بسم الله الرحمن الرحيم

Shandi University

Faculty of Post Graduate Studies and Scientific Research

Dissertation:-

Submitted to the University of shandi in partial fulfillment of the Requirements for the award of the Degree of Master of Science in Pediatric Nursing

Research Title:-

Assessment of Nurses Knowledge Regarding Care Of Child with Meningitis in Soba university hospital (2017 – 2018)

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2018

قال تعالي

اعوذ بالله من الشيطان الرجيم

(وان يمسسك الله بضر فلا كاشف له الا هو وان يردك بخير فلا راد لفضله يصيب به من يشاء من عباده وهو الغفور الرحيم)

صدق الله العظيم

سورة يونس

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DEDICATION

I dedicate this work to my father, Mother, sisters, brothers and husband Who supported and helped me to successfully accomplish this study. They were very patient and kind.

Acknowledgement

I sincerely thank all those who helped me to carry out this study.

My heartily gratitude goes to my main supervisor* Dr. Marym Mohamed Elnageeb*, great help and guidance at all levels of this study. I found much support from them in this work.

I also express my thanks to the colleagues in the Ministry of Health and who provided me with the information I needed to start my study.

Some other people who provided hand to me and maybe I have forgotten to mention, I thank them all.

ABSTRACT

Bacterial meningitis still has a significant mortality rate, and these patients need to be managed in the hospital and need more nursing care. Some patients will have permanent neurologic effects following the acute episode. Viral meningitis is typically self-limited. Fungal meningitis often occurs in patients who are immune compromised,[9].This descriptive study design done to Assessment Of Nurse's Knowledge And Regarding Care Of Child With Meningitis In Soba university hospital (2017-2018).

Total coverage(60) nurses who were available during study period . the study focused mainly on knowledge of nurses regarding Care Of Child With Meningitis, how those care child with Meningitis to be healthy and wellbeing

Data was collected by questionnaire and analyzed by computer using spss program.

The study showed that more than half (68.3%)of nurses had selected Acute inflammation of the protective membrane as the definition of Meningitis. The study showed that more than tow third (90%) of nurses had selected Careful examination of child with meningitis focusing on neurologic status .

الخلاصة

لا يزال التهاب السحايا البكتيري يسبب معدل وفيات كبير , ويحتاج هؤلاء المرضى الي مزيد من الرعاية التمريضية في المستشفى , بعض المرضى سيكون لديهم اثار عصبية دائمة بسبب التهاب السحايا.

التهاب السحايا الفيروسي عادة ما يكون محدود ذاتيا.التهاب السحايا الفطري غالبا ما يكون في المرضى الذين يعانون من ضعف المناعة,[9].

تم تصميم هذا البحث الوصفي لتقييم معرفة الممرضة فيما يتعلق برعاية الطفل مع التهاب السحايا في مستشفى سوبا الجامعي(2017_2018).

شملت الدراسة (60) ممرضة كانوا متواجدين خلال فترة الدراسة. ركزت الدراسة بشكل رئيسي على المعرفة وكيفية تعامل الممرضات فيما يتعلق برعاية الطفل المصاب بالتهاب السحايا , وان رعاية الطفل مع التهاب السحايا لا بد ان تكون صحيحة وصحية.

تم جمع البيانات عن طريق الاستبيان وتحليلها عن طريق الكمبيوتر باستخدام برنامج SPSS.

واظهرت الدراسة ان اكثر من نصف الممرضات (68.3%) قد اختاروا التهابا حادا في الغشاء الواقي للمخ باعتباره تعريف لالتهاب السحايا.

كما اظهرت الدراسة ان اكثر من الثلث (90%) من الممرضين قد اختاروا الفحص الدقيق للطفل المصاب بالتهاب السحايا مع التركيز على الحالة العصبية .

Table of content

List of figure

LIST OF TABLES

	Meningitis occurs in people of all age groups but (infants, young children and the elderly are more predisposed to meningitis?
12.	distribution of nurses according to their knowledge about what is the urgent signs of Patient needs medical assistance and review by intensive care unit?
13.	distribution of nurses according to their knowledge about what is nursing Care if the patient's mental status is altered (seizure)?
14.	distribution of nurses according to their knowledge about The most important nursing assessment for meningitis
15	distribution of nurses according to their knowledge about Common nursing interventions
16	distribution of nurses according to their knowledge about The role of Nurse in Infection Prevention and Control
17	distribution of nurses according to their knowledge about Content of infection control
18	distribution of nurses according to their knowledge about Discharge and home care guidelines
19	distribution of nurses according to their knowledge about Complication of meningitis
20	distribution of nurses according to their knowledge How is bacterial meningitis prevented

List of Abbreviations

ABCDE	Air way, Breathing, Circulation, Diagnoses, Evaluation
CNS	Central nervous system
CDCP	Centers for Disease Control and Prevention
CT	computed tomography
LP	lumbar puncture
ICP	intracranial pressure
IDS	immunodeficiency syndrome
ICU	Intensive care unit
CRP	Ceram reactive protein
IPC	Infection Prevention and Control
IPCQSC	Infection Prevention and Control Quality and Standards Committee
DIPC	Director of Infection Prevention and Control
SIADH	syndrome of inappropriate antidiuretic hormone
ABM	Acute Bacterial Meningitis
NM	Neisseria meningitides
SP	Streptococcus pneumoniae

Chapter one

1-Introduction

1.1 Background

In 2015 meningitis occurred in about 8.7 million people worldwide. This resulted in 379,000 deaths – down from 464,000 deaths in 1990. With appropriate treatment the risk of death in bacterial meningitis is less than 15%. Outbreaks of bacterial meningitis occur between December and June each year in an area of sub-Saharan Africa known as the meningitis belt. Smaller outbreaks may also occur in other areas of the world,[1].

Bacterial or pyogenic meningitis affects many infants, children, and teenagers in the United States each year; most cases affect children under 5 years of age. The mortality rate is significant, even with appropriate antibiotic therapy (8% H. influenzae; 15% meningococcal; 25% pneumococcal). The infant/young child is at great risk for bacterial infection with males being affected more often than females,[2].

Bacterial meningitis still has a significant mortality rate, and these patients need to be managed in the hospital. Some patients will have permanent neurologic effects following the acute episode. Viral meningitis is typically self-limited. Fungal meningitis often occurs in patients who are immune compromised,[3].

