

A CROSS-SECTIONAL STUDY ON AWARENESS OF BIRTH PREPAREDNESS AND COMPLICATION READINESS (BP/CR) AMONG ANTENATAL MOTHERS ATTENDING PRIMARY HEALTH CENTRE

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Abstract

BACKGROUND: Maternal and child health (MCH), Despite Maternal morbidity and mortality in a declining trend, developing countries are still burdened with high rates of Maternal morbidity and mortality. In most of the situation MMR could be attributed to the "Three Delays" related to pregnancy, (1) Decision making, (2) Travel to health facility and (3) Adequate care in obstetric emergency. These delays could be alleviated by Health promotion and participation of individuals, families, and communities in Maternal and Child Health. Birth Preparedness and Complication Readiness (BPCR) is one of the interventions suggested by WHO for Health promotion. Tamil Nadu is one of the best states in maternal-child health in India but the three delays are still a problem of concern. Assessing BP/CR would help in identifying the preparation level of mothers and also address these three delays.

OBJECTIVES: To Assess the awareness of BP/CR among Primigravida mothers who completed 12 weeks of gestational age attending Medavakkam Primary Health Centre and factors influencing it.

METHODS: It was a cross-sectional study done at Medavakkam PHC, which is the field practice area of Institute of Community, Medicine Madras Medical College, during November 2020-November 2021, in the primigravida mothers who had completed 12 weeks of gestational age. The sample size was calculated as 130. AN mothers attending OPD had included in the study. A study tool is semi-structured questionnaire comprising demographic details and components of birth preparedness & complication readiness. Birth preparedness and complication readiness (BP/CR) Index, awareness of maternal danger signs, level of birth preparedness was calculated.

RESULTS: 130 primi mothers were included in the study, mean distribution of age among participants were 23.2±2.6 years and 11 (8.5%) were going to job, 86 (66.2%) were coming from nuclear families and 61 (46.9%) belonged to middle class, and 77 (59.2%) were in 3rd trimester, 84 (64.6%) had completed 4 antenatal visits. BP/CR index was 57.8%, awareness of maternal danger signs was 23%, the level of Birth preparedness was 50% in this study population. The primi mothers in their 3rd trimester had higher awareness in maternal danger signs (36.4%) and high level of birth preparedness (64.9%), those who had awareness about maternal danger sign were well prepared for delivery (birth) and the odds of birth preparedness was 3.6 (1.5-9) times among them.

CONCLUSION: This study had shown that the awareness of maternal danger signs among primi gravida Antenatal mothers was very poor and the birth preparedness level was average, suggesting BP/CR counselling and practices should be initiated from the 1st visit of Antenatal period itself.

KEY MESSAGES: BP/CR, MMR, Birth preparedness, complication readiness.

INTRODUCTION

Maternal and child health (MCH), despite Maternal morbidity and mortality in a declining trend, developing countries are still burdened with high rates of Maternal morbidity and mortality.¹ The target 3.1 of Sustainable Development Goals (SDG) set by the United Nations aims at reducing the global Maternal Mortality Ratio(MMR) to less than 70 per 100,000 live births by 2030. Maternal Mortality Ratio in India is 113/1,00,000 population,² with large inter- and intra-state inequities. In Tamil Nadu it is 63/1,00,000 population.² Though Tamil Nadu has attained the SDG target earlier, if compared with some countries the value is still high and it's necessary to work for sustained reduction of MMR.

In 1994, Thaddeus and Maine proposed The "Three Delays" related to pregnancy-related mortality delay in -¹ deciding to seek appropriate medical help for an obstetric emergency,² reaching an appropriate obstetric facility³ receiving adequate

care when a facility is reached.

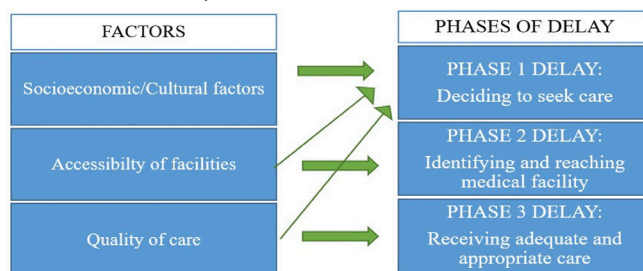


Figure 1: Covid-19 vaccination status among study participants (n=2850)

SUBJECTS AND METHODS



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Fig.1 stated the factors which contribute to these delays. These factors are directly linked with Health promotion and participation of individuals, families, and communities in Maternal and Child Health.

