for Disease Control (2006): A comprehensive Immunization Strategy to Eliminate Transmit ion of Hepatitis B Virus Infection in the United States. Morbidity and Mortality Weekly Report:55(RR16),1-25.

7. Custer B, Sullivan SD, Hazler TK, Iioeje U, Veeristra DL, Kowdley KV: Global epidemiology of hepatitis B virus .J Clin Gastroenterol,2004 Nov-Dec:38(10Suppl 3):S158-68.

8. De Villersg HC. Nel M, Prinsloo EAM (2007): Occupational exposure to blood borne viruses among medical practitioners in Bloemfontein, South Africa.SA Fam Pract, 49(3):14.

9. El-Awady MY. Hepatitis B vaccination rates among medical personnel at Ain Shams UniversityHospital and obstacles to vaccine uptake. J Egypt public Health

10. Assoc. 200:73(5-6):519-37. 10. Holl FB, Liaang TJ. Hepatitis B Virud. In:Knipe DM et al., eds. Fields virology, 4th ed., Philadelphia, Lippincott Wilkins, 2001:2971-3036.

11. Kane M, Banatvala J, Da Villa G, Esteban R, Franco E, Goudeau A, Grob P, Jilg W, Rizzetto M, van Damme P,van Hattum J, West D, and Zackerman J (European Consensus Group on Hepatities B Immunity). Consensus statement: Are booster immunization needed for lifelong hepatitis B immunity European Consensus Group on Hepatitis B Immunity: Lancet 2000 feb 12:355(9203): 561-565.

12. Kermodeetal M, Jolley D, Langkham B, Thomass MS, Crofts N(2005): Occupational exposure to blood and blood borne virus infection among health care worker(HKW) in rural north Indian.

13. Health care setting .Am J Infect control, 33:34-41.

14. .kiire CF (1996): The epidemiology and prophylaxis of hepatitis B in sub-Saharan Africa: a view from tropical and subtropical Africa. Gut, 38 (suppl2): ss-s12.

15. Mahfouz A, Abdelmoneim I, Khan M (2009). Injection safety at primary health care level in south-western Saudi Arabia: Eastern Mediterranean Health Journal,15 (2).

16. MeMahon BJ, Holk P,Bulkow L,Snowball M.serologic and clinical outcomes of 1536 Alaska Natives chronically infected with hepatitis B Virus. Ann Intern MED2001:135:759-68.

17. Miller M, Piasani E: Bulletin of the world Health Organization 2000, 77: 808-811.

18. Moghimi M, Marashi SA, Kabir A, Taghipour HR ,Faghihi-Kashani AH,Ghoddoosi I, Alavian SM (2007):KNA and practice of surgeons about blood borne diseases. J Sur Research,22:4804-08.

19. Grady et all J, Bacterial .182.2285-2291.

20. Safe Injection Global Network (SIGN) Website ,April 2004 http://www.injectionsafety.org

21. Shepard CW, Finelli SL, Fiore AE125, Bell BP(2006) Hepatitis B virus infection: Epidemiology and vaccination: Epidermal Rev 28:112-.

22. Simonsen L (2000), unsafe injection in thedeveloping world and transmission of blood borne pathogens: a review Bulletin of the world Health Organization 77(10):789-800.

23. South Africa Vaccination and Immunization Center(2008):clinical disease hepatitis B .Available at(http://www.savic.ac.za.com /disease.php?,sub3=88).Accessed july 17,2008.

24. Tsebe KV, Burnette RJ, Hlungwani NP,sibara MM, Venter PA, Mphahlele MJ (2001) The first five years of universal hepatitis B vaccination in South Africa: evidence for elimination o f HBsAg carriage in under 5years-olds: vaccine 19:3919-3926.

25. WHO (2006): The Global Alliance for vaccines and immunization .Hepatitis B Fact sheet available at http://www.who. inlentity/ immunizationdelivery /adc/gavi, hepb .

26. Wikipedia (2007): Hepatitis B virus. Available at (http:en.wikipedia.org).

APPENDEX

Shandi University

The Graduate College

Medical and Health Studies Board

Research on Prevalence and barrier of HBV vaccines among the nurses in alfoad private hospital

Serial no :( )

Part (1)

Demographic Information:

Age

20-30	31-40	41-50	More than 50

Gender

male	female

Qualification

Diploma	bachelora	master

Duration as health care worker (in years)

2-5	**6-10**	**11-15**	**>20**

Health care site

pediatric	**obs**	**medicin**	**surgey**

Your exposure to / protection against

hepatitis B:

Have you been vaccinated against hepatitis B virus?

yes	no

If vaccinated, how many doses?

One dose	Two dose	Full dose

Was your immunity against hepatitis B checked after vaccination?

checked	Not checked

If checked, are you....

protected	Not protected

How many times during your working lifetime have you experienced a needle stick or sharps injury involving a needle or sharp instrument that had been used on patient?

never	once	2-5	<6

If you have experienced needle stick injuries have you report them...

always	sometime	never

If you have reported a needle stick injury were you given post exposure prophylaxes that include the hepatitis B.

yes	no

How many times in the last year have expressed blood or body fluid (e.g. amniotic fluid or liquor) splashing in your eyes or mouth?

never	once	2-5	6-10

Do you wear protective clothing when handling blood or body fluid?

Always	sometime

A/ Hepatitis **B** vaccination is to expensive	agree	neglect	fear	distrusted
B/ I am scared of being vaccinated because it hurts				
C/ I am scared of being vaccinated because it hurts				
D/ I am not at risk for hepatitis B because I am always carefully when examining patients and taking specimens.				
E/ I am not at risk for HBV because I am healthy person				
F/ I do don't trust vaccinations				
G/ vaccination is against my religion / traditional beliefs				
H/ Hepatitis B vaccination should be compulsory for nurses				