ADDIS ABABA UNIVERSITY

COLLEGE OF HEALTH SCIENCE

SCHOOL OF NURSING AND MIDWIFERY

ASSESSMENTOF THE PREVALENCE AND ASSOCIATED FACTORS OF PUERPARAL SEPSIS AMONG PNC WOMEN DURING POST -PARTUM PERIOD AT DESSIE REFERAL HOSPITAL, ETHIOPIA,2018.

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COLLEGE OF HEALTH SCIENCES

SCHOOL OF NURSING AND MIDWIFERY

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This thesis by Nigusie Abebaw is accepted in its present form by the board of examiners as satisfying thesis requirement for the degree of masters in Maternity and Reproductive health Nursing.

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STATEMENT OF DECLARATION

By my signature below, I declare and affirm that this thesis is my own work. I have followed all ethical principles of scholarship in the preparation, data collection, data analysis and completion of this thesis. All scholarly matter that is included in the thesis has been given recognition through citation. I affirm that I have cited and referenced all sources used in this document. Every effort has been made to avoid plagiarism in the preparation of this thesis.

This thesis is submitted in partial fulfillment of the requirement for a graduate degree from the Addis Ababa University at College of Health Sciences, School of of Nursing and Midwifery. The thesis is deposited in the Addis Ababa University Digital Library and is made available to local, national and international scientific community. I solemnly declare that this thesis has not been submitted to any other institution anywhere for the award of any academic degree, diploma or certificate.

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ACRONYMS

ANC…….Antenatal Care

ART…….. Anti retroviral therapy

CBC..... Complete blood count

CDC.....Centre for Disease Control and Prevention

C/S ……..Cesarean Section

ETB……..Ethiopian Birr

PROM……..Prolonged Rapture of Membrane

PNC……post natal care

PP…….Post partum.

PS……..Puerparal Sepsis.

PV…….Per vagina

SPSS…….Statistical Package for Social Sciences

WHO…….World Health Organization

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ABSTRACTS

Introduction: According to the World Health Organization definition, puerperal sepsis is a genital tract infection occurring within the rupture of placental membranes or labor until 42nd days of post-partum period**.** This disease is characterized by two or more of such symptoms as pelvic pain, fever (i.e., oral temperature of 38.5°C or higher on any occasion), abnormal vaginal discharge and delay in the reduction of the uterus size.

Objectives: Assessments of the prevalence and associated factors of puerperal sepsis among post natal women in Dessie referral hospital, Ethiopia, 2017/2018.

Materials and Methods: A retrospective cross-section study design was conducted among post-natal women in Dessie referral hospital**.**The study samples were selected by systematic sampling procedure that full fill the inclusion criteria to be selected during the study period.

EPI data version3.1 was applied to enter the data.SPSS version 20 was used for analysis of the result. Bi variable and multi variable regression was carried out to determine the association between the outcome variable and independent variables.

RESULT: the result of the finding showed that from 422 samples 24(5.7%) were developed puerperal sepsis during child birth and post-partum period**.** this study showed that the age of respondents ranged from 15 to 46 years, with a mean of 26.73 with SD 5.12 years. and also from the total numbers of child births, 55.5 % were primi gravid.

Vaginal examination**. (OR=7.22, 95% CI, 2.22-23),** body temperature **((OR=4.01, 95%CI, 1.09-14.7).**mode of delivery **(OR=4.77, 95%CI, 1.38-16.47)** and duration of membrane rupture **(OR=6.22, 95% CI, 1.93-20.0)** were the most significant association with development of puerperal sepsis during child birth and post –partum period.

CONCLUSION: generally the prevalence of Puerparal sepsis was 5.7 % .to reduce this problem Management staffs and health profession staffs should also consider integrating hygiene education and Puerperal sepsis awareness was important to prevent and control puerperal sepsis for women during child birth and post-partum period.

Key wards: puerperal sepsis, prevalence, associated factors, Dessie referral hospital.

CHAPTOR ONE

1. INTRODUCTION

1.1BACKGROUND OF THE STUDY

According to the World Health Organization definition, puerperal sepsis is a genital tract infection occurring within the rupture of placental membranes or labor until 42nd days of post-partum period(1)This disease is characterized by two or more of such symptoms as pelvic pain, fever (i.e., oral temperature of 38.5°C or higher on any occasion), abnormal vaginal discharge and delay in the reduction of the uterus size (1, 2),

According to global incidence of puerperal sepsis, Geneva foundation for medical education and research training course in reproductive health showed that the conditions usually leading to the puerperal sepsis are the home delivery related with unhygienic conditions using dirty materials, low socioeconomic condition, anemia, parity, prolonged period of delivery after rupture of the amniotic membrane, frequent per vaginal examinations and prolonged labor are some pre disposing factors of puerperal sepsis (3).

Even though epidemiology of infections in the puerperal sepsis is not well understood, puerperal sepsis is serious form of septicemia contracted by women during or soon after child birth, miscarriage and unsafe abortion. In US infection affects 5–7% of postpartum women with higher rates for women undergoing caesarean sections, but real prevalence remains underestimated because surveillance systems are often limited to the acute care setting. The center for disease control and prevention (CDC) estimates that up to 84% of surgical site infections (SSIs) are diagnosed post-operatively in the post-acute care setting (1, 4).

According to WHO (2015), Bacterial infections during labour and the puerperium are among the the direct leading causes of maternal mortality and morbity in worldwide, accounting for about one tenth of the global burden of maternal mortality. While the number of maternal deaths arising from these infections has decreased considerably in high-income settings (2, 5).

Pregnant and post- partum women represent a particularly vulnerable population for developing sepsis because of reduced maternal immunity during this period. Study done in Scottish show that, an indicator of uncomplicated puerperal sepsis is usually recognized by specific biomarkers which are precursors for sepsis and are important to identify types of sepsis such as sever or septic

shock (2).However, physiological changes of pregnancy can mimic and sometimes mask these biomarkers and thus the patho-physiology of sepsis(2). For this reason, an understanding of the risk factors along the continuum of sepsis morbidity from uncomplicated sepsis to severe sepsis is important for targeting preventive strategies that could be implemented 'upstream' of severe sepsis(6).

