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Cross sectional study of knowledge and awareness among MCH beneficiaries about antenatal and infant care in rural Tamil Nadu, India

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ABSTRACT

Aims and Objectives: Mother and child together form the majority of the population in developing countries. Though they have maximum number of health services attributed to them, morbidity and mortality rates for antenatal women and children are very high. Lack of comprehension of preventive services is one of the important reasons for this. This study was planned with the aim of assessing the knowledge and awareness levels among pregnant women about antenatal care and regarding various aspects of new born and infant care among mothers of under three. **Materials and Methods:** This is a community based cross- sectional study involving beneficiaries attending the Rural Health Centre of a teaching Medical College, in Tamil Nadu. **Results:** Awareness about routine antenatal care, danger signs of pregnancy and preparation for emergency labour were observed to be poor among antenatal women. Knowledge about new born care, infant feeding practices, immunization, newborn and childhood illnesses were all found inadequate among mothers of under three. All the aspects were better in antenatal women who were educated, could read Tamil, and belonged to joint family. But these factors had no effect of mothers of under three. Health workers and family members were the major source of information for both the groups. **Conclusion:** Knowledge is observed to be poor, in spite of all the participants being beneficiaries of Rural Health Centre and the majority of them being educated upto secondary standard. Efficient use of existing health services, giving health education sessions with precise messages will help to increase awareness.

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Key words: Knowledge, Antenatal care, Infant care, New born care.

INTRODUCTION

Millennium Development Goals (MDGs) are a set of numerical & time-bound targets to measure achievements in human and social development laid down by the UN. The 4th goal is to reduce child mortality and the 5th Goal is to improve Maternal Health. These goals are measured by the indicators Infant Mortality Rate (IMR), Under five Mortality Rate, (U5MR) and Maternal Mortality Ratio (MMR). For these MDGs to be achieved by 2015 the national indicators for India need to be 28, 42 and 109 respectively.[1] In the year 2012, these indicators for India are 42,52and 178 respectively.[2,3]

Although there has been an estimated 4.7% annual decline in the Maternal Mortality rate, the MMR of India is still at an alarming rate of 178 with the apprehension of not being able to meet the Millennium Development Goals 2015.[4] Same is the case for IMR and U5MR.

In view of this for a long time our country has been very explicit in promoting and providing a safe motherhood and antenatal care services for the betterment of maternal health as well as that of the infant. However, one of the major determinants for the efficacy of these services is the rate of utilization of these services, which are much lower than the expected specially in the rural areas.[5,6]

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Awareness of women regarding their health assumes special significance in the Indian context because the maternal health problems are mainly due to ignorance, poverty, and lack of knowledge regarding the issue. It is therefore very important to first focus on services for increasing the awareness level of the mother.[7] Awareness and knowledge about the rationale behind these services is necessary for escalating the utilization of these services to provide a safe motherhood, delivery and for the well being of the baby. This will in turn decrease the MCH mortality indicators and help us to achieve the MDGs.

Thus this study was planned with the aim to assess the knowledge and awareness levels among the pregnant women about antenatal care, danger signs during pregnancy & preparation for emergency labour and to assess knowledge about various aspects of new born care and infant care in mothers with children under three years of age and demographic factors affecting them. This will therefore help in identifying the lacunae in the awareness levels in antenatal care, new born and child care which can be related to the utilisation of these services and hence contribute to bring down the mortality indicators.

MATERIALS AND METHODS

This is a community based cross- sectional study involving the pregnant women and mothers with children less than 3 years of age. The study was conducted in the field practice area of the Rural Health Centre of a teaching Medical College, located in Kanchipuram District of Tamil Nadu. A list of pregnant women seeking antenatal services and mothers of children under three years of age, who were beneficiaries of the Rural Health Centre was obtained. From the list, 100 antenatal women and 100 mothers of under three were selected by simple random sampling using a table of random numbers.

