~~Factors influencing and effect of puerperal sepsis among postnatal women in Vom Christian Hospital, Plateau state, Nigeria~~

Factors and effect of Puerperal Sepsis at Vom Christian Hospital in Plateau state, Nigeria

ABSTRACT

~~Despite all efforts made by WHO~~ to reduce the incidence of Puerperal sepsis, it remains the third most common cause of death following childbirth or miscarriage accounting for 15% of 50,000 maternal lives lost annually. It usually occurs within 10 days – 6 weeks postpartum following delivery. The most common infection is that of the uterus and surrounding tissues. The purpose of this study was to assess the factors influencing and effects of puerperal sepsis among postnatal women in Vom Christian Hospital. Non-probability sampling technique using convenient methods of sampling and sample size was determined through the Taro Yamani formula where 80 women were recruited into the study and questionnaires administered for data collection with 100% retrieval rate and analyzed using descriptive statistical analysis. This study revealed high rates of respondents agreeing that anaemia (75%) followed by early cesarean section (62.5%) and delay in seeking healthcare (62.5%) with (56.3%) multiply vaginal examination as factors swaying puerperal sepsis infections in women. 75% respondents agreed that puerperal sepsis causes both painful inflammation of breast and pain while urinating, with 81.3% cause by vaginal discharge as the common effect of puerperal sepsis in most women while majority (81.3%) of the respondents revealed that poor vagina hygiene causes infection where endogenous infectious agents are mostly harboured. Puerperal sepsis is a deadly disease among women, our finding showed that most of the postnatal women had knowledge about puerperal sepsis and its factors, hence, preventive measures and women personal hygiene during antenatal visits be emphasized. Thus, healthcare givers should follow aseptic technique to prevent puerperal sepsis infections among women during delivery.

Keywords: Puerperal sepsis, Haemorrhage, Postpartum women, chorioamnionitis and Pyelonephritis

1. INTRODUCTION

Puerperal sepsis is a term giving to an infection that affects expectant mothers and those who have recently delivered. Infections within pregnancy can be server as the genital tract has an increase surface area, the infection can affect the cavity and walls of the uterus leading to pelvic abscesses. Infection tends to spread after long labour or severe bleeding due to haemorrhage causing peritonitis, septicaemia, or death of those at the cruelest of moment [1-3]. Globally 6 million had developed puerperal sepsis and around 77,000 mothers died of it. It is one of the fifth common cause of maternal mortality worldwide.

Puerperal sepsis is caused by a bacterium being introduced into the genital tract by unclean hands during examination and are more susceptible due to large genital tract surface area where the bacterium entered the body through pelvic examination, trauma during labour or prolonged labour [4, 5]. Bacteria that cause puerperal sepsis are chlamydia, clostridium tetani, clostridium welchii, Escherichia coli, gonococci, staphylococci, and streptococci [6].

Other causes of puerperal sepsis are mastitis, pyelonephritis, ruptured membranes, respiratory complications, first birth, poor socioeconomic status, caesarean delivery and superficial or deep-vein thrombosis [7-8].

Symptoms for puerperal sepsis normally appeared between 24 hours to 10 days after infection begins and the uterus does not return to its normal size resulting to shivering and chills, pain and discomfort in lower abdomen, tenderness and pain in the uterus, malaise, discharge from the vagina with foul smell containing pus, pale and discolouration of skin, shortness of breath, fatigue, and edema [9,10].

Puerperal sepsis can be diagnosed by abnormal changes in the patients' temperature, heart and breathing rates indicates infection. The vagina and the uterus can be checked for swelling and tenderness by abdominal and internal examination while further test can be carried out to determine the type of infection where it is located and if bodily function have been affected [11]. Blood and urine samples may be collected for organ function test, wound swabs alongside blood pressure checks, ultrasound scan, computerized tomography (CT scan) can also be carried out. Once puerperal sepsis is suspected, broad-spectrum antibiotics such as will be administered orally or intravenously to prevent infection spreading when results received revealed infected bacteria isolated. Antipyretic medication and cold compresses may be used to keep the level under control. Due to the body demand for oxygen, oxygen can be given as levels in the blood can become low and intravenous fluids is normally given within the first 48 hours after hospitalization to prevent dehydration and kidney failure. Infection sites need to be kept clean and dry by removing pus to allow infected tissue repair and prevent bacteria from entering [5, 12-14].

