Original Research Article

Assessment of mother's knowledge towards pregnancy, childbirth, postpartum and essential newborn care in district Solan, HP

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ABSTRACT

Background: Even though the neonatal, maternal and perinatal mortality is declining in our country, still the morbidity and mortality rate is very high. Further improvement is possible by increasing awareness and appropriate practices of mothers towards pregnancy, childbirth, postpartum and essential newborn care. Objective of the study was to assess the knowledge of postnatal mothers regarding pregnancy, childbirth, postpartum and newborn care. These feeding practices were assessed in postnatal mothers, using a structured questionnaire.
Methods: Univariate analyses method [such as frequencies, percent distribution, means, and standard deviations (SD)] and Binary Logistic regression method was used for analysis of data with help of analyse-it and SPSS software.
Results: Knowledge regarding pregnancy, childbirth and postpartum care: Mean percentage obtained was 68.128% (SD of 18.15). 100% was obtained by only 7 mothers (2.3% of total). Knowledge regarding essential newborn care: Mean percentage obtained was 59.8% (SD of 19.6). 100% was obtained by only 15 mothers (5% of total). A total of 71 mothers failed, constituting 23.7% of total. Education status and parity status both were significantly associated with maternal knowledge regarding pregnancy and postpartum but they do not predict the outcome very well.
Conclusions: Postnatal mothers had inadequate knowledge on pregnancy, childbirth, postpartum and newborn care. Therefore educational intervention at multiple levels is required during the period of antenatal, and postnatal visits. Secondly socio-demographic factors- educational status and parity status of postnatal mothers were not associated with maternal knowledge.

Keywords: Knowledge, Pregnancy, Childbirth, Newborn care

INTRODUCTION

The postnatal period is a very critical phase in the lives of mothers and newborn babies. Most maternal and infant deaths occur during this time.[1] Still then, this is the most neglected period for providing good health care services. Lack of appropriate knowledge and care during this period could result in significant mortality and morbidity.

One-fifth of the total live births and more than 25% of the neonatal deaths in the world occur in our country. In

2015, among the 5.9 million under-5 deaths all over the world, 2.7 million occurred in the neonatal period.[2] In India about 3/4th million neonates died in the year 2013. The current neonatal mortality rate is 28 per 1000 live births.[3] It has declined from 44 per 1000 live births in 2000 to the current levels. But this rate of decline was less than the decline in infant mortality rate during the same period. The current perinatal mortality rate of India (2013) is 26 per 1000 births.[3] India's maternal mortality rate reduced from 556 deaths per 100,000 live births in 2007 to 174 deaths in 2015; however, adolescent and illiterate mothers and those living in hard to reach areas

still have a much greater chance of dying in childbirth.[4] Evidence tells us that improving maternal education is very effective in improving neonatal and maternal survival, as it improves preventive lifestyle and increases the utilization of maternal and neonatal health services.[5-7] Stabilization of population growth and low levels of infant and neonatal mortality in Kerela is partly because of its high female education levels.[8] Upadhyay et al found that low educational status of parents, occupation and caste explains about 45.7% of neonatal deaths in Haryana.[9] Nationwide United Nations Children Fund Coverage Evaluation Survey was done in India from November 2009 to January 2010. It assessed the coverage of key interventions in antenatal, natal and postnatal periods.[10] About 25% of pregnant women had full antenatal check-up, at least one tetanus toxoid injection and adequate iron and folic acid tablets during the pregnancy. Approximately 33% neonates were breastfed within 1 hour of birth.[10] In various studies done, the percentage of neonates who receive at least 3 antenatal visits within first 10 days of life is usually less than 50%.[11-15] The parity status of the mother also plays a role in the knowledge of mother regarding pregnancy, delivery, postpartum and neonatal care.[16-18]

Although several initiatives have been taken by the Indian government regarding these shortcomings, their impact remains limited due to mismanagement, shortage of skilled health staff and lack of preparedness of health-care facilities.[19,20] The quality of care (both health centre based and household-based) during pregnancy, delivery and post partum period has significant impact on newborn health. Essential newborn, pregnancy, childbirth and postpartum care are a set of comprehensive recommendations designed by World Health Organization (WHO) to improve health of the newborn through intervention before conception, during pregnancy, soon after birth and in postnatal period.[1,21-23] Based on these numerous recommendations and guidelines we asked few questions from the postnatal mothers living around our hospital. Their answers provided us the health related knowledge status of these mothers and the efficacy and penetration of primary, secondary and tertiary level health care facility which cater to them. This can greatly help the policy makers and health providers in better implementation and making further improvements in the existing health care network. This was also an opportunity for the mothers enrolled in this study to correct and update their knowledge regarding maternal and child health.

