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ORIGINAL ARTICLE

Birth Preparedness and Complication Readiness Among Rural Pregnant Women of Tamilnadu: A Cross Sectional Study

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Abstract

Background: Birth preparedness and complication readiness serve as valuable tactics for enhancing the provision of maternal and child care services, consequently reducing morbidity and mortality associated with childbirth. Anticipating childbirth and possessing prior awareness of potential complications enables women to access services promptly. **Methods:** In 2022, a community-based cross-sectional study was conducted involving a sample of 480 pregnant women. Data on Birth Preparedness and Complication Readiness (BPCR) were gathered using a pretested and standardized questionnaire. Data analysis was performed utilizing SPSS version 20. The questionnaire encompassed inquiries regarding birth preparedness, such as the selection of a health facility, designation of a birth attendant, arrangement for transportation, securing a blood donor, and whether the woman had saved money for delivery. Complication readiness was assessed through questions concerning complications during pregnancy, delivery, and the neonatal period. **Results:** Out of the 480 pregnant women included in the study, 30.8% were classified as belonging to the upper middle class. Additionally, 55% of the participants had experienced multiple pregnancies, while 74.2% were identified as being in their third trimester. Furthermore, 70% of the women had undergone their initial Antenatal Care (ANC) checkup before reaching 12 weeks of gestation. Despite these demographics, the study found a general lack of awareness regarding Birth Preparedness and Complication Readiness (BPCR) among the participants. **Conclusion:** The study indicates a low level of birth preparedness and complication readiness within Rural Tamilnadu. To address this issue effectively, targeted health education strategies should be directed towards young couples and adolescent girls, who represent the future mothers. Implementing both individual and community-level interventions focused on birth preparedness and complication readiness has the potential to enhance maternal service delivery and ultimately reduce both morbidity and mortality rates associated with childbirth.

Keywords: Pregnancy, Maternal Health Services, Birth Preparedness, Obstetric Labor Complications, Health Education, Health Knowledge, Attitudes, Practice

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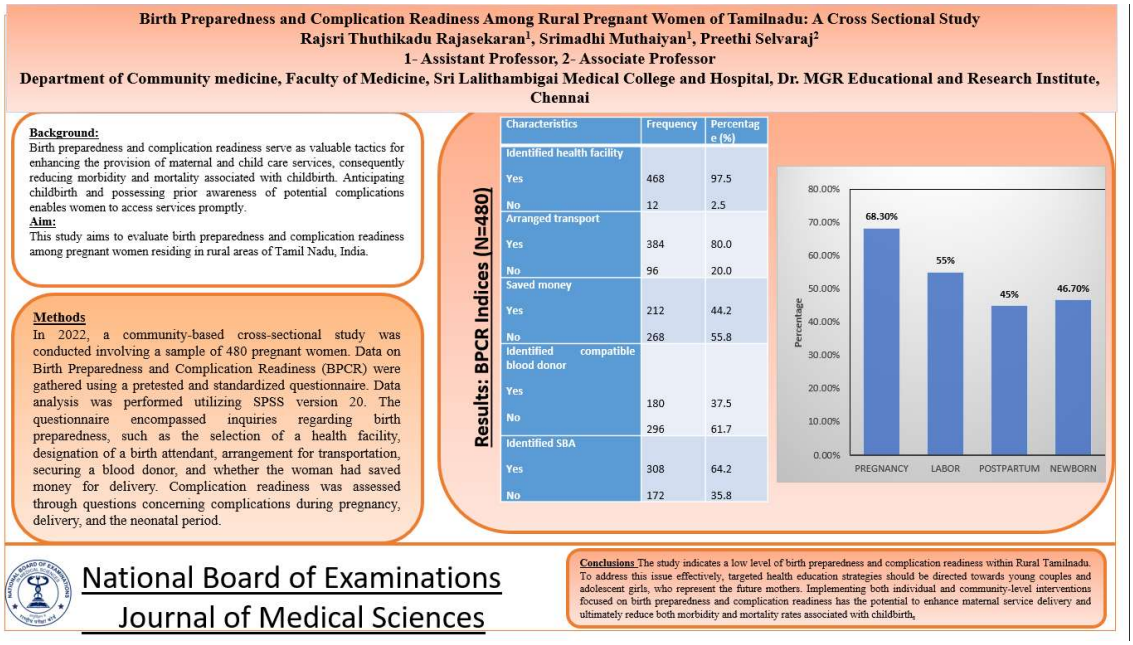
Graphical Abstract



