

Determinants of postnatal maternity care service utilization in rural Belgaum of Karnataka, India: A community based cross-sectional study

Abstract

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Background: The postnatal period is critical to the health and survival of a mother and her newborn. Lack of care in this period may result in death or disability as well as missed opportunities to promote healthy behaviors, affecting women and newborn children. Hence, the study was carried out to explore determinants of postnatal maternity service utilization in the rural area of Belgaum. **Materials and Methods:** Community based cross-sectional study was carried out from August 2012 to January 2013 in rural Belgaum. Total 630 mothers with less than 1 year child were interviewed using pretested questionnaire with her written consent. Analysis was done in Statistical Package for Social Sciences (SPSS) version 20 applying appropriate statistics. Results were presented in tabular and narrative forms. **Results:** Among 630 mothers, 54.6% were 20–24 years of age, 61.6% were having secondary level of education, 89.8% house wives and 91.6% Hindus. About 69.7% were from joint family with low economic status. Regarding postnatal service use; 79.0% use properly. Almost; three-fifth met with nurse/health workers at least three times, four-fifth got advice about breast/nipple care, 92.5% about breast-feeding, 67.9% about post-natal exercise, 89.0% on nutrition education, and 85% got the advice of uterus care. About 29.8% perceived some health problems. Education, income, awareness, and delivery places were found most significant determinants ($P < 0.01$) of postnatal services use. **Conclusion:** More than three quarters of mothers had used the proper postnatal maternity services. Education, family income, awareness, and delivery place were found as most significant factors. Sustainable maternal and child healthcare (MCH) programs and awareness will support to achieve furthermore better results.

Key words: Determinants, health service utilization, maternity services, postnatal care

INTRODUCTION

The postnatal period—defined here as the first six weeks after birth—is critical to the health and survival of a mother and her newborn. The most vulnerable time for both is during the hours and days after birth. Lack of care in this time period may result in death or disability as well as missed opportunities to promote healthy behaviors, affecting women, newborns, and children.

Globally, estimated 1.5 billion women were of childbearing age (15–45-year-old) in 2011. A total of 210 million become pregnant every year; of which 13.33% (28 million) covered by developed countries and remaining huge portion (86.66%) is in developing world including India.^[1,2] Over half a million women encounter complications due to childbirth annually and many die. Almost 40% of women experience complications after delivery and an estimated 15% of these women develop potentially life-threatening problems.^[3,4] Most of the maternal problems and deaths can be prevented or reduced if women had access to, or visited maternal health services during pregnancy, childbirth, and the postnatal period.^[3,5]

Maternal and child healthcare (MCH) is a major component of primary healthcare (PHC).^[6] Mother and child health is the first priority based program of India. First National Health Policy 1983, Population Policy 2000, Revised Health Policy 2002, and National Rural Health Mission (NRHM) 2005 gave emphasis on improvement of the health status of mothers and their children in rural areas.^[7]

Postnatal care (PNC) refers to the assistance given to a mother and the baby for a period of six weeks from the time of delivery. Postnatal services are primarily comprised of physical examination, immunization, health education, and family planning services. Many women have not received these essential healthcare services yet though they need these services after delivery. Similarly the Millennium Development Goals 5 focused to improve maternal health (MDG 5 WHO), with targets to reduce maternal mortality by three quarters between 1990 and 2015, and to achieve universal access to reproductive health by 2015.^[8] To achieve this goal, the rural population need to be giving more scope. Utilization of postnatal health services can be affected by multitude of factors including accessibility, availability, quality of care as well as personal attitudes and socioeconomic characteristics. Hence, the study was carried out to explore health service utility pattern of mother during postnatal period and possible influencing factors in the rural area of Belgaum district.