In the year 2003, WHO introduced the important concept - IFC framework to address these factors and by the way reduce these delays, this framework focused on Health promotion and participation of individuals, families, and communities in Maternal and Child Health.³ Birth Preparedness and Complication Readiness (BPCR) is one of the interventions suggested by WHO under this framework, as an essential element of the antenatal care package given by health care workers.³

BP/CR worked at each level (Individual, Family, and Community). BPCR facilitates women and their families to be prepared before childbirth for successful delivery and improves problem reorganization by symptoms and thereby reduces delay in seeking health care.⁴ Health care workers are the persons responsible for providing BP/CR awareness to the mother and the family, in the context of identifying maternal danger signs, identifying place of delivery, skilled assistant during delivery, saving money for delivery, local transport facility, and blood donor.

In 2014 Dieudonné et al.⁵ had shown in a Systematic Review and Meta-Analysis that there was a 28% reduction in MMR when BP/CR interventional strategy was applied. No studies have been done regarding BP/CR level in Tamil Nadu. Tamil Nadu is one of the best states in maternal-child health but the three delays are still challenges. Assessing BP/CR would help in identifying the preparation level of mothers and also address these three delays. This study focused on the individual level of awareness in primi gravida mothers to exclude the experience gained from the previous child birth. BP/CR could be assessed by calculating a compound BPCR Index, which comprised of the above-said BP/CR components.⁶

OBJECTIVE

To Assess the awareness of BP/CR among Primigravida mothers who completed 12 weeks of gestational age attending Medavakkam Primary Health Centre and factors influencing it.

METHODOLOGY

3.1 Study area and study period : This was a cross-sectional study done at Medavakkam PHC, which is the Rural Health Training Centre for the Institute of Community Medicine, a field practice area of Madras Medical College. The study was

done during November 2020-November 2021.

3.2 Study population, Sample size and sampling technique

The study population was Primigravida mothers who had completed 12 weeks of Gestational age and attended Medavakkam Primary Health Centre Outpatient department(OPD). The sample size was calculated using the formula, $n = Z^2 \times pq / d^2$, using the prevalence of 45% taken from previous study⁷ and relative precision of 9%, with 10% non response rate and the sample size was calculated as 130.

Ethical approval was obtained from the Institutional Ethical Committee of Madras Medical College. The mothers who gave consent were included in the study till the sample size reached.

3.3 Study tool and Data collection : A pretested, prevalidated, semi-structured questionnaire comprising demographic details and components of birth preparedness & complication readiness was adopted from "Monitoring Birth Preparedness and Complication Readiness, Tools and Indicators for Maternal and Newborn Health (jhpiego)" – Individual-level.⁸ Modified B.G.prasad scale was used for Socio-economic status assessment. Data collection was done by face-to-face interview technique.

3.4 Operational definition

3.4.1. Birth preparedness and complication readiness (BP/CR) Index:

The average of the following components enlisted in the table-1 is called BP/CR Index(4).

3.4 Operational definition

3.4.1. Birth preparedness and complication readiness (BP/CR) Index:

Table 1 : BP/CR Index components⁴

| S.No | BP/CR Components |
|------|--|
| 1. | % of women knew any existing govt. financial scheme. (MRMBS,JSY) |
| 2. | % of women knew at least one key danger signs of pregnancy |
| 3. | % of women knew at least key danger signs of childbirth |
| 4. | % of women knew at least key danger signs of post partum period |
| 5. | % of women knew at least one key danger sign of newborn |
| 6. | % of women who (plan to) saved money for childbirth |
| 7. | % of women who (plan to) identified vehicle for emergency transportation |
| 8. | % of women who knew about government ambulance services |
| 9. | % of women who (plan to) identified blood donor |
| 10. | % of women who identified place of delivery |
| 11. | % of women who knew about government blood services |

3.4.2. Awareness of maternal danger signs : If a participant is able to specify atleast one key danger signs in all the phases of antenatal, labor and postnatal period then the individual was considered to be aware of maternal danger signs.

3.4.3. Birth preparedness : If a pregnant woman have planned three components out of four in the following, she was considered as being "well prepared" and the rest were

considered “not prepared” i) identified place for childbirth; ii) identified blood donor; iii) saved money for child-birth and iv) arranged transport in case of delivery and obstetric emergency.

3.5. Data Analysis

The data was entered in MS Excel and analyzed using SPSS Version 16. Descriptive statistics are expressed as Percentages. A Chi-square test was used to determine the statistical significance.

RESULTS

4.1. Socio-Demographic Details

130 primi mothers were included in the study, mean distribution of age among participants were 23.2±2.6 years with the minimum of age of 18 years and the maximum age of 32 years.