Objectives

Primary objectives

- To assess knowledge on essential newborn care among mothers in district Solan, Himachal Pradesh.
- To assess knowledge on pregnancy, childbirth and postpartum care among mothers in district Solan, Himachal Pradesh.

Secondary objectives

- To determine whether literacy status and parity of mothers are associated with maternal knowledge about pregnancy, childbirth, postpartum and essential newborn care care among mothers in district Solan, Himachal Pradesh.

METHODS

Study design

This hospital based descriptive cross sectional study was done till 300 cases were studied, w.e.f. date of clearance from Ethics committee of hospital (October 2017). The study was fully voluntary and strictly confidential. No financial compensation was given for participation. Participants were free to withdraw at any point during the study.

Inclusion criteria

All parous ladies (who gave consent) in the local community in district Solan served by Maharishi Markandeshwar Medical College who had delivered in the past one year preceding the study.

Exclusion criteria

This included abortion or stillborn cases, women who were critically ill and were admitted in Intensive care units, women with mental or psychiatric illnesses or whose baby/babies died after birth or were critically sick at time of questionnaire. The questionnaire made consists of both closed and open ended questions and the mothers were explained the questions in their local language and asked to answer the questions orally, which were filled in by the principal or co-investigators only. This questionnaire was based on the recommendations and guidelines issued by the WHO.[1,21-23]

Statistical method

Analyse-it 5.95.0.0 version and SPSS (2017) statistical software was used. In addition to descriptive analysis, standard (and not sequential) multiple logistic regression method was used to determine whether 'Literacy status' and 'Parity' of mothers are associated with maternal knowledge on essential newborn care and pregnancy, childbirth and postpartum care. Since the outcome variables had binary outcomes, binary logistic regression model was used. Both under Essential newborn care questionnaire and Pregnancy, childbirth and postpartum care questionnaire, every correct answer was given 1 mark and an incorrect or don't know answer was given 0 marks. Due to lack of standard and validated scoring for maternal knowledge on pregnancy, childbirth, postpartum and newborn care, median score of the questions i.e. 50% correct answers, was used as a cut off to distinguish between inadequate knowledge and adequate knowledge. Those who scored below the 50% were considered to

have inadequate knowledge and labelled '0' and those who scored above were considered to have adequate knowledge were labelled '1' under the respective questionnaire. Before starting Binary Logistic regression by SPSS, Box- Tidwell test was used to show a linear relationship between continuous predictors and logit. Parity status and Education status were taken as independent variables and both being classified under categorical covariates. Parity 1 and education status as illiterate was considered as reference (or baseline) category for comparison.

RESULTS

Characteristics of the sample population

The sample population of the study constituted a total of 300 married women aged 18-48 years who delivered a living baby during the twelve month period preceding the conducting of the interviews.

Socio-demographic characteristics

Age: Figure shows that three-quarters (90%) of the sample women were in the prime childbearing age (20-35 yrs), 8% were older (≥35 years), while 2% were younger than the prime childbearing age (18-20 years). None were below 18 yrs age. The mean age of the respondents was 28.3 years [Standard deviation (SD) 4.1]. The age of the women ranged from 19-38 years. Maximum mothers were of 29 yrs age (15% of total).

Rest of socio-demographic factors are detailed in Table 1 and 2.

Knowledge regarding pregnancy, childbirth and postpartum care

A total of 13 different questions were asked and the responses accordingly are given in Table 3(a) and 3(b). Mothers who gave 50% or more of correct answers were considered to be in pass category and the rest in fail category. Mean percentage obtained was 68.128% with SD of 18.15. Minimum percentage obtained was 23.07% and maximum was 100%. 100% was obtained by only 7 mothers (2.3% of total). A total of 59 mothers failed, constituting 19.6% of total. Most of mothers scored between 69-84% (145 out of total of 300 mothers). Percentage breakup is given in Figure 1.

Knowledge regarding essential newborn care

A total of 10 different questions were asked and the responses accordingly are given in Table 4a and 4b. Mothers who gave 50% or more of correct answers were considered to be in pass category and the rest in fail category. Mean percentage obtained was 59.8% with SD of 19.6 and median was 60%. Minimum percentage obtained was 10% and maximum was 100%. 100% was obtained by only 15 mothers (5% of total). A total of 71

mothers failed, 23.7% of total. Percentage breakup is given in Figure 2.