MATERIALS AND METHODS

A community-based, cross-sectional study was carried out from August 2012 to January 2013 in the rural area of Belgaum district, Karnataka, India. Altogether 630 mothers with an infant were selected as study participants. Statistical formula; $N = Z^2pq/d^2$ was used to calculate the study sample with considering 1.5 design effect, 10% nonresponse rate, and 5% allowable error. Two stages 30 clustered sampling technique was used. At first stage, Belgaum Taluk was selected from 10 Taluks of Belgaum district. There were 12 PHCs in rural area of Belgaum Taluk. Five PHC areas were selected randomly from these 12 PHCs as study site. For selecting villages, all subcenter (SC) villages of each PHC and villages having no health institution (neither PHC nor SC) were listed separately. From each PHC area, the PHC village was selected. Further, two SC villages and three villages having not any health institution from each SC area were selected randomly. Thus, the study covered 30 villages as clusters. In second stage, three random points were identified in each selected cluster to cover all areas of the village. Then, 21 samples (seven from each point of each village) were taken from each cluster. Hence, all total 630 study participants were covered. Data were collected by interview using pretested structured questionnaire. Voluntary written consent was taken before starting the study. Data accuracy and reliability was maintained by double entry process and analyzed using Statistical Package for Social Sciences (SPSS, version 20). Percentage, means, standard deviation (SD), and odds ratio (OR) were calculated with applying logistic regression model. The criterion for statistical significance was set at the value of $P < 0.05$. The analyzed data were disseminated in tables, graphs/charts, and narrative form as per necessity.

RESULTS

Demographic finding of the study

All together 630 mothers (mean age \pm SD: 24.14 \pm 3.21 years) were participated in the study. About 54.6% of the participants

were 20–24 years of age, whereas 37.1% were 25–29 years. More than three-fifth (61.6%) of the participants had secondary level of education followed by primary level (18.7%) and pre-university college (PUC; 9.4%). Almost 89.8% of the participants were house wife and most of them (91.6%) were Hindus followed by Muslim (7.5%). More than three quarter (78.3%) did nonconsanguineous married. About 69.7% were from joint family having the low class (<3,000 Indian rupees (IRs)/month) economic status. Nearly half (49.8%) of the participants' husband were of secondary level education followed by primary level (22.9%). About 45.6% of the participant's husbands were labors and very rare (0.5%) were unemployed [Table 1].

Postnatal service utility pattern

Among 630 postpartum mothers participated in the study, 79.0% had used the postnatal services properly. Study showed, about 89% took iron and folic acid (IFA) tablet with meeting to nurses/health workers. More than three-fifth (6.3%) of the participants met with nurse/health workers at least 3 times during postnatal period, but only one quarter of them took Vitamin 'A' capsule. Nearly four-fifth (79.7%) got the advice related to care of breast and nipple. Almost 92.5% got the advice of art of caring the breast, 67.9% got the advice related to postnatal exercise and 89.0% got the nutrition education. About 71.1% got the advice of family planning and 32.4% of them were using any form of the contraceptives. About 29.8% of the women faced any type of health problem during their postnatal and later period. The common health problems perceived by them were puerperal sepsis with fever (35.1%), uterus prolapsed with backache and abdominal pain (27.1%), weakness (14.4%), mastitis (10.6%), vaginal bleeding with pain (7.4%), and lower abdominal pain (5.3%). About 46.8% of suffered women took medicine with the advice of nurses and health workers and 16.4% did home treatment without consulting any health workers, while 12.3% did not do anything. Most of the participants (84.9%) got the advice for caring of uterus from nurses/health workers either they were suffered by uterus prolapsed or not [Table 2].

Factors affecting post natal care service utilization pattern

Postnatal services soon after the delivery to 42 days are particularly important to reduce the maternal and neonatal deaths. It can be affected by several factors. Education of the mother, family income, types and size of family, occupation of husband, level of knowledge on PNC, history of previous neonatal death, health service used by mothers during antenatal period and place of delivery were revealed to be significant factors ($P < 0.05$) determining to use PNC services [Table 3].