Since the 1990s, a dramatic increase in the incidence of meningococcal meningitis (and the often fatal blood infection meningococcemia) among adolescents and young adults has occurred. Living in close quarters,

sleeping less than usual, and sharing personal items such as drinking

glasses and lip balm contribute to the increase in disease. For these reasons, the AAP recommendations advise meningococcal vaccination

for all children aged 11 to 12 years; adolescents at high school entry or age 15 (whichever comes first) who have not been previously vaccinated; all college freshmen living in dormitories; and children who are at high risk, such as children with chronic conditions or immune suppression or those who travel to high-risk areas or live in crowded conditions (AAP, 2005). Further information and a resource for families can be obtained through the National Meningitis Association, which can be accessed at www.nmaus.org.

In developed countries, disease resulting from Haemophilusinfluenzae typeB,once the most common cause of meningitis in children, has decreased dramatically since the introduction of the Hib vaccine. In less developed countries, infection with H. influenzae type B still remains a concern. Most cases of bacterial meningitis occur in the winter and early spring, but it can occur year round,[4].

Some forms of meningitis are preventable by immunization with the meningococcal, mumps, pneumococcal, and Hib vaccines. Giving antibiotics to people with significant exposure to certain types of meningitis may also be useful,[5].

1.2 Justification

Patients with meningitis can become mentally illness due to infection, increases patients risk for infection and inflammation within the central nervous system (CNS). Nurses must be equipped with scientific and knowledge regarding meningitis patients and be able to perform the nursing care with proficiency in order to avoid there complications.

1.3 Objectives

1.3.1. General objective:-

Assessment of Nurses Knowledge Regarding Care Of Child With Meningitis

1.3.2. Specific objectives:-

1. To assess nurses knowledge about Basic information regarding Meningitis.
2. To assess nurses knowledge about care of Meningitis
3. To assess nurses knowledge about Prevention of Complication regarding child with Meningitis

4.Corelation between Variable

Chapter two

2-Literature Review

2.1. Introduction

Meningitis is an inflammation of the meninges that develops as a result of infection from either bacterial or viral agents. The causative organism is often age-dependent. Neonates develop meningitis as a result of Escherichia coli; Haemophilus influenza, type B; Group B Streptococcus; Neisseria meningitides; Streptococcus pneumonia; Listeria monocytogenes; and herpes. Infants and children are susceptible to Haemophilus influenza, type B; Neisseria meningitides; Streptococcus pneumonia; enterovirus; adenovirus; and the mumps virus. However, adolescents are at risk from exposure to Neisseria meningitides; Streptococcus pneumonia; herpes; adenovirus; and arbovirus, [6].

2. 2.Definition of meningitis:-

Infection of the subarachnoid space associated with an inflammatory response of the meninges, [7].

Bacterial meningitis is more serious than viral meningitis and is sometimes fatal.[8]

2.3. Causes of meningitis:-

Meningitis is either septic or aseptic. Septic or pyogenic meningitis is causedby a bacterial pathogen such as Streptococcus pneumoniae, Neisseria meningitis, Escherichia coli, or Haemophilus influenzae type B. Aseptic meningitis is caused by a known or unknown viral agent typically presenting at peak seasonal viral illness intervals in the fall and winter. Meningitis can develop at any time during childhood. During the neonatal period, meningitis results from a pathogen transmitted during the labor and delivery process or while in utero.

The most common types of neonatal meningococcal infections are caused by herpes simplex, Group B beta-hemolytic Streptococcus, and E. coli. In older infants and children, a peak incidence of Streptococcus pneumoniae is noted in the winter months. In summer months, bacterial organisms such as Neissieria meningitides and non-bacterial agents such as rhinoviruses and adenoviruses are more prevalent. Haemophilus influenza type B, once a deadly pathogen, has almost been eradicated now with scheduled routine childhood immunizations (Centers for Disease Control and Prevention).

Bacterial meningitis is the result of bacterial dissemination from a nasopharyngeal or a hematological inoculation. The pathogen migrates into the cerebrospinal fluid and imbeds in the subarachnoid space. The body reacts to the infiltration with a severe inflammatory response and white blood cell proliferation. Systemic septicemia, surgical procedures involving the central nervous system, a penetrating wound, otitismedia, sinusitis, cellulitis of the scalp or facial structure, dental caries, pharyngitis, and orthopedic diseases and procedures are also antecedent events leading to bacterial meningitis,[9].

2.4 Classification of meningitis:-

1. Meningitis is classified as septic or aseptic. The aseptic form may be viral or secondary to lymphoma, leukemia, or human immunodeficiency virus (HIV). The septic form is caused by bacteria such as Streptococcus pneumoniae and Neisseria meningitides,[5].

2. 5. Pathophysiology of meningitis:-

1. The causative organism enters the bloodstream, crosses the blood–brain barrier, and triggers an inflammatory reaction in the meninges. Independent of the causative agent, inflammation of the

subarachnoid and pia mater occurs. Increased intracranial pressure (ICP) results. Meningeal infections generally originate in one of two ways: either through the bloodstream from other infections (cellulitis) or by direct extension (after a traumatic injury to the facial bones). Bacterial or meningococcal meningitis also occurs as an opportunistic infection in patients with acquired immunodeficiency syndrome (AIDS) and as a complication of Lyme disease. Bacterial meningitis is the most significant form. The common bacterial pathogens are N. meningitidis (meningococcal meningitis) and S. pneumoniae, accounting for 80% of cases of meningitis in adults. Haemophilus influenzae was once a common cause of meningitis in children, but, because of vaccination, infection with this organism is now rare in developed countries,[5].

2.6 Predisposing factors:-

Meningitis can develop at any time during childhood. During the neonatal period, meningitis results from a pathogen transmitted during the labor and delivery process or while in utero.

a peak incidence of Streptococcus pneumoniae is noted in the winter months. In summer months, bacterial organisms such as Neissieria meningitides and non-bacterial agents such as rhinoviruses and adenoviruses are more prevalent. Haemophilus infl uenza type B, once a deadly pathogen, has almost been eradicated now with scheduled routine childhood immunizations,[10]. .

2.7 Risk factors:-

Infants and children are at particular risk for meningitis because they lack immunity to many causative pathogens. Other risk factors include close contact with infected persons (crowded living conditions, day-

care, college dormitories, military barracks), poverty, African-American or Native-American race, and male gender,[6].

2.8. Physical Examination

General Appearance: Level of consciousness; obtundation, labroid respirations.

- Note whether the patient looks “ill,” well, or malnourished.

Vital Signs: Temperature (fever), pulse (tachycardia), respiratory rate (tachypnoea), BP (hypotension).

Skin: Capillary refill, rashes, petechia, purpura (meningococcemia). Head: Bulging or sunken fontanel.