The questions were prepared with reference to the Mother-Child Protection. Mother & Child Protection card is a comprehensive card providing complete information right from the Antenatal test to growth monitoring of the newly born baby in continuation. This card is prepared by the joint efforts of Health Department and Women & Child Development Department in collaboration with UNICEF. This card not only gives the information about pregnant women & child but also give the comprehensive information about the pregnant women, vaccination of child, child nutritional status and prevention of main diseases.[8,9] The card is also available in local languages. The questionnaire was tested in the field before administration. The questionnaire was orally administered to every individual in the sample after having obtained informed consent. It was administered in the local language (Tamil) by visiting the women in their houses and the given responses were noted accordingly. Verbally administering the questionnaire was aimed at reducing the errors with perception of the questions and to obtain the maximum exact responses. The data was then analysed using SPSS version 16. Proportions were calculated. Single and double tailed Z tests were appropriately applied and p values were calculated.

RESULTS

The mean age of Antenatal women is 24.33 ± 2.88 years.78% of the participants were educated up to or above secondary section and 82% could read the local language (Tamil). 51% belonged to joint family and 49% belonged to nuclear family.

Average age of mothers of under three in rural area is 25.99 ± 3.23.92% of the mothers were educated upto and above secondary standard and 89% are able to read Tamil. Fifty-seven percent were from Nuclear families and 43% from joint families.

Table 1 shows awareness about routine Antenatal care. 69% women correctly stated that 1st trimester is the ideal time for Antenatal registration, however only 37% women were aware of minimum three antenatal checkups. Measurement of blood pressure during every visit, 100 Iron Folic Acid tablets and two injections of Tetanus Toxoid were answered correctly by 56%, 38% and 79% of the sample respectively. Only 23% of the pregnant women could interpret the family planning symbol correctly. Among the danger signals in pregnancy, pain in abdomen was most commonly perceived (27.8%) followed by bleeding (21%), pedal oedema (13.6%), convulsions (10.5%) and fever (8.6%). Only 2.5% women were aware of rupture of membranes and no one perceived pallor as a danger signal. Sixteen percent were not aware of any single danger sign. When asked what preparation would they do in case they suddenly go in labour and an emergency arises, 40.3% respondents did not know what they would do in such a situation. Thirty-one percent said they would arrange for transport in advance. However only 19.4% said that they would identify a hospital in advance and only 9.3% said that they would save money for such a situation.

Table 2, depicts knowledge of mothers of under three on the various aspects of care of infant. The only precautionary measures for new born that the mothers are aware are, initiating breast feeding and providing warmth at birth (23% and 36% respectively). Forty-one percent of the samples were not aware of any precautionary measures.

Table 1: Awareness about antenatal care

S. no	Various aspects of antenatal care (n=100)	Correct responses (%)
1	Period of antenatal registration (1st trimester)	69 (69)
2	Minimum number of antenatal checkups (3 times)	37 (37)
3	Number of times BP should be measured during pregnancy (during every visit)	56 (56)
4	Minimum number of Iron tablets to be taken during pregnancy (100 tablets)	38 (38)
5	Number of TT injections to be given during pregnancy (2 injections)	79 (79)
6	Interpretation of the family planning symbol	23 (23)
	Danger signs in pregnancy *multiple responses	
1	Pain abdomen	45 (27.8)
2	Bleeding	34 (21)
3	Pedal oedema	22 (13.6)
4	Convulsions/unconsciousness	17 (10.5)
5	Fever	14 (8.6)
6	Bursting of bag (rupture of membrane)	4 (2.5)
7	Pallor	0 (0)
8	Do not know	26 (16)
	Preparation for emergency labour *multiple responses	
1	Arrange for transport	40 (31)
2	Advance identification of hospital	25 (19.4)
3	Save money	12 (9.3)
4	Do not know	52 (40.3)

Thirty percent of mothers were aware that the new born should not be given bath for the first 7 days. Fever of the new born was perceived as a danger signal by 41% of the mothers. No cry or continuous cry, not feeding well and yellow palms was considered threat by 18%, 11%, 9% respectively. Only 3% mothers perceived diarrhoea as a risk to new born health. 18% of the women were not aware of even one danger sign of new born.

Forty-nine point four eight percent mothers were aware that breast feeding is started in the first one hour of birth and 34.02% knew that exclusive breast feeding should be given for first six months.

Cereals (42%) were observed to be the most popular choice of weaning food, followed by pulses (17%), vegetables (12%) and other healthy options like egg, cow's milk etc. (9%). Fruits were opted by only 1% of the mothers. Artificial food was preferred by 17% and biscuits by 2% of mothers.