Table 1: Socio-demographic characteristics of mothers (n=300).

Characteristics	Number of mothers (%)
Religion	
Hindu	258 (86.0)
Sikh	025 (08.3)
Muslim	011 (03.7)
Christian	006 (02.0)
Literacy status	
Post graduate	31 (10.3)
Under graduate	91 (30.3)
Higher senior secondary school pass	54 (18.1)
Senior secondary school pass	49 (16.3)
Primary pass	70 (23.3)
Illiterate	05 (01.7)
Occupation	
Housewife only	208 (69.3)
Working*	092 (30.7)
Parity	
1	074 (24.7)
2	110 (36.7)
3	063 (21.0)
4	028 (09.2)
5	015 (05.0)
6	008 (02.7)
7	002 (00.7)

*Detailed breakup given in Table 2

Table 2: Detailed breakup of maternal occupation. (n=300).

Maternal occupation	Number	Percentage (%)
Housewife	208	69.3
Teacher	21	7.0
Clerk	14	4.7
Tailor	12	4.0
Class 4	9	3.0
Banker	7	2.3
Beautician	7	2.3
Staff nurse	5	1.7
Agriculture	4	1.3
Business	4	1.3
Labourer	2	0.7
Lawyer	2	0.7
Salesgirl	2	0.7
Saleswoman	2	0.7
Shopkeeper	1	0.3

Relationship between maternal knowledge regarding pregnancy/childbirth/postpartum care and education status/parity status of mothers: Omnibus test of model coefficients showed a chi-square value of 94.625 with a p value of <0.05 which is highly significant. It means our

model is significantly better over empty/constant model (model with no predictors). Nagelkerke's R2 value was 0.430. Hosmer and Lemeshow test showed significance of 0.898 which tells us that our model is quite a good fit. Case wise list shows that only 5 cases do not fit the model well. -2 log likelihood value is 202.756 meaning that model poorly predicts decisions. Looking at the variables in equation results with education status of mothers as the variable, there is a highly significant overall effect with Wald value of 15.072, df=5 and p value of 0.01. Among all the education status categories only undergraduate's category had statistically significant p value of 0.033. Odds ratio of 25.796 shows that

mothers from undergraduates category are 25.8 times more likely than illiterate mothers in having a good knowledge regarding antenatal, pregnancy and postpartum care. Looking at the variables in equation results with parity status of mothers as the variable, there is a highly significant overall effect with Wald value of 18.429, df=6 and p value of 0.005. Among all the categories only parity 4 and 5 categories had statistically significant p value of 0.021 and 0.013 respectively. Odds ratio of 0.278 and 0.178 shows that mothers from parity 4 and 5 category are very less likely than parity 1 mothers in having a good knowledge regarding antenatal, pregnancy and postpartum care.

Table 3a: Details of knowledge regarding pregnancy, childbirth and postpartum care.

S.No	Variable	Response/Answer (%)
1.	Minimum antenatal visits required	
	<4	121 (40.3)
	=4	50 (16.7)
	>4	109 (36.3)
	Do not know (DNK)	20 (6.7)
2.	Is Tetanus toxoid necessary during pregnancy?	
	Yes	292 (97.3)
	No	7 (2.3)
	DNK	1 (0.3)
3.	Are IFA tablets required to be taken during pregnancy?	
	Yes	273 (91)
	No	24 (8)
	DNK	3 (1)
4.	Are IFA tablets required to be taken after pregnancy during postpartum period?	
	Yes	96 (32)
	No	163 (54.3)
	DNK	41 (13.7)
5.	If delivery/labour pains do not start even if EDD is reached when will you go for advice to a nearby health care centre?	
	≤ 2 weeks	271 (90.3)
	> 2 weeks	7 (2.3)
	DNK	22 (7.3)
6.	When amniotic bag of a pregnant woman rupture/water leaks she should wait for waters to stop before going to a health care facility?	
	Yes	124 (41.3)
	No	118 (39.3)
	DNK	58 (19.3)
7.	If a pregnant lady is not in labour pains even after ___ duration after rupture of bags, then she goes to a nearby health centre	
	≤6 hours	120 (40)
	>6 hours	74 (24.7)
	DNK	106 (35.3)

Table 3b: Details of knowledge regarding pregnancy, childbirth and postpartum care.