Introduction

Maternal mortality remains a significant global concern, particularly accentuated in developing nations [1]. Trend analysis between 2000 to 2020 estimated 287,900 maternal deaths occurred annually across 180 countries, with a majority concentrated in developing regions [2]. Complications arising from pregnancy and childbirth stand as the primary causes of mortality among women of reproductive age in both India and worldwide [3]. The lack of access to skilled attendants and emergency care significantly contributes to these fatalities [4]. Despite India's status as a developing country, maternal care services are provided free of charge in the public sector [5]. However, a survey conducted by the National Sample Survey Organization in 2004 revealed that 80% of households bore the financial burden of maternal healthcare services, with private sector services costing four times more than those in the public sector [6]. Birth preparedness entails encouraging individuals to take appropriate measures during pregnancy, ensuring the presence of a skilled care provider during childbirth [7]. Complication readiness involves raising awareness of danger signs among women, families, and communities, equipping them to respond effectively during emergencies [8]. Birth preparedness and complication readiness (BPCR) encompass the process of planning for normal childbirth while anticipating necessary actions in case of emergencies [9]. Despite various evidence-based interventions implemented under national programs to promote maternal health in India, several small-scale cross-sectional studies conducted in both rural and urban populations have revealed persistent challenges regarding BPCR indicators [10-12]. Against this backdrop, the present study was conducted rural Tamil Nadu, India, aiming to establish a baseline understanding of the BPCR status in the region.

Objectives

This study aims to assess birth preparedness and complication readiness among rural pregnant women in Tamil Nadu, India.

Methods

A community-based, cross-sectional study was conducted between May and October 2022 in rural Tamil Nadu. Institutional Ethical clearance was obtained. The study targeted antenatal women in their second and third trimesters of pregnancy residing within the district. All 480 pregnant women registered within the district were included in the study. Pregnant women who were residents of the area and provided informed consent were eligible for participation, while postnatal women, non-residents, and those who did not provide informed consent were excluded.

Upon obtaining informed consent, a pretested standardized questionnaire was administered through personal interviews. The questionnaire was translated into Tamil, the local language, and back-translated into English to ensure consistency. The first section of the questionnaire collected sociodemographic information, including age, caste (Scheduled Caste, Scheduled Tribe, Other Backward Class [SC/ST/OBC], and General), religion, duration of formal education, occupation, total family income, and parity. The second section focused on birth preparedness, encompassing early registration (gestational age at first ANC visit), number of antenatal checkups, identification of health facilities, availability of transportation, saving money for delivery, identification of compatible blood donors, and designation of skilled birth attendants. The section on complications readiness included questions regarding potential complications during pregnancy, delivery, and neonatal period. Key danger signs were identified for each stage, such as severe vaginal bleeding, swollen hands/face, and blurred vision during pregnancy; severe vaginal bleeding, prolonged labor, convulsions, and retained placenta during labor; and severe vaginal bleeding, foul-smelling vaginal discharge, and high fever during the postpartum period. Key danger signs for neonates included convulsions, difficulty/fast breathing, very small size, lethargy/unconsciousness, and inability to suck/drink during the first 7 days of life.

Data analysis was performed using SPSS Version 20, and the results were expressed in terms of frequency and percentage.

Results

Socio-demographic Profile

Within the cohort of 480 study participants, a majority (47.5%) fell within the age bracket of 20-25 years, with 13.3% being below 20 years old, 24.2% between 26 to 30 years old, and 15% over 30 years old. Regarding caste distribution, 46.7% of participants belonged to Scheduled Caste, 23.3% to the general caste, and 30% to other categories. Among the participants, 96 out of 240 were degree holders, while 33.3% had completed higher secondary education, and 10.8% had primary education. A notable 15.8% of participants were illiterate. Employment status showed that 88.3% of participants were employed, while 11.7% were unemployed. In terms of socioeconomic class, 13.3% were classified as upper class, 30.8% as upper middle class, 30.1% as middle class, 23.3% as lower middle class, and only 2.5% as lower class (Table 1).

