Section: Pregnancy and Childbirth

Original Research Article

ASSESSMENT OF MATERNAL HEALTH LITERACY LEVEL AND ITS ASSOCIATION WITH UTILISATION OF HEALTH CARE SERVICES AND PREGNANCY OUTCOMES AT A TERTIARY CARE CENTRE OF DISTRICT ETAWAH: A HOSPITAL-BASED CROSS SECTIONAL STUDY

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ABSTRACT

Background: Maternal health literacy (MHL) is a critical determinant of pregnancy outcomes for mothers and their children. It encompasses the ability of mothers to access, understand, evaluate, and apply health-related information pertinent to maternal and child healthcare. The aim is to assess maternal health literacy level, and its association with utilization of health care services and pregnancy outcomes among newly delivered mothers in Etawah district. **Materials and Methods:** Study Design is a hospital based cross sectional study. Duration is from July 2024 to November 2024. Sampling Convenience sampling technique was used to enroll the study participants. Methodology is a cross-sectional study was conducted among recently delivered postnatal females till 8-week postpartum period who visited the PNC OPD from July to October 2024 and data were collected by MHELIP questionnaire and self designed, semi-structured questionnaire and subjected to the statistical analysis using SPSS-24 **Result:** The mean age of participants was 26.9 (±2.73) years. Most belonged to joint families (37.7%) and the lower socio-economic class (58.33%), with education mainly up to junior high school (32%) and high school (29.4%). Utilization of services showed that women with desired health literacy accessed free medication (73.9% vs. 52.9%, p=0.05) and free investigations (73.9% vs. 52.1%, p=0.042) significantly more than those with limited literacy. Regarding pregnancy outcomes, cesarean delivery was more common in limited literacy (27.7% vs. 4.3%, p=0.014), while stillbirths occurred only in limited literacy women (4.4%). Term deliveries were higher in desired literacy (47.8% vs. 20.5%, p=0.007).Regular IFA consumption was more in desired health literacy group(65%). Postnatal (33.6% vs. 26.1%, p=0.386) and neonatal complications (53.5% vs. 39.1%, p=0.182) were also more frequent in limited literacy, though not statistically significant. **Conclusion:** MHL significantly impacts pregnancy outcomes by enhancing healthcare utilization, improving understanding of health information, and empowering mothers to engage in self-care practices. Addressing gaps in MHL through targeted educational programs can lead to better maternal and child health outcomes, highlighting the need for public health initiatives focused on improving maternal health literacy across diverse populations.

INTRODUCTION

Maternal health literacy is the ability of mothers to access, understand, appraise and apply crucial health information on mothers and child health that contributes in reducing maternal and child mortality. It plays a pivotal role in decreasing maternal and neonatal mortality and is instrumental in achieving

Sustainable Development Goal number 3 which emphazies good health and well-being by reducing maternal and child mortality ratio).[1] Pregnancy is a transformative phase of women`s life bringing about variety of changes, not just physically but also in terms of the responsibilities that come with being pregnant and being a parent. These changes make women and parents more receptive to health-prevention information.[2] According to several studies, the prevalence of pregnant women with low health literacy ranges from 15– 44%.[3,4] In studies conducted in Tanzania and Huan, 42% and 30% of pregnant women, respectively, did not recognize any of the signs of risk during pregnancy and childbirth.[5,6] Maternal morbidity and maternal deaths can be reduced by providing better maternal health care services. Though national programs exist for improving maternal and child health in India, maternal mortality and morbidity remains still high. This could be attributed to several factors, an important one being non-utilization or delay in seeking care of maternal health-care services, especially amongst the rural poor and urban slum population due to either lack of awareness or access to health-care services. Antenatal care (ANC) is the healthcare provided to women who are pregnant, for confirmation and monitoring of the progress of their pregnancy, and to promote their birth preparedness and complication readiness for ensuring optimal birth outcomes for both the mother and her baby.[7] Moreover, significant underutilization of ANC has been observed among women living in poverty, low education, poor awareness, cultural traits, and residence in underserved areas.[8,9] Globally, postnatal care (PNC) remains seldom utilized maternal and newborn health intervention and India is no exception.[10-12] The policies adopted in India have slurred over the crucial component of PNC with the result that its coverage stands incongruously with that of antenatal care and institutional care at birth.[12] The utilization of any of the social services, including health services, has never been equitably distributed throughout the society. People who have access to the facilities were generally found to make more use of them than the people who have neither knowledge nor access to the facilities. The prevalence of maternal health literacy is a growing concern among reproductive age women worldwide, affecting their health and pregnancy outcomes. With the rising number of adverse pregnancy outcomes, the result of this study can be a great step to address their issues. Findings from this study will have significant implications for pregnant and postnatal females to utilize maternal health care services to improve their pregnancy outcomes. Identifying the maternal health literacy level in a population is essential for teaching women about health and pregnancy and assisting health care provider in enhancing health services. Understanding the maternal health literacy level helps health care provider to improve their services. The survey results could be utilized to identify area with low maternal health literacy and develop interventions for women with low maternal health literacy.

