

**ASSESSMENT OF PROVISION OF IMMEDIATE POSTNATAL CARE FOR  
MOTHERS AND THEIR NEWBORN BABIES AND ASSOCIATED FACTORS AT  
JUMC MATERNITY WARD**

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# ABSTRACT

## Background

Postnatal period is the first six weeks (42 days) following delivery of the baby. The immediate postnatal period covers the first 24 hours following childbirth. The time immediately following childbirth is a period of high risk for mothers and newborns. Lack of appropriate care during this period could result in significant ill health, disabilities and even deaths. Despite its importance, this is the most neglected time for the provision of quality services in developing countries.

## Objectives

The primary aim of this study was to assess provision of immediate post natal care for postnatal mothers and their newborn babies at Jimma University Medical Center (JUMC) maternity ward.

## Subjects & Methods

There were a total of 806 (571 Spontaneous vaginal and 235 cesarean) deliveries at Jimma University Medical Center maternity ward during the study period. A total of 420 women who fulfilled the inclusion criteria were approached and gave consent. A total of 420 postnatal mothers and 37 maternity health workers were included in the study. Consecutive sampling procedure was used. Cross-sectional non participatory observational study was conducted by using structured clinical observation checklists to assess provision of immediate post natal care for postnatal mothers and their newborn babies at Jimma University Medical Center maternity ward. Two sets of structured questionnaires were used to collect data from the mothers and the maternity health care providers. The checklist and questionnaires were prepared based on the World Health Organization recommendations on postnatal care of the mother and newborn. Data was collected by two midwives recruited from health providers working at JUMC maternity ward. Prior to the data collection they were familiarized with the questionnaires and the interview guides. Ethical clearance was obtained from Jimma University Medical Center College of medical science. Data analysis was done by SPSS version 20 computer software.

## Result

Adequate immediate post natal care (PNC) was provided for both postnatal mothers and their babies only in 4 (1%) of case. A total of 148 (35.2%) women received all maternal observation components and 2 (0.5%) did not receive any of the components. Only 13 (3%) of the newborns received all components of essential newborn care and 8 (1.9%) of babies did not received any of essential newborn care (ENC) components. Majority of mothers were not advised on danger signs to themselves 263 (62.6%) and their baby 260(61.9%). Similarly majority of mothers were not advised on other maternal care 369 (87.9%) and baby care 403 (96%) components of postnatal care. A total of 26 (70.3%) of maternity health workers (MHW's) had adequate knowledge towards immediate PNC.

## Conclusion and recommendations

The findings of this study suggest that several aspects of immediate postnatal observation and monitoring of mothers and their newborns need significant improvement. There is also lack of advice, information and counseling given to mothers concerning danger signs to the mother and her baby.

## **ACKNOWLEDGMENT**

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## **LIST OF ABBREVIATION**

**ANC** = Antenatal Care

**C/S** = **Cesarean Section**

**EBF** = Exclusive Breast Feeding

**EDHS** = Ethiopia Demographic Health Survey

**EMDHS** = Ethiopia Mini Demographic and Health Survey

**ENC** = Essential Newborn Care

**ETB** = Ethiopian Birr

**HIV** = Human Immunodeficiency Virus

**HF** = Health Facility

**HW** = Health Worker

**IM** = Intramuscular

**ITN** = Insecticide Treated Net

**JUMC** = Jimma University Medical Center

**LBW** = Low Birth Weight

**MMR** = Maternal Mortality Rate

**PMTCT** = Prevention of Mother- to - Child Transmission of HIV

**PNC** = Postnatal Care

**SPSS** = Statistical Package for Social Sciences

**SSA** = Sub-Saharan Africa

**SVD** = Spontaneous Vaginal Delivery

**UNICEF** = United Nations Children's Fund

**WHO** = World Health Organization

# CHAPTER ONE

## INTRODUCTION

### 1.1 BACKGROUND INFORMATION

Postnatal period is the first six weeks (42 days) following delivery of the baby. The immediate postnatal period covers the first 24 hours following childbirth (whether at home or in a health facility), during which the baby's physiology adapts and the risks to the mother of postnatal hemorrhage, and other significant morbidity are highest. Days 2 through 7 are defined as the early postnatal period and the period from Days 8 through 42 as the late postnatal period [1].

The World Health Organization (WHO) stated that if birth is in a health facility, mothers and newborns should receive postnatal care in the facility for at least 24 hours after birth. During the immediate postnatal period, all postpartum women should have regular assessment of vaginal bleeding, uterine contraction, fundal height, temperature and heart rate (pulse rate) measurement routinely. Urine void should be documented within six hours. All women should be given information about the physiological process of recovery after birth, and told that some health problems are common, with advice to report any health concerns to a health care professional; Women should be counseled on nutrition, hygiene, birth spacing and family planning. Contraceptive options should be discussed, and contraceptive methods should be provided if requested. Iron and folic acid supplementation should be provided for at least three months after deliver [2].

Promotion of essential newborn care practices is one strategy for improving newborn health outcomes. The WHO has defined essential newborn care to include clean delivery and clean cord care, thermal protection, early and exclusive breastfeeding, initiation of breathing and resuscitation, eye care, immunization, care for the low birth weight newborn, and management of newborn illness [3].

According to the WHO report, the global Maternal Mortality Rate (MMR) in 2015 was estimated at 216 per 100,000 live births. This translates into approximately 830 women dying every single day due to the complications of pregnancy and childbirth. Almost all of these deaths occurred in low-resource settings, and most could have been prevented. The African Region bore the highest burden with almost two thirds of global maternal deaths occurring in the region. The primary causes of maternal deaths are hemorrhage (mostly bleeding after childbirth), hypertension during pregnancy (pre-eclampsia and eclampsia), sepsis or infections, and indirect causes mostly due to interaction between pre-existing medical conditions and pregnancy [4]. The estimate of the maternal mortality rate in Ethiopia for the 7-year period preceding the 2016 EDHS was 412 deaths per 100,000 live births; that is, for every 1,000 births in Ethiopia, there are about 4 maternal deaths. The neonatal mortality rate was 29 deaths per 1,000 live births [5].

An estimated 5.9 million children under 5 years of age died in 2015, with a global under-five mortality rate of 42.5 per 1000 live births. Of those deaths, 45% were newborns, with a neonatal mortality rate (NMR) of 19 per 1000 live births. The major causes of neonatal mortality in 2015 were prematurity, birth-related complications (birth asphyxia) and neonatal sepsis. The provision of effective care for all women and babies at the time of birth in facilities could prevent an estimated 113 000 maternal deaths, 531 000 stillbirths and 1.3 million neonatal deaths annually [4]. According to EDHS 2016 the NMR in Ethiopia was 29 deaths per 1,000 live births [5].

The time immediately following childbirth is a period of high risk for mothers and newborns. “Around 65% of maternal deaths and 75% of newborn deaths occur in the first seven days after the birth, and around half of these deaths occur in the first 24 hours. A newborn baby is about 500 times more likely to die in the first day of its life than at one month of age. This is compelling evidence to provide optimum and integrated maternal and newborn care during the first few days after delivery. “If all newborns received high impact and cost-effective interventions during the postnatal period, it is estimated that neonatal mortality could be reduced by between 10-27%. In other words, high postnatal care coverage could save up to 60,000 newborn lives a year in Ethiopia [6]. Major changes occur during postnatal period which determines the well-being of mothers and newborns. Yet, this is the most neglected time for the provision of quality services. Lack of appropriate care during this period could result in significant ill health, disabilities and even deaths [1].