Eyes: Extra ocular movements, papilledema, pupil reactivity, icterus. Neck: Nuchal rigidity. Brudzinski's sign (neck flexion causes hip flexion); Kerning's sign (flexing hip and extending knee elicits resistance). Chest: Rhonchi, crackles, wheeze. Heart: Rate of rhythm, murmurs. Extremities: Splinter hemorrhages (endocarditis).

Neurologic: Altered mental status, weakness, sensory deficits,[1].

Careful examination, focusing on the child’s general appearance, vital signs, and neurologic status, is crucial. Observation of patients from across the room is helpful; children who happily play with toys in the waiting room but who are fussy when examined by a physician are less likely to have meningitis. Fever is present in most children with meningitis, but hypothermia may occur in infants. With increased intracranial pressure, bradycardia and hypertension develop. Signs of meningeal irritation, including pain and limitation of range of motion of the neck, may not be evident in children less than 18 months of age. Positive Kernig and Brudzinski signs are indicative of meningeal inflammation. A Kernig sign is elicited by having a child lie on her back with the knee flexed and the hip flexed so that the thigh is perpendicular to the trunk. If meningeal irritation is present, extension of the knees

causes pain. A Brudzinski sign occurs when the hips and knees spontaneously fl ex after passive flexion of the neck. It is necessary to perform a detailed neurologic examination with assessment of mental status, examination of cranial nerves, reflexes, muscle strength, and gait (if applicable). A bulging anterior fontanel is sometimes apparent in young infants. Pulmonary, cardiac, abdominal, and bone and joint examination may reveal the presence of other sites of infection. Petechiae or purpura may be evident on skin examination. A careful retinal examination may detect presence of papilledema,[11].

2.9. Life-threatening features:

If the patient demonstrates any of the following signs urgent medical assistance is required and the patient needs review by ICU:-

-Rapidly progressive rash

-CRT >4 seconds

-oliguria

-respiratory rate <8 or>30 breaths/min

-heart rate <40 or >140 beats/min

-acidosis pH <7.3 or BE worse than−5

-WBC <4

-marked depressed conscious level – GCS <12 or a fall in GCS of >2

-focal neurology

-persistent seizures

-bradycardia and hypertension

-papilloedema, [2].

2.10. Infection control issues:

The role of Clinical Nurse Specialists in Infection Prevention and Control (IPC):-

To provide expert professional advice and education on the prevention and control of infection to other professionals, multi-disciplinary groups, patients and careers.

To lead in the investigation of identified cases of infection/alert organisms & conditions.

To advise on control measures, delegating responsibility to Trust staff as appropriate.

To give advice on complex issues relating to infection prevention and control and report findings.

Role of Modern Matrons/Service Managers:-

All Service Managers and Modern Matrons are responsible for:

Membership at the Infection Prevention and Control Quality and Standards Committee (IPCQSC).

On-going compliance with the policy within their clinical areas and reporting non-compliance to the Director of Infection Prevention and Control (DIPC) via the Infection Prevention &Control Team (IPCT)

Reporting all matters relating to infection prevention and control to the Deputy Director of Nursing.

Facilitating feedback of information related to surveillance data and identified cases of infection/alert organisms & conditions.

Report confirmed cases of infection/alert organisms & conditions.

All staff who is involved with the care of a patient within the inpatient services and community must:

Comply with this policy and guidance on all identified cases of infection/alert organisms and conditions. It is the responsibility of each individual member of staff to adhere to the requirements set out within this policy,[12].

The scientific knowledge on which nurses base their clinical practice is often lacking. Nurse's lack of adherence to aseptic technique may be a factor in transmitting infection or cross infection, [4].

When an infection can be prevented by ordinary and reasonable care, nurses must use such care. Adequate knowledge is required to follow the aseptic technique; Aseptic technique should be considered an essential component of the care of child with meningitis to reduce the risk of infection. It is recommended that hands should be washed before and after care

2.11. How is meningococcal meningitis prevented?

Vaccines are available to protect against types A, C, Y, and W135.

Epidemic control relies on good surveillance with early detection and treatment. A mass immunization campaign that reaches at least 80% of the entire population with types A & C vaccine can prevent an epidemic. These vaccines are not effective in young children and infants and only provide protection for a limited time, especially in children younger than two years old.

2.12 Nursing Diagnoses and Related Interventions :-

If a child has meningitis, the parents may feel responsible for the illness. They knew the child had an upper respiratory infection, and they wonder whether they could have prevented meningitis if only they had taken the child to their primary care provider as soon as the respiratory symptoms started. Reassure them that the symptoms of meningitis occur insidiously. No one could have predicted the full extent of the disease from the first signs. Encourage parents to care for their child during the illness, both to help make the child more comfortable and to help them manage their own anxiety. Teach them good infection control techniques so that they can perform these tasks safely.

Nursing Diagnosis: Pain related to meningeal irritation

Outcome Evaluation: Child states that pain is tolerable and shows no facial grimacing or other signs of discomfort.

2.13 Nursing Diagnosis:

Decreased Intracranial Adaptive Capacity related to inflammatory process secondary to microbial invasion of the central nervous system

Measurable Short-term Goal: The child will not experience complications from increased intracranial pressure (ICP).

Measurable Long-term Goal: The child will recover completely with no residual neurological deficits.

NOC Outcomes: Neurological Status: Autonomic (0910) Ability of the autonomic nervous system to coordinate visceral and homeostatic function Tissue Perfusion: Cerebral (0406) Adequacy of blood fl ow through the cerebral vasculature to maintain brain function

NIC Interventions: Intravenous Therapy (4200) Neurologic Monitoring (2620) Cerebral Edema Management (2540) Seizure Precautions (2690)

Nursing Interventions:

1. Implement universal precautions. Initiate respiratory isolation for first 24 hours of antibiotic administration for bacterial meningitis (specify). Instruct family in correct procedures. RATIONALE: Universal precautions help prevent transmission of infection. Respiratory isolation prevents droplet transmission of bacteria to family and caregivers until the prescribed antibiotic has been implemented for 24 hours. 2. Initiate and maintain intravenous access (specify fluids and rate) as ordered. Monitor hourly intake and output, notifying the caregiver if urine output is less than 0.5–1 mL/kg per hour. RATIONALE: Intravenous access is required for optimal medication administration; fluids promote adequate

hydration; decreased output may signal impending syndrome of inappropriate antidiuretic hormone (SIADH).

3. Administer prescribed IV antibiotic, antiviral, steroid, and antipyretic medications as prescribed (specify drug, dose, route, and times). RATIONALE: Antimicrobial medications should be administered as soon as possible. Drugs that are specific for the cultured microorganism will be most effective in combating infection. Steroids reduce cerebral edema, decreasing meningeal irritation to help prevent complications such as hearing loss, hydrocephalus, and learning,[9].