Considering important maternal health issues, more recent studies have been conducted to establish the optimal knowledge and skills of puerperal infection prevention specialists and of staff to bed ratios but clear recommendations on effective organization of staff have not organized. Some guidelines such as those on hand hygiene before and after procedure are highly specific and have been play a vital role to prevent the prevalence of puerperal sepsis(3).Unfortunately; puerperal Infection is a painful fact of life and the chief cause of death in maternal population. Even though the major infectious diseases are controlled and still infections are the main cause for mortality and morbidity(6).

1.2 STATEMENTS OF THE PROBLEM

Puerperal Sepsis is a profound inflammatory response to infection caused by bacterial, viral, fungal, or parasitic pathogens. It affects women during or soon after child birth, post partum period, miscarriage or unsafe abortion period (4, 7).In the first 19th century, puerperal sepsis took on epidemic proportions, particularly when home delivery practice changed to delivery in health facilities. Now a day's aseptic precautions, advances in investigative tools and antibiotics have played a great role in reducing the prevalence of puerperal sepsis. However, the severity of puerperal sepsis was increased both in developed and developing countries yearly (8).

More than 75% of maternal deaths resulting from pregnancy and post partum period are brought about by preventable causes as they depend strongly on quality of care provided during procedure. Puerperal Sepsis is among the major preventable cases of maternal death in which about one million women lost their life each year worldwide because of it (9).The estimation of 75,000 maternal mortality occurring worldwide yearly as a result of infections are recorded in low-income countries. Although the prevalence in developed countries is relatively low (between 0.1 and 0.6 per 1000 births), it is nonetheless an important major direct cause of maternal mortality (1).

Astudy conducted in department of gynecology and faculty of medicine colombia showed that, mortality of puerperal sepsis, by region, is estimated at 11.7% in Asia 9.7% ,in Africa 7.7%, in Latin America and the Caribbean, which is relatively high compared to 2.1% in developed countries (10). Similarly study of maternal mortality in a tertiary care hospital in Abbottabad, Nigeria to determine causes and mechanism of prevantion, the contribution of sepsis to maternal mortality was 19.2% and it was the third leading cause of death (11).

It has been found to be the second most common cause of maternal morbidity and mortality in the developing world such as sub-Saharan countries. Studies from developed countries showed that the prevalence of maternal morbidity due to puerperal sepsis was increased from 0.65 per 1000 deliveries in 2002 to 1.13 per 100,000 in 2008(12).Puerperal sepsis is also reported to be common cause of mothers to seek advanced health care. A study done on maternal intensive care and high risk maternity' in Canada, showed puerperal sepsis to be the third main reason for transfer to intensive care unit and accounted for 15% of cases. This was also observed in Brazil where sepsis was among the major leading causes of transfer to intensive care unit (13).

There is no accurate data on puerperal sepsis in both developed and developing countries specially sub Saharan countries including Ethiopia. And also the short period of observation may not afford enough time to exclude evidence of infection prior to discharge from the health faciltes. due to these reason complications including long life complication such as infertility, are occurred due to untreated puerperal sepsis by its own time effectively (4, 14).

Thus The aim of this study was to assess the prevalence and associeted factors of the puerperal sepsis during post partum period in Dessie referral hospital, 2018.

1.3 SIGNIFICANCE OF THE STUDY

The prevalence of puerparal sepsis was not well identified in our countryEthiopia. The first reason is because of inapropriate documentation and neglection of health proffession during examination during post natal period. thisis because of the limitations of surveillance systems, which monitored infections that were recognized during hospitalization specialy duriing child birth and post partum period is so important. Most postpartum infection morbidities, however, occur after hospital discharge.

This study was designed to avoidthis limitation by extending monitoring of postpartum monitoring chart during post partum peroid,which are so mandatory to decrease the prevalence , problem occured during post partum period and identify the factors associated for the occurance of puerparal sepsis among post natalwomen.

This study will also play agreat arole to increase the common understanding of the health proffession about the assement and management of the puerparal sepsis duringchild birth and post partum period.

Furthermore this study findings will be used as abaseline for further researchers

CHAPTOR TWO

2. LITATURE REVIW

Historical background of sepsis

The first epidemic of puerperal fever occurred at the Hotel Dieu in Paris in 1646. Subsequently, maternity hospitals all over Europe and North America reported outbreaks and even between epidemics the death rate from sepsis reached one woman infour or five of those giving birth.

The name of Thomas Watson, Professor of medicine in 1842, he wrote puerperal sepsis is when a practitioner has attendedanyone example of it, he should use most diligent ablution". He began to write on the subject, and in 1843 published his classic essay the contagiousness of puerperal fever-that contains eight principles to avoid the puerparal sepsis if obstetric cases were being treated(15).

Globally, the most common infecting organism during post partum time was group A haemolytic streptococci(11). whose virulence to have diminished in recent years possibly due to improved socioeconomic conditions and the use of antibiotics(16).

2.1 THE PREVALENCE OF PUERPERAL SEPSIS

The epidemiology of puerperal sepsis morbidities has not been well characterized. Precise figures are difficult to find because of the variabley of definitions used and the difficulty of obtaining data from the community as many puerparal sepsis morbidities and mortality happen after discharge from hospital (17).Studies done by WHO in 2008 shows that every year it is estimated that ,more than 500 000 women die of pregnancy related complications and childbirth in worldwide. Approximately seven million women who give birth suffer serious health problems and a further 50 million women suffer adverse health consequences after childbirth. The majority of these deaths and complications occur in developing countries (4).

Studies from developed countries showed that the prevalence of maternal morbidity due to puerperal sepsis was increased from 0.65 per 1000 deliveries in 2002 to 1.13 per 100,000 in 2008 (12).

Retrospective study conducted in US shows that the prevalence of puerperal sepsis in 1998-2009 50,000,000 Obstetric visits were reviewed Rate of post-delivery sepsis increased by 148%

(15).Similarly Study conducted in Rajiv Gandhi University of Health Science college showed that the prevalence of puerperal sepsis was 4.1 %(18).