Table 1 : Socio-Demographic factors

| FACTORS | | FREQUENCY | PERCENTAGE |
|-----------------------|-----------------------------------|-----------|------------|
| Education | Primary School education | 2 | 1.5% |
| | Secondary School education | 2 | 1.5% |
| | High School education | 34 | 26.2% |
| | Higher Secondary School education | 23 | 17.7% |
| | Under Graduate | 69 | 53.1% |
| Job | Employed | 11 | 8.5% |
| | Un-employed | 119 | 91.5% |
| Type of Family | Joint family | 44 | 33.8% |
| | Nuclear family | 86 | 66.2% |
| Socio-Economic status | Lower class | 3 | 2.3% |
| | Lower middle | 6 | 5.4% |
| | Middle | 61 | 46.9% |
| | Upper Middle | 37 | 28.5% |
| | Upper class | 22 | 16.9% |

Among the 130 participants 69 (53.1%) were under graduates, only 11 (8.5%) were going to job, 86 (66.2%) were coming from nuclear families and 61 (46.9%) belonged to middle class.

4.2. Obstetric details :

Table 2 : Obstetric details

| Variables | | Frequency (percentage) |
|---------------------------------|---------------------------|------------------------|
| Pregnancy Related Complications | Yes | 32(24.6%) |
| | No | 98(75.4%) |
| Antenatal Visits | Less than 4 visits | 46(35.4%) |
| | More than 4 visits | 84(64.6%) |
| Trimester | 2 nd Trimester | 53(41%) |
| | 3 rd Trimester | 77(59%) |

Among 130 participants 77 (59.2%) were in 3rd trimester & 53 (40.85) were in 2nd trimester, 32 (24.6%) were suffered from any complications in current pregnancy, 84 (64.6%) had completed 4 antenatal visits.

4.3 Awareness of maternal danger signs

Awareness of maternal danger signs was 23%

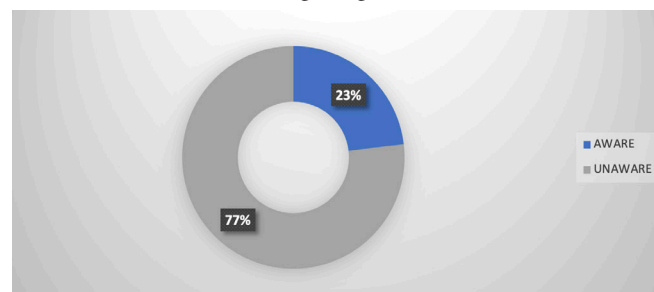


Figure 2 : Awareness of maternal danger signs

4.4. Awareness of danger signs in various phases

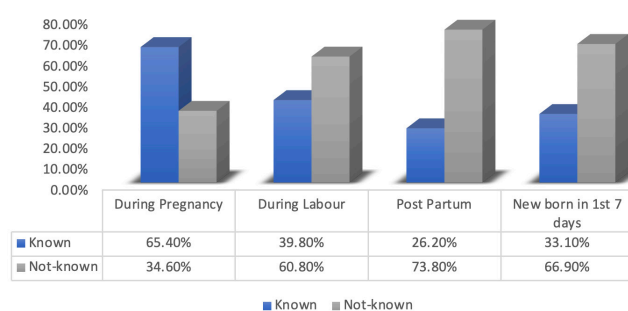


Figure 3 : Awareness of danger signs

The awareness of maternal danger signs among primi mothers during pregnancy, labour, postnatal period and fetal danger sign during the 1st 7 days of newborn life were 65.6%, 39.8%, 26.2% and 33.1% respectively.

4.5. Individual components of Birth preparedness

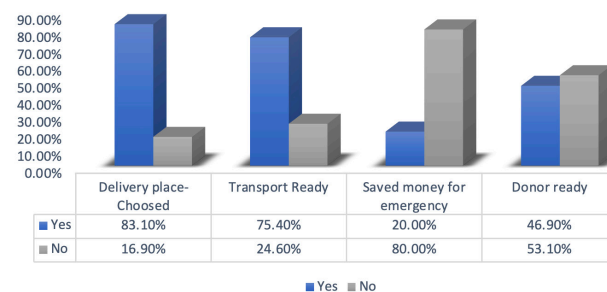


Figure 4 : Individual components of Birth preparedness

The birth preparedness among primi mothers in the component of choosing delivery place, ready with the transport in emergency, saved money for delivery and ready with blood donor were 83.1%, 75.4%, 20% and 46.9% respectively.

