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Research Article

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Postnatal Care of Mothers: Knowledge, Nutritional Status and Utilization of Postnatal Care Services

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Abstract

The enabling environment for safe motherhood depends on the acumen of skilled health personnel and the availability of adequate health-care facilities, equipment, and medicines and emergency care when needed. The goal three of SDG aims at reducing the global maternal mortality ratio to less than 70 per 100,000 live births. In view of this, a study was conducted to study the knowledge, nutritional status and utilization of postnatal care services by the nursing mother and to develop intervention module to enhance mother's knowledge on postnatal care on a sample of 200 mother-infant dyads in Dharwad district of Karnataka state. The tools used for the study were a self-structured questionnaire to study the knowledge about care during puerperium, MUAC was measured to assess the nutritional status of lactating women and Aggarwal socio-Economic Status scales were administered [1]. Edinburgh Postnatal Depression Scale was used to study the presence of postpartum depression among mothers [2]. The results revealed that most of the mothers had moderate (66.50 %) anaemia and 7.00 per cent had severe anaemia. Only 42 per cent women had normal nutritional status whereas 31.50 per cent were in moderate under-nutrition category and 10 per cent were in severe under-nutrition category Maternal knowledge in four dimensions of public health, breastfeeding and nutrition, contraceptive methods and infant care was low to moderate. An intervention on postnatal care of mother was developed and was tested for its efficacy. The intervention to mothers significantly increased their knowledge on care during puerperium. The results indicate a need for family-based intervention to improve postnatal care of mother for safe motherhood.

Keywords: Postnatal Care, Safe Motherhood, Knowledge, Intervention

Introduction

Pregnancy, birth and motherhood, in an environment that respects women, can powerfully affirm women's rights and social status without jeopardizing their health. The enabling environment for safe motherhood and childbirth depends on the care and attention provided to pregnant women and new-borns by communities and families, the acumen of skilled health personnel and the availability of adequate healthcare facilities, equipment, and medicines and emergency care when needed.

New-born survival is inextricably linked to the health of the mother. The postnatal period (the time just after delivery and through the first six weeks of life) also called puerperal period is especially critical for new-borns and mothers. Though many mothers survive during childbirth, the health risks associated with pregnancy and childbirth are far greater in developing countries than in industrialized ones. On average, each day around 1,500 women die from complications related to pregnancy and childbirth.

The Sustainable development goals (2016) or "Transforming our world: the 2030 Agenda for Sustainable Development" that replaced the Millennium Development Goal (MDG) -5 is a collection of 17 global goals set by the United Nations which cover a broad range of social & economic development issues. The goal three of SDG is to". Ensure healthy lives and promote well-being for all at all ages". This aims at reducing the global maternal mortality ratio to less than 70 per 100,000 live births and end preventable deaths of new-borns and children under 5 years of age. All the countries as per SDGs aim to reduce neonatal mortality to at least as low as 12 per 1,000 live births and under-5 mortality to at least as low as 25 per 1,000 live births by 2030 (Report of the Inter- Agency and Expert Group on Sustainable Development Goal Indicators (E/CN.3/2016/2/Rev.1).

India contributes to one-fifth of global live births and more than a quarter of neonatal deaths. Nearly, 0.75 million neonates died in India in 2013, the highest for any country in the world. The current NMR is 28 per 1000 live births. Given the infant and under-five child mortality rates of 40 and 49 per 1000 live births, respectively. According to NITI Aayog (National Institution for Transforming India), maternal mortality ratio is 167 per 100000 live births and in Karnataka it is 133 per 100000 live births (http://niti.gov.in/ report 2013). India with a score of 58.1 was ranked 116th on the index, out of 157 nations behind countries such as Nepal, Sri Lanka, Bhutan and China on the 2017 Sustainable Development Goal (SDG) Index.