Early neonatal mortality significantly contributes to the overall under-five child mortality of a nation. UNICEF has shown that early neonatal mortality alone accounts for about 40% of deaths of children aged less than five years, and nearly 60% of deaths of infants aged less than one year. Newborns whose mothers have died during labor and delivery, or in the postnatal period, have an even greater chance of dying themselves, partly due to the lack of postnatal maternal care, but also because the causes of maternal mortality and morbidity also pose a high risk to the baby [6] . The provision of effective care for all women and babies at the time of birth in facilities could prevent an estimated 113 000 maternal deaths, 531 000 stillbirths and 1.3 million neonatal deaths annually [4].

Despite its importance, this period is generally the most neglected in developing countries[8] and most mothers and newborn babies do not receive postnatal care services from a skilled health care provider during the critical first few days after delivery [9, 10]. In developed countries virtually all women and their infants receive PNC, even though the nature and frequency of this care varies considerably [8]. However, in developing countries even the need for care and support after birth was less recognized and approximately one-third of women in sub-Saharan Africa give birth in facilities, and no more than 13 percent receive PNC within two days of delivery. Whether women deliver at home or in a facility, PNC services are often absent. Moreover, PNC services, where available, often lack essential elements of care required for the optimum health of the mother and her newborn [7].

The level of postnatal care coverage is extremely low in Ethiopia. According to the 2014 Ethiopia Mini Demographic and Health Survey (EMDHS), only 13 percent of women received postnatal care within two days, as recommended. The great majority of women (82 percent) with a live birth in the preceding five years did not receive a postnatal checkup at all. Among women who received a postnatal checkup, 8 percent were examined within 4 hours of delivery, 3 percent within 4-23 hours, 2 percent within 1-2 days, and 5 percent within 3-41 days of delivery. Twelve percent of women received postnatal care from a doctor, nurse, or midwife. One

percent of women received care from a HEW. This report also indicated that the level of PNC coverage was extremely low in Oromia region (12.8%) and only few (10.9%) of mothers received PNC service within 48 hours after gave birth [11].

## 1.2 STATEMENT OF THE PROBLEM

Mothers and their newborn babies are at highest risk of dying during the early neonatal period, especially in the first 24 hours. Around 45-50% of the mothers and newborns who die do so in the first 24 hours after birth. The most critical period for complications in the postnatal mother arising from bleeding (post-partum hemorrhage) is in the first 4-6 hours after delivery, due to excessive blood loss from the site where the placenta was attached to the mother's uterus, or from rupture of the uterus during labor and delivery. Hemorrhage can also threaten the baby's life if it occurs before delivery and the baby is starved of oxygen and nutrients. Both the mother and the baby are also at high risk of developing other complications if the physiological adjustments that take place in their bodies after the birth do not occur properly. This can result in loss of function or interruption of essential supplies of oxygen and nutrients needed to sustain Life [5].

If all newborns received high impact and cost-effective interventions during the postnatal period, it is estimated that neonatal mortality could be reduced by between 10-27%. In other words, high postnatal care coverage could save up to 60,000 newborn lives a year in Ethiopia, This is compelling evidence to provide optimum and integrated maternal and newborn care during the first few hours and days after delivery. This high risk period is also the time with the lowest coverage of maternal and child health care in Ethiopia. In practice, whether the woman delivers her baby at home or in a health facility, in the majority of cases postnatal care services are not routinely available in Ethiopia. Even if postnatal care is available, it is often not practiced properly, due to lack of knowledge and skill by the health workers, and at times due to lack of essential equipment and supplies [6].

## CHAPTER TWO

### LITERATURE REVIEW

Evidence from developing countries worldwide suggests that a simple package of interventions, such as providing advice on postnatal danger signs, advice on self-care, and iron folate supplementation, as well as early detection and referral of postnatal maternal complications, are effective in reducing maternal mortality [12]. Furthermore, the following interventions have been proven to significantly reduce neonatal mortality: resuscitation of new-born baby (6-42% reduction in mortality), promotion of breastfeeding (55-87%), prevention and management of hypothermia (18-42%) and kangaroo mother care (reduction in 75% in incidence of infections) [13].

Postnatal care also provides a unique opportunity to connect women to other health interventions within the continuum of care and to promote healthy behaviors. Evidence from Latin America suggests that contraceptive uptake is higher when women receive immediate postpartum contraception [14], and a randomized controlled study from Syria showed that exclusive breastfeeding was higher for women who received postnatal visits [15]. Such interventions, especially when delivered as a package of care linking maternal and new-born health, can be very cost effective. Postnatal care is twice as cost effective as intrapartum care, and 20 to 100 times cheaper than providing PMTCT [16].

According to a baseline evaluation of maternal and newborn health Care Services in 4 hospitals, 123 health centers, and 307 health posts among 25 woredas selected from Amhara, SNNP, Oromiya and Tigray regions of Ethiopia in 2013, the median length of stay after delivery was reported to be six hours. All hospitals provide immediate and essential newborn care except two Hospitals lack services for advanced resuscitation support and pediatric nursery services. At health center level, 83.7% of health centers have basic neonatal resuscitation services, 89.4 % have warmth and drying of baby services, 91.9% have eye prophylaxis, 92.7% have clean cord care, 6.5% have incubator for newborn care, 6.5% have advanced neonatal support services, 6.5% have pediatric nursery services and 97.8 % have early and exclusive breast feeding counseling services [17].

According to a study done in Pradesh, India in 2013 on maternal and newborn health, including 4062 postnatal women, just over half of women reported having a post-partum check in the first 48 hours after birth. Over 90% of newborns had their umbilical cord cut with a new blade, similarly high for the number whose cord was tied with a new or boiled string, and 70% had nothing put on the cord in the first days after birth. However, just half of newborns had all these elements of clean cord. Coverage of the live saving thermal care behaviors immediate drying and immediate wrapping were high at over 75%, but the practice of delayed bathing was low with just one quarter of newborns benefiting from this life saving behavior. Fifty-one percent of newborns were breastfed immediately at birth [18].

An assessment of postnatal care education given to mothers pre-discharge in health facilities in Nairobi County in 2014 including 19 facilities and 422 mothers showed that danger signs for PPH and postpartum sepsis (infection) were specified in all facilities. Breast problems were specified in 88% of the facilities while signs of anemia were specified in 71% of the facilities. All the other danger signs were specified in less than half of the facilities with pre-eclampsia, obstetric fistula, eclampsia and puerperal psychosis being specified in 47%, 29%, 23% and 18% of the facilities only. Seventy percent of the respondents initiated breastfeeding within the

recommended 1 hour after delivery and 73% noted that they had been shown how to latch. The highest percentage of respondents, 46%, were not advised on when to go back to the facility, 25% advised to go back after six weeks, 21% told to return at the recommended time i.e. after 1-2 weeks or in case of danger and 8% advised to go back only if danger arises. Concerning danger signs to the baby, Baby refusing to feed scored the highest at 86%, followed by poor body temperature at 85%, wet or pus in the cord 77%, jaundice 72%, difficult breathing 71%, first bowel or bladder movement 50%. On the lower side, lethargy and swollen eyes scored 34%, diarrhea 27% and convulsion got the least at 20%. Other components of maternal education that were assessed were benefits of EBF to the baby which had the highest score at 96%, the subsequent immunizations at 91%, need to maintain baby's warmth at 86%, importance of growth monitoring at 75%, ensuring baby sleeps under ITN 64%, how to bath the baby 63%, cord care 62% and finally delay of first bath scored a mere 33% [19].