It also confirmed that the level of awareness on PNC ($P = 0.002$) and education of the mother ($P = 0.02$) were important contributing factors of PNC utilization. Educated women were double folds (95% confidence interval (CI): 1.24–4.75) more likely to receive service than those who had no education, and women who were highly aware were 2.54 times (95% CI: 1.133–5.904) more likely to

Table 1: Selected sociodemographic characteristics of respondent (N = 630)

Characteristics	Frequency	Percentage
Age of the respondent (in year)		
≤19	12	1.9
20-24	344	54.6
25-29	234	37.1
30-34	32	5.1
≥35	8	1.3
(Mean age±SD: 24.14±3.21 years)		
Educational status of respondent		
Illiterate	40	6.3
Primary level	116	18.4
Secondary level	388	61.6
PUC	59	9.4
University degree	27	4.3
Occupation of the respondent		
House wife	566	89.8
Farming	23	3.7
Government service	8	1.3
Private service	5	0.8
Business	4	0.6
Labor	22	3.5
Other	2	0.3
Religion		
Hindu	577	91.6
Muslim	47	7.5
Jain	3	0.5
Christian	3	0.5
Marital relation		
Consanguineous	137	21.7
Nonconsanguineous	493	78.3
Family type		
Nuclear	191	30.3
Joint	439	69.7
Family monthly income (IRs)		
<3,000	127	20.2
3,000–10,000	412	65.4
>10,000	91	4.4
Educational status of the husband		
Illiterate	56	8.9
Primary level	139	22.1
Secondary level	314	49.8
PUC	74	11.7
University degree	47	7.5
Occupation of the husband		
Unemployed	3	0.5
Farming	88	14.0
Government service	37	5.9
Private service	110	17.5
Business	90	14.3
Labor	287	45.6
Other	15	2.4

SD = Standard deviation, PUC = pre-university college, IRs = Indian rupees

do so than those who were less aware. Moreover, family monthly income proved to be other most significant contributing factor of PNC service utilization. Women who had high family monthly

income were 2.08 times (95% CI: 1.18–3.65) more likely ($P = 0.01$) to have obtained postnatal care (PNC) service than women with low income. It is interesting to note that the study also showed the women whose husband perform the farming or labor work were 1.84 times (95% CI: 1.247–2.710, $P = 0.002$) more likely to use the service than those who were government or private officials or business person. Type and size of the family also contributed the important role for utilizing of the PNC service. The study revealed that the women who were from joint family were 1.54 times (95% CI: 1.247–2.710) more likely ($P = 0.03$) to use the service than the women from nuclear family. Similarly mothers who were from large family were 2.017 times (95% CI: 1.089–3.739) more likely ($P = 0.02$) to use the services than mother who were from small family.

The study also proved that place of the delivery, age of mother at first pregnancy, and ANC service utility practices played further more significant role on PNC utilization. Women who used institutional delivery services were 2.42 times (95% CI: 1.24–4.74) more likely ($P = 0.008$) to use the PNC service than the women who delivered in home. Similarly, women who were first pregnant in their normal age (20–34 years) were 1.554 times (95% CI: 1.020–2.369) more likely ($P = 0.03$) to use the PNC service than the women who were got their first pregnancy in teenage or 35 years and more. In addition, women who used the ANC service during their pregnancy time were 2.27 times (95% CI: 1.08–4.75) more likely ($P < 0.02$) to use the PNC service than those who did not used so [Table 3].

DISCUSSION

According to World Health Organization (WHO), at least three home visit by health workers, continuation of IFA tablet intake by 42 days of delivery, caring of infection, management of postpartum hemorrhage, getting breast feeding education, caring of breast and nipple, postpartum exercise, getting nutrition education, maintaining proper nutrition and advice of choosing suitable family planning devices are the basic services require to the mother during the postnatal period. This study shows that nearly four-fifth of the mothers used postnatal service properly which was more than other study finding in Nepal, India and Bangladesh.^{9,10} Our study showed that about 89.0% took IFA tablet during postnatal period. This was a good achievement of postnatal service utility. This could be due to the reason that most of the mother were delivered in institution and home visit of health worker after delivery. More than three-fifth of the participants met with nurse/health workers at least three times during postnatal period. It was found that, only one quarter of the postnatal mother took vitamin A capsule which was lesser than the study reported from Nepal.¹⁰ The difference was due to the reason that in Nepal, the government launched the vitamin A program as national program and made mandatory, but in India it is not mandatory. The common health problems perceived by women during the postnatal and later period were puerperal sepsis with fever (35.1%), followed by uterus prolapsed with backache and abdominal pain (27.1%), weakness (14.4%), mastitis (10.6%), vaginal bleeding with pain (7.4%), and lower abdominal pain (5.3%) which is