There is a lack of community-based data on causes of neonatal and maternal deaths, many of which occur at home. Integrated community-based postpartum care is not only important to reduce mortality and morbidity of mothers and new-borns, but it is also crucial to reinforce healthy behaviours. Healthy behaviours initiated around the time of birth are needed to ensure that both mother and baby continue to experience good health following birth. Hence here is a need to provide basic maternal, new born care and resuscitation which significantly contributes in bringing down maternal and neonatal mortality and morbidity in developing countries like India.

In view of this, the present study was conducted with the following objectives.

- To study/know existing practices in care during pueparium;
- To assess health status of nursing mother and its association to child health;
- To study the knowledge and utilization of postnatal care services by the nursing mother;
- To develop an interventional package to enhance mother's knowledge on postnatal care and test its efficacy.

Material and Methods

Research Design

A cross-sectional study on the postnatal care of mother and newborn was conducted from 2017 July-2020 January. In first phase the sample consisted of 200 mother-infant dyads of Dharwad district in northern Karnataka, India. The mothers in postnatal period (the time just after delivery and through the first six weeks of life) in the age group of 18-35 years who were randomly selected from three taluks of Dharwad district formed the sample of study. An interrupted time series design was used to test the knowledge level after intervention. The study was approved by University of Agricultural Science, Dharwad as staff research project.

Tools Used for the Study

The tools used for the study included a Self-Structured Questionnaire to study the knowledge and rearing practices of neonate and to study the existing practices in care during puerperium and Socio-Economic Status Scale developed by Aggarwal et.al [1]. Personal interviews were conducted to obtain the information from mothers and haemoglobin level of mothers at the time of delivery was used to assess health status of mothers. The data on haemoglobin levels was the secondary data obtained by the Mother's card issued by the government once she registers her pregnancy and monitors till the lactation period. A scale to measure knowledge level of mothers during puerperium was developed which consisted of 18 statements regarding puerperal care of mother. The statements were in yes/no format. The correct statements were scored with 1mark each and mothers scoring below 6 were categorised as with low knowledge, 7-12 as medium knowledge and >12 as high knowledge category.

Most studies indicate a maternal weight for gestational age ranging from <43.5 kg to <50 kg with statistical significance for LBW. There is no clear cut-off value for maternal weight per gestational age, but <45 kg seems indicative for high risk of LBW in Asian countries regardless of gestational age. MUAC is a good indicator of the protein reserves of a body, and a thinner arm reflects wasted lean mass, i.e. malnutrition. MUAC is rather insensitive to changes over the total period of pregnancy for adult women, is easy to measure, and requires only one measurement. Hence MUAC was measured to assess the nutritional status of lactating women. The MUAC was measured to the nearest 0.1 cm, by marking the midpoint of the subject's upper arm, located between the tips of the shoulder and elbow, then wrapping the measuring tape around the subject's arm at the midpoint by using a standard flexible tape. The MUAC cut offs to classify nutritional status in mothers are: severe malnutrition <19 cm, moderate malnutrition ≥19 - < 22cm and mild ≥ 22 - 23cm, normal >23 - 30 cm and obese >30cm [3-5].

Edinburgh Postnatal Depression Scale, developed for screening postpartum women in outpatient, home visiting settings or at the 6-8-week postpartum examination was used to study the presence of postpartum depression among mothers [2]. The scale is famed worldwide for its specific and sensitivity in the assessment of depression among the postnatal as well as the antenatal women. It comprises of 10 questions with scores ranged from zero to 3 does the total score varies as from zero to 30. Moreover 7 out of 10 questions are scored reversely the tool has been validated in many languages [3]. Women who scored ≥10 on the EPDS were considered to have postnatal depression based on previous studies done in India [6, 7].

The data collected was analysed by SPSS 21 version software using suitable descriptive statics, t-test and logistic regression.