S.No.	Variable	Response/Answer (%)
8.	If labour pain continues for more than __ duration, a pregnant lady should go to nearby healthcare facility immediately	
	≤12 hours	211 (70.3)
	>12 hours	59 (19.7)
	DNK	30 (10)

Continued.

S.No.	Variable	Response/Answer (%)
9.	If a pregnant woman has heavy bleeding after delivery, she should go to health facility immediately without waiting	
	Yes	269 (89.7)
	No	18 (6)
	DNK	13 (4.3)
10.	After delivery of baby if placenta is not expelled after __ hours/minutes, the woman should go to a nearby health centre	
	≤1 hour	102 (34)
	>1 hour	39 (13)
	DNK	159 (53)
11.	A woman should have someone near her for first 24 hours after delivery	
	Agree	297 (99)
	Disagree	0 (0)
	DNK	3 (1)
12	A woman should change the perineal diapers and check for bleeding every 4-6 hourly for at first 24 hours after delivery	
	Agree	262 (87.3)
	Disagree	19 (6.3)
	DNK	19 (6.3)
13.	What is minimum interval recommended between two pregnancies?	
	<2 years	92 (30.7)
	≥2 years	195 (65)
	DNK	13 (4.3)

Table 4a: Details of knowledge regarding newborn care.

S.No.	Variable	Response/Answer (%)
1.	What is duration of exclusive breastfeeding?	
	<6 months	12 (4)
	=6 months	90 (30)
	>6 months	172 (57.3)
	DNK	26 (8.7)
2.	How soon after delivery should the baby be breastfed?	
	≤1 hour	163 (54.3)
	>1 hour	66 (22)
	DNK	71 (23.7)
3.	First Bath of a newborn should be done after what age after birth?	
	<24 hours	43 (14.3)
	≥24 hours	162 (54)
	DNK	95 (31.7)
4.	Should the newborn baby be nursed separately from mother after delivery?	
	Yes	261 (87)
	No	36 (12)
	DNK	3 (1)
5.	Number of clothes should be more in number than used by adults	
	Yes	292 (97.3)
	No	2 (2)
	DNK	6 (0.7)
6.	How would you care for the umbilical stump of a newborn?	
	Covered	130 (43.3)
	Uncovered	121 (40.3)
	DNK	49 (16.3)

Table 4b: Details of knowledge regarding newborn care.

S.No.	Variable	Response/Answer (Percentage)
7.	**Would you apply any substance to the umbilical cord? If yes what substance?**	
	Antiseptic	128 (42.7)
	Nothing	58 (19.3)
	Oil/Ghee	39 (13)
	DNK	75 (25)
8.	**If the umbilical stump is soiled with baby's urine or faeces, how would you clean it?**	
	Clean with clean water	120 (40)
	Clean with antiseptic	72 (24)
	Will not clean it	5 (1.7)
	DNK	103 (34.3)
9.	**Enumerate the danger signs in newborn**	
	≥50% signs answered correctly	228 (76)
	<50% signs answered correctly	72 (24)
10.	**Does a newborn require any vaccination at birth?**	
	Yes	292 (97.3)
	No	0 (0)
	DNK	8 (2.7)

Table 5: Association between maternal knowledge regarding pregnancy/childbirth/postpartum care and maternal parity/education status.

		B	Wald	df	Sig.	Exp (B)	95% C.I. for EXP(B)	
							Lower	Upper
Step 1a	Parity		18.43	6	0.005			
	Parity 2	0.564	1.128	1	0.288	1.758	0.621	4.977
	Parity 3	-0.193	0.145	1	0.703	0.824	0.305	2.226
	Parity 4	-1.279	5.368	1	0.021	0.278	0.094	0.821
	Parity 5	-1.727	6.202	1	0.013	0.178	0.046	0.692
	Parity 6	-1.387	2.822	1	0.093	0.250	0.050	1.260
	Parity 7	-21.90	0.000	1	0.999	0.000	0.000	.
	Education status		15.07	5	0.010			
	Primary pass	-0.631	0.292	1	0.589	0.532	0.054	5.245
	Senior secondary pass	-0.043	0.001	1	0.971	0.958	0.094	9.763
	Higher secondary pass	0.116	0.009	1	0.923	1.123	0.108	11.617
	Under-graduate	3.250	4.568	1	0.033	25.796	1.309	508.179
	Post graduate	19.616	0.000	1	0.998	330530257.966	0.000	.
	Constant	1.332	1.375	1	0.241	3.787		

a=Variable(s) entered on step 1: Parity, Education status.

