

Women Health Literacy and Associated Factors on Women and Child Health Care in Ilu Ababor Public Health Facilities, Ethiopia

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Background: Maternal health literacy (MHL) is the ability of mothers to obtain, interpret, appraise, and apply women and child health information that contributes to a reduction in mortality among mothers and children. This is an important concern since a woman's health during pregnancy may be her first interaction with the healthcare system, and a woman's comprehension of health information has a direct impact on her unborn child's growth throughout the process of conception.

Aim: Assess the degree of maternal health literacy and related factors in women's and children's health care among mothers whose children have received basic immunizations at the public healthcare facilities in Ilu Abba Boor.

Methods and Materials: A cross-sectional study was carried out in the facility between December 2021 and January 2022. Investigators trained supervisors and data collectors for five days before data collection. Through basic random sampling, 411 mothers whose children had received the minimum set of vaccinations from health facilities in the Ilu Ababor zone of Oromia, Ethiopia, were chosen. Face-to-face interviews were used to gather the data, which were then imported into Epidata 4.1 and exported to SPSS. The factors associated with maternal health literacy in maternal and child healthcare were identified through the application of descriptive statistics, bivariate analysis, and multivariable logistic regression analyses. The findings are displayed in the form of graphs, tables, and figures.

Results: This study had a 100% response rate when 411 participants were invited to participate. The mean maternal health literacy score was 28.5 ± 10.3 . Most of the women (293 [71.3%]) had inadequate health literacy levels while 118 (28.7%) had adequate. The multivariate analysis's findings indicated that the rate of adequate maternal health literacy was 12.2 times higher among urban women than among rural ones (AOR=12.2 [5.34, 24.48]). Women who gave birth vaginally were 0.24 times less likely to have adequate maternal health literacy than women who had a caesarean section (AOR=0.24 [0.112, 0.503]). Mothers who had four or more prenatal care follow-ups were found to have sufficient maternal health literacy higher than those who had just one (AOR=0.23[0.095, 0.556]), two (AOR=0.26[0.138, 0.307]), and three times (0.14[0.108, 0.167]) antenatal care contacts.

Discussion and Recommendation: This study shows that inadequate maternal health literacy affects the healthcare of mothers and children. Given the significance of health literacy for women's health, national health authorities ought to develop more educational initiatives aimed at raising health literacy rates and empowering women who are of reproductive age.

Keywords: maternal health literacy, women and child health care

Introduction

The ability of mothers to access, comprehend, evaluate, and apply information about mother and child health is known as maternal health literacy (MHL). MHL helps to reduce the rates of maternal and infant mortality,^{1,2} which in turn helps to achieve SDGs 3 (good health and well-being: lowering the maternal and child mortality ratio) and 2 (zero hunger: reducing underweight and stunting among young children).³ Maternal health literacy has the potential to influence women's motivation, comprehension, and utilization of information in ways that support and preserve their own and their children's health,

according to Renkert and Nutbeam. To guarantee healthy maternity and pregnancy outcomes, maternal health literacy and cognitive skills are necessary. According to Kohan et al, these include the capacity to identify risk factors and implement healthier lifestyles and improved nutrition during pregnancy.

Pregnancy may be a woman's first experience with the healthcare system and her health status, so maternal health literacy is important. Additionally, a mother's comprehension of health information directly affects her unborn child before conception, during pregnancy, and during the formative years.⁴ Previous studies conducted in Nigeria have discovered an association between MHL, pregnancy outcomes,⁵ and the nutritional status of children.⁶ It was suggested by another Indian study that "initiatives targeting health literacy could improve vaccination coverage"⁷ that higher MHL was independently correlated with higher childhood immunization rates.