Results and Discussion

Table 1: Demographic Characteristics of the Sample N=200

Characteristics	Category	N (%)
1. Religion	Hindu	174(87)
	Muslim	26 (13)
2. Family Type	Nuclear	135 (67.50)
	Joint	65 (32.50)
3. Size of family (No. Of members)	≤ 4(Small)	72 (36.00)
	5-8(Medium)	94 (47.00)
	> 9(Large)	34 (17.00)
4. SES	Low	31 (15.50)
	Middle	141 (70.50)
	High	28 (14.00)
5. Age of Mother	18-20	18(9.00)
	21-25	118 (59.00)
	26-30	60(30.00)
	31-35	04(2.00)
6. Status of Mother	Home maker	143(71.50)
	Working	57 (28.50)
7. Education of mother	Illiterate	16 (8.00)
	Primary	78 (39.00)
	Secondary	62(31.00)
	PUC (Class 12)	32(16.00)
	Graduation	12(6.00)
8. Parity	Primiparous	86(43.00)
	Para 2	48(24.00)
	Multiparous	66(33.00)
9. Knowledge on Postnatal care	High	23(11.50)
	Medium	107(53.50)
	Low	70(35.00)

The results revealed that majority of the sample belonged (table 1) to Hindu religion (87 %), nuclear family (67.5%), medium size family (47 %) and middle SES (70.5 %) category. Most of the mothers belonged to 21-25 years age group (59 %) and 26-30 years (30 %). With respect to mother's education most of them were primary educated (39 %), followed by secondary (31 %), PUC (16 %) and graduation (6 %). However, 8 per cent of mothers were illiterates. About 43 per cent were primiparous, 33 per cent were para-2 and 33 per cent were multiparous. Postpartum mothers had medium (53.50 %) to low (35.00 %) knowledge on postnatal care.

Table 2: Distribution of Mothers Based on Maternal Health Indicators N=200

Characteristics	Category	N (%)
1. Type of delivery	Normal	117 (58.5)
	Caesarean section	79 (39.5)
	Instrumental	04 (0.02)
2. Hb level of mother (g/dl)	>11 (no anaemia)	53 (26.50)
	7-11 (moderate anaemia)	133 (66.50)
	< 7 (severe anaemia)	14 (7.00)
3. Maternal Nutritional Status (as per MUAC cut-offs)	Severe under-nutrition (<19 cm)	20(10.00)
	Moderate under-nutrition (≥19-< 23cm)	63 (31.50)
	Normal weight (>23 - 27 cm)	84 (42.00)
	Over weight (>27- 30 cm)	21 (10.50)
	Obese (>30cm)	12 (06.00)
4. Postpartum Depression (EPDS)	Present (< 10)	23(11.50)
	Absent (≥ 10)	177(88.50)

The maternal health indicators (table 2) show that 58.50 per cent of mothers had normal delivery and 39.50 per cent had C-section and very few (0.4 %) had instrumental delivery. Most of the mothers had moderate (66.50 %) anaemia, 7.00 per cent had severe anaemia and only 26.50 per cent mothers had normal Hb levels. Only 42 per cent women had normal nutritional status whereas 31.50 per cent were in moderate under-nutrition category and 10 per cent were in severe under-nutrition category. It was observed that 10.50 and 6.00 per cent were in overweight and obese category respectively.

Unni Xavier and Amgiasvasanth (2020) also observed prevalence of malnutrition up to 60 per cent in northern Karnataka among low SES mothers. Dharmalingam in India found that 37 per cent lactating mothers were undernourished which was correlated to under-nutrition among the babies [8]. Similarly, Hegde et al found that Deresh (2020) also found that malnutrition among lactating mothers was 21.80 per cent [3]. Similarly, Barennes et al, Duko et al and Hung Lin et al have observed high prevalence of malnutrition among lactating mothers [9-11].

Postpartum depression (PPD) as per the EPDS in the present study was found among 11.50 per cent women. The prevalence varies from region to region and across culture Hegde et al in their study in coastal Karnataka found the prevalence of depression was 11.3% in the immediate postpartum week, 15.8% at six weeks and 15.5% at fourteen weeks after delivery [3]. Patel et al observed PPD in 48.5 per cent post -partum mother in Anand district of Gujarat [7]. Sreshtha et al (2015) found 12 per cent prevalence of PPD in a rural community near Delhi, India. Zaidi et al in a study in tertiary hospital in Delhi, India found 12.75 per cent prevalence of PPD among mothers [6]. Similar study in Sri Lanka by Fan et al prevalence of PPD was 15.5% and 7.8% among mothers assessed 10 days and 4 weeks postpartum respectively [6, 12].

