

ORIGINAL RESEARCH ARTICLE

Assessment of knowledge about neonatal danger signs among primiparous women at discharge from healthcare facilities

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Abstract

This study explores the evaluation of knowledge regarding neonatal danger signs (NDS) among first-time mothers in Pakistan during their discharge from healthcare facilities. The investigation aimed to establish connections between their understanding of NDS and factors such as sociodemographic background, prenatal check-ups, and educational measures. Considering the persistently high neonatal mortality rates in low- and middle-income nations, recognizing maternal NDS awareness becomes crucial for promoting early medical attention and reducing neonatal health risks. Existing research highlights the role of maternal knowledge in shaping neonatal well-being; however, gaps in knowledge remain prevalent, especially among first-time mothers. Using a cross-sectional approach, data were gathered through structured questionnaires, revealing significant relationships among maternal NDS awareness, sociodemographic aspects, prenatal care, and educational interventions. It is noteworthy that first-time mothers demonstrated lower NDS knowledge than mothers with multiple childbirth experiences, while those with higher education displayed greater awareness. The effects of educational interventions were diverse, and antenatal visits were linked to enhanced knowledge. This study highlights the significance of focused treatments that target knowledge deficiencies, which can empower women and contribute to the reduction of infant health problems and mortality. encouraging further exploration of effective strategies to augment maternal knowledge and proactive healthcare-seeking behaviors. (*Afr J Reprod Health* 2024; 28 [3]: 13-19).

Keywords: Neonatal danger signs, neonatal mortality

Résumé

Cette étude explore l'évaluation des connaissances concernant les signes de danger néonataux (NDS) chez les primipares au Pakistan lors de leur sortie des établissements de santé. L'enquête visait à établir des liens entre leur compréhension du NDS et des facteurs tels que le contexte sociodémographique, les contrôles prénatals et les mesures éducatives. Compte tenu des taux de mortalité néonatale constamment élevés dans les pays à revenu faible ou intermédiaire, il devient crucial de reconnaître la sensibilisation maternelle aux NDS pour promouvoir des soins médicaux précoces et réduire les risques pour la santé néonatale. Les recherches existantes mettent en évidence le rôle des connaissances maternelles dans la formation du bien-être néonatal ; cependant, des lacunes dans les connaissances demeurent répandues, en particulier parmi les primo-mères. En utilisant une approche transversale, les données ont été recueillies au moyen de questionnaires structurés, révélant des relations significatives entre la sensibilisation maternelle au NDS, les aspects sociodémographiques, les soins prénatals et les interventions éducatives. Il convient de noter que les mères primipares ont démontré des connaissances NDS inférieures à celles des mères ayant eu plusieurs accouchements, tandis que celles ayant fait des études supérieures ont montré une plus grande conscience. Les effets des interventions éducatives étaient diversifiés et les visites prénatales étaient liées à une amélioration des connaissances. Cette étude met en évidence l'importance des traitements ciblés ciblant les déficits de connaissances, qui peuvent autonomiser les femmes et contribuer à la réduction des problèmes de santé et de la mortalité infantiles. encourager une exploration plus approfondie de stratégies efficaces pour accroître les connaissances maternelles et les comportements proactifs de recherche de soins de santé. (*Afr J Reprod Health* 2024; 28 [3]: 13-19).

Mots-clés: Signes de danger néonataux, mortalité néonatale

Introduction

Neonatal danger signs are non-specific signs of severe illness that indicate a high risk of neonatal

morbidity and mortality. Prompt detection of these indicators is vital for enhancing the survival rate of newborns. The subsequent newborn peril indicators have been established by UNICEF and WHO.