Nursing Diagnosis: Risk for ineffective tissue perfusion (cerebral), related to increased ICP Outcome Evaluation: Child's vital signs return to ,normal; child is alert and oriented; motor, cognitive, and sensory function are within acceptable parameters for the child's age; specific gravity of urine is 1.003 to 1.030. Observe the child carefully for signs of increased ICP. Carefully monitor he rate of all IV infusions to prevent overhydration and increased ICP. Measure urine specific gravity to detect oversecretion or undersecretion of antidiuretic hormone because of pituitary pressure. Measure the child's head circumference, and weigh the child daily. Monitor hearing acuity (reduced if there is compression of the eighth cranial nerve) by asking an older child a question or observing whether an infant listens to a music box or to your voice,[13].

NURSING INTERVENTION

- Monitor intake and output to check fluid balance.
- Keep room darkened due to photophobia.
- Monitor neurologic function at least every 2 to 4 hours, changes in mental status, level of consciousness, pupil reactions, speech, facial movement symmetry, and signs of increased intracranial pressure.
- Seizure precautions per institution policy.

- Isolation per policy depending on organism,[14].

2.14. Nursing Care if the patient's mental status is altered (seizure)

1 . Call for help. In a hospital, use the designated emergency number. In the community setting call 911.

2. Maintain a patent airway. If the airway is occluded, open the airway with a jaw thrust maneuver. Administer oxygen if needed and available. Do not put anything in the mouth. If the situation warrants emergency medical care, qualifi ed health care personnel can insert an appropriate sized oral airway.

3. Loosen restrictive clothing to ensure adequate circulation to essential body organs.

4 . Administer medications according to prescription,[9].

2.15. Nursing alert

Always isolate a patient who is suspected of having bacterial meningitis until bacterial meningitis is ruled out,[9].

2.16. Complications of meningitis:-

Brain damage, nerve damage, deafness, stroke, and even death,[15].

Previous Studies:-

Research Article Acute Bacterial Meningitis in Qatar: A Hospital-Based Study from 2009 to 2013This retrospective descriptive study, which involved all in-patients with ABM, was conducted at Hamad General Hospital between January 1, 2009, and December 31,2013

The study identified 117 episodes of (ABM) in110 patients There were 43, 22, 21, 12, and 18 episodes in 2009, 2010, 2011, 2012, and 2013,

respectively. The study sample showed The peak frequency of ABM episodes was noted among adults (15–64 years old) (92.3%)

From a clinical point of view, fever was the most frequent symptom (110,94%),followed by mental alteration (55,47%), headache (43, 36.8%), and vomiting (35, 29.9%).The most frequent underlying conditions were neurosurgery(54,46.2%),hypertension(26, 22.2%),and diabetes mellitus (9,7.7%)

Study done by Dr. Kala Yadhav ML in India Study of Bacterial Meningitis in Children Below 5 Years with Comparative Evaluation of Gram Staining, Culture and Bacterial Antigen Detection In the present study done on 100 cases, male to female ratio was 1.27:1, which showed a male preponderance. 44 (44%) cases gave a history of having been treated with antibiotics before the first lumbar puncture was done. Of the 100 clinically suspected cases of ABM, the laboratory confirmed cases were found to be only 24 (24%), on considering the above criteria Streptococcus pneumoniae was the predominant organism which was isolated in this study.

Another study done by Rotherham Doncaster and South Humber about Management of Cases and Contacts of Meningococcal Infections Policy date issue at 25 August 2015Reviewer at August 2018 The purpose of this policy is to direct staff on the appropriate management of cases and contacts with meningococcal infections and to ensure that all measures are taken to limit spread of the infection.

The policy content is based on sound infection prevention and control principles and national guidance for the management of cases and contacts of meningococcal infections.

Household contacts of a patient with meningococcal infection are at a higher risk than the general population of developing the infection themselves. The risk of a second case occurring in the household is around 1%.

Study done by Commey JO[1], Rodrigues OP, Akita FA, Newman M Bacterial meningitis in children in southern Ghana One hundred and three children (1% of seriously ill children referred to the Korle Bu Teaching Hospital in Accra) were admitted with bacterial meningitis over a 17 month period. 43 of these children had been ill for more than 4 days before arrival at our centre. The main causative organisms were S. pneumoniae (47.9%), Neisseria meningitides (38.4%) and Haemophilus influenzae (9.6%). All bacterial isolates were highly sensitive to ceftriaxone. Resistance to penicillin and chloramphenicol was however present in 5-17% of isolates. All cerebrospinal fluid samples were sterilised within 48 hours of antibiotic treatment. Case fatality rate was 22% with the majority of deaths occurring within hours of admission and closely related to S. pneumoniae infection. Neurological complications occurred in 22%; mild diarrhoea in 33% and secondary fever in 14.8% of survivors.

Study conducted at a rural district hospital, serving the rural population of the northern parts of Yemen about Bacterial profile and clinical outcome of childhood meningitis in rural Yemen: a 2-year hospital-based study. All patients aged 1 month-15 years admitted between May 1999 and June 2001, with clinical evidence of meningitis In contrast to the studies from the low-mortality countries of the region, our study showed that the predominant pathogens of childhood (ABM) were Streptococcus pneumoniae (SP) and Neisseria meningitidis (NM). SP meningitis was associated with increased mortality and permanent disability

Chapter three

3-Material and Methods

3.1 Study Design

This is a descriptive cross-sectional hospital based study. This study used a descriptive approach to assess knowledge regarding care of child with meningitis in Soba University Hospital (2017-2018).

3.2 Study Area and setting

Soba University Hospital initiation on 1975 which is located in khartoum state near mystoma center , and northern madani street , it is provided many service for population such as medical , surgical , pediatric and obstetrical service , The hospital contain intensive care unit (ICU) , neonatal intensive care unit (NICU) , pediatric dialysis , pediatric medicine ward , pediatric surgery ward , nutritional department and outpatient pediatric.

3.3. Study Population

The study was done on nurses who were working in pediatric unit in Soba University Hospital

3.4 Sample size

All nurses work in pediatric unit during period of study (total coverage) (50 nurses)

3.5 Sample technique:-

Convenient sampling technique was used

3.6 Data collection technique

The data for this research was collected using a designed structured questionnaire as tool for data collection. The tool was designed after careful review of the literature and the previous studies. After the tool was designed, a pilot study was done. It included a total of 10 nurse participant. The questions for the questionnaire were found understandable by the participant and can assess knowledge level, and based on this small pilot study results, the questionnaire were adopted. The data was collected from nurses by the researcher during their working time in duty. The researcher attended all the nurses' duties in order to collect accurate data. Questionnaires were filled by nurses.