Factors influencing puerperal sepsis

Pregnancy and lactation: Malnutrition, anaemia, under-liying diseases (i.e., bacterial vaginosis, group B streptococcus), history of prolong rupture of membrane, and chorioamnionitis [14-16]. Due to poverty during antenatal, women may be hindered from acquiring adequate food leading and anaemic women have low resistance to infection causing puerperal sepsis as a result diminishing the host resistance as well as occurrence of uterine ischaemia [4].

Labour and delivery: These are associated with poor infection control practices or instrumental delivery, prolonged labour, multiple vaginal examinations, caesarean section, poor pre-operative, and post-operative management to retained products of conception, haemorrhage, laceration of the genital tract [17]. In this, post-partum infection starts in the uterus post-delivery and develops in the raw interior surface of the uterus after the detachment of the placenta and could also develop to puerperal sepsis during birth process [2, 18, 19].

Inadequate healthcare facilities: Poor government infrastructural development to set up health facilities that can easily be accessed and affordable. Furthermore, poor partnership with most private hospital such that services offered are affordable by all mothers who attend the facility. The reduced number of trained medical personnel, recruitment because of for seeing other business predisposes mothers to different microorganisms' capable to cause puerperal sepsis [10, 20]. However, decreased awareness to the mothers about the existence of puerperal sepsis and lack of strict law against traditional birth attendants with inadequate knowledge and skills to assist the mothers during delivery which increases the risk to puerperal sepsis since mothers tend to utilize the birth attendants more than the health facilities [8, 21, 22].

Cultural factors and beliefs: The delay in seeking healthcare, behaviour and low socioeconomic status of women contribute to their poor health in Nigeria generally and deprives them of adequate medical care and resources; the lack of knowledge about clinical symptoms of puerperal sepsis, and lack of post-natal care [10, 23]. To most women, poverty combined with cultural constraints constitute a social barrier around them about health services makes them ignore the utilization of the health facilities thus most of the deliveries take place at home where delivery is carried out without aseptic measures. These women

cannot adopt a good health seeking behaviour even when they know that they have life threatening conditions. Some mothers pose a negative attitude against some health facilities due to poor handling by midwives when they come to deliver thus resorted to traditional birth attendants where they seem to feel at home knowing the fact that Intravaginal practices (IVP) are linked to bacterial vaginosis (BV), obstetric/gynaecological complications, and to some extend poses the risk of acquiring HIV and sexually transmittable diseases [24, 25].

Effects of puerperal sepsis

Chorioamnionitis: The infection of chorion and amnion usually occurring near term resulting from infections that ascend through the genital tract involving the ovarian veins and the inferior vena cava with risk factors relating to cesarean section, premature rupture of the membrane, premature of labour, increased neonatal pneumonia, bacteremia, meningitis, and death. However, the risk of chorioamnionitis is decreased by avoiding or minimizing digital pelvic examination in patient with premature rupture of membrane [15, 26].

Mastitis: Mastitis is a common condition that predominates during the puerperium where breast abscesses are less common, however when they do develop, delays in specialist referral may occur due to lack of clear protocols. This painful inflammation of the breast usually accompanied by infection and later fever in the puerperium due to frequent mastitis. Symptoms may include high fever, erythema, tenderness, pain, swelling and warm to touch. Treatment includes encouragement of fluid intake and antibiotics aiming at reducing the spread of staphylococcus aureus infections [27, 28].

Pyelonephritis: This is a bacterial infection of the renal parenchyma occurring in postpartum bacteria ascend from the bladder. The infection may begin as a symptomatic bacterial infection during pregnancy and sometimes associated with bladder catheterization to relieve urinary distention during and after labour [29]. The causative organism is usually a type of coliform bacteria such as E. coli and symptom include fever, flank pain, general malaise, and occasionally painful urination, but other gram-negative bacteria such as Staphylococci and Streptococci may also be involved, though, anaerobic bacterial infections are rare causes of genitourinary tract infections but may be involve in pyometra [30]. Treatment is adjusted accordingly and continued for a total of 7 to 14 days with antibiotics initiated intravenously and oral fluid intake be encouraged [31].

Endometritis: This is a uterine infection typically caused by bacteria ascending from the lower gastrointestinal tract developing after chorioamnionitis during labour or post-partum haemorrhage. The incidence of post-partum endometritis is affected mainly by the mode of delivery, but also patient characteristics post-partum endometritis occurs in 1.3% of normal vaginal delivery while surgical sites infections affect 3–5% of women undergoing caesarean section, but prior studies had placed the rate of infection upwards of 15% with 15 – 20% of unscheduled caesarean section [32]. Predisposing condition may include abdominal tenderness, pain, fever, malaise and sometimes discharge from the vagina, prolong labour, operative traumatic delivery, repeated digital examination, young maternal age, low socioeconomic status etcetera affecting the feotus [13].