Table 1. Sociodemographic profile of the participants (N=480)

Characteristics	Frequency	Percentage (%)
Age		
< 20years	64	13.3
20-25 years	228	47.5
26-30 years	116	24.2
>30 years	72	15.0
Caste		
General	112	23.3
SC/ST	224	46.7
Others	144	30.0
Education		
Illiterate	76	15.8
Up to 8^{th}	52	10.8
8^{th} – 12^{th}	160	33.3
Degree Holder	192	40.1
Occupation		
Employed	56	11.7
Unemployed	424	88.3
Socio economic status		
Upper class	64	13.3
Upper middle class	148	30.8
Middle class	144	30.1
Lower middle class	112	23.3
Lower class	12	02.5

Obstetric profile of the participants

Among the study population, 45% were primigravidae and 55% were multiparous. Distribution across trimesters showed that 7.5% were in the first trimester, 18.3% in the second trimester, and 74.2% in the third trimester. Concerning Antenatal Care (ANC), 70% of ANC mothers had their first check-up and registration before 12 weeks of pregnancy (Table 2).

Birth Preparedness Indices

A significant proportion (97.5%) of study participants had already decided and identified the health facility for their delivery, with only 2.5% yet to decide. Regarding transport arrangements, 80% of participants had made arrangements, while 20% had not. Additionally, 44.2% of subjects had saved money specifically for delivery expenses, and 37.5% had identified a blood donor. Furthermore, 64.2% had identified a skilled birth attendant within their community (Table 3).

Complication Readiness Indices

A considerable percentage (68.3%) of participants were aware of danger signs during pregnancy, while 55% were aware of danger signs during labor. In the postpartum period, 45% were aware of danger signs, and 46.7% were aware of danger signs in newborns (Figure 1).

Table 2. Obstetrics profile of the participants (N=480)

Characteristics	Frequency	Percentage (%)
Parity		
Primi	216	45.0
Multi	264	55.0
Trimester		
First	36	7.5
Second	88	18.3
Third	156	74.2
GA at first ANC		
<12 weeks	336	70.0
>12 weeks	144	30.0

Table 3. BPCR Indices (N=480)

Characteristics	Frequency	Percentage (%)
Identified health facility		
Yes	468	97.5
No	12	2.5
Arranged transport		
Yes	384	80.0
No	96	20.0
Saved money		
Yes	212	44.2
No	268	55.8
Identified compatible blood donor		
Yes	180	37.5
No	296	61.7
Identified SBA		
Yes	308	64.2
No	172	35.8