97.89% mothers were of the opinion that their babies were completely immunized till date. However 62% were not aware of the name of a single vaccine or supplement given to their child. Very few mothers were aware of the names of the vaccines (BCG 15%, DPT 10%, OPV 7%, Measles 4% & Hepatitis B 2%). Not a single mother knew about Vitamin A.

Table 2: Awareness about infant care

S. no	New born care	Number of mothers (%)
1	Precautionary measures for new born *multiple responses (n=109)	
	Breast feeding	39 (36)
	Providing warmth	25 (23)
	Umbilical cord kept dry	0
	Kept away from sick	0
	Check weight of child	0
	Do not know	45 (41)
2	1st bath of new born (7th day after birth) (n=100)	30 (30)
3	Danger signs in new born *Multiple responses (n=133)	
	Fever/cold to touch	55 (41)
	No cry/continuous crying	23 (18)
	Not feeding well	15 (11)
	Yellow palms/soles	12 (9)
	Diarrhoea/blood in stools	4 (3)
	Convulsions/unconsciousness	0 (0)
	Do not know	24 (18)
	Feeding practices	
1	Time of initiation of breast feeding (within 1 hour) (n=97)	48 (49.48)
2	Period of exclusive breast feeding (1st 6 months) (n=97)	33 (34.02)
3	Food items used for supplementary feeding after 6 months of exclusive breast feeding *multiple responses (n=210)	
	Cereals	87 (42)
	Dal (pulses)	36 (17)
	Vegetables	26 (12)
	Fruits	3 (1)
	Other healthy food options(egg, cow milk)	17 (9)
	Artificial food (cerelac/lactogen)	36 (17)
	Biscuits	5 (2)
	Immunization	
1	Mothers perception of complete immunization (complete)	93 (97.89)
2	Name of vaccines/supplements known *multiple responses (n=122)	
	BCG	18 (15)
	DPT	12 (10)
	OPV	9 (7)
	Measles	5 (4)
	Hepatitis B	2 (2)
	Vitamin A	0 (0)
	Do not know	76 (62)
	Growth and Development	
1	Ideal shape of normal growth curve (n=100)	42 (42)
	Important childhood illnesses	
1	Common childhood illnesses *multiple responses (n=218)	
	Fever	91 (42)
	Respiratory infections	63 (29)
	Diarrhoea	42 (19)
	Others (Jaundice, polio)	18 (8)
	Do not know	4 (2)
2	Treatment of diarrhoea at home *multiple responses (n=101)	
	ORS	17 (17)
	Extra fluids	13 (13)
	Continue normal diet	5 (5)
	Continue breast feeding	2 (2)
	Hospitalization	42 (42)
	Do not know	22 (21)

Forty-two percent mothers could correctly tell about the ideal shape of a growth curve (upward). Forty-two percent women identified fever as an important childhood illness, followed by respiratory infections (29%). Nineteen percent mothers identified diarrhoea as a common illness. However 21% did not know how to treat diarrhoea at home. Seventeen percent knew about ORS and 13% about extra fluids. Only 2% thought that breast feeding should be continued and 5% were of the opinion that normal diet should be continued. Forty-two percent of the sample regarded hospitalization necessary for management of a child with diarrhoea.

On the basis of correct responses, individual scores in different categories were calculated followed by calculation of average scores in percentages. The average scores were then compared with the demographic factors like education of the women, ability to read Tamil and type of family. Standard deviation and Z-tests were applied. Table 3 shows the demographic factors affecting the scores. It is observed that antenatal women educated more than 10th standard, those who could read Tamil and those belonging to joint families scored significantly better. However the same factors have not affected the scores of mothers of children under three years of age.

Figure 1 shows various sources of information mentioned by both the groups of beneficiaries. Health Workers and Family members are a major source of information for both the group. Past experience plays a more important role in antenatal group and MCH card in infant care. Peers play a small role in awareness and contribution of media is very poor in both the groups.