Study done in Laboratory and Department of Medicine, Brigham Women's Hospital showed that prevalence of puerperal sepsis was 6%. With rates of 7.4% following cesarean section and 5.5% following vaginal delivery(19).

research was done in Asia showed that the prevalence of puerperal sepsis accounts 15%(20).Another research done in South Asian countries showed that the prevalence data about puerperal sepsis was11%(21).And also Study conducted in India showed that the prevalence of Puerperal sepsis was 1.7% and 34.4% of all obstetrical admissions and postnatal complications respectively(7).

Astudy conducted at Omdurman and maternity hospitals over 6 month's period were patients diagnosed of puerperal infection and deliveries the study period giving a prevalence of 0.45%.(27).South Asia has the highest prevalece of maternal sepsis deaths globally (13.7%) , yet little current information exists regarding the epidemiology of puerperal infection in this region(21).

According to a study done in Maidunguri Teaching Hospital in Nigeria the prevalence ofpuerparal sepsis was 19.2% and it was the third leading cause of maternal mortality and morbidty (11).the demographis health survayof kenya(2008-2009) showed that the prevalence rate of puerparal sepsis was 15%(22)

2.2 ASSOCIATED FACTORS OF PUERPERAL SEPSIS

There are some Predisposing factors for pueparal sepsis such as**-:**

Caesarean section, Prolonged labour, Early rupture membrane, prolonged rupture of membrane(PROM), Multiple vaginal examinations, Use of internal fetal monitoring, Use of internal uterine monitoring , Low socioeconomic status, Chorioammionitis, Anaemia , Major obstetrical trauma of the vagina, cervix or perineum and demographic status(23) **.**

Study done at The University of Iowa showed that, maternal body tempratur was signifcantly associated for the developments of puerpral sepsis during child birth and post partum period((24).

2.2.1 Socio-demographic status

Study done in India showed that Puerperal sepsis was common among young patients of 15–25 years age (66.3%)low socioeconomic status(65.20 %), and uneducated patients (78.2%).(11).

Study done in sudan show that those mother who develp puerperal infection was the mean age was 25.4 years so that most of the patients are adult age group. (10).

Astudy done in Gynaecology and Obstetrics Department Liaquat University of Medicalcollege show that,Majority of the women admitted with puerperal sepsis were above thirty years of age 84(65.11%), age below 20 years 28 (21.70%) women and age between 21 to 30 years of age group were 17 (13.17%) .this result showed that age of the women between 21 to 30 years were more significant than below 20 years of age28 (21.70%) .Similarly the result of puerparal sepsis depend on the women parity showed that , primiparous women were 20 (15.50%) more sinificant than grand multiparous having parity 5 and above in 101 (78.29%)(3). A research conducted in kenya about the maternal resident during child birth with puerperal sepsis showed that the following result . There was 32 (28%) of the women resident were <10 km distance from the health facility ,remaing112(72%) were living more than 10 km distance(2).

2.2.2Obstetric status

the study was done in India about Puerperal sepsis showed that home deliveries 73.9%, prolong labor 58.6%,prolonged rupture of membranes73.8% and deliveries conducted by untrained birth attendants, 60.5 %. Amongst the risk factors, malnourishment 67% and pre-existing anemia 42% were the most common and significant, followed by prolonged rupture of membrane 73.8% (6). A study conducted at Omdurman and maternity hospitals over 6 month's period were reviewed 45 patients were diagnosed as having puerperal infection and there were deliveries during the study period. The result of obstetric factors showed that, patients following vaginal deliveries giving a result of 0.2%. Following c/s was 1.3%. Instrumental deliveries were giving 2.1%.In this study about site of delivery showed that, home vaginal delivery (9%), unattended delivery (4%) and following hospital delivery (87%).According to route of delivery, 14 patients following vaginal delivery and episiotomy was done (31.1 %). Vaginal delivery without episiotomy was 4.4%. Instrumental vaginal delivery was (19%). Elective caesarean section (11.2%) and patients following emergency caesarean section were (53.3%)(25)

A study was done in Sudan show that those mother who developed puerperal infection due to obstetric factors are, the high prevalent rate of infection was among women who delivered vaginally (97.6%) compared to those who delivered by caesarean section (2.5%). The numbers of women who child birth vaginally had a sepsis; (96.6%) of them was delivered at home, whereas

only (3.4%) delivered vaginally at the hospital(18).Similarly Study conducted at Ife hospital in Nigeria the obstetric associated factors with puerperal sepsis showed that anemia 69.2% of cases, prolonged labor 65.7% cases and frequent vaginal examination 50.7% (9).

Aresearch conducted in kenya associated Factors with puerperal sepsis showed that the following result . There was astatistically significant association between the duration of labor and antenatal care attendance. Accordingly, the mothers who had short labor were 0.35 times more likely significant than to have attended the antenatal care visits . Additionally, the duration of labor and availability of food during the pregnancy were observed to have a statistically significant relationship(2). Similarliy Research done in the same country in Kenya Factors associated with puerperal sepsis showed that duration of labour and antenatal care attendance had significant statistical associations result.72% of the subjects had delivered their babies, and 28% of them had antenatal care attendace(26)

Study done at the university college hospital Ibadan Nigeria showed that 74 patients had caesarean Section done out of 256 deliveries giving a caesarean rate of 28.9%. The mean age of the women who had caesarean section was 30.2yrs (SD=6.3) with about half in the age group 26 to 30 years. The study participants were predominantly traders (43.2%). About 46% of the patients had tertiary education while 6.8% had no formal education. Multifarious women constituted about half of the patients and 56.8%wereunbooked(27).similarly the other study which was done in public maternity hospital of the Municipal Health Secretary in Goiania, Brazil showed that n association was found of the risk factor type ($p = 0.000$ and Relative Risk of 4.40-[3.19-6.06]), resulting in a statistically significant association between the delivery mode variable and puerperal infection. Hence, the parturient women submitted to Cesarean delivery presented a 4.4 times higher risk normal delivery (28)

Study was done in Croydon University Hospital show that the risk factors of perineal infection are high risk to obtained the obstetric notes of the women, and included premature and prolonged rupture of membranes, repeated vaginal examinations, episiotomy, type of delivery (spontaneous or instrumental) and medical problems. From the total delivery 21% of the cases are developed perineal wound infections. It was showed that the prevalence of Premature membranes rupture who developed perineal wound infection are 8%; Prolonged membranes rupture during Intra-partum 12%,>4 vaginal examinations during laboring 33%,Spontaneous vaginal deliveries58% and Instrumental deliveries 42%(29)

2.2.3 Health facility factors

A study done in Gynecology and Obstetrics Department Liquate University showed that, frequent problem was observed in undocumented population in (75.96%) cases; documented women were (24.03%) (1).