4.6. Birth Preparedness

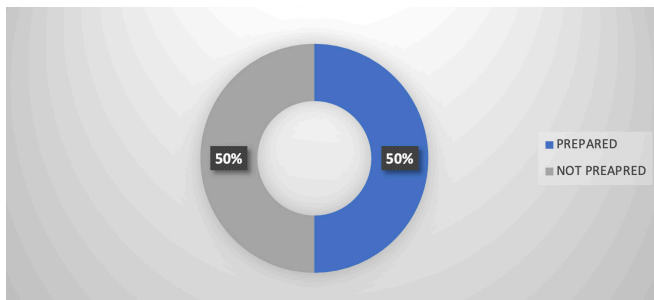
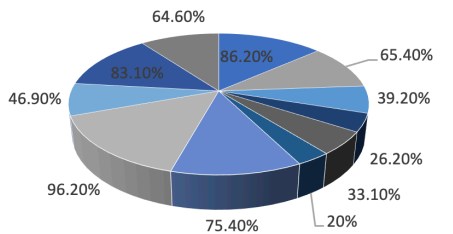


Figure 5 : Birth Preparedness

The level of Birth preparedness is 50% in this study population.

4.7. BP/CR Index

BP/CR INDEX = 57.8%



- % of women knew any existing govt. financial scheme. (MRMBS,JSY)
- % of women knew at least one key danger signs of pregnancy
- % of women knew at least key danger signs of childbirth
- % of women knew at least key danger signs of post partum period
- % of women knew at least one key danger sign of newborn
- % of women who (plan to) saved money for childbirth
- % of women who (plan to) identified vehicle for emergency transportation
- % of women who knew about government ambulance services
- % of women who (plan to) identified blood donor
- % of women who identified place of delivery
- % of women who knew about government blood services

Figure 9 : BP/CR Index

4.8. Associations

Table 3 : Awareness of danger signs & Birth preparedness

| | | Birth preparedness | | Odds ratio | P value |
|---------------------------|---------|--------------------|--------------|-------------|---------------|
| | | Prepared | Not prepared | | |
| Awareness of danger signs | Aware | 22(73.3%) | 8(26.75) | 3.6 (1.5-9) | 0.004* |
| | Unaware | 43(43%) | 57(57%) | | |

The participants those who were going to job had higher awareness in maternal danger signs (27.3%) and high level of birth preparedness (54.5%) than the participants were not going to job, and this was not statistically significant. The participants those who were from nuclear family had higher awareness in maternal danger signs (26.7%) and high level of birth preparedness (53.5%) than the participants from joint family, again this was not statistically significant.

Table 4 : Socio demography Vs

Awareness of danger signs & Birth preparedness

| VARIABLES | | Awareness of maternal Danger Sign | | Birth preparedness | |
|-----------------------|---------------------------------------|-----------------------------------|------------|--------------------|--------------|
| | | Aware | Unaware | Prepared | Not prepared |
| Education | Primary School (n=2) | 0 (0%) | 2 (100%) | 2 (100%) | 0 (0%) |
| | Secondary School education(n=2) | 0 (0%) | 2 (100%) | 0 (0%) | 2 (100%) |
| | High School education(n=34) | 4 (11.8%) | 30 (88.2%) | 16 (47.1%) | 18 (52.9%) |
| | Higher Secondary School education(23) | 10 (43.5%) | 13 (56.5%) | 9 (39.1%) | 14 (60.1%) |
| | Under Graduate (n=69) | 16(23.2%) | 53 (76.8%) | 38 (55.1%) | 31 (44.9%) |
| p-Value | | 0.06 | | 0.206 | |
| Job | Employed(n=11) | 3 (27.3%) | 8 (72.7%) | 6 (54.5%) | 5 (45.5%) |
| | Un-employed(n=119) | 27 (22.7%) | 92 (77.3%) | 59 (49.6%) | 60 (50.4%) |
| | p-Value | | 0.730 | | 0.753 |
| Type of Family | Joint family(n=44) | 7 (15.9%) | 37 (84.1%) | 19 (43.2%) | 25 (56.8%) |
| | Nuclear family(n=86) | 23 (26.7%) | 63 (73.3%) | 46 (53.5%) | 40 (46.5%) |
| | p-Value | | 0.266 | | 0.180 |
| Socio-Economic status | Lower class(n=3) | 0 (0%) | 3 (100%) | 3 (100%) | 0 (0%) |
| | Lower middle(n=7) | 0 (0%) | 7 (100%) | 2 (28.6%) | 5 (71.4%) |
| | Middle(n=61) | 14 (23%) | 47 (77%) | 32 (52.5%) | 29 (47.5%) |
| | Upper Middle(n=37) | 10 (27%) | 27 (73%) | 16 (43.2%) | 21 (56.8%) |
| | Upper class(n=22) | 6 (27.3%) | 16 (72.7%) | 12 (54.5%) | 10 (45.5%) |
| p-Value | | 0.617 | | 0.381 | |