The study conducted in five provinces of Iran revealed that, among the participants, 28.1% had adequate health literacy, 15.3% had borderline health literacy, and 56.6% had deficient health literacy.⁸ According to a study on pregnant patients sent to Tehran, Iran's healthcare facilities, 30% and 23.6% of the participants, respectively, had low and borderline health literacy levels.⁹ 44% of women in research on Siberian women who were referred to medical facilities in Russia had inadequate health literacy levels, according to the study's findings.¹⁰

One's capacity to manage chronic illnesses and take care of oneself is impacted by health literacy. In Ethiopia, research indicates that women with low educational status, little media exposure, and low community women's literacy had lower rates of early ANC initiation. These findings are related to the implications of women's literacy in various ways.¹¹ Women with low literacy are more likely than those with high literacy to experience physical violence as norms and positive attitudes, according to another study conducted in Ethiopia.¹² A subsequent study revealed that mothers in Ethiopia who were illiterate had a lower likelihood than mothers who were literate of giving their children all four types of vaccinations.¹³

Maternal health literacy is a significant issue for two reasons: first, a woman's pregnancy may be her first encounter with the healthcare system; and second, a woman's health and her comprehension of health information before, during, and during the years of growth and development can have a direct impact on the child. This study's main goals were to ascertain the maternal health literacy levels regarding mother and child health care in the primary public health facilities under investigation, as well as the factors that impact women's MHL. Developing understanding of MHL aids in increasing MHL awareness. Policy makers may be able to create more focused interventions in response to the factors pertaining to MHL.

Methods and Materials

Study Area

This study was conducted in the Iluababor zone, which is located in the Oromia regional state of Ethiopia. Mettu is the capital town of the zone and is located 600 km from Addis Ababa in the south-western region of Ethiopia. This zone had a total population of 934,783, of which 453,536 were female and 481,247 male. One referral hospital, one primary hospital, 41 health centers, and 280 health posts were found in this zone. According to the 2020 Zonal Report, 23,392 children were vaccinated. Based on this, the average number of children vaccinated monthly is 1949. The selected thirteen health facilities accounted for 627 children based on the average number of children vaccinated monthly. The study was conducted between December 2021 and January 2022. This study used an institution-based cross-sectional study design.

Population

Every mother whose children fall within the age range where basic vaccinations are administered in the designated health facilities during the study period.

Inclusion Criteria

Every woman whose children are within the age range for which they should receive a basic immunization.

Sample Size and Sampling Procedure

The following assumptions were taken into account while determining the sample size using a single population proportion formula: a 95% confidence interval, a 0.05 margin of error, and a 0.5 proportion of maternal health literacy because no prior research has been done in Ethiopia. Lastly, the total sample size was 411 with a 10% non-response rate.

Thirteen health institutions were chosen at random from this total using the lottery method. Based on the previous year's report, the average number of women at the thirteen health centers selected had 627 children whose ages were within the range of receiving a basic vaccination within a month. The study participants were selected using a simple random sample method after each health institute was assigned proportionately based on monthly cash flows (Figure 1).

Variables

Dependent variables

- Level of maternal health literacy

Independent Variables

- Sociodemographic characteristics include age, income, education, ethnicity, religion, and language.
- Obstetric and service-related factors (parity, ANC contact, pregnancy outcomes, children's nutritional status, child vaccination, exclusive breastfeeding, sources of health-related information, and receiving information)

Operational Definition

Maternal Health Literacy

pertains to a mother's capacity to obtain, understand, appraise, and apply information regarding maternal and child healthcare throughout her pregnancy, childbirth, and postpartum period. Particular emphasis is placed on important practices such as ANC visits, childbirth, and postpartum care at medical facilities, as well as nutrition and immunization, per WHO guidelines and the National Strategic Action Plan.^{14,15}

Measurement of Health Literacy

A 4-point Likert scale was used to grade each item to determine MHL (4 = extremely difficult, 3 = difficult, 2 = easy, and 1 = very easy). The lowest mean score that could be obtained was 1, and the maximum possible score was 4. Based on their unique index ratings, each person's mean of all participating items was determined. The formula used to normalize the health literacy indices, which ranged from 0 to 50, was $\text{index} = (\text{mean} - 1) * 50 / 3$. If 1 was the lowest possible mean value, then the index score's minimum value was 0, and its highest value was 50. Based on health literacy assessments conducted in Asia and Europe, the cut-off points were classified as "inadequate" (0–33) and "Adequate (33–50)".^{16,17}

Data Collection Tool and Method

There is no particular tool for MHL, however, it has been measured in other nations,^{2,18} and the Sørensen health literacy model is commonly used in Europe and Asia.^{18,19} This study's research tool will be based on a general literacy tool