3.7 Data Processing and Analysis

The data checked, verified and analyzed using the statistical program: the Statistical Package for Social Science (SPSS)Version 15.

3.8 Ethical Consideration

-written permission from university of shandi faculty of graduate.

-verbal consent from participant after explaining research objective .

Chapter four

4.Result

Fig(3-1):distribution of nurses according to their gender.

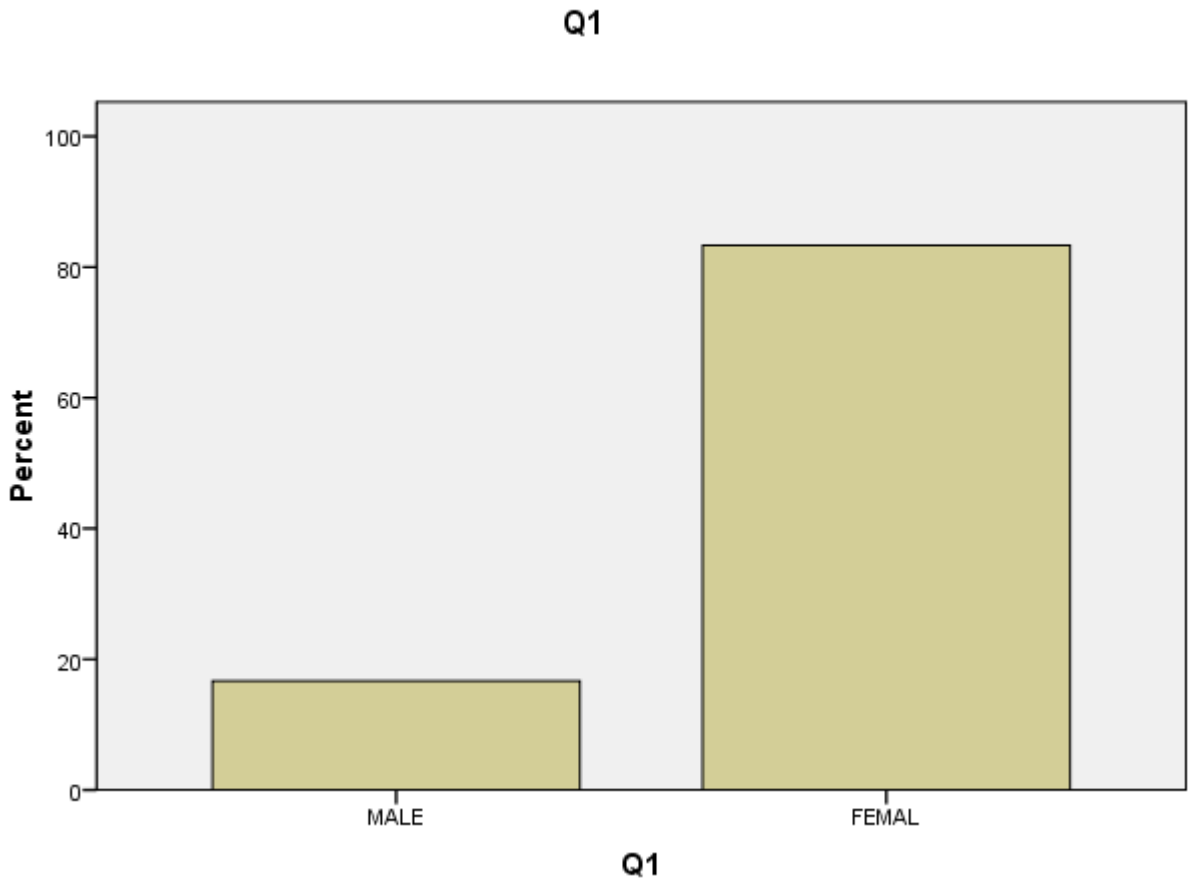


figure (3-2) distribution of nurses according to their Years of experience:

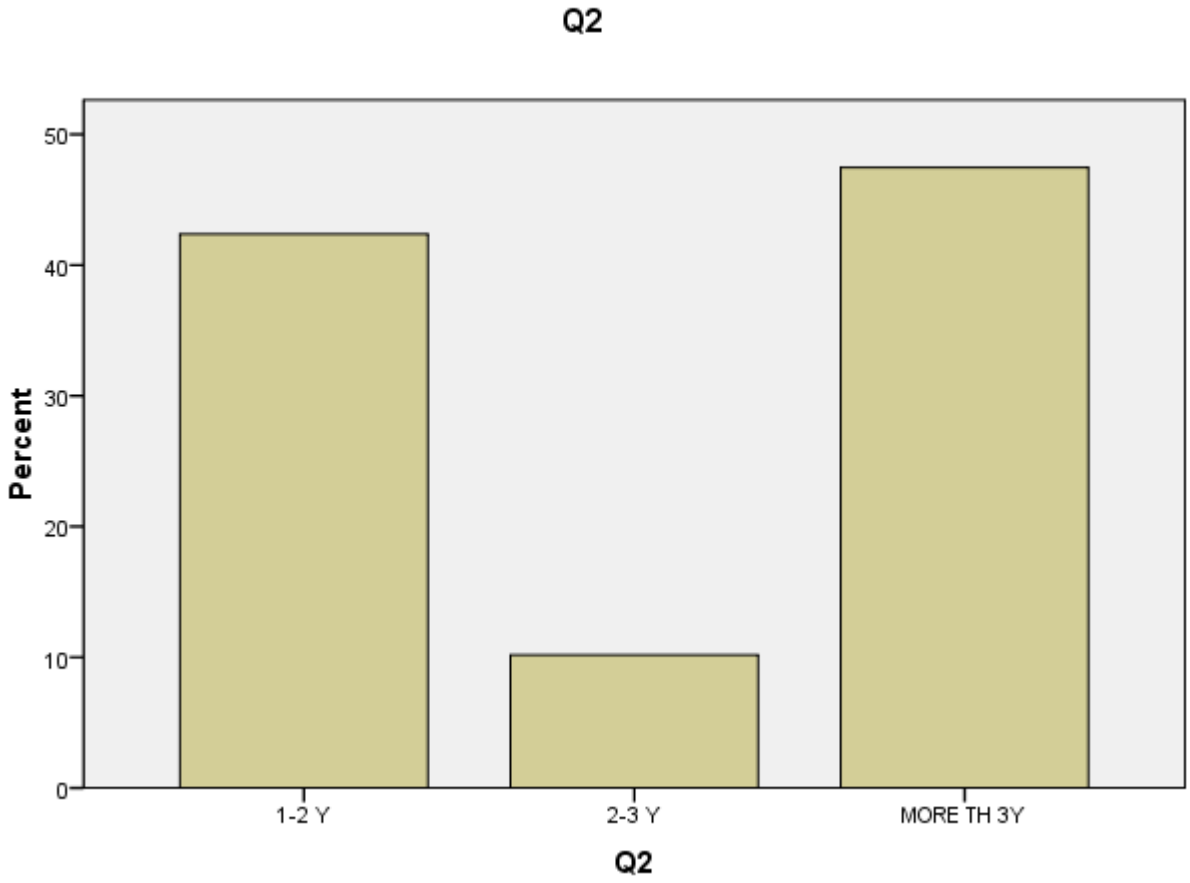
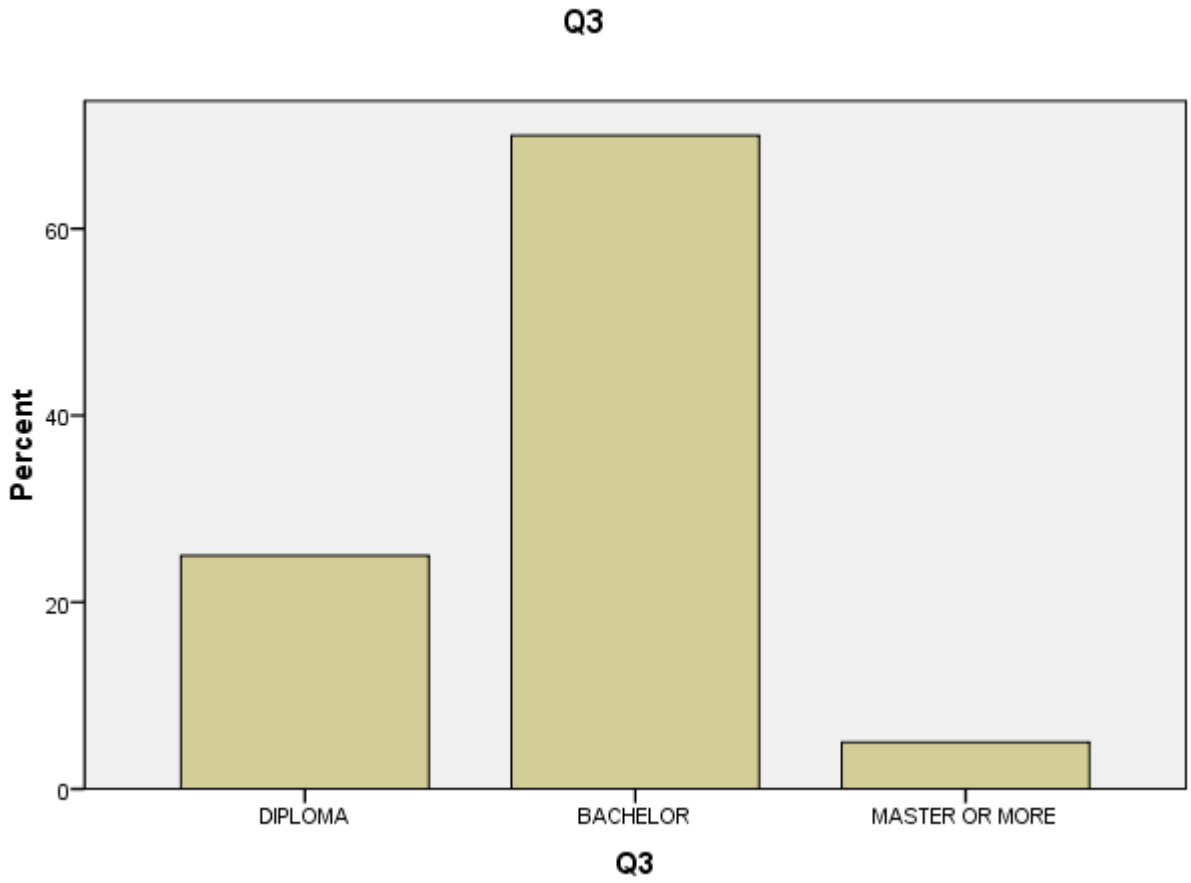


figure (3-3) distribution of nurses according to their Level of education:



Table(3-1): distribution of nurses according to their knowledge about definition of Meningitis:-

Item	frequency	Percent	Total	Percent
Acute inflammation of protective membrane covering the brain	41	68.3%	60	100%
inflammation's proximity to the brain and spinal cord	30	50.0%		
inflammation of the pia and arachnoid mater or meninges	29	48.3%		

Table (3-1): showed that 68.3% had selected Acute inflammation of protective membrane covering the brain as definition of Meningitis.

Table(3-2):distribution of nurses according to their knowledge about the most common cause of meningitis

Item	frequency	Percent	Total	Percent
Virus	40	66.7%	60	100%
Bacteria	49	81.7%		
Fungi	15	25%		

Table (3-2): showed that 81.7% had selected Bacteria as the most common cause of meningitis

.

Table(3-3):distribution of nurses according to their knowledge about Bacterial meningitis is more serious than viral meningitis?

Item	frequency	Percent	Total	Percent
Bacterial meningitis is more serious than viral meningitis?	44	70.0%	60	100%

Table (3-3): showed that 70.0% had selected Bacterial meningitis is more serious than viral meningitis

Table(3-4):distribution of nurses according to their knowledge about Greater risk for outbreaks of bacterial meningitis

definition	Frequency	Percent	Total	Percent
People living in close living conditions	42	70.0%	60	100%
pathogen transmitted during the labor and delivery process	29	48.3%		
During the neonatal period	35	58.3%		

Table (3-4): showed that 70.0% had selected People living in close living conditions as the greater risk for outbreaks of bacterial meningitis

Table(3-5):distribution of nurses according to their knowledge about Risk factors for the development of neonatal meningitis

definition	Frequency	Percent	Total	Percent
Low birth weight	27	45.0%	60	100%
Premature delivery	29	48.3%		
Premature rupture of membrane	40	66.7%		

Table(3-5) showed that 66.7% had selected Premature rupture of membrane as the risk factors for the development of neonatal meningitis

Table(3-6):-distribution of nurses according to their knowledge about Fungal meningitis often occurs in patients who are immune compromised?

definition	Frequency	Percent	Total	Percent
Fungal meningitis often occurs in patients who are immune compromised?	55	91.7%	60	100%

Table (3-6): showed that 91.7% had selected Fungal meningitis often occurs in patients who are immune compromised.