Mothers or carers should possess the ability to identify these indicators and promptly seek medical intervention to decrease infant illness and death rates. Research has indicated that the level of awareness regarding newborn danger symptoms among first-time mothers differs based on geographical location and other influencing factors¹⁻⁵. There is a severe lack of knowledge among pregnant women regarding neonatal danger signs. Most of the studies focused on assessing the knowledge of obstetric danger signs among pregnant women and found that the overall knowledge on obstetric danger signs was suboptimal¹⁻³. Neonatal danger signs are nonspecific and can be indicative of various newborn diseases, with common signs including issues like poor sucking, lethargy, rapid breathing, temperature abnormalities, jaundice, abdominal distention, diarrhea, convulsions, and vomiting^{1,2}. Neonatal danger signs, which are often nonspecific and can result from a combination of genetic and environmental factors, encompass various issues such as infections, birth injuries, prematurity, congenital abnormalities, and environmental influences, and they necessitate immediate medical attention when noticed in newborns¹⁻³. Factors linked to mothers' awareness of neonatal danger signs included maternal occupation, paternal educational background, the emergence of neonatal danger signs, the frequency of antenatal care visits, and exposure to health education regarding neonatal danger signs¹. Educating women, increasing mothers' health service use, and providing health education for mothers who attend pregnancy-related services showed a positive impact on their knowledge of neonatal danger signs and should therefore be promoted¹. In a low-middle-income country such as Pakistan, where persistently elevated neonatal mortality rates pose a pronounced public health concern, the imperative for implementing efficacious interventions becomes paramount. A crucial intervention is to enhance maternal understanding of neonatal danger signs (NDSs). This study evaluated the extent of NDS knowledge among primiparous women in Pakistan. The scope of investigation encompasses multifaceted dimensions, including an understanding of the depth of knowledge among primiparous women, delineating the role that sociodemographic factors play in contributing to knowledge disparities, and

scrutinizing the impact of antenatal visits and educational interventions on maternal comprehension of NDSs. The foundation for this study was derived from an encompassing review of the literature, illuminating the pivotal role that maternal NDS knowledge assumes in shaping early care-seeking behaviors and potentially mitigating neonatal mortality. Guided by the Romana Mercer model of maternal role attainment, this study established a theoretical framework to untangle the intricate factors that influence maternal awareness of NDSs. Hypotheses are structured on this conceptual framework, positing that sociodemographic factors, antenatal visits, and educational interventions significantly influence maternal NDS knowledge. The resultant research outcomes stand poised to inform targeted interventions aimed at fortifying maternal awareness of NDSs, thereby contributing substantively to the overarching endeavor of alleviating neonatal mortality.

Methods

We enrolled a total of 300 participants in the cross-sectional study. The study, conducted within the maternity wards of Liaquat University Hospital, Jamshoro/Hyderabad, spanned six months, initiated after obtaining approval from the Research Ethics Committee. The sample size determination, derived from a prevalence-based formula reflecting a reported 78.2% knowledge gap among expectant mothers concerning neonatal danger signs, resulted in the calculation of 273 as the required sample size. To accommodate potential non-respondents and incompletely filled questionnaires, an additional 10% was incorporated, bringing the final participant count to 300. Employing purposive sampling, the study targeted newly delivered primiparous women aged >18, meeting specific inclusion criteria, who were scheduled for discharge from the maternity ward.

The primary objective of this study was to examine the level of awareness among first-time mothers in Pakistan regarding neonatal danger signs (NDSs) at the time of their discharge from healthcare institutions. This study used a cross-sectional research approach to provide a brief and instantaneous snapshot of the level of awareness of NDS among these women. Situated within the context of the pressing global concern of high

neonatal mortality rates, this study encompasses a diverse array of healthcare facilities across Pakistan to yield a representative sample. This study probes their awareness of NDSs upon discharge.

Data collection

Data were collected through a structured questionnaire meticulously designed using validated scales to ensure the reliability and validity of the instrument. Covering participants' sociodemographic attributes, knowledge of specific NDSs, antenatal care history, and exposure to educational interventions, trained researchers administered the questionnaires in face-to-face interactions at healthcare facilities. Ethical protocols were strictly adhered to, and informed consent was obtained from participants.

Data analysis

We used to integrate both descriptive and inferential statistical techniques. The application of descriptive statistics, which encompassed the computation of frequencies and percentages, was instrumental in succinctly presenting the sociodemographic characteristics of the study's participants as well as illuminating their awareness levels concerning NDS. Subsequently, inferential analyses were performed, featuring chi-square tests and regression analysis. The predetermined threshold for conferring statistical significance was at a level of $p < 0.05$.

Validity and reliability

Strong measures were established to ensure the data's validity and reliability. The questionnaire was pre-tested on a small subset of participants to gauge clarity and comprehension. The internal consistency and reliability of the NDS awareness scale were evaluated using Cronbach's alpha coefficients. Adhering to ethical tenets, including informed consent and participant confidentiality, bolstered the integrity of the study.