2.3 CONCEPTUAL FRAME WORK OF THE STUDY

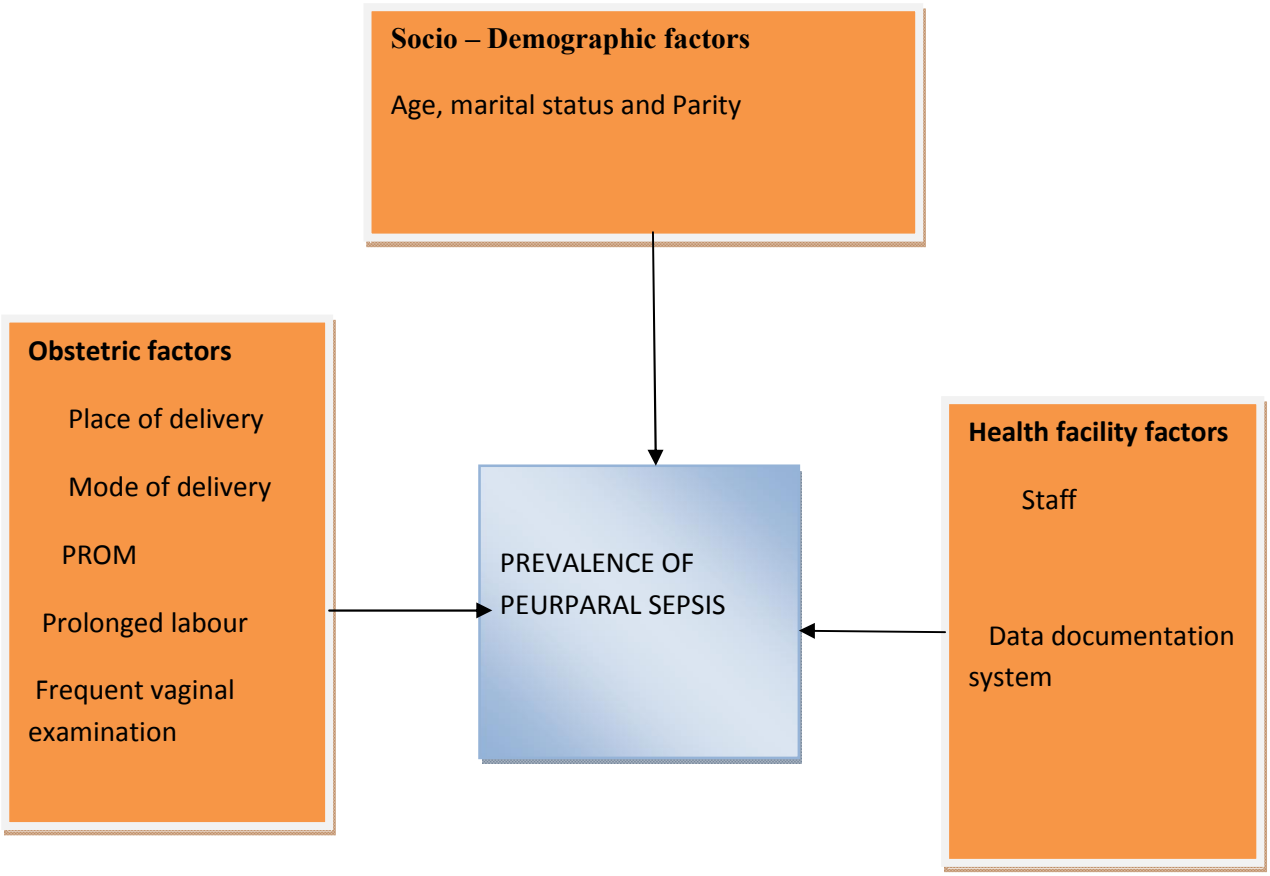

Figure 1-Shows Conceptual frame work of the prevalence and associated factors of puerperal sepsis among child birth and post natal women, 2018(4).

CHAPTER 3 OBJECTIVIES

3.1 GENERAL OBJECTIVE

To assesses the prevalence and associated factors of puerperal sepsis among post natal women in Dessie referral hospital, Ethiopia, January2016 to April, 2018.

3.2 SPECIFIC OBJECTIVES

1-To assess the prevalence of puerperal sepsis among post natal women during post natal period.

2-To determine factors associated with puerperal sepsis during post partum period.

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CHAPTER 4 RESEARCH METHDOLOGY

4.1 Study area

The study was conducted in Dessie referral hospital, Ethiopia.

Dessie town is found in south Wollo zone, eastern margin of Amhara regional state and in north central part of Ethiopia at a road distance of 401km from Addis Ababa. Astronomically, the town lies on the intersection of 11°8′N 39°38′E. Based on 2007 national census conducted by central statistics agency of Ethiopia showed that totally 151,174 people are living in dessie town .Among them,78,242 are females(30).

Dessie referral hospital is the major referral hospitals in the south wollo zone. In this hospital multi disciplinary services are given for all community from those some of them are-: labour,ANC, any gynaecological case, paediatric and neonatology service, major and minor operation, emergency care service, inpatient and out patients service, counselling and testing, ART service, laboratory service and pharmacy service.

4.2 Study period

The study was conducted from February 22 to April 22, 2018

4.3 Study design

A retrospective cross-sectional study design was conducted among post-natal women in Dessie referral hospital.

4.4 Population

4.4.1 Source of population

The study was targeted for all women who were visited Dessie referral hospital for labor and delivery and post -natal care services in between first January 2016to April 2018.

4.4.2Study population

The study population in this research were randomly selected women, who visited in Dessie referral hospital in between first January, 2016 to April, 2018.

4.5 Eligibility criteria

4.5.1 Inclusions criteria

Well Documented data about puerperal sepsis that werecomplete record and specified diagnosis during the time of data collection.