Prevention of puerperal sepsis

Johnson and Taylor, [33] reported that following aseptic technique and principles is very important. Correct cleaning practice of hospital and home environments need be followed, and use of sterile packs and equipment must be used to prevent contaminations which must only be used once and discarded. In the order hand, physicians must exercise the correct hand hygiene technique and use of antiseptic soap, alcohol-based rubs and sterile gloves, protective clothing, aprons, and shoes must be worn to prevent the spread of infection and contamination. By doing this, it reduces the risk of introducing bacterium into a sterile environment. Though, training and education of birth attendants on the need to hand-wash during delivery is universally practiced. According to the Royal College of Obstetrics and Gynaecologist [14], trained traditional birth attendants have been observed to be more likely to practice hygienic delivery than their untrained counterparts. Yet, no significant difference in the level of puerperal sepsis was seen when comparing groups.

In surgical aseptic technique, caesarian section is thought to be required as a lifesaving procedure in at least 5% of delivery, however, the procedure is associated with an increased risk of puerperal sepsis and could potentially double the risk of maternal infection. Although, Cephalosporin and Quinolones may be considered in managing puerperal sepsis, prevention of maternal sepsis is essential [1, 4, 10].

2. MATERIAL AND METHODS

This was a retrospective non-experimental hospital based descriptive designed to explore the factors responsible for puerperal sepsis among postnatal women in Vom Christian Hospital Plateau state, Nigeria and its environs between the months of September – December 2020. The hospital has a total staff strength of 60 healthcare workers comprising 40 nurses/midwives and 20 Doctors with over a hundred bed settings. The hospital has four basic ward such as Maternity, Male and Female wards, children and private wards rendering services to most community women and their families. Simple non-probability sampling technique using the convenient methods of sampling procedure in accordance with Taro Yamani formula was employed where 80 respondents were recruited for the study. Data collection was conducted by means of self-structured interviewers questionnaire divided into sections A-C (Section A consist of Demographic data, section B consist of questions on factors influencing puerperal sepsis and its effects, and section C consist of questions on sources of infections of puerperal sepsis). Data analyzed using contingency tables and expressed in percentages.

3. ~~RESULTS AND DISCUSSION~~ WRITE YOUR RESULT AND DISCUSSION IN SEPARATE PARAGRAPHS

Sociodemographic data

Most (50%) women respondents fall within the age range between 26 – 35 years followed by 31.2% within the age group of 36 – 45years and lower (18.8%) rates seen in ages between 19 – 25 years. Educational level indicates that majority (37.5%) of the respondents had equal rates of tertiary and primary education while 25% had secondary education with 75% of them indicated to be married. The assessment of puerperal sepsis infection in women is indifferent in age and educational awareness of the disease however, advancement in reproductive age helps to determine the magnitude at which the disease increases or decreases over time as compared with studies of Bishaw et al., [34] and ~~Demisse et al.,~~ [2], who reported that women who did not attend a formal education were over three times and those wo delivered through cesarean session were over four times at higher risk of developing puerperal sepsis as observed in In table 1.

Factors and Effects influencing puerperal sepsis

Factors influencing puerperal sepsis as seen in table 2 revealed high rates of the respondents agreeing to early cesarean section (62.5%), multiply vaginal examination (56.3%), anaemia (75%), and delay in seeking healthcare (62.5%) as factors swaying puerperal sepsis infections. In the same way, ~~Demisse et al.,~~ [2], reported that majority of determinants of puerperal sepsis were related with pregnancy and childbirth. Again, ~~Mckinley *et* al.,~~ [35] reported that poor access to healthcare is not only an important risk factor for developing postpartum infections but a direct factor in treatment delays and associated morbidity and mortality of puerperal sepsis. Another research conducted by Khaskheli *et* al., [4] reported that common risk factors were anaemia; suboptimal personal hygiene as well as improper sterilization which resulted in severe health hazards such as septicemia, disseminated intravascular coagulation as well as death. Also, ~~Atlaw *et* al.,~~ [36] reported that the occurrence of puerperal sepsis in their study was found to be 17.2 %,

having cesarean section delivery, primiparous and multiparas were factors found to be associated with puerperal sepsis.