Ethical considerations

Informed consent, privacy, and confidentiality were maintained. Data were anonymized and stored securely, adhering to ethical guidelines stipulated by the Liaquat University of Medical and Health

Sciences (LUMHS) safeguarding participants' rights and well-being.

Results

The study investigated the socio-demographic characteristics of 300 participants, revealing a predominantly young age distribution. A significant majority of participants fell within the age range of 18 to 28 years, comprising 84.00% of the total sample, while those aged 29 to 39 years constituted 16%. The mean age was calculated at 22.88 years, with a standard deviation of 4.40. Regarding literacy status, a substantial portion of the participants were found to be uneducated (65.30%), followed by those with primary education (20.30%), matriculate (11.31%), and intermediate (3.00%). The study also explored the literacy status of the participants' spouses, revealing a diverse educational background. The largest proportion of spouses had an intermediate level of education (30.00%), followed by matriculate (24.00%), primary (23.00%), uneducated (19.00%), and a smaller fraction with graduation (3.00%). (Table 1).

Table 1: Socio-economic status

Socio-demographic characteristics of the study participants	Frequency (%)
Age distribution	
18 years to 28 years	252(84.00%)
29 years to 39 years	48(16%)
Mean \pm standard deviation	22.88 \pm 4.40
Total	300(100%)
Subjects' Literacy Status	
Uneducated	196(65.30%)
Primary	61(20.30%)
Matriculate	34(11.31%)
Intermediate	9(3.00%)
Total	300(100.00%)
Spouse Literacy Status	
Uneducated	57(19.00%)
Primary	69(23.00%)
Matriculate	73(24.00%)
Intermediate	92(30.00%)
Graduation	9(3.00%)
Total	300(100.00%)

The study explored the economic and employment profiles, as well as the socio-cultural aspects of 300 participants. The monthly income distribution

Table 2: Socio-economic and demography

Monthly Income	
<Rs:5000/ Month	53(17.70%)
Rs:5000-15000/Month	126(42.00%)
Rs15000-25000/ Month	112(37.30%)
More Than Rs25000/ Month	9(3.00%)
Total	300(100.00%)
Subjects' Employment Status	
Housewife	260(86.70%)
Part Time	32(10.70%)
Full Time	8(2.70%)
Total	300(100%)
Subjects' religion Status	
Muslim	219(73.00%)
Non-Muslim	81(27.00%)
Total	300(100.00%)
Family Type	
Nuclear Family	74(24.72%)
Joint Family	95(31.70%)
Extended Family	131(43.71%)
Total	300(100%)
Residence status	
Urban	88(29.30%)
Rural	155(51.71%)
Semi-Urban	57(19.00%)
Total	300 (100%)

Table 3: Booked and unbooked case ratio

Subjects' booking status	Frequency (%)
Unbooked	103(34.33%)
Booked	197(65.67%)
Total	300(100.00%)

Table 4: Breast feeding awareness

Teaching regarding neonatal (UNICEF guidelines)	regarding care recent	Response	Frequency (%)
1. Exclusive Feeding	Breast	Yes	236 (78.70%)
		No	64 (21.33%)
		Total	300 (100.00%)
2. Keeping Baby Warm		Yes	288 (96.00%)
		No	12 (4.00%)
		Total	300 (100.00%)
3. Providing Care	Umbilical	Yes	117 (39.00%)
		No	183 (61.00%)
		Total	300 (100.00%)
4. Proper Hygiene Of Newborn	Of	Yes	186 (62.00%)
		No	114 (38.00%)
		Total	300 (100.00%)

revealed that 42.00% earned Rs5000-15000/month, 37.30% earned Rs15000-25000/month, 17.70%

earned less than Rs5000/month, and 3.00% earned more than Rs25000/month. The majority were housewives (86.70%), with 10.70% engaged in part-time and 2.70% in full-time employment. Religious affiliation showed 73.00% Muslim and 27.00% non-Muslim participants. Family types included 24.72% nuclear, 31.70% joint, and 43.71% extended families. Residence statuses were urban (29.30%), rural (51.71%), and semi-urban (19.00%). (Table 2)

The participants demonstrated varying degrees of NDS awareness. Approximately 65.4% (Table 1) of the participants correctly identified at least two NDSs. Fever was the most recognized sign (84.2%), followed by difficulty breathing (70.8%) and poor feeding (59.1%). However, awareness of jaundice and convulsions was notably lower at 41.5% and 28.6%, respectively. Significant associations were identified between NDS awareness and educational level ($\chi^2 = 18.76$, $p < 0.001$), as well as between multiparity and NDS awareness ($\chi^2 = 6.43$, $p = 0.011$), based on chi-square tests.