Table(3-7):-distribution of nurses according to their knowledge about Viral meningitis is typically self-limited?

definition	Frequency	Percent	Total	Percent
Viral meningitis is typically self-limited?	44	72.7%	60	100%

Table (3-7): showed that 72.7% had selected Viral meningitis is typically self-limited

Table(3-8):distribution of nurses according to their knowledge about Careful examination of child with meningitis focusing on?

Items	Frequency	Percent	Total	Percent
the child's general appearance	36	60.0%	60	100%
vital signs	40	66.7%		
neurologic status	54	90.0%		

Table (3-8): showed that 90% had selected neurologic status as the Careful examination of child with meningitis.

Table(3-9):distribution of nurses according to their knowledge about The main signs and symptoms of meningitis are:-

Items	Frequency	Percent	Total	Percent
positive Kernig's sign	34	56.7%	60	100%
Positive Brudzinski's signs	33	55.5%		
stiff neck	52	86.7%		

Table(3-9):showed that 86.7% had selected stiff neck as the main signs and symptoms of meningitis.

Table(3-10):distribution of nurses according to their knowledge about Diagnostic tests in patients with clinical finding of meningitis .

Items	Frequency	Percent	Total	Percent
Lumber puncture	57	95.0%	60	100%
CT-scan	31	51.7%		
Blood studies	28	46.7%		

Table(3-10):showed that 95% had selected Lumber puncture as the diagnostic tests in patients with clinical finding of meningitis.

Table(3-11):distribution of nurses according to their knowledge about Meningitis occurs in people of all age groups but (infants, young children and the elderly are more predisposed to meningitis?

Items	Frequency	Percent	Total	Percent
Meningitis occurs in people of all age groups but (infants, young children and the elderly) are more predisposed to meningitis?	58	96.6%	60	100%

Table(3-11):showed that 96.6% had selected Meningitis occurs in people of all age groups but (infants, young children and the elderly are more predisposed to meningitis.

s

Table(3-12):distribution of nurses according to their knowledge about the urgent signs of Patient needs medical assistance and review by intensive care unit?

Items	Frequency	Percent	Total	Percent
focal neurology	35	58.4%	60	100%
Oliguria	16	26.7%		
Persistent seizures	53	88.3%		

Table(3-12):showed that had 88.3% had selected Persistent seizures as the urgent signs of Patient needs medical assistance and review by intensive care unit.

Table(3-13):distribution of nurses according to their knowledge about nursing Care if the patient's mental status is altered (seizure)?

Items	Frequency	Percent	Total	Percent
Maintain a patent airway	52	86.7%	60	100%
Loosen restrictive clothing to ensure adequate circulation to essential body organs	38	63.3%		
Administer medications according to prescription	48	80.0%		

Table(3-13):showed that 86.7% had selected Maintain a patent airway as the nursing Care if the patient's mental status is altered (seizure).

Table(3-14):distribution of nurses according to their knowledge about most important nursing assessment for meningitis

Items	Frequency	Percent	Total	Percent
always, utilize an ABCDE approach to assess	52	86.7%	60	100%
Assess level of consciousness	46	76.7%		
Assess respiratory rate	34	56.7%		

Table(3-14):showed that 86.7% had selected always, utilize an ABCDE approach to assess as the most important nursing assessment for meningitis.

Table(3-15):distribution of nurses according to their knowledge about Common nursing interventions

Items	Frequency	Percent	Total	Percent
Keep room darkened due to photophobia	34	56.7%	60	100%
Seizure precautions per institution policy	52	86.7%		
Monitor neurologic function at least every 2 to 4 hours	42	70.0%		

Table(3-15):showed that 86.7% had selected Seizure precautions per institution policy as the common nursing interventions.

Table(3-16):distribution of nurses according to their knowledge about the role of Nurse in Infection Prevention and Control?

Items	Frequency	Percent	Total	Percent
To give advice on complex issues relating to infection prevention and control and report findings.	54	90.0%	60	100%
To advise on control measures, delegating responsibility to Trust staff as appropriate	43	71.7%		
To lead in the investigation of identified cases of infection/alert organisms & conditions	37	61.7%		

Table(3-16):showed that 90% had selected to give advice on complex issues relating to infection prevention and control and report findings. As the role of Nurse in Infection Prevention and Control.

Table(3-17):distribution of nurses according to their knowledge about Content of infection control are?

Items	Frequency	Percent	Total	Percent
Hands should be washed before and after care to reduce the risk of infection	58	96.6%	60	100%
Aseptic technique should be considered an essential component of care of child with meningitis to reduce risk of infection	52	86.7%		
Always isolate a patient who is suspected of having bacterial meningitis until bacterial meningitis is ruled out	43	71.7%		

Table(3-17):showed that 96.9 had selected hands should be washed before and after care to reduce the risk of infection as the Content of infection control.

Table(3-18):distribution of nurses according to their knowledge about discharge and home care guidelines by?

Items	Frequency	Percent	Total	Percent
Alternative rest and activity to conserve energy	49	81.7%	60	100%
Consume safe, clean and healthy foods	49	81.7%		
Identify signs and symptoms of an infectious process and report to physician promptly	54	90.0%		

Table(3-18):showed that 90% had selected Alternative rest and activity to conserve energy as the discharge and home care guidelines.

Table(3-19):distribution of nurses according to their knowledge about complication of meningitis:-

Items	Frequency	Percent	Total	Percent
nerve damage	48	80.0%	60	100%
Death	50	83.3%		
Brain damage	54	90.0%		

Table(3-19):showed that 90% had selected Brain damage as the complication of meningitis.

Table(3-20):distribution of nurses according to their knowledge about how is bacterial meningitis prevented?

Items	Frequency	Percent	Total	Percent
by Vaccines	49	81.7%	60	100%
by good personal hygiene	44	73.3%		
by avoid over crowded	49	81.7%		

Table(3-20):showed that 81.7% had selected by Vaccines and by avoid over crowded as the how is bacterial meningitis prevented.