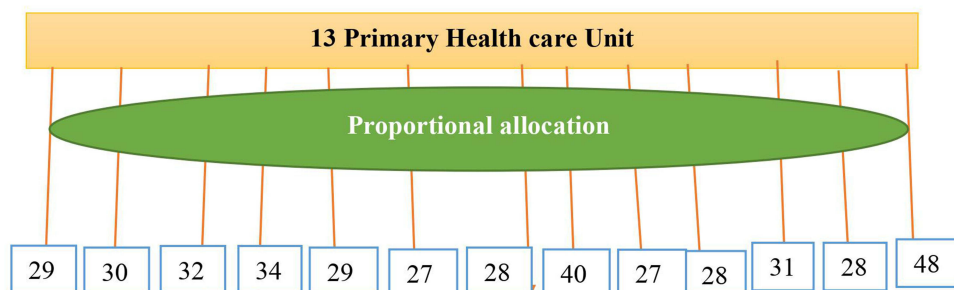


Figure 1 The proportional allocation of total participants over the thirteen randomly selected health facilities in Ilu Ababor Zone, Oromia, Ethiopia.

(scoring the capacity to get, comprehend, appraise, judge, and evaluate, as well as apply and use health information) that was modified for use in mental health care.

Three sections were covered by the research tool used to collect data:

1. From earlier research, sociodemographic information on age, religion, ethnicity, language, literacy, education, and income.^{20,21}
2. ANC visits, the location of birthing, the number of children, food restrictions/taboos, using hotbeds, smoking, and information received variables were adopted from previous studies and may be associated with factors or behaviors.²²
3. The National Strategic Action Plan and WHO standards were the basis for the development of the MHL questionnaire, which included 49 topics about mother and child health care during pregnancy, labor, and the postpartum period.^{14,23} The MHL items were modified to fit the format of a sexual reproductive health literacy tool in Laos,²⁰ as well as a health literacy survey instrument in Asia.¹⁷ There were fifteen items about information access in it.

To collect data, thirteen research assistants were hired and given training. For five days, they received training in conducting in-person interviews and accurately completing questionnaires. Thirteen data collectors got experience gathering data in medical facilities outside the scope of the study during the training. To prevent duplicate enrolment, the data collectors chose women who would bring their kids for basic vaccinations and made note on their folder. They also made arrangements based on the mothers' order of service requests, which included randomly selecting moms beforehand.

Data Analysis

The data was entered into Epidata 4.1 and then exported to SPSS 25.0. For descriptive statistics, the arithmetic mean, standard deviation, numbers, and percentages were employed. Important variables for multivariate logistic regression were chosen using bivariate logistic regression. The dependent variables in multiple logistic regressions were the inadequate and appropriate MHL levels, whereas the independent variables were the sociodemographic and important practices of women. When the p-value was less than 0.05, these factors were put forward into the model to calculate the Adjusted Odds Ratio (AOR), 95% confidence interval, and significance level. Both text and tables are used to present the results.

Data Quality Assurance

The questionnaire was suitably constructed, changed, and adjusted. The study tools were initially designed in English, and then, to assure correctness, translations back and forth between English and the regional languages were performed. These instruments' validity and reliability were verified.

Before the pilot test, the local supervisor contributed to the last edit. At Bunno Bedelle Hospital in the research area, a pilot test of the local language version was conducted under comparable conditions with 20 women whose children had received basic immunizations. Supervisors and data collectors received training. Every day, the lead investigators and supervisor examined and filled out the questionnaires, and the data collectors received supervision. During the data-collecting process, supervisors and primary investigators conducted monitoring and follow-up. The interviewer took notes during the interview and cross-referenced the information with the responses provided by the mothers in their record books, the child's immunization record, the ANC visits, and the place of labor (if it was at a medical facility).

Results

This study had 411 women in total, yielding a 100.0% response rate. The following are the outcomes.

Socio-Demographic Characteristics

Out of all the participants, 156 (38.0%) belonged to the 24–28 age group, and 142 (34.5%) to the 29–33 age group, with a mean age of 27.63 ± 4.27 years. 166 (40.4%) of the participants were Muslims, while 101 (24.6%) were Orthodox. In terms of women's educational attainment, 96 (23.4%) had a diploma, 124 (30.2%) had finished grade 8, 61 (14.8%) could read and write, and 37 (9%) could not (Table 1).