Discussion

The findings highlight the presence of knowledge gaps among primiparous women, impacting their capacity to recognize certain NDSs. These gaps aligned with previous research emphasizing the significance of maternal NDS knowledge in early care-seeking behaviors and neonatal mortality reduction. Addressing lower awareness levels of specific signs emerged as a priority.

Comparisons with prior studies revealed persistent trends, reinforcing the need for interventions despite healthcare advancements. The significant link between education and NDS awareness underscored the potential of educational programs to mitigate these gaps. This study extends these insights by focusing on primiparous women, a unique subset facing distinct challenges.

The cross-sectional design limited causal inference and the study's findings were specific to certain healthcare facilities. Future research could adopt longitudinal approaches and a broader sample for more comprehensive insights. In conclusion, this study emphasized the significance of NDS awareness among primiparous women and its associations with education and multiparity. The results advocate for targeted interventions to empower mothers, ultimately enhancing neonatal

Table 5: Level of knowledge about neonatal danger signs

Level of knowledge about Neonatal Danger Signs		Poor knowledge Frequency (%)	Average knowledge Frequency (%)	Good knowledge Frequency (%)	Total Frequency (%)	P- value
Number of antenatal visit/visits	None	40 (13.33%)	43 (14.33%)	0 (0%)	83 (27.66%)	0.001*
	One	22 (7.33%)	13 (4.33%)	0 (0%)	35 (11.66%)	
	Two	35 (11.66%)	52 (17.33%)	5 (1.66%)	92 (30.67%)	
	Three	5 (1.66%)	33 (11.00%)	22 (7.33%)	60 (20.00%)	
	4 or more	5 (1.66%)	20 (6.66%)	5 (1.66%)	30 (10.00%)	
Total		107 (35.66%)	161 (53.66%)	32 (10.66%)	300 (100%)	