4.5.2 Exclusions criteria

Were patients presenting with fever during pregnancy, after42 days of delivery, miscarriage or patients presenting with fever due to malaria or typhoid and incomplete recorded documents.

4.6 Sample size determination

Sample size was calculated by using single population proportion formula ($n= (Z^2pq)/d^2$). The study was used at 95% level of confidence and using Prevalence of 50% to calculate the sample size determination.

P=50% q=50%, d= error at 5%

$1.96^2*0.5*0.5/ (0.05^2)$ = Sample size =384

Then 10% will add to address attrition

384 + (10%) = **422**

4.7 Sampling procedure

Systematic sampling procedure was conducted to select the study population. Sampling frame was prepared to adjust the Kth value based on sample size determination and source of populations. From the total population 12,600 of the women, who were delivered in between first January 2016 to April 2018, selected the study population by every 30 sample intervals. Patients who has been diagnose with puerperal sepsis were selected during the study period. This design was suitable since the study was focused on the prevalence and the associations between the study‘s variables exclusively on reviewing the documented data. This design was appropriate so as to get a large sample for the study.

4.8 variables

4.8.1 Independents variables

- Socio-demographic characteristics: age, marital status and gravidity status.
- Obstetric factors: mode of delivery, prolonged labour, PROM, place of delivery and vaginal examinations.
- Health facility factors: facility factors including availability of adequate: equipment, staff, referral systems and distance.

4.8.2 Dependent variable

- Puerperal sepsis.

4.9 Data collection tools

The data was collected by using instruments such as check list questionnaire to get an appropriate and relevant data in the patients documented sheet. This check list questioner was adapted from a study done in Kenya (26)

This was used to collect data from the patients' documented sheet during data collection period. Study objectives were critically scrutinized and relevant questioner check list were prepared to get relevant and appropriate data.

4.10 Pre test

Tools of pre test was done in Dessie referral hospital to check, if the research instrument met the objectives of the study.It was also important that, Irrelevant/ ambiguous questions were drop from the list and reframing was done to capture relevant information after the pre test.The hospital was served the documented data with similar characteristics of documentation system. A total of 22 documented data were tested which were documented before 2016.

4.11Data collection procedure

Data collectors were two diplomas midwifes with one BSc supervisor. Training was given for two days on clarification of some terms and assessment tools, aim of the study, concerning need for strict confidentiality of documents data information , time of data collection, timely collection and reorganization of the collected data from respective documented data and submission on due time.

Data's were collected for approximately for one month duration including training, facilitated by data collection facilitators and supervisors.

The training was included how to review the data, how to collect & record data and how to supervise the data collectors. The Supervisor was closely monitor data collectors daily during data collection. In addition, the principal investigator together with supervisor was checked the collected data daily.

4.13 Data analysis and presentation

First, the data was checked for completeness then cleaned and coded before entered to EPI data. Next data from completed check list questionnaires were entered (double entry) in to EPI DATA version 3.1 and transferred in to SPSS version 20 for analysis. The data was presented by tables, frequencies, percentage, mean, standard deviation and by descriptive method.

The analytical methods, Bi-variable and Multi- variable regression analysis were used to assess associations between the dependent and independents variables (factors associated with PS) in the study.

4.14Operational definition

Puerperal sepsis -: the occurrence of sever pelvic pain, delayed of uterine contraction, offensives vaginal discharge and temperature more than 38.5 degree during post partum period up to 42 days(1)

Prolonged labor-: when labor stays more than 24hours during child birth (27)

PROM -: in which more than 24hours has passed b/n the rapture of membrane and onset of labor (29)

PV- examination-: vaginal examination during child birth every four hours

Repeated PV- examination –: vaginal examination the time of child birth before four hours.

4.15 Ethical Consideration

Ethical clearance was obtained from Institutional Review Board of Addis Ababa University College of health science, Department of nursing and midwifery. In addition, informed verbal consent was obtained from Dessie referral hospital Executive body before reviewing the data. The researcher was informing about the aim of the study and confidentiality of the information during reviewing of the data. The findings of this study will presented and submitted to Addis Ababa

University, school of allied health science, College of Health Sciences Department of nursing and midwifery.

In addition, it will also present in different seminars and attempts to be made publish by national and international journals.

CHAPTER 5-RESULTS

This chapter presents the results of analysis of responses collected by using check list questionnaires administered to patients recording documented sheet with puerperal sepsis and associated factors among child birth and post-partum natal mothers. A total of 422 recorded documents were assessed during data collection period with response rates of 100 percent. Two BSc midwifes and one BSc nurses were participated in the data collection process. The findings in this section were sequentially arranged in the order of study's specific objectives, that is to assess the prevalence and associated factors of puerperal sepsis among women of reproductive age (15-49 years) in Dessie referral hospital.

Among the total number of 422 samples, 24(5.7%) were developed puerperal sepsis.

5.1 Socio demographic characteristics

Results in this study shows that the age of respondents ranged from 15 to 46years, with a mean age of 26.73with SD ± 5.12 years. Majority of the mothers (92.9 %) were married and 55.5 % were primi gravid. Regarding to the distance between the patient's residence and the hospitals approximately 80.1% came from a distance of more than 10kms. (See Table 1)

Table 1shows Socio- demographic characteristics of child birth and post natal women in Dessie referral hospital, Ethiopia, 2018

(N=422).