Table 3: Demographic factors affecting the scores

Demographic variables	Sample size	Average score (%)	Standard deviation	Test of significance
Education				
Antenatal care				
≤10th standard	79	30.23	13.18	Z=4.33,
>10th standard	21	46.21	20.74	P=0.001**, double tailed
Infant care				
≤ 10th standard	75	22.22	6.85	Z=1.69,
>10th standard	25	24.89	6.94	P=0.0455, single tailed
Ability to read tamil				
Antenatal care				
Read Tamil	82	35.22	17.23	Z=2.18,
Can't read Tamil	18	26.14	8.13	P=0.03*, double tailed
Infant care				
Read Tamil	89	23.19	7.02	Z=1.26,
Can't read Tamil	11	20.39	5.92	P=0.21, double tailed
Type of family				
Antenatal care				
Nuclear	49	30.85	14.73	Z=1.66,
Joint	51	36.22	17.46	P=0 0.0485*, single tailed
Infant care				
Nuclear	57	23.01	7.35	Z=0.23,
Joint	43	22.69	6.42	P=0.82, double tailed

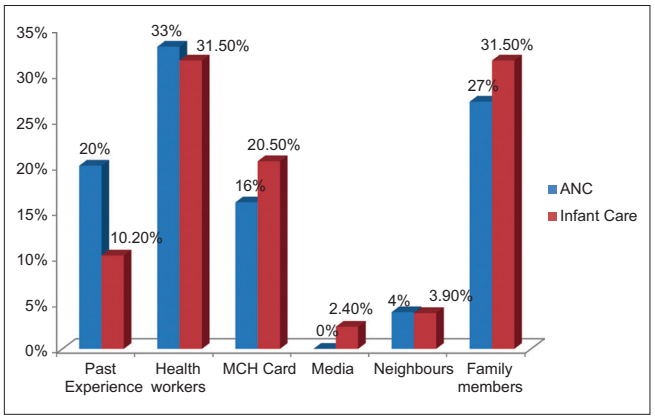

Figure 1: Source of Information

DISCUSSION

Awareness about registration in the first trimester and minimum two TT injections and BP measurement during every visit was observed in more than fifty per cent of the population (69%, 79% and 56% respectively). Awareness about minimum three check-ups and 100 Iron Folic Acid tablets was found to be very low (37% and 38% respectively). Only 23% of people were aware of the family planning symbol. This is correctly reflected in national statistics. As per NFHS 3 only 50.7% antenatal cases completed three antenatal visits and only 22.3% consumed 90 IFA tablets in rural India.[10] The findings of knowledge about ANC care in the current study are better than a similar study conducted in urban area of Imphal.[11] In an ICMR task force study, conducted in 28 districts in rural India, awareness about ANC registration was found to be low, but regarding TT injections and IFA tablets, high levels of awareness was observed among those who were availing ANC services.[5] Mahajan and Sharma observed in their study that knowledge about IFA tablets and TT injections were low in both urban as well as rural population in Maharashtra.[7]

Knowledge of danger signs of obstetric complications during pregnancy, labor and postnatal period is the first essential step for appropriate and timely referral.[12] However in the present study, awareness about most of the danger signals of pregnancy and the preparation need to be done for emergency labour was found to be extremely poor with 16% antenatal women not knowing a single danger sign. In a study conducted in Rural Tanzania 42% of clients

were not aware of any danger signs.[13] Several studies show poor awareness of danger signs of pregnancy.[5,12] Women educated above 10th standard, those who could read Tamil and those from joint family, had significantly better average scores. Similar results were observed by M.N.Haque in a study conducted in Bangladesh.[14]

Knowledge about infant care was observed to be very low in all aspects. Providing warmth to the newborn and immediate breast feeding were the only precautionary measures that the mothers were aware of. Maintaining the normal body temperature is extremely important in newborns because of their larger body surface area. A study done in rural India has proven that even when pregnant mothers who have access to a trained birth attendant for delivery at home, thermal care is the component of essential newborn care which gets neglected.[15]

It is a very common practice in India to bathe the newborns immediately after birth. This puts the newborn at risk of hypothermia which gets worse with the lack of adequate drying and warm clothes. The reason for this practice is the belief that the blood/fluid/vernix which stays on new-born's skin after birth is impure and has to be removed thoroughly. In the study conducted by Padiyath MA etal., more than 75% of mothers said that the first bath should be given after the 1st day of birth.[16] In the current study, only 30% women were aware that the new born should not be bathed for first 7 days. These findings are better than study conducted by Gupta P et al., in which only 15.1% said that baby should not be bathed and only dry up with a clean cloth.[17]