Practices of Mothers and Basic Information

Of the total participants more than average, 208 (50.6%) women, had two or three children and 120 (29.2%) had four or more children. 178 (43.3%) women had more than four antenatal care visits during their last childbirth, and 98 (23.8%)

Table 1 Socio-Demographic Characteristics of Women at Ilu Abbabor Public Health Facilities, 2022 (N=411)

Variables	Category	Total (N=411)	Percent (100%)
Age	18–23	91	22.1
	24–28	156	35.0
	29–34	142	34.5
	35–39	22	5.4
Marital status	Married	370	90.0
	Divorced	27	6.57
	Others	14	3.43
Religion	Muslim	166	40.4
	Orthodox	101	24.6
	Protestant	144	35.0
Residence	Rural	159	38.7
	Urban	252	61.3
Ethnicity	Oromo	257	62.5
	Ahmara	132	32.1
	Tigre	22	5.4
Educational level	Unable read and write	37	9
	Read and write	61	14.8
	Grade 1–8	124	30.2
	Grade 9–12	71	17.3
	Diploma	96	23.4
	Degree and above	22	5.4
Occupational status	Gov't employee	156	39.6
	Private employee	85	20.7
	Student	11	2.7
	Merchant	50	12.2
	Others	98	23.8

had one ANC visit. Most women, 378 (92.0%), gave birth to their last child at a health facility. 359 (87.3%) had given birth vaginally, with 52 (12.7%) giving abdominal delivery. The majority of participants 388 (94.4%) exclusively breastfed their children (Table 2).

Table 2 Practices of Mothers and Basic Information on Maternal and Child Health Care at Ilu Abbabor Public Health Facilities, 2022 (N=411)

Variables	Category	Total (N=411)	Percent (100%)
Number of child	1	83	20.2
	2–3	208	50.6
	≥4	120	29.2
ANC contact	Once	105	25.5
	Twice	32	7.8
	Three times	96	23.36
	Four or more times	178	43.3
Place of birth	Health facility	378	92.0
	Others	33	8.0
Route of Delivery	Vaginally	359	87.3
	CS	52	12.7
Postpartum care visit	Yes	378	92.0
	No	33	8.0
Complete vaccination	Yes	306	74.4
	No	105	25.6
Exclusive breast feeding	Yes	388	94.4
	No	23	5.6
Food restrictions during ANC	Yes	82	20
	No	329	80
Food/taboo restrictions during PP	Yes	76	18.5
	No	335	81.5
Smoking	Yes	6	1.5
	No	405	98.5
Alcohol intake	Yes	18	4.4
	No	393	85.6
Heard Information on MCH	Yes	400	97.3
	No	11	2.7
Source of Information	Media	189	46.0
	Health personnel	161	39.2
	Relative/companion	11	2.7

Level of Maternal Health Literacy with Different Dimensions

The mean maternal health literacy score was 28.5 ± 10.3 . Most women 293 (71.3%), had inadequate literacy levels and 118 (28.7%) were adequate. 274 (56.0%) women had inadequate access to information on maternal and child health care (Table 3).

Maternal Health Literacy and Associated Factors

The results of the bivariate analysis showed that maternal health literacy was significantly correlated with sociodemographic variables like age, place of residence, and educational attainment; and practice variables of MCH mothers like the number of children, frequency of follow-up appointments for prenatal care, delivery method and provision of basic child immunization. To account for confounding variables, these significant variables (p-value less than 0.25 in the crude analysis) were added to a multivariate logistic model. In multivariate analysis, variables having a p-value of less than 0.05 were deemed statistically significant, while the remaining variables were disproved.

The results of the multivariate analysis showed that women living in urban areas had a sufficient maternal health literacy rate 12.2 times higher than women living in rural areas (AOR=12.2 [5.34, 24.48]). Compared to women who had a caesarean section, vaginally birthing women were 0.24 times less likely for adequate maternal health literacy (AOR=0.24 [0.112, 0.503]). Women who had one antenatal care contact were 0.23 times less likely to have acceptable maternal health literacy than moms who had four or more (AOR=0.23[0.095, 0.556]). Women who complete basic child immunization 0.21 times more likely to for adequate MHL than women with no fully immunized for basic vaccination (AOR=0.21 (0.17, 0.73)) (Table 4).