VARIABLE	FREQUENCY	PERCENTAGE (%)
AGE RANGE (Years)		
15-30	187	44.3
31-46	235	55.7
PARITY STATUS		
Primi Para	234	55.5
Multi Para	187	44.5
Marital status		
Married	392	92.9
Not married	30	7.1
DISTANCE FROM THE HOSPITAL		
< 10kms.	84	19.9
≥10kms.	338	80.1
Referred from other health facilities		
Yes	228	54
No	194	46
If referred specific place of referral		
Another hospital	3	1.3
Health center	218	96.0
Privet health facility	6	2.6

5.2. Clinical care intervention during child birth and post –partum period

This finding showed that, among the total numbers of samples 415(98.3%) of them were complain their symptom clear and precise during child birth and post partum period. From recorded, most of 415(98.3%) them were sever lower abdominal cramp and 384(91.2%) sever pelvic pain during child birth and post partum period. This result also showed that, majority 371(91.6%) of the women's body temperature were less than 38.5 °C. The other finding of the result indicates that, from the total numbers of the sample most (406) of the women were tasted their basic lab investigation during child birth and post-partum period. From the types of basic lab investigation, 406(96.2%) complete blood count, 383(90.8%) blood group and RH, 288(68.2%) hematocrit and 124(29.4%) albumin.(See Table 2)

Table -2 shows the clinical care intervantion of the women during child birth and post-partum period in Dessie referral hospital, Ethiopia, may 2018

VARIABLE	FREQUENCY	PERCENTAGE (%)
Types of chief compliant		
Severe abdominal cramp	415	98.3
Offensive Vaginal discharge	22	5.2
Severe headache	120	28.5
Sever pelvic pain	384	91.2
History of present illness during child birth and post partum period recorded		
Yes	422	100
No	0	
Body temperatures of the women during post partum period		
<38.5 °C	371	91.6
≥38.5 °C	34	8.4
Basic lab investigation done		
yes	406	96.2
no	16	3.8
Types of lab investigation (multiple option is possible)		
CBC	406	96.2
Blood group and RH	383	90.8
Hematocrit	288	68.2
Albumin	124	29.4

5.3 Obstetric characteristics of women during child birth and post- partum period

It was evident that most of the puerperal sepsis cases (87.4%) had experienced several vaginal examinations before delivery. From the total number of vaginal examination who had been examined every 4 hours were 95.1% while those women who had examined below 4 hours were 4.9%.

Among the women who had delivered and had the disease, 352(83.4%) of the respondents were found to have had deliveries in tertiary hospital, while 52(12.3%) of respondents had delivered at home. The rest, 18(4.3%)had delivered at others health care facilities like health center, health post and private clinic.

It was also found that, majority of women 369(88.1%) who had delivered had waited for their membrane rapture that lasted for below 24 hours, the rest of the women who had delivered had waited for their rupture of membrane after 24 hours were only 11.9 % .(See Table 3).

Table-3shows the distribution of obstetric characteristics of the women during child birth and post –partum period in Dessie referral hospital Ethiopia, 2018

(N=422)

VARIABLE	FREQUENCY	PERCENTAGE (%)
PV-examination		
Every 4 hours	351	95.1
Below 4 hours	18	4.9
Place of delivery		
Home	16	3.8
Tertiary health care	406	96.2
Mode of delivery		
Spontaneous	292	69.4
instrumental	44	10.5
C/S	85	20.1
Duration of labor		
6-24hours.	368	87.8
>24hours.	51	12.2
Duration of Membrane ruptured		
≤24 hours	369	88.1
>24 hours	50	11.9

5.3Prevalence of puerperal sepsis

Based on the samples which were assessed by gynecologists and midwives when those women who had symptoms of pelvic pain, fever (body temperature of 38.5°C or higher), abnormal vaginal discharge and delay in the reduction of the uterus size during child birth and post -partum period. Among the total number of 422 samples 24(5.7%) were developed puerperal sepsis. (See Table 4)

Table-4shows the obstetric characteristics and puerperal sepsis among child birth and post-natal mothers who visited Dessie referral hospital from first January 2016 - April 2018.

Variables	Puerperal sepsis	
	Yes	No
PV-examination(n=363)		
Every 4 hours	9	318
Below 4 hours	8	28
Place of delivery(n=422)		
Home	3	13
Tertiary care level	21	385
Mode of delivery(=421)		
Spontaneous	9	283
Instrumental	3	41
C/S	12	73
Duration of labor(n=419)		
6- 24 hours	16	352
>24 hours	7	44
Duration of membrane rapture(n=419)		
≤24 hours	13	356
>24 hours	11	39

5.4 factors associated with puerperal sepsis among post natal mother

Bi variable and multi variable analysis of risk factors was done to identify the significant association between the independent variables' and dependent variable .The odds ratio values were used to show the strength of association between the variables of level of significance.

The findings of bi variable regression showed that PV- examination, place of delivery, mode of delivery, maternal temperature, and duration of labor and duration of membrane rapture were significant association for the developments of Puerparal sepsis. The statistical association of multi variable regression showed that there were no significant associations between duration of labor maternal age, distance between the clients resident and health facility and place of delivery during child birth and post –partum period.

Table-5 shows Bi-variable and multi-variable regression analysis result showing association of the independent variables with the prevalence of puerperal sepsis among childbirth and post-natal women in Dessie referral hospital, Ethiopia, 2018

Variables	Puerperal sepsis		Crude odd ratio (COR)	Adjusted odd ratio (AOR)
	Yes (N (%))	No (N (%))		
Age of the women				
15-30	9(37.5)	178(44.7)	1.00	1.00
31-46	15(62.5)	192(55.3)	**1.34(0.57-.3.15)***	0.71(0.22-2.28)
Distance from the health facility				
< 10 km	4(16.7)	138(34.7)	1.00	1.00
>=10 km	20(83.2)	260(65.3)	0.976(0.556-3.06)	2.28(0.46-11.22)
Temperature				
<38.5℃	355(93.2)	26(6.8)	1.00	1.00
>=38.5℃	16(66.7)	8(33.3)	**1.92(0.47-16.12)***	**4.01(1.09-14.7)***
PV-examination				
Every 4 hours	9(52,9)	318(91.9)	1.00	1.00
Below 4 hours	8(47.1)	28(8.1)	**10.9(3.6-28.2)***	**7.22(2.22-23.)***
Place of delivery				
Home	3(12.5)	13(3.3)	**4.23(1.11-15.9)***	0.70(0.92-5.34)
Tertiary health care facility	21(87.5)	385(96.7)	1.00	1.00
Mode of delivery				
Spontaneous	9(37.5)	283(71.3)	1.00	1.00
Instrumental	3(12..5)	41(10.3)	2.3(0.59-8.84)	2.27(.41-12.5)
Cesarean section	12(50)	73(18.4)	**5.1(2.09-12.78)***	**4.77(1.38-16.47)***
Duration of labor				
6-24 hours	16(69.6)	352(88.9)	1.00	1.00
>=24 hours	7(30.4)	44(11.1)	**3.5 (1.36-8.97)***	1.90(0.43-8.30)
Duration of membrane rupture				
<24 hours	13(54.2)	356(90.1)	1.00	1.00
>=24 hours	1145.8)	39(9.9)	**7.72(3.24-18.4)***	**6.22 (1.93-20.0)***