Table 2: Postnatal service utility pattern during 42 days after delivery

Service utilization	Frequency	Percentage
Intake of IFA tablet by 42 days of delivery		
Yes	561	89.0
No	69	11.0
Intake of vitamin A capsule		
Yes	159	25.2
No	471	74.8
Visited by nurses		
Yes	569	90.3
No	61	9.7
Frequency of visiting by nurses		
1-2 times	220	38.7
≥3 times	349	61.3
Got advice on caring of breast and nipple		
Yes	502	79.7
No	128	20.3
Got advice related to art of breast feeding		
Yes	583	92.5
No	47	7.5
Got advice on postnatal exercise		
Yes	428	67.9
No	202	32.1
Got nutrition education		
Yes	561	89.0
No	69	11.0
Got family planning education		
Yes	452	71.7
No	178	28.3
Used of contraceptive after delivery		
Yes	204	32.4
No	426	67.6
Types of contraceptive device used (n=204)		
Vasectomy	33	16.2
Laproscopy/Minilap/Tubectomi	76	37.3
Condom	64	31.4
Oral pills	7	3.4
Depo-Provera	4	2.0
Intrauterine device	20	9.8
Suffering by health problems during postnatal period (n=630)		
Yes	188	29.8
No	442	70.2
Health problem during postnatal period (n=188)		
Puerperal sepsis with fever and abdominal pain	66	35.1
Uterus prolapsed with abdominal pain and backache	51	27.1
Weakness	27	14.4
Mastitis	20	10.6
Vaginal pain and bleeding	14	7.4
Lower abdominal pain only	10	5.3
Got advice related to uterus prolapsed from the health worker		
Yes	535	84.9
No	95	15.1
Management of health problem during post natal Period (n=188)		
Took medicine with advice of ANM	88	46.8
Treated in hospital/clinic	46	24.5
Home treatment	31	16.4
No treatment	23	12.3