In relation to the effects of puerperal sepsis, most (75%) respondents agreed that puerperal sepsis causes both painful inflammation of breast and pain while urinating, and many (81.3%) of the respondents revealed that puerperal sepsis cause by vaginal discharge is common in most women. This concurs with the research conducted by Kajeguka *et al*., [6] who revealed that higher influential factor of puerperal sepsis was seen in caesarean section (66.7%), postpartum haemorrhage (57.1%), moderate to severe anaemia (61.9%), prolonged labour (76.2%) and bacterial infection (90.5%) such as Staphylococcus spp. Escherichia coli and Streptococcus spp. with significant difference at p<.05. More so, in a study conducted by Kiponza et al., [37] in Tanzania reported that puerperal sepsis was mostly caused by *E. coli* (61.8%) and *Klebsiella* spp (20.0%). More so, Nouri et al., [38] in their study, revealed that global risk factors contributing to infections are caused by poor hygiene practices during delivery and postpartum related to repeated manipulation of patients during delivery, prolonged time of labour or rupture of amniotic sacs, as well as poor sanitary conditions and poor services within health care facilities.

Sources of infection

As to sources of infection relating to puerperal sepsis in table 3, majority (81.3%) of the respondents revealed that poor vagina hygiene causes infection where endogenous infectious agents are mostly harboured. Preventive measures taking to control infectivity of puerperal sepsis during and after delivery revealed that majority (81.3%) of the respondents agreed to timely training and education of birth attendants in infection prevention and control followed by 75% reduction rates in non-touching technique to prevent puerperal sepsis infections among them.

Table 1. Sociodemographic data of respondents

Variables	Frequency	Percentage (%)
Age group		
19 – 25	15	18.8
26 – 35	40	50.0
36 – 45	25	31.2
Educational level		
Primary	30	37.5
Secondary	20	25.0
Tertiary	30	37.5
Religion		
Christianity	60	75.0
Islam	15	18.7
Others	5	6.3
Marital status		
Single	20	25.0
Married	60	75.0

Table 2. Factors and effects influencing puerperal sepsis

Causes of infection	Frequency (%)	
	Yes (%)	No (%)
Early emergency caesarean section	50 (62.5)	30 (37.5)
Multiple vagina examination	45 (56.3)	35 (43.7)
Anaemia in pregnancy	60 (75.0)	20 (25.0)

Delay in seeking healthcare	50 (62.5)	30 (37.5)
Painful inflammation of the breast	60 (75.0)	20 (25.0)
Painful urination	60 (75.0)	20 (25.0)
Vaginal discharge	65 (81.3)	15 (18.7)

Table 3. Sources of puerperal sepsis infection and measures of prevention

Variables	Frequency	
	Yes (%)	No (%)
Infected birth attendant infects women in labour or during delivery	65 (81.3)	15 (18.7)
Use of contaminated instrument in conducting delivery	65 (81.3)	15 (18.7)
Normal flora within the vagina can cause infection	50 (62.5)	30 (37.5)
Poor hygiene can cause infection	65 (81.3)	15 (18.7)
Regular hand washing prevents infection	60 (75.0)	20 (25.0)
Non-touching technique	65 (81.3)	15 (18.7)
Training and education of birth attendant or nurse	65 (81.3)	15 (18.7)

4. CONCLUSION

Puerperal sepsis is a deadly disease among women, our finding showed that most of the postnatal women knew about puerperal sepsis and preventive measures could help a lot in reducing it occurrence; hence, healthcare givers should follow aseptic technique to prevent infections during delivery. Thus, personal hygiene of pregnant women before and after delivery be emphasized during antenatal visits.

After reading the article, the reader is supposed to understand from the conclusion why your research should be important to them. A conclusion is a synthesis of important elements, not just a review of your arguments or a restatement of your research problem.I did not obtain this knowledge from your conclusion .

CONSENT

All participating postnatal women consented to take part in this research and provide us with the necessary information needed.

ETHICAL APPROVAL

~~Ethical clearance was sought for and approval obtained (VCH/ADM/33/Vol. III/07) from the Ethical Research Committee of the Vom Christian Hospital while due process by introducing research field assistants to chief matron of the hospital before proceeding to meet the respondents. They were followed, research protocol and procedures discussed, and confidentiality assured in accordance with the ethical standards laid in the 1964 Declaration of Helsinki.~~ There is confusion

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