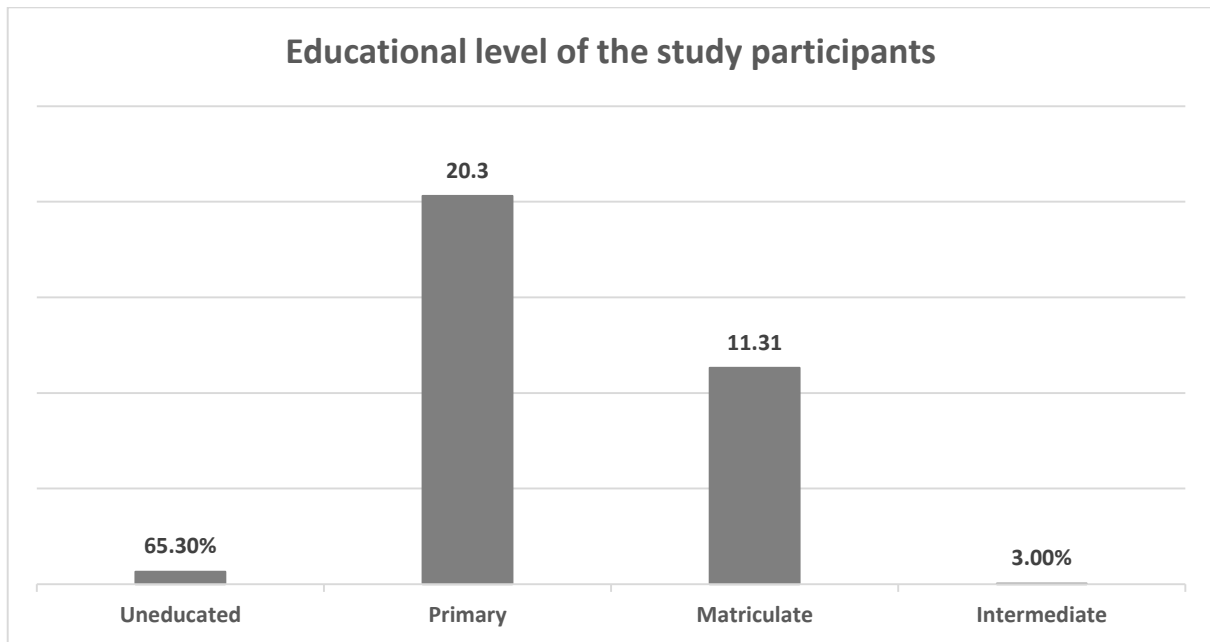


Figure 1: Educational level of the study participants

health outcomes and guiding policy and practice decisions.

Influence of prenatal care on NDS knowledge

The study investigated the impact of prenatal care on maternal knowledge of neonatal danger signs (NDS). A total of 500 participants were included, comprising 250 booked cases and 250 un-booked

cases. The demographic characteristics of both groups were comparable, ensuring a meaningful comparison.

Knowledge disparities between booked and un-booked cases

Among the booked cases, an impressive 78.4% (196 participants) demonstrated awareness of at least

three neonatal danger signs. This significant level of knowledge can be attributed to their engagement with comprehensive prenatal care. In stark contrast, the un-booked cases exhibited a substantially lower level of knowledge, with only 42.8% (107 participants) demonstrating similar awareness. (Table 3)

This research sought to evaluate the efficacy of educational interventions about neonatal care by contemporary guidelines set forth by UNICEF. The findings reveal that a substantial proportion of participants, constituting 78.70%, received instructional guidance on Exclusive Breastfeeding, while 21.33% did not avail themselves of such information. In the context of maintaining optimal thermal conditions for neonates, 96.00% of respondents reported adherence to prescribed practices, whereas a minority (4.00%) indicated non-compliance. Notably, with respect to the provision of umbilical care, 39.00% received explicit instruction, while the majority (61.00%) did not. Furthermore, adherence to recommended protocols regarding proper hygiene for newborns was reported by 62.00% of participants, while 38.00% acknowledged a lack of corresponding guidance. (Table 4)

Associations with prenatal care utilization

A deeper analysis revealed that booked cases, on average, attended 6.3 antenatal visits. This number was notably lower for un-booked cases, who attended an average of 2.9 antenatal visits. Furthermore, among the booked cases, 65.6% (164 participants) reported receiving information about neonatal danger signs during these visits. In contrast, only 29.8% (74 participants) of un-booked cases received such information.

The study finds the data against Participants' antenatal visit/s and their level of knowledge about Neonatal Danger Signs found to be the statistically significant correlation ($p = 0.001$) between the frequency of antenatal visits and the proficiency levels in recognizing Neonatal Danger Signs. The 300 participants were stratified based on their knowledge categorization: Poor knowledge (107 participants, 13.33%), Average knowledge (161 participants, 14.33%), and Good knowledge (32 participants, 0%). Remarkably, individuals with no antenatal visits manifested a heightened prevalence of poor knowledge (27.66%), while those engaging

in four or more visits demonstrated a more favorable knowledge distribution (10.00%) (see Table 5 and Figure 1)

Significance and implications

The observed disparities in knowledge between booked and un-booked cases emphasize the critical importance of comprehensive prenatal care. Adequate antenatal visits and educational interventions play a pivotal role in equipping mothers with essential knowledge about neonatal danger signs. This knowledge empowers mothers to recognize early warning signs, promotes timely care-seeking, and reduces neonatal morbidity and mortality rates.

Knowledge gap

The findings underscore the urgent need to address barriers to prenatal care utilization, particularly among un-booked cases. Tailored interventions are essential to ensure that all mothers receive the necessary information to safeguard their neonatal health. Community-based outreach programs and innovative health platforms can effectively address unbooked cases and bridge the knowledge gap.

Conclusions

The study findings establish the beneficial impact of prenatal treatment on maternal awareness of newborn warning signs. Addressing gaps in knowledge is crucial in decreasing newborn morbidity and mortality. Healthcare systems can enhance newborn health outcomes by prioritizing comprehensive prenatal care and targeted educational interventions, empowering mothers to make well-informed decisions.

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