Table 3 The Mean Score (Out of 50) and Health Literacy Level in Terms of Health Literacy Dimensions on Mother and Child Health Care Among Women in Ilu Abbabor Public Health Facilities, 2022 (N=411)

Dimensions	Mean \pm Standard Deviations	Maternal Health Literacy	
		Inadequate (%)	Adequate (%)
Access Information	30.97 \pm 10.98	230(56.0)	181(44.0)
Understand Information	26.67 \pm 12.08	274(66.67)	137(33.33)
Judge Information	24.56 \pm 15.87	345(84.0)	66(16.0)
Apply Information	31.77 \pm 13.78	187(45.5)	224(54.5)
Total health literacy	28 \pm 10.3	293(71.3)	118(28.7)

Table 4 Bivariate and Multivariate Analysis to Identify Factors Associated with Maternal Health Literacy About Mother and Child Health Care Among Women in Ilu Abbabor Public Health Facilities, 2022 (N=411)

Variables	Category	MHL		COR (95% CI)	AOR (95% CI)	P value
		Inadequate (%)	Adequate (%)			
Age	18–23	118(28.7)	11(2.67)	1		
	24–28	112(27.2)	44(10.7)	0.24(0.105,0.823)	0.21(0.204,0.75)	0.037*
	29–34	49(11.92)	41(9.7)	0.102(0.049,0.215)	0.10(0.095,0.172)	0.041*
	35–39	14 (3.4)	22(5.35)	1.57(1.02,3.17)	1.23(1.45,2.89)	0.029*
Residence	Rural	148(36.0)	11(2.67)	1		
	Urban	145(35.3)	107(26.0)	10.1(5.124,19.238)	12.2(5.34,24.48)	0.000*

(Continued)

Table 4 (Continued).

Variables	Category	MHL		COR (95% CI)	AOR (95% CI)	P value
		Inadequate (%)	Adequate (%)			
Education level	Unable read and write	39(9.5)	2(0.48)	0.043(0.0101,0.18)	0.041(0.01,0.08)	0.046*
	Read & write	62(15.1)	5(1.21)	0.067(0.02,0.105)	0.053(0.02–0.097)	0.029*
	Grade 1–8	103(25.1)	21(5.1)	0.175(0.081,0.379)	0.156(0.10,0.374)	0.014*
	Grade 9–12	20(4.8)	9(2.19)	0.376(0.172,1.68)	0.35(0.18,1.5)	0.011*
	Diploma	18(4.4)	20(4.86)	0.93(0.49,2.085)	0.54(0.31,1.87)	0.004*
	Degree and above	51(12.4)	61(14.84)	1		
Number of child	One	98(23.8)	22(5.35)	1.531(0.871,2.692)	0.746(0.328,1.697)	0.485
	2 or 3	61(14.8)	22(5.35)	0.622(0.318,1.219)	1.04(0.452,1.471)	0.867
	≥4	134(32.6)	74(18.0)	1		
Frequency of ANC contact	Once	104(34.1)	1(0.2)	0.006(0.003,0.054)	0.23(0.095,0.556)	0.001*
	Twice	30(7.3)	2(0.48)	0.044(0.031,0.096)	0.26(0.138,0.307)	0.000*
	Three times	87(21.2)	9(2.2)	0.069(0.46,0.15)	0.14(0.108,0.167)	0.000*
	Four or more	70(17.0)	108(26.0)	1		
Route of Delivery	VD	263(63.9)	96(23.3)	2.009(1.105,3.652)	0.24(0.112,0.503)	0.000*
	CS	30(7.3)	22(5.35)	1		
Complete vaccination	Yes	115(28)	191(46.5)	0.51(0.14,0.78)	0.21(0.17,0.73)	0.01*
	No	85(20.7)	20(4.87)	1		
Postpartum Food restriction	Yes	62(15.08)	14(3.4)	0.502(0.269,1.94)	0.899(0.186,4.345)	0.895
	No	231(56.2)	104(25.3)	1		

Notes: *P value less than 0.05 multivariate analysis. “1” indicates category group used for reference.