MATERIALS AND METHODS

Study Design: This investigation was designed as a hospital-based cross-sectional study, which enabled the researchers to evaluate the study population at a specific point in time without the need for follow-up. The design was chosen as it is efficient for estimating the prevalence of outcomes and identifying associated factors among postnatal women.

Study Duration: The study was conducted over a period of five months, from July 2024 to November 2024. Data collection was specifically carried out between July 2024 and October 2024, while November 2024 was utilized for data entry, verification, and statistical analysis.

Study Setting: The research was carried out in the Postnatal Care (PNC) Outpatient Department of a tertiary care teaching hospital. This setting was selected due to its large footfall of recently delivered mothers, thereby providing a suitable population for the study.

Study Population and Participants

The study population included postnatal women within eight weeks of delivery who visited the PNC OPD during the data collection period.

Inclusion Criteria:

- Women aged 18 years and above.
- Those who had delivered within the past eight weeks.
- Willing to provide written informed consent.

Exclusion Criteria:

- Women with severe medical or psychiatric illness preventing participation.
- Those unwilling to respond to the questionnaire.
- Women who had experienced stillbirth and were emotionally distressed at the time of data collection.

Sampling Method and Sample Size

A convenience sampling technique was used, wherein eligible women attending the OPD during the study period were approached. This method ensured feasibility within the given timeframe.

The sample size was estimated considering hospital patient flow during the study months. A target of approximately 150–200 participants was set to ensure adequate statistical power while maintaining manageability of data collection and analysis.

Data Collection Tools

Two instruments were employed for data collection:

1. MHELIP Questionnaire – A standardized tool used for assessing maternal health literacy, covering domains such as understanding of healthcare instructions, awareness of maternal and child health practices, and ability to access health services.
2. Semi-Structured Questionnaire – Developed by the researchers to collect socio-demographic characteristics (age, education, occupation, income, residence), obstetric history (parity,

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delivery method, complications), and health-seeking behavior.

Data Collection Procedure: Eligible participants were first informed about the study objectives and assured of data confidentiality. After obtaining informed consent, participants were interviewed in a private setting at the OPD. For literate mothers, self-administration of the questionnaire was allowed, while for those with literacy limitations, the researcher conducted face-to-face interviews. Completed questionnaires were checked daily for accuracy and completeness.

Data Management and Analysis

Data were coded and entered into SPSS version 24 for statistical processing. The analysis plan included:

- Descriptive Statistics: Frequencies, percentages, means, and standard deviations to summarize socio-demographic and obstetric data.
- Inferential Statistics: Chi-square tests, t-tests, or logistic regression (where applicable) to assess associations between maternal health literacy levels and demographic/obstetric factors.

A p-value of <0.05 was considered statistically significant.

Ethical Considerations

- Ethical clearance was obtained from the Institutional Ethics Committee prior to the commencement of the study.
- Informed written consent was taken from each participant.
- Participants were ensured confidentiality and anonymity of their responses.

RESULTS

Table 1: Socio-demographic profile of the study participants (N=384)

S. No	Variable Name	Subgroup	n (%)
1	Age (in years)	Mean ± SD	26.93 ± 2.73
2	Religion	Hindu Muslim Others	123(32%) 153(39.8%) 108(28%)
3	Education of mother	No schooling Primary school Junior high school High school Intermediate Graduation and above	21(5.5%) 97(25.3%) 123(32%) 113(29.4%) 9(2.3%) 21(5.5%)
4	Occupation of mother	Unskilled Semiskilled Skilled Housewife Student	95(24.7%) 66(17.2%) 86(22.4%) 131(34.1%) 6(1.6%)
5	Type of family	Nuclear Joint Two generation	120(31.3% 145(37.7%) 119(30.9%)
6	Socio-economic status	Upper class Upper middle class Middle class Lower middle class Lower class	4(1.041%) 19(4.95%) 31(8.1%) 106(27.6) 224(58.33%)

The study revealed that the mean age of the participants was 26.9 years A majority of the respondents were Muslims (40%), while Hindus (32%) and others (28%) made up the rest. Regarding education, junior high school (32%) and high school (29.4%) were the most common educational levels, whereas only 5.5% of mothers had completed graduation or above. In terms of occupation, a considerable proportion were housewives (34.1%), followed by unskilled (24.7%) and skilled workers (22.4%). Most participants lived in joint families (37.7%), while nuclear families accounted for 31.3%. Socio-economic analysis showed that more than half of the participants (58.33%) belonged to the lower class, and only a small proportion (4.9%) were from the upper-middle class and (1.04 %) from upper class.