*** P value less than 0.05**

On multiple logistic regression women who had PV examination below 4 hours during childbirth were 7 times more likely to develop puerperal sepsis than among those mothers with PV – examination every 4 hours.**(OR=7.22, 95% CI, 2.22-23)**

The study also found that maternal body temperature more than 38.5 degree were significant association to develop puerperal sepsis .This means that those mothers whose body temperature more than 38.5 ℃ were 4 times more likely to develop puerperal sepsis than those women whose body temperature less than 38.5 ℃ **(OR=4.01, 95%CI, 1.09-14.7).**

There were also significant association between modes of delivery and puerperal sepsis. Those mothers who were delivered by C/S were 5 times more likely to develop puerperal sepsis than those mothers who were delivered by spontaneous vaginal delivery **(OR=4.77, 95%CI, 1.38-16.47**).The study also assessed that duration of membrane rupture more than 24 hours was six time more likely to develop puerperal sepsis than membrane rupture less than 24 hours. **(OR=6.22, 95% CI, 1.93-20.0).**

The result of this finding showed that there was no any significant association between duration of labor and the occurrence of puerperal sepsis during childbirth and post -partum period. There were also no any association of maternal age, distance between the health facility and place of delivery for the development of puerperal sepsis during childbirth and post-natal period.

6. DISCUSSION

It was evident that from the total numbers of the sample 24(5.7%) of the women were developed puerpal sepsis during child birth and post –patum period. Study done in kenya showed that, the prevalence of puerparal sepsis to be 15%(26). Other study done in Maidunguri Teaching Hospital , Nigeria showed that the prevalence of puerparal sepsis during child birth and post patum period was 19.2%(11).This difference could be because of majorty of the mothers were delivered at the health care facilty level.the other reason for this diffence could be cultural aspect, as requiring family's permission to visit the health care facilty during pregnancy,child birth and post partum period.

This study was assessed vaginal examinations as a risk factor to puerperal sepsis. Results from PV- examination below 4 hours (repeated) during childbirth could determine the occurrence of puerperal sepsis. Repeated PV- examinations were 7 times more likely to develop of puerperal sepsis during child birth and post –partum period. This study was consistent with study conducted at Ife hospital, Nigeria in which frequent vaginal examination was strongly associated with the occurrence of puerperal sepsis during child birth and post –partum period(9). This was because of prolonged state of an open cervix often impairing natural mechanical barriers to ascending infection from vagina.

In this finding (93.2%) of the women body temperature were less than 38.5 ℃. This study showed that body temperature more than 38.5 ℃ **(OR=4.01, 95%CI, 1.09-14.7**) were 4 times more likely to develop puerperal sepsis during childbirth and post –partum period. Similar study conducted at the University of Iowa Hospitals and Clinics showed that, the maternal body temperature more than 38.5 ℃ were significantly associated with the developments of puerperal sepsis during child birth and post –partum period(24). The other study done in South Asia showed that, maternal body temperature more than 38.5 degree during child birth was not significantly associated with the occurrence of puerperal sepsis during child birth post-natal period(21).This was because of sample sized difference during study period.

Results of this study showed that, majority (69.4%) of the women were delivered by spontaneous vaginal delivery. Study of multi variable regression analysis showed, mothers who were delivered by C/S **(OR=4.77, 95%CI, 1.38-16.47**) were 5 times more likely to develop puerperal sepsis than spontaneous vaginal delivery during child birth and post-partum period. Similar study done at public maternity Hospital of the Municipal Health Secretary in Goiania (GO), Brazil and Sudan showed that, modes of delivery by C/S were significantly association to develop puerperal sepsis than spontaneous vaginal delivery during child birth and post- partum period (10, 28).This result was highly consistent with study done in Brazil and Sudan. This was because of due to lack of implementation of aseptic technique during operation time. Most of the operation areas were not enough sterile, so that those mother who were delivered by C/S had high chance to develop puerperal sepsis during child birth and post-partum period.

In this study the result of duration of membrane rupture before 24 hours were (81.1%). This finding showed that duration of membrane rupture during child birth more than 24 hours **(OR=6.22, 95% CI, 1.93-20.0)** were significant association with the developments of puerperal sepsis during child birth and post- partum period. This result was in line with study done in Croydon university hospital(29).This was because of bacterial infection were enter in to the vagina and cervical area after rapture of membrane for a long time during child birth.

7. LIMITATION OF STUDY

- These results were limited to only one referral hospital therefore; this cannot be represented the whole population of this region about puerperal sepsis.
- The other limitation of this study was types of study design. Using Retrospective study sometimes, the documented sheets were incomplete which made it so difficult to get accurate information during data collection process.

8. CONCLUSIONS AND RECOMMENDATIONS

8.1 CONCLUSION

This research showed that the prevalence of puerperal sepsis in Dessie governmental referral hospital was 5.7%. The results of this research showed that most of the maternal ages were found between 31-46 years interval. Among the total number of the samples majority of the women were primi gravid.

PV- examinations were independently associated with the development of puerperal sepsis during childbirth, in Dessie governmental referral hospital. This finding may be help to improve the health professional awareness about identification of risk factors of puerperal sepsis during childbirth period. In addition, maternal body temperature, mode of delivery and duration of membrane ruptures were others factors that were significantly associated with the developments of puerperal sepsis during childbirth and post-natal period.

8.2 RECOMMENDATIONS

In view of the findings of this study, the following recommendations can be made:

For health care professionals

- Health professionals in Dessie Referral hospital should minimize frequency of PV examination towards WHO recommendation.
- There is need for special health education on Puerperal Sepsis followed by Education of the community on hygiene among post-partum mothers to prevent cases of infections in Dessie referral hospital.

- Management staffs and Health care staffs should be holding frequent health education about prevention and control of puerperal infection during child birth and post natal period.