Overall in compilation, though our model identifies that education status (undergraduates) and parity status (parity 4 and 5) both are significantly associated with maternal knowledge regarding pregnancy and postpartum, they do not predict the outcome very well. There is substantial individual variability that cannot be explained by parity and education status.

Relationship between maternal knowledge regarding newborn care and education status/parity status of mothers: Omnibus test of model coefficients showed a chi-square value of 37.79 with a p value of <0.05 which is highly significant. It means our model is significantly better over empty/constant model (model with no predictors). Nagelkerke's R2 value was 0.178, which means the model explains roughly 18% of the variation in outcome. Hosmer and Lemeshow test showed significance of 0.687 which tells us that our model is quite a good fit. Case wise list shows that only 10 cases do not fit the model well. -2 log likelihood value is 290.53 meaning that model poorly predicts decisions. Looking at the variables in equation results with education status of mothers as the variable, none of the education status subcategories had statistically significant p value of <0.05. Looking at the variables in equation results with parity status of mothers as the variable, there is no significant overall effect with p value of 0.135.

Table 6: Association between Maternal knowledge regarding newborn care and maternal parity/education status.

		B	S.E.	Wald	df	Sig.	Exp (B)	95% C.I. for EXP(B)	
								Lower	Upper
Step 1a	Parity			9.772	6	0.135			
	Parity 2	0.890	0.373	5.675	1	0.017	2.434	1.171	5.061
	Parity 3	1.205	0.445	7.343	1	0.007	3.338	1.396	7.981
	Parity 4	0.968	0.531	3.321	1	0.068	2.632	0.930	7.451
	Parity 5	0.689	0.636	1.172	1	0.279	1.992	0.572	6.933
	Parity 6	0.742	0.802	0.855	1	0.355	2.100	0.436	10.110
	Parity 7	21.59	28420.72	0.000	1	0.999	2383848773.5	0.000	.
	Education status			21.334	5	0.001			
	Primary pass	-0.408	0.988	0.171	1	0.679	0.665	0.096	4.609
	Senior secondary pass	0.211	1.002	0.044	1	0.833	1.235	0.173	8.804
	Higher secondary pass	0.343	1.005	0.117	1	0.733	1.409	0.197	10.101
	Under-graduate	1.514	1.010	2.247	1	0.134	4.544	0.628	32.894
	Post graduate	1.365	1.089	1.571	1	0.210	3.915	0.463	33.096
	Constant	0.019	0.948	0.000	1	0.984	1.019		

a=Variable(s) entered on step 1: Parity, Education status.
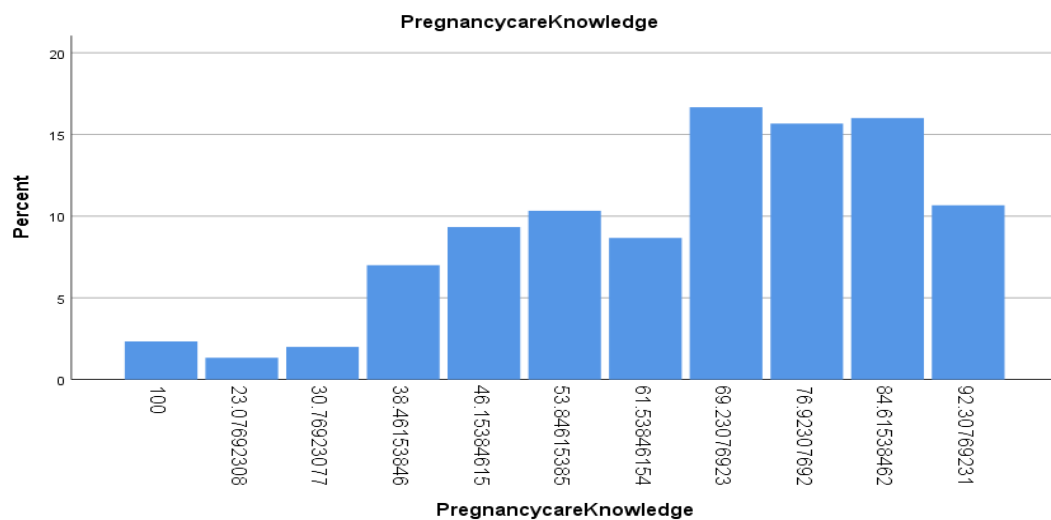
Figure 1: Breakup of percentages achieved by mothers regarding 'pregnancy, childbirth and postpartum care' questionnaire.
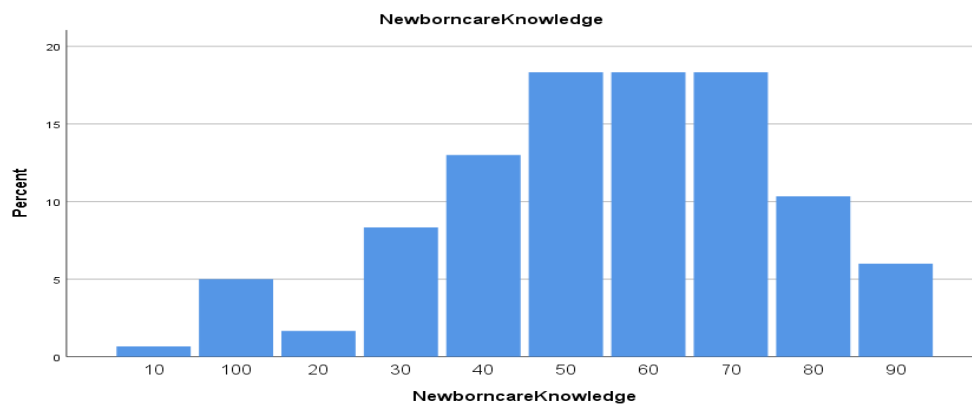
Figure 2: Breakup of percentages achieved by mothers regarding 'Essential newborn care' questionnaire.