IFA = Iron and folic acid, ANM = auxiliary nurse midwife

Table 3: Factors affecting postnatal care (PNC) services utilization

Variables	PNC service use		Chi-square (χ^2)	OR	95% CI	P-value	
	Good (n = 498)	Poor (n = 132)					
Age (in years)	20-35	485 (79.1)	128 (20.90)	0.07	1.16	0.37–3.63	0.791
	≤19 and >35	13 (76.4)	4 (23.5)				
Educational level	Some schooling	473 (80.0)	117 (20.0)	7.06	2.426	1.24–4.75	0.008*
	No schooling	25 (65.0)	15 (35.0)				
Religion	Hindus	290 (76.9)	87 (23.1)	2.58	0.721	0.483–1.077	0.110
	Others	208 (82.2)	45 (17.8)				
Occupation of mother	Housewife	448 (79.2)	118 (20.8)	0.037	1.063	0.568–1.989	0.848
	Others	50 (78.1)	14 (2.9)				
Monthly family income (in IRs)	<3,000	111 (87.4)	16 (12.6)	6.70	2.08	1.18–3.65	0.01**
	≥3,000	387 (76.9)	116 (23.10)				
Types of family	Joint	357 (81.3)	82 (18.7)	4.51	1.54	1.247–2.710	0.03*
	Nuclear	141 (73.8)	50 (26.2)				
Family size	Large	464 (80.1)	115 (19.9)	5.136	2.017	1.089–3.739	0.02*
	Small	34 (66.7)	17 (33.3)				
Occupation of husband	Farming/labors and others	326 (83.0)	67 (17.0)	9.61	1.84	1.247–2.710	0.002**
	Service/business	172 (72.6)	65 (27.4)				
Education of husband	Some schooling	454 (79.1)	120 (20.9)	0.008	1.032	0.528–2.015	0.972
	No schooling	44 (78.6)	12 (21.4)				
Level of awareness	High	460 (80.7)	110 (19.3)	9.89	2.421	1.376–4.259	0.002**
	Low	38 (63.3)	22 (33.7)				
Distance (in km)	≤6	267 (78.5)	73 (21.5)	0.12	0.934	0.635–1.374	0.729
	>6	231 (99.7)	599 (20.3)				
Cost of transportation (IRs)	≥40 (inexpensive)	339 (80.1)	84(19.9)	0.931	1.218	0.815–1.820	0.335
	>40 (expensive)	159 (76.8)	48 (23.2)				
Gravidity	≥2	315 (79.9)	79 (20.1)	0.516	1.155	0.78–1.71	0.472
	First	183 (77.5)	53 (22.5)				
Parity	≥2 (multi parity)	303 (80.8)	72 (19.2)	1.718	1.295	0.879–1.907	0.19
	First	195 (76.5)	60 (23.5)				
History of neonatal deaths	Yes	27 (96.4)	1 (3.6)	5.345	7.51	1.01–55.78	0.021*
	No	471 (78.2)	131 (21.8)				
Place of delivery	Institution	473 (80.2)	117 (9.8)	7.062	2.426	1.24–4.74	0.008**
	Home	25 (62.5)	15 (37.5)				
Age of mother at first pregnancy	Normal age	383 (8.0)	90 (19.0)	4.246	1.554	1.02–2.369	0.039*
	Risk age	115 (73.2)	42 (26.8)				
ANC service use	Yes	477 (79.9)	120 (20.1)	4.994	2.271	1.08–4.75	0.025*
	No	21 (63.6)	12 (36.4)				

*Significant at $P < 0.05$, **significant at $P < 0.01$. PNC = Postnatal care, OR = odds ratio, CI = confidence interval, IRs = Indian rupees, ANC = antenatal care

somehow different from the study results from Nepal.^[10] The study conducted in Nepal showed that most of the mother suffered from weakness (27%) followed by mastitis (27%), vaginal bleeding (20%), fever (13%), vaginal pain (13%), and a prolapsed uterus (7%). It was found that education of the mother, family income, types and size of family, occupation of husband, level of knowledge on PNC, history of previous neonatal death, health service used by mothers during antenatal period, and place of delivery were significantly associated with PNC services use. This study showed that level of awareness (OR = 9.89) and education of mother (OR = 2.42) were strong predictors of for PNC service use which were in line with the study conducted in other parts of India and abroad.^[9,11-13] Similarly, monthly family income, occupation of husband, and place of delivery were other most important determinants of PNC service utilization. Mothers who had monthly family income <3,000 IRs

were more likely to use the PNC service than those who have ≥3,000 IRs. This is due to the good impact of NRHM and other MCH program conducted by government and other organization with focusing to the people of below poverty line. This finding was somehow in contrast with the study findings in Bangalore, India.^[11] Similarly, women whose husband were farmers or labor, took the PNC service 9.6 times more than the other whose husband were service holder and business man. This could be due to the reason that farming and laboring are the free autonomous jobs and they can give time more, while service holder and business person could not manage time for supporting. This finding was matched with the study report of Srivastava *et al.*^[9] Our study revealed that mothers who delivered in hospital or PHC used more PNC service than the mother who delivered at home (OR = 7.062) which is in line with the others similar study.^[14] Utilization of antenatal and delivery care

services has positive impact on the use of PNC which is in line with other study.^[12,13] There was no association found with variables like teenage pregnancy, type of family, high risk pregnancy, occupation of mother, parity, gravidity, and education of husband; like the finding of the study in Bangalore.^[11]

CONCLUSION

More than three quarters of mothers had used the proper postnatal maternity services. Education of mother, monthly family income, awareness on postnatal service use and its benefits, types and size of family, antenatal service used, and delivery place were found as significant contributing factors for postnatal service utilization in rural Belgaum. Advancement of health facilities, encouragement of service provider, sustainable maternal, and child health programs and creating awareness will support to achieve furthermore better results.

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