A Quality of Care Study on prevention and management of common maternal and newborn complications in the 19 Ethiopia's Hospitals in 2011 showed that only 21 (18%) of newborns received all elements of essential newborn care. only 14 (12%) were placed skin-to-skin on the mother's chest or abdomen. In a third (33%) of the cases the health workers helped the mother to initiate breastfeeding within the first hour of delivery and delay cord clamping/tying until the pulsations had stopped or at least 2–3minutes after birth [24].

## **CHAPTER THREE**

### **SIGNIFICANCE OF THE STUDY**

The time immediately following childbirth is a period of high risk for mothers and newborns. This is also the time when effective postnatal care can make the most difference to the health and life chances of mothers and newborns. This is because of a large proportion of maternal and neonatal deaths occur during the first 48 hours after delivery as indicated in different literatures. Therefore, the skilled care provided during labor and delivery has to continue during the immediate postnatal period for both the mother and the baby to reduce the maternal and neonatal deaths.

The coverage for postnatal care still remains low in Ethiopia. According to the EDHS 2016 the national coverage of postnatal care within 2 days of delivery is 15.6 %, the lowest coverage was in Oromia Region that is 9 % [5]. There is also limited information on provision of immediate postnatal care services in the study area and previously no research were conducted regarding immediate postnatal care services in the study area. Therefore this study was designed to assess the provision of immediate PNC and its associated factors in the study area and the results of this study would help as an important input for any possible intervention aimed at improving the immediate PNC service provision in the study area.

# **CHAPTER FOUR**

## **OBJECTIVES**

### **4.1 General objective**

To assess provision of immediate post natal care for postnatal mothers and their babies at JUMC maternity ward.

### **4.2 Specific objectives**

1. To determine the proportion of post natal mothers who receive adequate immediate postnatal care
2. To determine the proportion of neonates who receive adequate immediate postnatal care
3. To assess the knowledge of maternity health workers towards immediate postnatal care

# **CHAPTER FIVE**

## **METHODS AND MATERIALS**

### **5.1 Study area and Period**

- The study was conducted at JUMC maternity ward, Jimma; from 22/05/ 2017 – 25/07/2017.

### **5.2 Study Design**

- Cross-sectional non participatory observational study design was used.

### **5.3 Population**

**5.3.1. Source population:** - All mothers who gave delivery at JUMC maternity ward during the study period.

**5.3.2. Study Population:** - Postnatal mothers and their babies at JUMC maternity ward selected from the source population within the study period by consecutive sampling method.

### **5.4 Inclusion and exclusion criteria**

#### **5.4.1 Inclusion criteria**

- Postnatal mothers who delivered vaginally and their babies at JUMC maternity ward.

#### **5.4.2 Exclusion criteria**

- Postnatal mothers who delivered by cesarean section.
- Postnatal mothers who has postpartum complications.
- Postnatal mothers whose babies are sick and admitted to neonatal intensive care unit.
- Postnatal mothers whose babies have died

## 5.5 Sample size and sampling technique

Sample size is determined by using **single proportion** formula

$$N = \frac{(Z_{\alpha/2})^2 pq}{d^2}$$

Where

**d** = margin of error = 0.05

**Z** = the standard normal value and equals 1.96 at 95% confidence interval.

**P** = an estimate prevalence rate. In this case, it equals 50%.

**q** = 1-p = disease free values, in this case, it equals 50%.

**No** = Total sample size require

$$\Rightarrow N_o = \frac{(1.96)^2 (0.5) (0.5)}{(0.05)^2} = \mathbf{384}$$

- After adding a 10% non-response rate (38.4), the total sample size will be **422**.
- There are 30 female and 10 male health workers at JUMC maternity ward. Thirty seven of the health workers found working in JUMC maternity ward during the period of study were targeted for inclusion in the study. Each of the respondents was picked based on availability on voluntary basis.

## **5.6 Data collection and measurement**

### **5.6.1 Variables**

#### **Dependent variables**

- Provision of immediate post natal care for postnatal mothers and their babies

#### **Independent variables**

- Age
- Religion
- Ethnicity
- Parity
- Marital status
- Occupational status
- Educational status
- Income
- Knowledge of maternity health workers towards immediate postnatal care

### **5.6.2 Data collection instruments**

Two tools were used in this study, namely structured interview questionnaire and an observational checklist. Two sets of structured questionnaires were used to collect data from postnatal mothers and the maternity health providers. Structured clinical observation checklists were used to collect data regarding provision of immediate PNC to mothers and their newborns. The checklist and questionnaires were prepared based on the WHO recommendations on postnatal care of the mother and newborn [2].

### **5.6.3 Data collection method**

Data was collected by two midwives recruited from health providers working at JUMC maternity ward. They were familiarized with the questionnaires and the interview guides. The investigator guided the process addressing each question and confirming everyone understood the tools. Other MHW's were not informed that data is being collected. The selected mothers were approached and invited to participate. The purpose for the study was explained. A verbal consent was obtained from the discharged mothers and exit interview was made by their bedsides. Data was collected during day and night time throughout the data collection period.

The maternity health workers who were available and gave consent were approached. They were briefed on the purpose of the study and a structured questionnaire was administered by the data collectors.

### **5.6.4 Data analysis**

The collected data was analyzed with SPSS version 20 program and the results are presented by using tables and figures. Frequency distribution by percentage, mean and median was used.

### 5.6.5 Ethical consideration

Letter from department of pediatrics and child health was written to JUMC maternity ward to get the permission to collect the data. Informed verbal consent was secured from each study participant after explaining the objective of the study. The right to refuse to participate at any point (before and during) the questionnaire filling was assured. The respondent's name was mentioned so as to keep the confidentiality.

### 5.6.6 Operational Definition

**Postnatal period:** - is the first six weeks (42 days) following delivery of the baby.

**Immediate postnatal period:** - covers the first 24 hours following childbirth.

**Postnatal care:** - is the care given to the mother and her newborn baby by health workers immediately after the birth and for the first six weeks of life.

**Immediate postnatal care:** - Care provided to mothers and their newborn babies by health workers within the first 24 hours following childbirth.

**Early neonatal period:** - the time just after the delivery and through the first seven days of life.

**Neonatal period:** - is the time from birth to the 28th day after the birth.

**Neonatal mortality rate:** - The probability of dying within the first month of life per 1,000 live births.

**Infant mortality rate:** - The probability of dying before the first birthday per 1,000 live births.

**Under five Mortality rate:** - The probability of dying before the age of five year per 1,000 live births.

**Maternal mortality rate:** - The probability of mothers dying from causes associated with complications of pregnancy or child birth per 100,000 live births.

#### **Adequate Immediate Postnatal Care for Mothers includes:**

- Regular assessment of vaginal bleeding, uterine contraction, fundal height, temperature and heart rate (pulse) routinely during the first 24 hours starting from the first hour after birth
- Counselling on signs and symptoms of postpartum hemorrhage, pre eclampsia/eclampsia, infection and thromboembolism. Other elements of counseling includes EBF from birth until 6 months of age, nutrition, hygiene, family planning, safer sex including use of condoms and use of ITN.
- All women should be counseled on danger signs to the baby which includes stopped feeding well, history of convulsions, fast breathing (breathing rate of  $\geq 60$  per minute), severe chest in-drawing, no spontaneous movement, fever (temperature  $\geq 37.5$  °C), low body temperature (temperature  $< 35.5$  °C), any jaundice in first 24 hours of life, or yellow palms and soles at any age.
- Iron and folic acid supplementation should be provided for at least 3 months after delivery.