Discussion

The average maternal health literacy score was 28.5 ± 10.3 . Of the women, 293 (71.3%) had low literacy and 118 (28.7%) had adequate literacy. Compared to a study done in Iran, where 98.2% and 61.3% of pregnant women, respectively, had good and adequate MHL levels, the level of maternal health literacy (MHL) in our study is considerably lower.²¹ This variation may be due to differences in the educational status of the respondents: in the Iranian study, 61% of participants completed high school or higher, whereas in the current study, 54% of participants had no formal education. It may also be due to differences in the study area, as the Iranian study was conducted among women from urban areas, where there is a greater likelihood of acquiring information through media and other sources.²¹ These figures were greater than those found in Laos, south-eastern Asia, where research found that 80% of expectant mothers had either unsatisfactory or insufficient health.²⁰ According to a study conducted in Vietnam, among other sources of MCH information, family members are crucial for mothers in ethnic minority populations.¹ In this survey, however, 46% of women's information came from the media and 46% from medical professionals.

This research revealed that important predictors of MHL were women's age, residence, level of education, frequency of ANC visits, method of childbirth, and completion of children's basic immunizations. The findings showed a direct relationship between maternal health literacy and women's educational attainment. This shows that compared to women

with greater levels of education, illiterate women were less likely to have access to sufficient MHL. These results align with research undertaken in Taiwan²⁴ and Iran.²⁵

Our results also showed a strong correlation between MHL and frequent follow-ups in prenatal care. This outcome is in line with research done in Laos, Southeast Asia.²⁰ This may be the case because women who attended more ANC visits had the chance to speak with medical professionals about issues pertaining to the mother and the newborn, and all of these interventions may have increased MHL.²⁶ In contrast to women who gave birth vaginally, those who underwent abdominal surgery (C-section) were substantially more likely to have appropriate maternal literacy, with regard to this study. The completion of vaccinations was most significantly linked to higher levels of maternal health literacy, while other behaviors—such as smoking, consuming alcohol, and restricting breastfeeding and food taboos during postpartum care—were not correlated with maternal health literacy levels.

This study's strength is that it's the first of its kind, so the scientific community may use it as a point of reference. The lack of national and international research to compare the results is one of the study's limitations. Furthermore, although no research has been done on cause-and-effect reports, this is a cross-sectional study that does not show a cause-and-effect relationship.

Conclusion and Recommendation

This study generally shows that maternal health literacy is low for the purpose of providing healthcare to mothers and children. Health literacy was significantly associated with variables like age, place of residence, educational attainment, frequency of prenatal treatment, mode of delivery, and full series of childhood vaccinations. Nonetheless, there was no correlation found between the level of maternal health literacy and the occupation of women, smoking, alcohol consumption, or exclusive breastfeeding for longer than six months.

More information on maternity and child healthcare, beginning with pre-conception care, should be given by medical experts. Furthermore, there are not many studies, and more is needed especially on health literacy in childbearing age groups, as opposed to married women alone. Local governments ought to concentrate their efforts on setting up adult literacy centers in their individual regions, where women who are ready to have children can get the necessary and pertinent information on being pregnant and giving birth, as well as enhance their reading skills.

Abbreviations

AOR, Adjusted Odds Ratio; ANC, Antenatal Care; CI, Confidence Interval; Km, Kilometer; MCH, Maternal and Child Health; MHL, Maternal Health Literacy; MMR, Maternal Mortality Ratio; OD, Odds Ratio; SDP, Sustainable Development Goal; SPSS, Statistical Packages for Social Science; USA, United States of America; WHO, World Health Organization.

Ethical Consent

The study complies with the ethical principles of the World Medical Association Declaration of Helsinki. Mattu University Institutional Review Board has approved for ethical review and verbal consent process with (reference number: RPG/124/22, date of approval: 23 May, 2022). The data collectors explained the purpose of the study to the participants. The study granted its participants the liberty to withdraw from participation at any point in time and the chance to pose any inquiries they might have about the investigation. All other participant information was kept confidential, including their names.

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Disclosure

The authors report no conflicts of interest in this work.

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