Table 3: Frequency of Maternal Knowledge in Four Dimensions of Public Health, Breastfeeding and Nutrition, Contraceptive Methods and Infant Care

Knowledge	Good N (%)	Moderate N (%)	Poor N (%)	Mean±SD
Post-natal Services by Government	122 (61.00)	59 (29.50)	19 (9.50)	7.20± 1.88
Breastfeeding	86 (43.00)	92 (46.00)	22 (11.00)	6.22± 2.67
Infant Care	16 (8.00)	126 (63.00)	58 (29.00)	12.21± 3.24
Care of Nursing Mother	22 (11.00)	137 (68.50)	41 (20.50)	9.53±1.23
Family Planning measures	14 (7.00)	119 (59.50)	67 (33.50)	3.05±2.0

The maternal knowledge on our dimensions (table 3) indicates that about 61.00 per cent of mothers were aware about the post-natal services provided by the government and only 43 per cent mothers had knowledge about successful breast-feeding practices and its benefits. Majority of the mothers had moderate to poor knowledge about care of infant and nursing-mother and 33.50 per cent of mothers were not aware of family planning measures.

Table 4: Bivariate Analysis of Maternal Factors Associated with Post Natal Care Utilization (PNC)

Variables	Post natal care utilization (PNC)				OR (95 % CI)	P-Value
	Yes		No			
	n	%	n	%		
1. Age in years						0.043*
31-35	02	50.00	02	50.00	1.00	
26-30	26	43.33	34	56.67	1.48 (1.21,1.82)	
21-25	66	55.93	52	44.07	0.98 (0.98, 1.67)	
18-20	07	38.89	11	61.11	2.54 (1.42–3.55)	
2. Education of mother						0.019*
Graduation and above	09	75.00	03	25.00	1.00	
PUC/diploma	22	68.75	10	31.25	1.33 (0.91,1.95)	
Primary/Secondary	82	58.57	58	41.43	1.37 (1.13,1.66)	
Illiterate	06	37.50	10	62.50	2.05 (1.21,3.47)	
3. Status of Mother						0.13
Homemaker	78	54.55	65	45.45	1.00	
Working	24	42.11	33	57.89	1.28 (1.06,2.53)	
4. SES						0.04*
High	16	57.14	12	42.86	1.00	
Medium	47	33.33	94	66.67	1.90 (1.22,2.95)	
Low	08	25.81	23	74.19	3.61 (2.04.6.40)	
5. Knowledge about Postnatal care						0.001**
High	13	56.52	10	43.48	1.00	
Medium	41	38.32	66	61.68	1.88 (1.12-2.33)	
Low	18	25.71	52	74.29	2.31 (1.59, 3.21)	

* - Significant at 5 % level
** - Significant at 1 % level

The results (table 4) indicate that the mothers in the age group of 18-20 years (OR = 2.54, 95 % CI = 1.42, 3.55) had 2.54 times of higher odds of risk in utilizing post-natal care services compared to older age group mothers. The utilization was better in 21-25 and 31-35 years age group mothers.

With respect to the education of mothers, the illiterate mothers had higher odds of risk for not utilizing post-natal care services compared (OR = 2.05, 95 % CI = 1.2, 3.47) compared to graduates (reference category), PUC educated and primary/secondary educated mothers. The utilization of postnatal services was high among graduated mothers. The high odds of risk in utilization was observed in medium SES (OR = 1.90, 95 % CI = 1.22, 2.95) and low SES (OR = 3.61, 95 % CI = 2.04, 6.40) compared to high mother belonging to high SES category (reference category). Similarly, the mothers with low postnatal care knowledge had 2.31 times higher risk of not utilizing postnatal care services (OR = 2.31, 95 % CI = 1.59, 3.21) followed by mothers with medium knowledge (OR = 1.88, 95 % CI = 1.12, 2.33) when compared to mothers with high knowledge regarding postnatal care (reference category). However, working status of mother had no significant association with post-natal care utilization.