Table 5 : Obstetric related details

Vs Awareness of danger signs & Birth preparedness

| VARIABLES | | Awareness of maternal Danger Sign | | Birth preparedness | |
|------------------------------------|----------------------------------|-----------------------------------|------------|--------------------|--------------|
| | | Aware | Unaware | Prepared | Not prepared |
| Trimester | 2 nd Trimester (n=53) | 2 (3.8%) | 51(96.2%) | 15 (28.3%) | 38 (71.7%) |
| | 3 rd Trimester (n=77) | 28 (36.4%) | 49 (63.6%) | 50 (64.9%) | 27 (35.1%) |
| | | 0.000* | | 0.000* | |
| Complications in current pregnancy | Yes (n=32) | 8 (25%) | 24 (75%) | 17 (53.1%) | 15 (46.9%) |
| | No (n=98) | 22 (22.4%) | 76 (77.6%) | 48 (49%) | 50(51%) |
| | | 0.766 | | 0.684 | |
| AN visits | Less than four (n=46) | 0 | 46 (100%) | 13 (28.3%) | 33 (71.7%) |
| | More than four (n=84) | 30 (35.7%) | 54 (64.3%) | 52 (61.9%) | 32 (38.1%) |
| | | 0.000* | | 0.000* | |

The Primi mothers in their 3rd trimester had higher awareness in maternal danger signs (36.4%) which was statistically significant, they were also high level of birth preparedness (64.9%) in the 3rd trimester and which was statistically significant.

DISCUSSION

In this study around 130 primi gravida antenatal mothers were participated. BP/CR index of the current study was 57.8% Kar M et al,⁴ in Odisha had shown that BP/CR index value was 28.6% among Antenatal mothers, this could be due to the better Maternal and Child health services in Tamil

Nadu.

Awareness of danger signs during the period of Antenatal, labour, Postnatal (atleast one in each phase) in this study was 23%, this is comparable with the study in Kanchipuram done by Gopalakrishnan et al. (2019).⁹ who had shown 21% of Antenatal mothers had awareness of maternal danger signs, Pervin et al. in Bangladesh had shown the awareness was 45.6%,¹⁰ which was not comparable with the current study.

The level of birth preparedness was 50% in this study, Pervin et al. in Bangladesh had shown the birth preparedness was 23.6%¹⁰ and Kar et al. in Odisha had also shown only 26% of the birth preparedness, both were lower than the current study.⁴

According to the current study, those who had awareness about maternal danger sign were well prepared for delivery (birth), the odds of birth preparedness was 3.6 (1.5-9) times higher and it was statistically significant, p value was 0.004. Akshaya and Shivali et al. in Karnataka¹ also had a similar kind of results and the odds of occurrence was 5 (2.2-11.8).

In a study done at karnataka study they had shown that socio-economic status had a role in awareness and birth-preparedness.¹ Gopalakrishnan et al.⁹ had established a significant association between maternal literacy status and awareness of maternal danger signs, but in the current study social factors like maternal education, job, type of family and Socio-economic status were not significantly associated with BP/CR.

In the current study all the participants in the 3rd trimester had more than 4 Antenatal visits, very few from the 2nd trimester had also more than 4 antenatal visits, and there was significant association between BP/CR and the participants had more than 4 visits this result was comparable with the Akshaya and Shivali et al.

BP/CR index level in this study was 57.8% shows there was significant association between the awareness of maternal danger signs with the birth preparedness.

The highest level of awareness in maternal danger signs and birth preparedness were noted in the participants those who had more than 4 visits and also in their 3rd trimester

CONCLUSION

Key Factors related to awareness on AN care have been studied. The crucial factors like maternal danger signs are related to birth preparedness. Hence mothers to be instructed often.

RECOMMENDATION

Health care workers has to create awareness among antenatal mothers about maternal danger signs of each phases of pregnancy.

BP/CR counselling and practices should be initiated from the 1st visit itself.

LIMITATIONS

This study was done in the field practice area of the Institute of Community Medicine, Madras Medical college. So, it may not be generalizable to other parts of the Antenatal mothers.

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