For health bureau

- The south wollo zone health bureau and the Financial Authorities should consider funding the hospital to create an enabling environment for the Facility to carry out awareness creation on Puerperal sepsis to their patients.
- The regional government should consider improving the infrastructure in this area; this includes building accessible roads and improving those that already exist. This will help the health care staff to access the community to give the appropriate treatments, good counseling and to create good health seeking behavior on PS.
- For researchers more strong primary study needs to be conducted on puerperal sepsis.

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ANNEXES

Annex I

Information sheet to get permission for the proposal

This sheet is to be read for the participants of the study. Good morning/afternoon, my name is_____ And I am one of the data collectors for the study being conducted by Addis Ababa University, College of Health Sciences, school of allied health science department of nursing and midwifery on assessment of the prevalence and associates factors of puerperal sepsis among post natal women at Dessie referral hospital, Ethiopia, 2018. The documented data's are selects for my research scientifically reviewed data are needs for this study .if you give me consent after you will have understood the following information sheet.

The aim of this study is to have a simple picture of what happens to patients with puerperal sepsis complication treated by the facility and ideally by health profession .The patients pathway mapping will be done using this semi structured checklist which helps to capture patients presentation to the facility, initial patient evaluation, follow-up patient care, puerperal sepsis interventions and outcome.

Selection of the patient charts

Look at the delivery/maternity register and select the cases with puerperal sepsis. Using patient card numbers identified from the register retrieve patient records.

Review each of the patient records using the mapping tool taking note of the key parameters with the healthcare provider present. After you have completed the patient's record review, meet with the healthcare provider who was mainly involved in the care of the cases and start discussing the details of the case, gaps and reasons for observed gaps case by case.

Conversely, some Hospitals may have faced much more puerperal sepsis complications: in this case try to select the most recent, when recall problem is not satisfied. Before discussion about the cases with the health professions:

Ensure that I inform the health worker the aim of the study is to document success, challenges and lessons of reviewing the documents about the puerperal sepsis.

Inform the health worker the patient's pathway mapping aims to look what happens to the patents with puerperal sepsis complication and by no means is it a managerial inquiry. The information generated the process will never be used to judge individual practitioner performance and will be confidential.

Take informed verbal consent from the health worker providing information about confidentiality and security of the documented data during data collection period.

Annex II

Questionnaire

General instructions: on this questionnaire there is no need to write the name or the Addresses of the documented data site. Therefore, there is no means to identify who filled the questionnaire. Though some of the questions touch personal life and secret, we kindly request you to give the true and Right answer after reviewing the documented data. The purpose of this study is to Assesses the prevalence and associated factors of puerperal sepsis among post natal women in Dessie referral hospital, 2018.

Code no_____

ASSOCIATD FACTORS FOR PUERPARAL SEPSIS	
SECTION-1 : PATIENT GENERAL INFORMATION AND PRESENTING CONDITION	
1.Patient's Woreda	_____
2.Distance from the health facility	A. below 10 km B. more than 10 km
3.Is the patient a referral from other Facility	A. Yes B. No
4.If yes specify facility type	A. Another Hospitals B. Health center C. Private health facility
6.Age of the mother	_____years
7. Number of gravidity	A 1 B 2 C 3 D >=4

8. marital status	A. married B. not married
9.Diagnosis at admission	A. Malaria B .typhoid fever C. puerperal sepsis D.vaginitis E. In labour pain_____

SECTION 2: REVIEW OF CLINICAL CARE AND INTERVENTIONS

1.Chief Complaints with its duration documented	A. Yes B.
2 If yes Q no 1 what type of chief complaint was recorded .more than one chief compliant is possible to record with the documented data?	A. Abdominal cramp B. Offensif vaginal discharge C. Severe head ach D. Pelvic pain E. Others_____
3. History o f presenting illness is documented?	A. Yes B. No
4. If yes Q No 3 what types of presenting illness was recorded?	A. Sever lower abdominal cramp B. Offensif and high amount of Vaginal discharge. C.Severe pelvic pain D .Sever head ach E. Others_____
5. Vital signs taken and documented	A.Yes B. No
6. If yes Q no 5 what types vital sign done(more than one opinion was possible)	A. Pulse rate_____ B. Temperature_____ C.Blood pressure_____ D.Respiratory rate _____
7.Specify diagnosis at initial evaluation	A. puerperal sepsis B. Typhoid fever C. Malaria D. Others_____

8. The patient's history and physical examination findings documented. Are the diagnosis/Overall Assessment accurately?.	A.Yesaccurate /appropriate B.Not accurate /appropriate C.Not possible to tell from the documentation
9. Is thier any basic lab investigations in the documented sheet?	A. Yes B. No
10. If yes Q No 9 what kind of lab investigation recorded in the documented sheet?	A. WBC B. widal flex C. blood film D.VDRL

PUERPARAL SEPSIS INTERVENTION	
1. Is there timely and appropriately intervention after initial and follow up on managing puerperal sepsis?	A. Yes B. No
2. If yes what types of intervantion and management were given?	A. Fully documented and Yes it is in line with proper management B. Fully documented but it is not in line with the proper management. C. Not documented properly and can't tell
3. What types the intervention done to manage puerperal sepsis?	A. Intravenous antibiotics B. Intra muscular antibiotics C .Referral D .Others (Specify) _____
4. What was the indication or diagnosis for the puerperal sepsis intervention?	A .Fever B. Severe headache C. Offensif vaginal discharge D. Abdominal cramp E. Others _____

Section- 3 Labouring conditions of the women during child birth	
1. Is thire parthograph sheet in the documentation sheet?	A. Yes B. No
2. If yes how long interval PV –Examination was recorded in the parthograph?	A. before 4hours B. every 4hours
3. Place of deliveries during child birth time?	A. Home B. Tertiary care level
4. What was the mode of the last delivery in the documented sheet?	A. Spontaneous vaginal delivery B. caesarean delivery C. instrumental/assisted delivery
5. What was the duration of labour in the documentation sheet during delivery?	A. 6-12 hours B. >24 hours
6. How long did the rapture of the membrane take during child birth?	A. ≤24 hours B. > 24 hrs