Table(3-21): Educational level: *distribution of nurses according to their knowledge about definition of Meningitis Cross tabulation:-

Items	Frequency	Percent	Total	Percent	p-value
Acute inflammation of the protective membrane covering the brain	41	68.3%	60	100%	.394
inflammation's proximity to the brain and spinal cord	30	50.0%			.171
inflammation of the pia and arachnoid mater or meninges	29	48.3%			.427

Table (3-21): showed that there is No relation between level of education and knowledge of nurses about definition of Meningitis

Table(3-22): years of experience: *distribution of nurses according to their knowledge about nursing Care if the patient's mental status is altered (seizure) Cross tabulation

Items	Frequency	Percent	Total	Percent	p-value
Maintain patent airway	52	86.7	60	100%	-.021
Loosen restrictive clothing to ensure adequate circulation to essential body organs.	38	63.3			-.152
Administer medications according to prescription	48	80.0			-.294

Table (3-22): showed that there is negative relation between years of experience and knowledge of nurses about nursing Care if the patient's mental status is altered (seizure)

Table(3-23): level of education: *distribution of nurses according to their knowledge about Content of infection control Cross tabulation

Items	Frequency	Percent	Total	Percent	p-value
Hands washing before and after care to reduce the risk of infection	58	96.6	60	100%	.665
Aseptic technique considered an essential component of care of child with meningitis	52	86.7			.053
Always isolate a patient who is suspected of having bacterial meningitis until meningitis is ruled out	43	71.7			.175

Table (3-23): showed that there is no relation between level of education and knowledge of nurses about Content of infection control.

Chapter five

5.1 Discussion:

Most common infection of the central nervous system (CNS) in infants is meningitis. The three main types of causative organisms are bacterial, fungal and viral. Meningitis may also occur as the result of complications of neurosurgery, trauma, systemic infection, or sinus or ear infection. Bacterial meningitis is the most common and serves as The focus of this discussion.

The study revealed that the most of participants had female (83.3%), also showed that less than half of participants (46.7%) had years of experience more than three years.

According to level of education the study showed that more than tow third of participant (70.0%) had bachelor degree , statistically the study showed there are strong relation between level of education and give advice on complex issues relating to infection prevention and control and report findings as role of Nurse in Infection Prevention and Control.

The study showed that most of participant (90%) had selected Careful examination of child with meningitis focusing on neurologic Status. The study explain that (86.7%) of participants had selected the main signs and symptoms of meningitis is stiff neck, most participants (95%) had selected Lumber puncture as the Diagnostic tests in patients with clinical finding of meningitis.

5.2 Conclusion:

based on the study result, the study showed that nurses had selected give advice on complex issues relating to infection prevention and control and report findings as role of Nurse in Infection Prevention and had selected Hands washing before and after care to reduce the risk of infection is content of infection control, and had selected Seizure precautions per institution policy is common nursing interventions during seizure attack.

5.3. Recommendations:-

The study recommended that:-

1. Increase nurse's knowledge and updated in paediatric unit in Soba University Hospital to the current researches and guidelines by training course.
2. Education should be implemented and updated monthly or annually for nurses in paediatric unit in Soba University Hospital.
3. Further researches must be carried out to determine knowledge.
4. Give all nurses in pediatric unit chance to share in researches to improve nurses knowledge.

APENDEX

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Questionnaire

Assessment Of Nurse's Knowledge And Attitude Regarding Care Of Child With Meningitis In Soba university hospital (2017-2018)

1- Gender

a) Mal ( )

b) Female ( )

2- years of experience:

a) (1 - 2)years ( )

b) (2 - 3) years ( )

c) more than 3 years ( )

3- Level of education:

a) Diploma of nursing ( )

b) Bachelor of nursing ( )

c) Master of nursing or more ( )

4- Definition of Meningitis:-

a) acute inflammation of the protective membranes covering the brain ( )

b) inflammation's proximity to the brain and spinal cord ( )

c) inflammation of the pia and arachnoid mater or meninges ( )

5- the most common cause of meningitis is?

a) Viruses ( )

b) Bacteria ( )

c) Fungi ( )

6- Bacterial meningitis is more serious than viral meningitis?

a) Yes ( )

b) No ( )

7- Greater risk for outbreaks of bacterial meningitis?

a) People living in close living conditions ( )

b) pathogen transmitted during the labor and delivery process ( )

c) During the neonatal period ( )

8-Risk factors for the development of neonatal meningitis include?

a) Low birth weight ( )

b) Premature delivery ( )

c) Premature rupture of membranes ( )

9- Fungal meningitis often occurs in patients who are immune compromised?

a) Yes ( )

b) No ( )

10- Viral meningitis is typically self-limited?

a) Yes ( )

b) No ( )

11- Careful examination of child with meningitis focusing on?

a) the child's general appearance ( )

b) vital signs ( )

c) neurologic status ( )

12- The main signs and symptoms of meningitis are:-

a) positive Kernig's sign ( )

b) positive Brudzinski's signs ( )

c) stiff neck ( )

13- Diagnostic tests in patients with clinical finding of meningitis are?

a) Lumber puncture ( )

b) CT-scan ( )

c) Blood studies ( )

14- Meningitis occurs in people of all age groups but (infants, young children and the elderly are more predisposed to meningitis?

a) Yes ( )
b) No ( )

15- what is the urgent signs of Patient needs medical assistance and review by intensive care unit?

a) focal neurology ( )
b) oliguria ( )
c) persistent seizures ( )

16- what is nursing Care if the patient's mental status is altered (seizure)?

a) Maintain a patent airway ( )
b) Loosen restrictive clothing to ensure adequate circulation to essential body organs. ( )
c) Administer medications according to prescription ( )

17- The most important nursing assessment for meningitis is:-

a) always, utilize an ABCDE approach to assess ( )
b) Assess level of consciousness ( )
c) Assess respiratory rate ( )

18- Common nursing interventions?

a) Keep room darkened due to photophobia. ( )
b) Seizure precautions per institution policy ( )
c) Monitor neurologic function at least every 2 to 4 hours ( )

19- The role of Nurse in Infection Prevention and Control?

a) To give advice on complex issues relating to infection prevention and control and report findings. ( )
b) To advise on control measures, delegating responsibility to Trust staff as appropriate ( )
c) To lead in the investigation of identified cases of infection/alert organisms & conditions ( )

20- Content of infection control are?

a) Hands should be washed before and after care to reduce the risk of infection ( )
b) Aseptic technique should be considered an essential component of care of child with meningitis to reduce risk of infection ( )
c) Always isolate a patient who is suspected of having bacterial meningitis until bacterial meningitis is ruled out ( )

21- Discharge and home care guidelines by?

a) Alternative rest and activity to conserve energy ( )
b) Consume safe, clean and healthy foods ( )
c) Identify signs and symptoms of an infectious process and report to physician promptly ( )

22- Complication of meningitis include:-

a) nerve damage ( )
b) Death ( )
c) Brain damage ( )

23- How is bacterial meningitis prevented?

a) by Vaccines ( )
b) by good personal hygiene ( )
c) by avoid over crowded ( )