### **Adequate Immediate Postnatal Care for the Newborn includes:**

- Immediately at birth, all babies should be dried thoroughly and their breathing assessed.
- The cord should be clamped and cut only after 1–3 minutes, unless the baby needs resuscitation.
- During the first hour after birth, the baby should be in skin-to-skin contact with the mother for warmth and the initiation of breastfeeding.
- Appropriate clothing of the baby
- Eye and vitamin K prophylaxis
- Clean, dry cord care remains the standard recommendation for newborns born in health facilities.
- Delayed bathing, skin-to-skin contact and immunization according to EPI
- The infant vital signs are checked.

### **Adequate Knowledge towards Immediate Postnatal Care:**

- The measure for adequacy of knowledge was  $<50\%$  inadequate and  $\geq 50\%$  considered as adequate.

## CHAPTER SIX

### RESULT

There were a total of 806 (571 SVD and 235 C/S) deliveries at JUMC maternity ward during the study period. A total of 422 women who fulfilled the inclusion criteria were approached and 420 of them gave consent to participate in the exit interviews. The mean age (SD) was 25.50 (4.89) years. Most 293(69.8%) were aged between 20 and 29 years of age. The minimum age was 17years and maximum 45 years.

Majority of mothers were Oromo 292 (69.5%) and Muslim 263 (62.6%). Almost all mothers were married 413(98.3%); 196 (46.6%) were primiparous and 26(6.1%) are grand multiparous. Majority of mothers 407 (96.9%) had ANC follow up mainly in Hospitals 204 (48.5%), as shown in Table 2 below.

**Table 1:** Showing the Frequency of Women by Socio-demographic Variable, JUMC, 2017

Variables		Frequency	Percentage
<b>Ethnicity</b>	Oromo	292	69.5
	SNNP	80	19.0
	Amhara	39	9.3
	Tigray	8	1.9
	Others	1	0.2
	<b>Total</b>	<b>420</b>	<b>100</b>
<b>Religion</b>	Muslim	263	62.6
	Orthodox	105	25.0
	Protestant	47	11.2
	Catholic	4	1.0
	Others	1	0.2
	<b>Total</b>	<b>420</b>	<b>100</b>
<b>Education Status</b>	Unable R&W	92	21.9
	Primary	153	36.4
	Secondary	93	22.1
	College	81	19.3
	Other	1	0.2
	<b>Total</b>	<b>420</b>	<b>100</b>
<b>Occupation</b>	Unemployed	61	14.5
	Self employed	49	11.7
	Housewife	195	46.4
	Private employee	32	7.6
	Government employee	83	19.8
	<b>Total</b>	<b>420</b>	<b>100</b>
<b>Income</b>	0-500	100	23.8

	501-1500	162	38.6
	1501-2500	31	7.4
	Above 2500	127	30.2
	<b>Total</b>	<b>420</b>	<b>100</b>
<b>Marital Status</b>	Married	413	98.3
	Unmarried	7	1.7
	<b>Total</b>	<b>420</b>	<b>100</b>
<b>Parity</b>	1	196	46.7
	2 - 5	207	49.3
	≥ 6	17	4
	<b>Total</b>	<b>420</b>	<b>100</b>
<b>ANC Follow Up</b>	Yes	407	96.9
	No	13	3.1
	<b>Total</b>	<b>420</b>	<b>100</b>
<b>ANC Follow Up Site</b>	HC	204	48.6
	Hospital	148	35.2
	Private clinic	55	13.1
	<b>Total</b>	<b>407</b>	<b>96.9</b>
<b>Number Of ANC Visit</b>	< 4	162	39.8
	≥ 4	245	60.2
	<b>Total</b>	<b>407</b>	<b>100</b>

Majority of the respondents were not advised about danger signs in the mother 263 (62.6%) and the baby 260(61.9%). Signs of infection 144 (34.3 %) and puerperal psychosis 19 (4.5%) are the most and the least mentioned danger sign to the mother respectively. Most common mentioned danger sign to the baby was poor sucking 154 (36.7 %), whereas change in mental status was not mentioned at all, as shown in Table 3 below.

**Table 2:** Showing the Frequency of information and counseling given to mother on specific danger sign to the mother and her baby, JUMC, 2017.

<b>Variables</b>		<b>Frequency</b>	<b>Percentage</b>
<b>Advise about danger signs in the mother</b>	Yes	157	37.4
	No	263	62.6
	<b>Total</b>	<b>420</b>	<b>100</b>
<b>Advise on Breast Problems</b>	Yes	24	15.3
	No	133	84.7
	<b>Total</b>	<b>157</b>	<b>100</b>
<b>Advise on Signs Of Puerperal Infection</b>	Yes	144	91.7
	No	13	8.3
	<b>Total</b>	<b>157</b>	<b>100</b>
<b>Advise on Signs Of PPH</b>	Yes	55	35
	No	102	65

	<b>Total</b>	<b>157</b>	<b>100</b>
<b>Advise on Signs Of obstetric fistulae</b>	Yes	20	12.7
	No	137	87.3
	<b>Total</b>	<b>157</b>	<b>100</b>
<b>Advise on Signs Of puerperal psychosis</b>	Yes	19	12.1
	No	138	87.9
	<b>Total</b>	<b>157</b>	<b>100</b>
<b>Advise on Signs Of pre-eclampsia / eclampsia</b>	Yes	64	40.8
	No	93	59.2
	<b>Total</b>	<b>157</b>	<b>100</b>
<b>Advise about Danger Signs in the baby</b>	Yes	160	38.1
	No	260	61.9
	<b>Total</b>	<b>420</b>	<b>100</b>
<b>Advise on Poor feeding</b>	Yes	154	3.8
	No	6	96.2
	<b>Total</b>	<b>160</b>	<b>100</b>
<b>Advise on abnormality of body temperature</b>	Yes	46	28.8
	No	114	71.2
	<b>Total</b>	<b>160</b>	<b>100</b>
<b>Advise on difficult breathing</b>	Yes	32	20
	No	128	80
	<b>Total</b>	<b>160</b>	<b>100</b>
<b>Advise on Signs Of Cord infection</b>	Yes	52	32.5
	No	108	67.5
	<b>Total</b>	<b>160</b>	<b>100</b>
<b>Advise on Jaundice</b>	Yes	21	13.1
	No	139	86.9
	<b>Total</b>	<b>160</b>	<b>100</b>
<b>Advise on change in mental status</b>	No	160	100
	<b>Total</b>	<b>160</b>	<b>100</b>
<b>Advise on Convulsions</b>	Yes	31	19.4
	No	129	80.6
	<b>Total</b>	<b>160</b>	<b>100</b>
<b>Advise on where to seek help</b>	Yes	58	36.3
	No	102	63.7
	<b>Total</b>	<b>160</b>	<b>100</b>
<b>Advise on when to return</b>	Yes	163	38.8
	No	257	61.2
	<b>Total</b>	<b>420</b>	<b>100</b>

Majority of mothers were not advised regarding self-care 369 (87.9%) and baby care 403 (96%) components of postnatal care. Most mothers were advised on options of family planning 302(71.9%) and assisted by the health worker to initiate breastfeeding within 1 hour of delivery 399(95%). The most and the least mentioned components were EBF 387 (92.1%) and use of ITNs 5 (1.2%) respectively as shown in Table 4 below.

**Table 3:** Showing the Frequency of information and counseling given to mother on other maternal and baby care components of postnatal care, JUMC, 2017.