Overall in compilation, our model identifies that none of education status subcategories are significantly associated with maternal knowledge regarding essential newborn care. Also they do not predict the outcome very well.

DISCUSSION

In our study, majority of cases were of Hindu religion, housewives only, undergraduates and of parity 2. This is in consensus with the data given by District Level Household and Facility Survey-4 for Himachal.[24] Questions in which >90% women answered correctly were - Tetanus toxoid, IFA during pregnancy, heavy bleeding post delivery, need for a helping person during 1st 24 hrs of delivery and labour pains not started even when EDD is crossed. Regarding newborn care questions in which >90% of women answered correctly were on number of clothing required and need of vaccination at birth. Regarding other questions mothers had poor knowledge (gave wrong answer or gave do not know response). Mean percentage obtained (of passing) was 68.128% and 59.8% in pregnancy care and newborn care questionnaire respectively.

Our study identifies that education status (only undergraduates) and parity status (parity 4 and 5) both are significantly associated with maternal knowledge regarding pregnancy and postpartum but they do not predict the outcome very well. There is substantial individual variability that cannot be explained by parity and education status and may be other multiple maternal factors are also contributing or responsible for maternal knowledge. Neither education status subcategories, nor parity status is significantly associated with maternal knowledge regarding essential newborn care. Our results are not the same as shown by a few Indian studies.[8,9,16-18] May be selective and repetitive advice provided by the primary and tertiary health care providers and the number of antenatal and postnatal visits is more important than the educational status and parity status of mothers. Another reason may be that our questionnaire was very comprehensive and consisted of 23 questions in total covering pregnancy, postpartum and newborn care knowledge assessment. None of previous studies have covered these parameters in detail. Also there may be other multiple socio-demographic factors contributing to maternal knowledge.

This study indicates that awareness and attitude of postnatal mothers towards neonatal care has lots of lacunae. There is scope for improvement by providing better care and health education for antenatal mothers at primary care level itself. More observational and retrospective studies, on a larger scale are required to know the knowledge of postnatal mothers regarding pregnancy and newborn care and to know the association of these practices with various socio-demographic factors. These will finally help to design appropriate interventional strategies to decrease maternal and neonatal mortality and morbidity.

Study limitations: Firstly, information has been collected from mothers who delivered 12 months preceding the survey date. Hence, there could be some recall bias. Secondly, the length of the questionnaire could have produced respondent fatigue. In addition, it is also likely that due to the long and sequential nature of the study questionnaire, the interviewers' might have unknowingly influenced a change in the study parameters.

CONCLUSION

Postnatal mothers had inadequate knowledge on pregnancy, childbirth, postpartum and newborn care. Therefore educational intervention at multiple levels is required during the period of antenatal, natal and postnatal visits.

Socio-demographic factors- educational status and parity status of postnatal mothers were not associated with maternal knowledge.

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