Various studies conducted globally also show similar results. Tesfahun et.al in a community-based study in Ethiopia found that though the majority of the women (84.39 %) were aware, only 66.83 % of women obtained PNC [13]. Yadav et.al in his study at a tertiary teaching hospital in Nepal found that whilst 95% of mothers knew about immunization, few had acquired knowledge regarding cord care, signs of illness in newborn and newborn feeding during antenatal checkups [14].

Pushpamala Ramaih in India found that knowledge only 42.46 per cent of primiparous mothers had adequate knowledge on postnatal care [15]. The knowledge on postnatal diet was found in 47.20 per cent and it was 21.88 per cent in the area of family planning. With regard to the knowledge score of multiparous mothers 61.86 per cent of mothers had adequate knowledge. Gul et.al in Karachi, Pakistan observed poor awareness in antenatal care seeking, delivery care and cord care. Family income of Rs.10, 000 (USD120) or less / month and maternal education level of primary or less were significantly [16].

Intervention on Postnatal Care of Mother

An intervention package including the topics on normal puerperium, Stages of Puerperium, postpartum care/needs of Women, care of mother immediately after delivery, postpartum care and hygiene, care of episiotomy, common puerperal problems in mother, nutrition, breast care, family planning and immunisation was developed and implemented. The intervention (lectures, demonstration, videos, etc) with multimedia technique was carried out with three sessions of 2 hours per week for two months. The package was developed in English as well as Kannada (the local language) and was provided to all the 40 mothers who consented to participate in the study.

An interrupted time series experimental design was used to compare the post-natal care knowledge level of mothers before and after intervention (table 5 & Figure 1) where 2 pre- tests and 2 post- tests were conducted. The t-test reveals that intervention was proved to be successful in improving significantly the knowledge of mothers regarding post-natal care. A significant increase in knowledge was observed in mothers from pre-test I to post-test I and II as well as and pre-test II to post-test I and II showing the need to create awareness among mother specially in underdeveloped and developing countries.

WHO is making lot of effort to improve maternal health especially during pregnancy and lactation to reduce maternal mortality and morbidity. In view of this many intervention programmes are implemented in developing countries to create awareness about postal care and utilisation of services. Watterson et al in their systematic review of 53 studies conducted in different countries evidenced effectiveness of intervention programmes at changing behaviour to improve antenatal care attendance, postnatal care attendance, or childhood immunization rates [17]. Sinha et.al (2013) in Haryana, India found that knowledge–practice gaps existed reduced among mothers counselled by ASHAs (health workers) and poor utilization of reproductive and child health services decreased to a greater extent.

Table 5: Comparison of Mean Scores of Post-Natal Care Knowledge of Mothers Before and After Intervention

Post-natal care knowledge of mothers (0-18)	Time intervals		Paired 't test
	Pre- test 1	**Pre -test 2**	
	8.27 ± 1.82	8.35 ± 1.80	**1.77^{NS}**
	Pre- test 1	**Post- test 1**	
	8.27 ± 1.82	12.96 ± 1.33	**18.04****
	Pre- test 1	**Post -test 2**	
	8.27 ± 1.82	14.90 ± 1.42	**20.35****
	Pre- test 2	**Post- test 1**	
	8.35 ± 1.80	12.96 ± 1.33	**18.39****
	Pre -test 2	**Post -test 2**	
	8.35 ± 1.80	14.90 ± 1.42	**20.45****