<b>Variables</b>		<b>Frequency</b>	<b>Percentage</b>
<b>Advise on maternal care</b>	Yes	369	87.9
	No	51	12.1
	<b>Total</b>	<b>420</b>	<b>100</b>
<b>Advise on family planning</b>	Yes	302	81.8
	No	67	18.2
	<b>Total</b>	<b>369</b>	<b>100</b>
<b>Advise on breast care</b>	Yes	104	28.2
	No	265	71.8
	<b>Total</b>	<b>369</b>	<b>100</b>
<b>Advise on frequent emptying of bladder</b>	Yes	68	18.4
	No	301	81.6
	<b>Total</b>	<b>369</b>	<b>100</b>
<b>Advise on food and fluid intake</b>	Yes	205	55.6
	No	164	44.4
	<b>Total</b>	<b>369</b>	<b>100</b>
<b>Advise on use of ITNs</b>	Yes	5	1.4
	No	364	98.6
	<b>Total</b>	<b>369</b>	<b>100</b>
<b>Advise on adequate rest and sleep</b>	Yes	27	7.3
	No	342	92.7
	<b>Total</b>	<b>369</b>	<b>100</b>
<b>Advise on baby care</b>	Yes	403	96.0
	No	17	4.0
	<b>Total</b>	<b>420</b>	<b>100</b>
<b>Initiate breastfeeding within 1hr of delivery</b>	Yes	399	99.0
	No	4	1.0
	<b>Total</b>	<b>403</b>	<b>100</b>
<b>Advise on EBF</b>	Yes	387	96.0
	No	16	4.0
	<b>Total</b>	<b>403</b>	<b>100</b>
<b>Advise on Delay of first bath for 24 hours</b>	Yes	90	22.3
	No	313	77.7
	<b>Total</b>	<b>403</b>	<b>100</b>

<b>Advise on Cord care</b>	Yes	203	50.4
	No	200	49.6
	<b>Total</b>	<b>403</b>	<b>100</b>
<b>Advise on subsequent immunizations</b>	Yes	356	88.3
	No	47	11.7
	<b>Total</b>	<b>403</b>	<b>100</b>

Only 13 (3%) of the newborns received all components of essential newborn care and 8 (1.9%) of the babies did not receive any of ENC. A total of 399 (95%) of newborns had their umbilical cord cut with a new blade, similarly high for the number whose cord was tied with a new or boiled string, and 405 (96.4%) had nothing put on the cord in the first days after birth. Majority of the newborns 406 (96.7%) were immediately dried after birth and only 77 (18.3%) of babies had identification bands placed on the wrist and/or ankle, as shown in Table 5 below.

**Table 4:** Showing the Frequency of Provision of Essential Newborn Care, JUMC, 2017.

<b>COMPONENTS OF ENC</b>	<b>DONE</b>		<b>NOT DONE</b>	
	<b>NO</b>	<b>%</b>	<b>NO</b>	<b>%</b>
The newborn is immediately dried after birth	406	96.7	14	3.3
Newborn is placed on mother's abdomen or chest in skin to skin contact	385	91.7	35	8.3
The baby is assessed for start of breathing and Appropriate actions are started, if needed, according to the clinical evaluation	404	96.2	16	3.8
Umbilical cord is clamped after pulsations stop or at least one minute unless there is an immediate clinical need to clamp early	399	95	21	5
Stump of the umbilical cord is left without dressing	405	96.4	15	3.6
Mother and baby are covered together with a pre-warmed blanket	111	26.4	309	73.6
A warm hat/cap is put on the baby's head	101	24	319	76
Baby identification bands placed on the wrist and ankle	77	18.3	343	81.7
Baby Weighed when it is stable	408	97.1	12	2.9
Eye prophylaxis is provided	283	67.4	137	32.6

Vitamin K intramuscular is administered	232	55.2	188	44.8
The infant vital signs are checked at least once	180	42.9	240	57.1
Immunizations are administered according to EPI	158	37.6	262	62.4
Passage of urine and faeces checked	165	39.3	255	60.7

A total of 148 (35.2%) women received all maternal observation components and 2 (0.5%) did not receive any of the components. Uterine palpation was done in 418 (99.5%) of mothers while breast inspection was done in 189 (45%) of mothers. Only 60 (14.3%) mothers received iron and folate supplementation, as shown in Table 6 below.

**Table 5:** Showing the Frequency of Provision of Maternal observations and monitoring, JUMC, 2017

<b>OBSERVATIONS AND MONITORING</b>	<b>DONE</b>		<b>NOT DONE</b>	
	<b>NO</b>	<b>%</b>	<b>NO</b>	<b>%</b>
Observations of vital signs at least twice	415	98.8	5	1.2
Uterine palpation(uterine contraction, fundal height)	418	99.5	2	0.5
Assessment of vaginal bleeding	417	99.3	3	0.7
Perineum inspection	274	65.2	146	34.8
Breast inspection	189	45	231	55
Assessment of conjunctival and/or palmar pallor	356	84.8	64	15.2
Assessment of abnormal vaginal discharge	398	94.8	22	5.2
Palpation of lower abdomen for tenderness	404	96.2	16	3.8
Passage of urine checked	222	52.9	198	47.1
Key symptoms ( If bleeding or pain increases, if mother feels dizzy or has severe headaches, visual disturbance or epigastric distress ) checked	348	82.9	72	17.1
Iron and folate supplementation	60	14.3	360	85.7

A total of 37 maternity health workers were obtained. The mean age (SD) was 26.08(2.99) years. Most 19(51.4%) were aged between 23 and 25 years of age. The minimum age was 23 and maximum was 32.

There were a total of 28 (75.6%) nurses and 9 (24.4%) midwives in JUMC maternity ward. Majority 23 (62.1%) of maternity health workers were females. Most of maternity health workers have Diploma 22(59.4%) and job experience between 1 and 5 years 32 (86.4%), as shown in Table 6 below.

**Table 6:** Showing the Frequency of maternity health workers by Socio-demographic Variables, JUSH, 2017

<b>Variables</b>		<b>Frequency</b>	<b>Percentage</b>
<b>Sex</b>	Male	14	37.8
	Female	23	62.2
	<b>Total</b>	<b>37</b>	<b>100</b>
<b>Level of training</b>	Diploma	22	59.5
	Bachelors degree	15	40.5
	<b>Total</b>	<b>37</b>	<b>100</b>
<b>Job title</b>	Nurse	28	75.7
	Midwife	9	24.3
	<b>Total</b>	<b>37</b>	<b>100</b>
<b>Job experience</b>	Less than 1 year	2	5.4
	Between 1 and 5 years	32	86.5
	Between 6 and 10 years	3	8.1
	<b>Total</b>	<b>37</b>	<b>100</b>

A total of 26 (70.3%) of MHW's had adequate knowledge towards immediate PNC. Out of 9 midwives 7 (77.8%) of them had knowledge. In contrast 19 (67.8%) of nurses had adequate knowledge towards immediate PNC.