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Table 2: Association of Maternal health Literacy level with Utilisation of health-care services among participants

S. No.	Various variables regarding Utilisation of health-care services	Sub-groups	Limited health literacy (Inadequate + Problematic) n (%)	Desired Health literacy (Sufficient + Excellent) n (%)	P value*
1.	ANC started at	1st trimester	158(43.8%)	14(60.9%)	0.145
		2nd trimester	185(51.2)	7(30.4%)	
		3rd trimester	18(5%)	2(8.7%)	
2.	Free medication	Yes	191(52.9%)	17(73.9%)	0.05
		No	170(47.1%)	6 (26.1%)	
3.	Free investigations	Yes	188 (52.1%)	17(73.9%)	0.042
		No	173 (47.9%)	6(26.1%)	
4.	Free transport	Yes	198 (54.8%)	14(60.9%)	0.573
		No	163(45.2%)	9(39.1%)	
5.	IFA Consumption	Nil	135(37.4%)	3(13%)	0.01
		Iregular	126(34.9%)	5(21.7%)	
		Regular	100(27.7%)	15(65.2%)	

The analysis showed that a larger proportion of women had limited health literacy(94%) and very few women had desired health literacy(6%). The women with desired health literacy initiated antenatal care in the first trimester (60.9%) compared to 43.8% with limited literacy, but this difference also did not reach statistical significance. Access to free medication and free investigations was significantly higher among women with desired health literacy (73.9% each) compared to those with limited literacy (52.9% and 52.1% respectively). Utilization of free transport services did not differ significantly across the two groups. Iron and folic acid (IFA) consumption showed a significant association with health literacy, as women with limited literacy were more likely to consume nil or irregularly, while regular IFA intake was higher in the desired literacy group.

Table 3: Association of Maternal health Literacy level with Pregnancy outcome among participants

S. No.	Various variables regarding pregnancy outcome	Sub-groups	Limited health literacy (Inadequate + Problematic) n (%)	Desired Health literacy (Sufficient + Excellent) n (%)	P value*
1.	Mode of delivery	Cesarean	100 (27.7%)	1 (4.34%)	0.014
		Vaginal	261 (72.3%)	22 (95.65%)	
2.	Foetal outcome	Still-birth	16 (4.4%)	0	0.007
		Pre-term	271(75.1%)	12 (52.2%)	
		term	74 (20.5%)	11(47.8%)	
3.	Post-natal complications	Yes	120(33.6%)	6(26.1)	0.386
		No	241(66.7%)	17(73.9%)	
4.	Neonatal complications	Yes	193(53.5%)	9(39.1%)	0.182
		No	168(46.5%)	14(60.9%)	

The study findings showed that cesarean deliveries were significantly more common among women with limited health literacy (27.7%) compared to only 4.3% among those with desired health literacy (p = 0.014). Fetal outcomes were also significantly better in the desired literacy group, with no stillbirths reported and a higher proportion of term deliveries (47.8% vs. 20.5%) compared to women with limited literacy (p = 0.007). Postnatal complications were slightly higher among women with limited literacy (33.6%) than those with desired literacy (26.1%), though this difference was not statistically significant (p = 0.386). Similarly, neonatal complications were more frequent among the limited literacy group (53.5%) compared to 39.1% in the desired literacy group, but the difference was not significant (p = 0.182).

DISCUSSION

The present study assessed the relationship between maternal health literacy (MHL), utilization of maternal health services, and pregnancy outcomes in rural Uttar Pradesh. The findings provide valuable insights into how health literacy impacts antenatal care (ANC) uptake, service utilization, and both maternal and neonatal outcomes, which align with evidence from previous studies conducted in different countries.

Sociodemographic Characteristics

The mean age of participants was 26.9 years, consistent with the reproductive age group reported in other regional and international studies[13,16]. Education levels were generally low, with only 5.5% being graduates or above, which likely contributed to poor health literacy and influenced healthcare utilization. A large proportion belonged to the lower socio-economic class (58.3%), reflecting the socio-economic constraints that also shape health-seeking behavior, as shown by Sysavanh et al. [14] in Laos, where poor literacy and poverty were linked to inadequate maternal care utilization.