Fever was the most commonly known danger sign (41%) and 18% not being aware of any danger sign in new born. Though 49.48% women knew that breast feeding should be initiated in first hour of birth, only 34.02% could correctly tell the period of exclusive breast feeding. Healthy food options like cereals and pulses were preferred over formula food and biscuits. Multiple studies have got findings better than the current study regarding initiating breast feeding in half an hour, and exclusive breast feeding.[18,19] Lower results were observed in a study conducted in Uttar Pradesh.[17]

Globally in 2010, approximately 50% of the 19.3 million infants who were not fully vaccinated lived in India, Nigeria and the Democratic Republic of Congo (DRC).[20] Though majority of mothers (97.89%) felt that their babies were completely immunized awareness regarding the name of the vaccines is very poor. None of the mothers were aware about Vitamin A. Inadequate knowledge on immunization has been observed in multiple studies.[16,21]

Growth charts are important tools for monitoring child growth. In a study conducted by Okafor IP et al., it is mentioned that parents and caregivers lack knowledge and understanding of growth charts and this may limit their benefits as educational tools by healthcare providers. Unfortunately, in both rural and urban areas, there is low usage of growth charts in health facilities.[22] Even in the current study, only 42% mothers cold correctly identify the ideal shape of the growth curve.

Delay in seeking appropriate healthcare for sick children can potentially result in mortality especially in developing countries.[22] Thus timely identification of a sick child by the mother is very important for timely referral. In this study fever was the most commonly known childhood illness followed by respiratory infections and diarrhoea. Similarly, difficulty in breathing was most commonly identified health issue followed by others in a study conducted in Wardha.[23]

Majority of the respondents felt that hospitalization was indicated in the case of diarrhoea and very few knew about ORS and extra fluids. Even in NFHS 3 it is observed that 61.5% childhood diarrhoea cases were taken to health facility and only 26.2% received ORS.[10]

In a study conducted by Sinha AK and Srivastava SP, it is observed that generally parents thought anti-diarrheal drugs are must for treatment and knowledge regarding ORS and its use in diarrhoea and vomiting was very poor. [24] In the current study, 2% of the mothers were of the opinion that breast feeding should be continued during diarrhoea. Better results were observed in other studies.[19]

Education, ability to read Tamil and joint family had positive effect on scores of Antenatal women. However they had no effect on scores of mothers. Similarly, all aspects were poorly known among illiterates in a study conducted in Bihar.[24]

Health workers and family members play a major role in providing information for both the groups. MCH card though very precise and informative is not found to be very popular in spreading awareness. Media has been found to be ineffective in spreading awareness. Even the family planning symbol was identified by only 23% of the antenatal women. Other studies have mentioned anganwadi worker and health facilities as main source of information on mother and child care.[21,18]

CONCLUSION

All key Indicators of India for Maternal and Child health in NFHS - 3 are very poor especially for rural India. All indicators of rural TN, though low are better than their National counterparts.[25] Inspite of this it is observed that knowledge and awareness about the various aspects of

antenatal, newborn and infant care is very poor. This is despite all the participants being beneficiaries of Rural Health Centre and the majority of them being literate and educated upto secondary standard. If we want beneficiaries to accept our services, make use of them, which will eventually lead to decrease in our mortality and morbidity indicators, we should provide them with a clear understanding of the reason or scientific rationale of why a particular intervention is essential. The literacy rates of both the study groups are good. Local language is also understood well by the population. This fact can be used to our advantage in creating awareness. It is observed that Health workers are the major source of information. This fact can be used to spread more effective information. Use of MCH card should be increased, also role of media needs to be improved. Thus making use of existing infrastructure and staff we need to devise targeted health education sessions using existing IEC material like the MCH card more effectively. Efficient use of existing assets, giving precise information on the topics, will help us to increase awareness, which in turn will increase utilization of services and help to achieve the targets of MDGs.

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Authors Contribution:
EE – Concept and design of the study, reviewed the literature, collected data, manuscript preparation. **MSP –** Concept and design of the study, reviewed the literature, helped in preparing first draft of manuscript, critical revision of the manuscript. **SBP –** Helped in designing the study, statistically analyzed and interpreted the data, critical revision of the manuscript.

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