**Table 7:** Showing adequacy of knowledge of maternity health workers towards immediate PNC by job experience, JUMC, 2017

<b>Variables</b>	<b>Job experience (years)</b>			
	<b>&lt; 1</b>	<b>1-5</b>	<b>6-10</b>	<b>Total</b>
<b>Adequate Knowledge</b>	2(5.4%)	23(62.2%)	1(2.7%)	26(70.3%)
<b>Inadequate Knowledge</b>	0	9(28.1%)	2(5.4%)	11(29.7%)
<b>Total</b>	2 (5.4%)	32 (86.5%)	3(8.1%)	37(100%)

Only 5 (13.5%) of the health workers mentioned all components of essential newborn care. Cord care 37 (100%) and placing the baby identification bands on the wrist and ankle 8 (21.6%) are the most and the least mentioned components of essential newborn care by the health workers respectively, as shown in Table 8 below

**Table 8:** Showing the Knowledge of maternity health workers towards essential newborn care by Job experience, JUMC, 2017

Variable		Job experience (years)			
		< 1	1-5	6-10	Total
<b>Dry the baby and keep it warm</b>	Mentioned	2(100%)	30(93.7%)	3(100%)	<b>35 (94.6%)</b>
<b>Assess breathing</b>	Mentioned	1(50%)	21(65.6%)	2(66.7%)	<b>24 (64.9%)</b>
<b>Cord care</b>	Mentioned	2(100%)	32(100%)	3(100%)	<b>37 (100%)</b>
<b>Place the baby in skin-to-skin contact</b>	Mentioned	0	13(40.6%)	1(33.3%)	<b>14 (37.8%)</b>
<b>Initiate breastfeeding within 1st hr</b>	Mentioned	0	18(56.2%)	2(66.7%)	<b>20 (54.1%)</b>
<b>Administer eye drops/ointment</b>	Mentioned	2(100%)	32(100%)	2(66.7%)	<b>36 (97.3%)</b>
<b>Administer IM vitamin K</b>	Mentioned	2(100%)	32(100%)	2(66.7%)	<b>36 (97.3%)</b>
<b>Place the baby ID bands on the wrist/ankle</b>	Mentioned	1(50%)	7(21.9%)	0	<b>8 (21.6%)</b>
<b>Weigh the baby when it is stable.</b>	Mentioned	2(100%)	26(81.2%)	1(33.3%)	<b>29 (78.4%)</b>
<b>Defer the first bath for at least 24hours</b>	Mentioned	0	5(15.6%)	0	<b>5 (13.5%)</b>

None of the health workers mentioned all of maternal observation components. Majority 36 (97.3%) of the health workers mentioned observations of vital signs where as palpation of lower abdomen to check for tenderness was mentioned only by 6 (16.2%) of them, as shown in Table 9 below.

**Table 9:** Showing the Knowledge of maternity health workers towards immediate postnatal check-ups performed to monitor maternal conditions by Job experience, JUMC, 2017

Variable		Job experience (years)			
		< 1	1-5	6-10	Total
<b>Observations of vital signs</b>	Mentioned	2(100%)	31(96.9%)	3(100%)	36(97.3%)
<b>Uterine palpation</b>	Mentioned	2(100%)	27(84.4%)	1(33.3%)	30(81.1%)
<b>Assessment of vaginal bleeding</b>	Mentioned	2(100%)	30(93.7%)	3(100%)	35(94.6%)
<b>Perineum inspection</b>	Mentioned	2(100%)	16(50%)	2(66.7%)	20(54.1%)
<b>Breast inspection</b>	Mentioned	2(100%)	6(18.7%)	2(66.7%)	10(27.0%)
<b>Look for conjunctival or palmar pallor</b>	Mentioned	2(100%)	21(65.6%)	1(33.3%)	24(64.9%)
<b>Look for abnormal vaginal discharge</b>	Mentioned	0	16(50%)	2(66.7%)	18(48.6%)
<b>Palpation of lower abdomen for tenderness</b>	Mentioned	1(100%)	5(15.6%)	0	6(16.2%)
<b>Ensure that the mother has passed urine</b>	Mentioned	0	8(25%)	1(33.3%)	9(24.3%)
<b>Questions on key symptoms</b>	Mentioned	0	16(50%)	2(66.7%)	18(48.6%)
<b>Encourage the mother to eat, drink and rest</b>	Mentioned	0	14(43.7%)	1(33.3%)	15(40.5%)
<b>Monitor mother and newborn every 30 minutes for the first 2 hours then every 4 hours</b>	Mentioned	0	9(28.1%)	1(33.3%)	10(27.0%)

Only 1 (2.7%) of the health workers mentioned all elements of danger signs to the mother whereas none of them mentioned all elements of danger signs to the baby. Majority 35 (94.6%) of them mentioned danger sign to the mother related to infection, pre-eclampsia / eclampsia and PPH. Most common mentioned danger sign to the baby was abnormality of body temperature 35 (94.6%) whereas change in mental status was the least mentioned 4 (10.8%). All of the health workers mentioned advise on family planning options and advised on exclusive breast feeding mentioned by 35 (94.6%) of them, as shown in Table 10 below.

**Table 10:** Showing the Knowledge of maternity health workers towards information and counseling given to postnatal mothers by Job experience, JUMC, 2017

Advise on Danger Signs to the mother		Job experience (years)			
		< 1	1-5	6-10	Total
Advise on Breast Problems	Mentioned	1(50%)	3(9.4%)	0	4(10.8%)
Advise on Infection	Mentioned	2(100%)	30(93.7%)	3(100%)	35(94.6%)
Advise on PPH	Mentioned	2(100%)	31(96.9%)	2(66.7%)	35(94.6%)
Advise on obstetric fistulae	Mentioned	0	2(6.2%)	1(33.3%)	3(8.1%)
Advise on Anemia	Mentioned	1(50%)	9(28.1%)	1(33.3%)	11(29.7%)
Advise on puerperal psychosis	Mentioned	0	13(40.6%)	0	13(35.1%)
Advise on pre-eclampsia / eclampsia	Mentioned	2(100%)	30(93.7%)	3(100%)	35(94.6%)
Advise on Thrombo-embolism	Mentioned	1(50%)	1(3.1%)	0	2(5.4%)
Advise on Danger Signs to the baby					
Baby refuses to feed	Mentioned	1(50%)	30(93.7%)	3(100%)	34(91.9%)
Advise on abnormality of body temperature	Mentioned	2(100%)	30(93.7%)	3(100%)	35(94.6%)
Advise on Difficulty breathing	Mentioned	0	10(31.2%)	1(33.3%)	11(29.7%)
Advise on Cord infection	Mentioned	1(50%)	12(37.5%)	1(33.3%)	14(37.8%)
Advise on Conjunctivitis	Mentioned	0	5(15.6%)	0	5(13.5%)

<b>Advise on Jaundice</b>	Mentioned	1(50%)	21(65.6%)	2(66.7%)	24(64.9%)
<b>Advise on Change in mental status</b>	Mentioned	0	4(12.5%)	0	4(10.8%)
<b>Advise on Convulsions</b>	Mentioned	0	13(40.6%)	1(33.3%)	14(37.8%)
<b>Advise on where to seek help</b>	Mentioned	0	6(18.7%)	1(33.3%)	7(18.9%)
<b>Advise on return date</b>	Mentioned	1(50%)	21(65.6%)	3(100%)	25(67.6%)
<b>ADVISE ON MATERNAL CARE</b>					
<b>Advise on family planning</b>	Mentioned	2(100%)	32(100%)	3(100%)	37(100%)
<b>Advise on personal hygiene</b>	Mentioned	2(100%)	31(96.9%)	3(100%)	36(97.3%)
<b>Advise on breast care</b>	Mentioned	0	14(43.7%)	1(33.3%)	15(40.5%)
<b>Advise on frequent emptying of bladder</b>	Mentioned	1(50%)	10(31.2%)	2(66.7%)	13(35.1%)
<b>Advise on food and fluid intake</b>	Mentioned	2(100%)	22(68.7%)	3(100%)	27(73.0%)
<b>Advise on use of ITNs</b>	Mentioned	0	3(9.4%)	0	3(8.1%)
<b>Advise on adequate rest and sleep</b>	Mentioned	1(50%)	5(15.6%)	2(66.7%)	8(21.6%)
<b>ADVISE ON BABY CARE</b>					
<b>Advise on EBF</b>	Mentioned	2(100%)	30(93.7%)	3(100%)	35(94.6%)
<b>Advise on Delay of first bath for 24 hours</b>	Mentioned	2(100%)	16(50%)	1(33.3%)	19(51.4%)
<b>Advise on Cord care</b>	Mentioned	0	21(65.6%)	2(66.7%)	23(62.2%)
<b>Advise on subsequent immunizations</b>	Mentioned	2(100%)	29(90.6%)	3(100%)	34(91.9%)
<b>Advise on Maintenance of warmth</b>	Mentioned	1(50%)	20(62.5%)	1(33.3%)	22(59.5%)
<b>Advice on checking first bowel and bladder function before discharge</b>	Mentioned	0	2(6.2%)	0	2(5.4%)

Overall, Only 67 (15.9%) of the mothers and 5 (1.2%) of the newborn babies received adequate immediate PNC. Both the mother and her newborn baby received adequate immediate PNC in 4 (1%) of cases as shown in Table 4 below.