Maternal Health Literacy and Antenatal Care Utilization

The present study revealed that women with desired health literacy were more likely to initiate ANC in the first trimester (60.9%) compared to those with

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limited literacy (43.8%). Although this difference was not statistically significant, the trend is important and supports the findings from Ethiopia, where Hailemariam et al.[16] reported that early ANC initiation was observed in 50.9% of women, and higher literacy was positively associated with timely initiation. Similarly, Nagdev et al. [15] highlighted that inadequate ANC service utilization was prevalent in nearly half of Indian women, largely driven by educational and literacy barriers.

Access to free medicines and investigations was significantly higher among women with desired literacy, showing that awareness plays a crucial role in service uptake. This resonates with findings from Laos, where Sysavanh et al.[14] demonstrated that mothers with problematic or inadequate literacy underutilized available services despite availability.

IFA Consumption and Service Utilization

Iron and folic acid (IFA) consumption showed a significant association with health literacy, where regular intake was higher in the desired literacy group. This indicates that health literacy influences adherence to preventive practices, a finding consistent with Ghotbizadeh et al. [13], who found that sufficient and excellent MHL categories were associated with better health behaviors and pregnancy outcomes.

Utilization of free transport services did not differ significantly, suggesting that structural barriers such as availability and quality of transport may override individual literacy levels. This highlights the interplay between system-level and individual-level determinants of maternal care.

Pregnancy and Birth Outcomes

The study reported significantly higher cesarean deliveries among women with limited literacy (27.7%) compared to those with desired literacy (4.3%). These findings are similar to Sharma et al.[18] in Nepal, where 25.8% of women had cesarean sections, with literacy and socio-economic factors influencing delivery mode. Moreover, fetal outcomes were significantly better in the desired literacy group, with no stillbirths and a higher proportion of term deliveries. These findings support the observations of Kishun et al.[19], who reported that lack of advice during ANC was associated with poor neonatal outcomes and high neonatal mortality.

Postnatal and neonatal complications were more frequent among women with limited literacy, although not statistically significant. However, this pattern reflects broader evidence from NFHS data [17] where maternal complications increased over time, partially explained by inadequate service utilization and lower literacy levels.

Comparisons with Global Evidence

The observed trends align with the global literature. For instance, Ghotbizadeh et al. [13] in Iran reported that a substantial proportion of women had inadequate or problematic health literacy, which adversely influenced pregnancy outcomes. Similarly, Sysavanh et al. [14] in Laos demonstrated the burden of low MHL in both rural and urban settings, echoing the challenges found in our study population in rural Uttar Pradesh.

Implications for Practice

The findings underscore the importance of improving maternal health literacy through targeted interventions such as community-based awareness programs, simplified health communication strategies, and strengthening of frontline health worker counseling. Enhancing MHL has the potential to improve ANC uptake, adherence to IFA supplementation, and ultimately maternal and child health outcomes.

CONCLUSION

The findings of the study indicate that maternal health literacy has a significant impact on pregnancy and childbirth outcomes. Women with inadequate health literacy were found to have a higher likelihood of undergoing cesarean deliveries compared to those with sufficient or excellent literacy levels. This could be due to delays in seeking timely care, poor adherence to medical advice, or complications that arise from limited understanding of recommended health practices.

The association between health literacy and fetal outcomes was also evident. Stillbirths occurred exclusively among mothers with limited health literacy, whereas term deliveries were more common in women with higher literacy levels. This shows that better health literacy equips women with the knowledge and skills necessary to adopt healthier behaviors, such as early pregnancy registration, timely initiation of antenatal care, and adherence to iron and folic acid supplementation schedules, which contribute to improved fetal health.

Although not statistically significant, mothers with limited health literacy experienced more postnatal and neonatal complications compared to those with better literacy. This trend highlights that limited awareness and understanding of postnatal and newborn care practices may increase vulnerability to adverse outcomes during the postpartum period.

Overall, the results emphasize that improved maternal health literacy plays a protective role by promoting safer delivery practices, decreasing the risk of stillbirth, and enhancing the likelihood of term deliveries. In contrast, poor health literacy increases the likelihood of both maternal and neonatal complications. These findings point toward the importance of strengthening health literacy programs as an integral part of antenatal and postnatal care to improve maternal and child health outcomes.

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