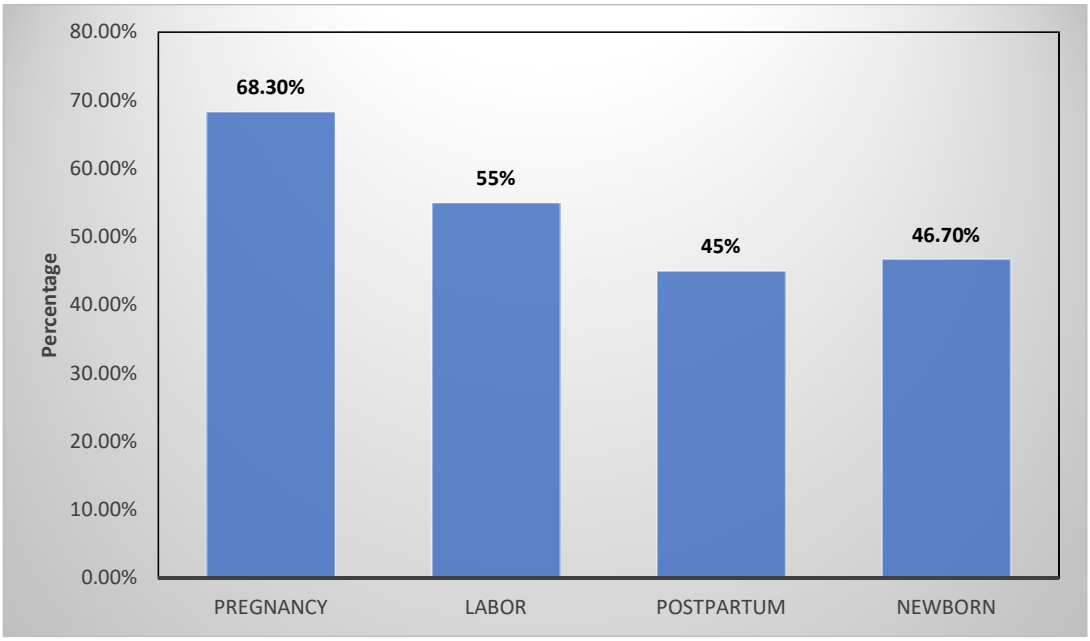


Figure 1. Complication readiness (Awareness regarding danger signs) (N=480)

Government Schemes

The majority (90%) were aware of government financial assistance for pregnant mothers, and 56.7% were aware of the government's free transport scheme for ANC, delivery, and Postnatal Care (PNC) visits. However, only 36.7% were aware of Birth Preparedness and Complication Readiness (BPCR), while 63.3% had not heard of it (Table 4).

Table 4. Awareness regarding government schemes (N=480)

Characteristics	Frequency	Percentage (%)
Government financial assistance		
Aware	432	90.0
Not aware	48	10.0
Government transport scheme		
Aware	272	56.7
Not aware	208	43.3
BPCR		
Aware	176	36.7
Not aware	304	63.3

Discussion

This community-based cross-sectional study aimed to assess the level of birth preparedness and complication readiness (BPCR) among antenatal mothers in rural Tamilnadu. The study findings indicate a poor level of BPCR among the participants, consistent with similar studies conducted in various regions of India. For instance, research by Agarwal et al. [13] among slum dwellers in Indore city reported a BPCR score of 47.8%, while

Acharya et al. [14] found a BPCR of 41% among antenatal women in Delhi. Studies in West Bengal populations also revealed BPCR scores ranging from 34.5% to 49.4% [15,16]. Globally, BPCR levels vary widely, with reports ranging from 16.5% in Ethiopia [17] to 65% in Nepal [18]. These discrepancies may be attributed to factors such as female literacy levels, health-seeking behavior, community empowerment, spouse's education status, and occupation, as well as variations in assessment methodologies.

Numerous studies from India and beyond underscore the significant impact of female literacy on BPCR [8-11]. In the current study, the low level of BPCR may be linked to limited exposure to healthcare providers during early pregnancy. Insufficient knowledge of key danger signs has also been identified as a contributing factor in other studies. Adequate knowledge of danger signs is crucial for early recognition of potentially life-threatening complications and prompt healthcare seeking behavior. Auxiliary Nurse Midwives (ANM) and Accredited Social Health Activists (ASHAs) should play a proactive role in educating expectant mothers and their families about these danger signs during Antenatal Care (ANC) visits.

Furthermore, the study found that women preferring public sector institutions for delivery tended to belong to lower socioeconomic status, possibly due to low awareness of available schemes. Maternal mortality in India is often attributed to maternal anemia and postpartum hemorrhage, highlighting the importance of identifying compatible blood donors and ensuring blood availability during emergencies [3]. Given India's resource-constrained setting, preventive care is crucial, and complications must be anticipated to facilitate timely initiation of appropriate treatment.

This community-based study provides valuable insights into the actual BPCR status within the community. Based on the findings of poor BPCR, targeted health education and awareness programs should be conducted to mitigate maternal mortality.

The study might have a sampling bias if the participants were not randomly selected, which could affect the generalizability of the findings to the entire population of rural pregnant women in Tamil Nadu. Participants might have provided socially desirable responses, leading to overestimation of birth preparedness and complication readiness.

Conclusion

The study revealed a low level of BPCR among participants. Multiparous women with adequate contact with healthcare providers demonstrated better BPCR, indicating the importance of knowledge acquisition. Field workers such as ASHAs and ANMs should be encouraged to educate women and their families about BPCR. Adolescent girls and newly married couples should be specifically targeted for BPCR advice, as they represent future mothers in need of essential knowledge and preparation.

Statements and Declarations

Conflicts of interest

The authors declares that they do not have conflict of interest.

Funding

No funding was received for conducting this study.

Ethical approval

The study was approved by Institutional Ethical Committee

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