**Table 11:** Percentage of provision of adequate immediate PNC for the mother and her newborn baby JUMC, 2017

<b>ADEQUATE PNC</b>	<b>FREQUENCY</b>	<b>PERCENTAGE</b>
For Mothers	67	15.9
For Babies	5	1.2
For Both	4	1

## CHAPTER SEVEN

### DISCUSSION

The study has established that there were gaps in the provision of immediate postnatal care and counseling to the mothers and their babies at JUMC maternity ward.

Adequate immediate PNC was provided for both postnatal mothers and their babies only in 4 (1%) of case. Concerning danger signs to the mother, 157 (37.3%) of the respondents were advised. This is lower than what is reported in a research done in Nairobi, Kenya which showed 190 (45%) of the respondents were advised on danger signs to the mother [19].

Evaluation of mother's knowledge on danger signs to babies showed that less than half of the mothers were advised on baby danger signs. This is lower than what is reported in a research done at Naivasha district Hospital Nairobi, Kenya which showed that 63 (65.6%) the mothers were advised on baby danger signs [25].

**This difference could be due to the small sample size (N=96) in the above mentioned study.**

Regarding self-care, 369 (87.9%) of the respondents were advised. Majority of the respondents (96%) were also advised on baby care. Acquisition of information that is pertinent to baby care was evaluated. This is much higher than what is reported in a research done in Nairobi, Kenya which showed 227 (55%) of the respondents were advised regarding self-care and only a quarter of mothers were advised on baby care [19]. This can be explained by a relatively high number of MHW's who mentioned maternal self care and baby care components of post delivery advice.

Only 13 (3%) of the newborns received all components of essential newborn care. This result is lower than what is reported in the QOC study done in Ethiopia which showed 21 (18%) of newborns received all elements of essential newborn care [24]. This can be explained by MHW's poor knowledge towards components of essential newborn care. Majority of the newborns 406 (96.7%) were dried immediately after birth and this result is in agreement with the finding in the above mentioned study [24]. Majority of newborns (95%) had their umbilical cord cut with a new blade, similarly high for the number whose cord was tied with a new or boiled string. These findings are comparable with the study done in Pradesh, India which showed that 92% of newborns had their umbilical cord cut with a new blade and tied with a new or boiled string [18]. Mother and baby were covered together with a pre-warmed blanket and a warm hat/cap was put on the baby's head only in a quarter of cases. The findings for administration eye and vitamin k prophylaxis were also low. This could be due to lack of blanket, hat/cap and medications (as explained by MHW).

Around a third of mothers received all maternal post delivery monitoring and observation components and 2 (0.5%) did not receive any of the components. Uterine palpation was done in almost all mothers while less than a quarter (14.3%) of mothers received iron and folate supplementation.

## CHAPTER EIGHT

### CONCLUSION AND RECOMMENDATIONS

#### 8.1 CONCLUSION

1. The results of service evaluation demonstrated that majority of the mothers and their neonates received postnatal care services which were below standard.
2. There is lack of advice, information and counseling given to mothers on breast care, frequent emptying of bladder, adequate rest, use of ITNs and delay of first bath for 24 hours prior to discharge.
3. There is also lack of advice, information and counseling given to mothers concerning danger signs to the mother and her baby, particularly on breast problems, obstetric fistula and puerperal psychosis from maternal danger signs; and on difficult breathing, convulsion, jaundice and lethargy from danger signs to the baby.
4. The study shows that MHWs' have limited knowledge on various PNC activities including ENC, maternal care and PN education.

#### 8.2 RECOMMENDATIONS

The following recommendations are made based on the study findings:

- This study suggests the need to incorporate provision of advice, information, counseling and support to mothers in the current discharge procedure.
- Several aspects of immediate newborn care needs significant improvement, especially thermal care, immunizations and administration of eye and vitamin k prophylaxis.
- Several aspects of immediate maternal care needs significant improvement, especially perineum inspection, checking passage of urine, breast inspection and iron and folate supplementation.
- There is need to provide in-service/refresher training courses on PNC for MHWs that can be offsite, as well as more flexible on-the-job training. Such training should be consistent and continuous to ensure emerging best practices.
- WHO PNC guidelines launched in October 2013 should be disseminated and implemented in the institution.
- Conduct further detailed studies at the hospitals to determine the causes of inadequate PNC provision at JUMC.

#### LIMITATIONS

A number of limitations are present.

- The use of observations to collect data may influence the results and the external validity as MHWs may try to provide better service than they normally do as well as change their behavior.
- Another limitation is due to recall of women's experience and understanding of some of the information provided during the consultations.
- The study also did not seek reasons for inadequate post delivery care at the facility.

- The study was limited to evaluating information given by the health provider to the mother yet the mother could have had the information from other sources such as books, previous experience, community etc.

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**Section 2: Information and counseling given to mother on specific danger signs to the mother and her baby at JUMC maternity ward**

No.	Information and counseling	YES	NO
Q1	Were you advised about possible danger signs for yourself?		
Q2	If yes for Q1, Were the following mentioned?		
	Breast problems (engorgement, cracked or inverted nipples)		
	fever; shivering; abdominal pain and/or offensive vaginal discharge (infection)		
	sudden and profuse blood loss or persistent increased blood loss; faintness, dizziness or palpitations (PPH)		
	Urinary or fecal incontinence (obstetric fistulae)		
	Severe sadness, unable to take care of baby and self, thoughts to injure self or baby( puerperal psychosis )		
	headaches accompanied by one or more of the symptoms of visual disturbances, nausea, vomiting, epigastric or hypochondrial pain, feeling faint, convulsions ( pre-eclampsia / eclampsia)		
Q3	Were you advised about possible danger signs for the baby?		
Q4	If yes for Q3, Were the following mentioned?		
	Baby refuses to feed, poor sucking		
	Abnormality of body temperature (baby feels very hot or very cold)		
	Difficulty breathing (grunting or wheezing, fast breathing, in-drawing of chest, blue around mouth)		
	Wet cord with blood/ pus & swelling around cord		
	Jaundice –yellow body, eyes or palms		
	Change in mental status (Lethargy/floppy)		
	Convulsions		
	Were you advised where to seek help for self or baby?		

<b>Q5</b>	Were you advised on return date?		
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**Section3: Information and counseling given to mother on other components of PNC**

<b>MATERNAL CARE</b>	<b>YES</b>	<b>NO</b>
Were you advised on options of family planning		
Were you advised on breast care		
Were you advised on frequent emptying of bladder?		
Were you advised on food and fluid intake?		
Were you advised on use of Insecticide Treated Nets?		
Were you advised on adequate rest and sleep		
<b>BABY CARE</b>		
Were you assisted by the health worker to initiate breastfeeding within 1hr of delivery?		
Were you advised on Exclusive breastfeeding		
Were you advised on Delay of first bath for 24 hours		
Were you advised on Cord care		
Were you advised on subsequent immunizations?		