NS- Non-Significant
** Significance at 1 per cent level

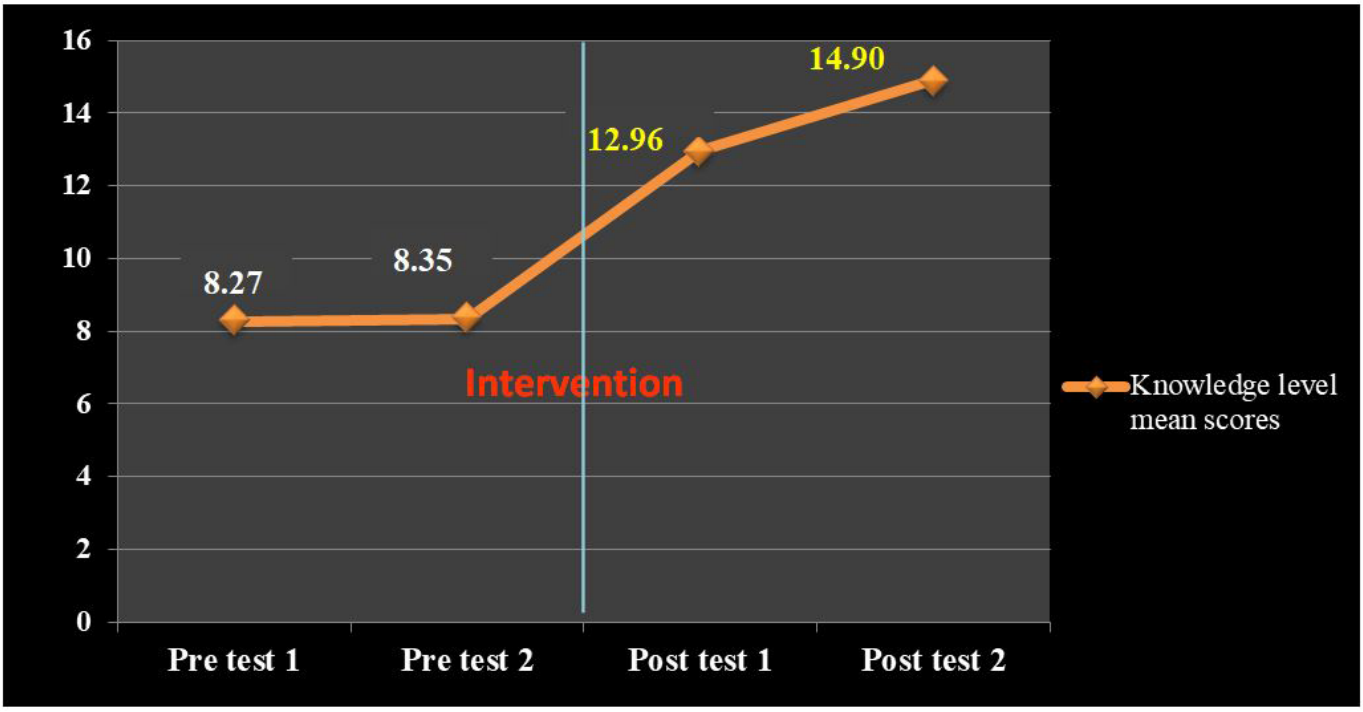

Figure 1: Mother's Knowledge Level on Postnatal Care–Before and After Intervention

Time intervals	Knowledge level mean scores of mothers
Pre test 1	8.27
Pre test 2	8.35
Post test 1	12.96
Post test 2	14.9

Conclusion

It is very evident from the present study that majority of mothers in Dharwad district of North Karnataka had poor nutritional status as indicated by their MUAC cut-off and haemoglobin level. The incidence of post-partum depression was 11.50 per cent. Maternal knowledge in four dimensions of public health, breastfeeding and nutrition, contraceptive methods and infant care was moderate to poor. Mothers belonging to younger age group of 18-20 years, low SES, illiteracy and poor knowledge were at higher risk of not utilizing post-natal care services. Vir and Malik observed that poor education and knowledge of women, inadequate decision-making power were the causes of poor nutritional status [18]. In the present study also, it was very evident that low education, SES and knowledge were the major factors affecting poor nutritional status and low postnatal service utilisation. In India in spite of excellent government initiatives on post-natal care to mothers, utilisation is poor because of low education, SES and poor decision-making powers in women. Hence intensive family-based intervention programmes are required to create awareness among mothers as well as family members [19, 20].

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Conflict of Interest

There is no conflict of interest

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