**PROVISION OF IMMEDIATE POSTNATAL CARE CHECK LIST**

**Section 1: Documented neonatal observations and procedures that were carried out JUMC maternity ward**

<b>OBSERVATIONS AND PROCEDURES</b>	<b>DONE</b>	<b>NOT DONE</b>
Eye prophylaxis is provided		
Vitamin K intramuscular is administered		
The infant vital signs are checked at least once		

Immunizations are administered according to EPI		
Passage of urine and feces checked		

**Section 2: Provision of ENC at JUMC maternity ward**

<b>COMPONENTS OF ENC</b>	<b>DONE</b>	<b>NOT DONE</b>
The newborn is immediately dried after birth		
Newborn is placed on mother's abdomen or chest in skin to skin contact		
The baby is assessed for start of breathing and Appropriate actions are started, if needed, according to the clinical evaluation		
Umbilical cord is clamped after pulsations stop or at least one minute unless there is an immediate clinical need to clamp early		
Stump of the umbilical cord is left without dressing		
Mother and baby are covered together with a pre-warmed blanket		
A warm hat/cap is put on the baby's head		
Baby identification bands placed on the wrist and ankle		
Baby Weighed when it is stable		

**Section 3: Documented maternal observations and procedures that were carried out at JUMC maternity ward**

<b>OBSERVATIONS</b>	<b>DONE</b>	<b>NOT DONE</b>
Observations of vital signs at least twice		
Uterine palpation (uterine contraction, fundal height)		
Assessment of vaginal bleeding		
Perineum inspection		
Breast inspection		
Assessment of conjunctival or palmar pallor		
Assessment of abnormal vaginal discharge		
Palpation of lower abdomen for uterine tenderness		

Passage of urine checked		
Key symptoms ( bleeding, dizziness, severe headaches, visual disturbance or epigastric pain ) checked		
Iron and folate supplementation		

## **MATERNITY HEALTH WORKER QUESTIONNAIRE**

### **Introduction**

My name is Dr Mulugeta woldu. I am a 3<sup>rd</sup> year resident pursuing specialty certificate in pediatrics and child health at Jimma university medical center. As part of my specialty program, I am conducting a study at JUMC maternity ward in order to assess provision of immediate post natal care to postnatal mothers and their newborn babies and you were randomly selected to participate. I would like to kindly request you to participate in the study as a maternity health worker to give me information on your practices concerning delivery of immediate PNC to postnatal mothers and their newborn babies. You will answer the questions that I will ask you to the best of your knowledge.

### **Voluntary participation and Confidentiality**

You do not have to give any answer to any question you do not wish to respond to, and you have the right to stop participating at any point if you feel uncomfortable.

The interview is completely anonymous and information that can be identified with you remains confidential. Your name will not appear anywhere on the data collection form.

### **Section 1: Demographic characteristics of health workers at JUMC maternity ward**

- 1) What is your age in completed years \_\_\_\_\_
- 2) Sex    A. Male        B. Female
- 3) What is your highest level of training?
  - A. Certificate        B. Diploma        C. Bachelors degree
  - D. Masters degree    E. Others, specify
- 4) What is your job title?
  - A. Nurse /midwife        B. Others, specify \_\_\_\_\_
- 5) For how long have you been working in maternity unit (inclusive of previous facilities)?
  - A. Less than 1 year        B. Between 6 and 10 years

C. Between 1 and 5 years

D. More than 10 years

**Section 2: knowledge of health workers at JUMC maternity ward towards ENC**

<b>Components of ENC</b>	<b>Mentioned</b>	<b>Not Mentioned</b>
Dry the baby and keep it warm by placing the baby on the mother's abdomen.		
Assess breathing. Make sure the baby is breathing well.		
If the baby does not breathe, clamp/tie and cut the cord immediately and start resuscitation.  If the baby does cry/breathes well, clamp/tie and cut the cord after pulsations stop or after 1-3 minutes.		
Place the baby in skin-to-skin contact on the mother's chest and cover with clean cloth and blanket.		
Initiate breastfeeding within the first hour.		
Administer eye drops/eye ointment		
Administer vitamin K.		
Place the baby identification bands on the wrist and ankle		
Weigh the baby when it is stable.		
Defer the first bath for at least 24hours		

**Section 3: knowledge of health workers at JUMC maternity ward towards immediate postnatal check-ups performed to monitor maternal conditions**

<b>Maternal check-up elements</b>	<b>Mentioned</b>	<b>Not Mentioned</b>
Observations of vital signs		
Uterine palpation (Feel if uterus is hard and round)		
Assess the amount of vaginal bleeding		
Perineum inspection ( Presence of a tear or cut, Is it red, swollen or draining pus)		
Breast inspection (engorgement, cracked, sore, bleeding or inverted nipples)		
Look for conjunctival or palmar pallor		
Look for abnormal vaginal discharge		
Palpation of lower abdomen for tenderness		
Encourage the mother to empty her bladder and ensure that she has passed urine		
questions on key symptoms ( If bleeding or pain increases, if mother feels dizzy or has severe headaches, visual disturbance or epigastric distress )		
Encourage the mother to eat, drink and rest		
Monitor mother and newborn every 30 minutes for the first 2 hours then every 4 hours		

**Section 3: knowledge of health workers on information and counseling given to postnatal mothers at JUMC maternity ward**

<b>Danger sign to the mother</b>	<b>Mentioned</b>	<b>Not Mentioned</b>
Fever; shivering; abdominal pain and/or offensive vaginal loss (infection)		
Headaches accompanied by one or more of the symptoms of visual disturbances, nausea, vomiting, epigastric or hypochondrial pain, feeling faint, convulsions ( pre-eclampsia / eclampsia)		
Sudden and profuse blood loss or persistent increased blood loss; faintness; dizziness; palpitations/tachycardia (PPH)		
Urinary or fecal incontinence(obstetric fistula)		
Extreme tiredness,( Anemia )		
Sadness, Anxiety and depression (puerperal psychosis)		
Breast problems: Engorgement, sore, cracked bleeding or inverted nipples		
unilateral calf pain; redness or swelling of calves; shortness of breath or chest pain (thromboembolism)		
<b>Danger sign for the newborn</b>		
Baby refuses to feed, poor sucking		
Abnormality of body temperature (baby feels very hot or very cold)		
Difficulty breathing (grunting or wheezing, fast breathing, in-drawing of chest, blue around mouth)		
Wet cord with blood/ pus & swelling around cord		
Swollen eyes, pus draining from eye or ear		
Jaundice –yellow body, eyes or palms		
Change in mental status (Lethargic/floppy)		

Convulsions		
<b>Advise on maternal care, specify</b>		
Counsel on family planning Counseling		
Advised on personal hygiene, especially hand washing		
Advise on breast care		
Advise on frequent emptying of bladder?		
Advised on food and fluid intake?		
Advise on use of Insecticide Treated Nets.		
Advise on adequate rest and sleep		
Advise on here to seek help for self or baby		
Advise on return date		
<b>Advise on baby care, specify</b>		
Advise on Exclusive breastfeeding		
Advise on Delay of first birth for 24 hours		
Advise on Cord care		
Advise on subsequent immunizations?		
Advise on Maintenance of warmth		
Advice the mother to ensure first bowel and bladder function is experienced before leaving hospital?		

