



## Research article

# Identifying associated factors in relation to health-related quality of life among postpartum women in Jimma town: A community-based cross-sectional study<sup>☆</sup>

Abebe Debu Liga<sup>a,\*</sup>, Yasin Negash Jabir<sup>b,\*\*</sup>, Seble Assefa<sup>c</sup>, Gurmesa Tura Debelew<sup>d</sup>, Bekalu Teka Worku<sup>d</sup>

<sup>a</sup> Department of Statistics, College of Natural and Computational Sciences, Wolkite University, Wolkite, Ethiopia

<sup>b</sup> Department of Statistics, College of Natural Science, Jimma University, Jimma, Ethiopia

<sup>c</sup> Department of Nursing, Faculty of Health Sciences, Jimma University, Jimma, Ethiopia

<sup>d</sup> Department of Population and Family Health, Faculty of Public Health, Jimma University, Jimma, Ethiopia

## ARTICLE INFO

## Keywords:

Associated factors  
Health-related QoL  
Postpartum women  
Jimma  
Ethiopia

## ABSTRACT

**Background:** The quality of life (QoL) of women during the postpartum period is affected by their living circumstances, reproductive history, exposure to and use of antenatal care, etc. The quality of life (QoL) issues associated to postpartum health among Ethiopian women have not been adequately examined in studies. Therefore, this study identified associated factors in relation to the health-related quality of life (QOL) among postpartum women in Jimma Town, Ethiopia.

**Methods:** A structured face-to-face interview and a self-administered questionnaire were utilized in a community-based cross-sectional study to obtain data from 397 postpartum women from May 15 to June 14, 2022, using a multistage sampling strategy. The data analysis utilized several descriptive statistics. Multiple logistic models were run on factors that were significant at the 25 % level in univariate analysis. Adjusted odds ratios and 95 % confidence intervals were computed to identify associated factors.

**Results:** The majority (51.2 %) of postpartum women had a low health-related quality of life, with a mean score of 50.58. Women poor health-related quality of life (QoL) was associated with age (AOR = 10.09; CI: 3.45–29.51), non-formal education of partners (AOR = 3.67; CI: 1.25–10.72), multiparousness (AOR = 2.21; CI: 1.14–4.29), unplanned pregnancy (AOR = 7.36; CI: 1.98–27.37), giving birth to a dead baby (AOR = 3.15; CI: 1.54–6.42), and not admitted to the hospital while pregnant (AOR = 5.50; CI: 3.86–26.30).

**Conclusion:** The finding revealed that the majority of postpartum women reported poorer health-related QoL. Thus, stakeholders should give attention to significant factors to set up measures to prevent and improve women's postpartum health-related QoL, and should be aware of women about the risk associated with poor health-related QoL.

<sup>☆</sup> Abebe Debu Liga, Yasin Negash Jabir, Seble Assefa, Gurmesa Tura Debelew, and Bekalu Teka Worku. Identifying associated factors in relation to Health-related Quality of Life among postpartum women in Jimma Town: A Community-Based Cross-Sectional Study (Heliyon, April 2024).

\* Corresponding author.

\*\* Corresponding author.

E-mail addresses: [abe.debu@yahoo.com](mailto:abe.debu@yahoo.com) (A.D. Liga), [yasinnegash51@yahoo.com](mailto:yasinnegash51@yahoo.com) (Y.N. Jabir), [seble.as2010@gmail.com](mailto:seble.as2010@gmail.com) (S. Assefa), [gurmesaatura@gmail.com](mailto:gurmesaatura@gmail.com) (G.T. Debelew), [bekelu23@gmail.com](mailto:bekelu23@gmail.com) (B.T. Worku).

<https://doi.org/10.1016/j.heliyon.2024.e29328>

Received 1 March 2023; Received in revised form 5 April 2024; Accepted 5 April 2024

Available online 10 April 2024

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## 1. Introduction

According to the World Health Organization (WHO), and Post 2014, quality of life is an individual's point of view on life, as it relates to their goals, aspirations, standards, cultural concerns, and the value system wherein they live [1,2]. Several studies have found that health-related quality of life (QoL) after childbirth limits daily activities, affects child care, leads to loss of self-care skills, breastfeeding cessation, and early introduction of solid foods to infants, and raises health-care costs [3–5]. Health-related QoL is becoming increasingly important in healthcare due to its ability to estimate well-being, disease impact, and the cost-effectiveness of interventions [6–8]. Evidence demonstrated that health-related QoL is a good measurement of maternity care [1]. Good health-related QoL is crucial, especially for women following childbirth [9], and that it is multidimensional measure of health from an individual's perspective that concentrates on the physical, emotional, and social impacts that diseases have on individuals and accounts for expectations, goals, standards, and concerns [1]. Understanding QoL is crucial for enhancing individual's symptom medication, care, and rehabilitation. It also helps to recognize the variety of issues that might influence individuals [10]. Women's living situations, reproductive histories, exposure to and utilization of reproductive health and antenatal care services, all have an impact on their health-related quality of life (QoL) throughout the postpartum period [11,12]. When evaluated during the postpartum period, postpartum women were subjected to poor quality of life (QoL), reduced functional status, poor sexual function, anxiety disorders, and depression. Additionally, it has been proven that the score may predict short- and long-term hospitalization, morbidity, and mortality [6,7]. Postpartum hemorrhage, sepsis, eclampsia, and hypertensive disorder account for 50 % of mother mortality during the acute phase [13]. Postpartum depression and breastfeeding troubles are associated to fatigue [14]. Other conditions that affect mothers' physical and psychological health include incontinence, hemorrhoids, constipation, sleeping disorders, and depressive symptoms [15]. These health issues have an impact not only on the health of mothers, but also on the well-being of their children [16]. However, these problems are often ignored by health professionals as "only to be expected". Similarly, due to the focus on childcare during the early months, such issues may be overlooked by both family members and health professionals [17]. Therefore, within 24 h of delivery, a medical professional should check the mother and the newborn [18]. Despite the fact that Ethiopian medical professionals have taken several steps to protect mothers' health during childbirth and prenatal care, the health-related quality of mothers lives among the postpartum period is currently a concern [19].

The postpartum period is still an important time in the lives of both the mother and the infant [20]. Women's postpartum QoL should reflect their satisfaction and perception of their health anxieties within their cultural context [21]. Childbirth and the many difficulties in caring for their babies reduce the quality of life for new mothers who must care for themselves [22]. Furthermore, mothers' roles and responsibilities in caring for newborn babies have a significant impact on women's quality of life during this time [23]. In 2015, approximately 300,000 maternal deaths occurred worldwide, with 99 percent occurring in developing countries. Sub-Saharan African countries accounted for two-thirds of all deaths, with South Asia accounting for one-fifth. Most of these deaths occurred during the postpartum period as a result of poor health-related QoL [11]. The majority of these deaths occur within the first four weeks of delivery, with 50 % occurring within the first 24 h of delivery [24]. Hemorrhage is responsible for 30–40 % of direct maternal mortality in Africa during the postpartum period [25].

As indicated above, in Ethiopia, healthcare professionals play an important role in prenatal care; however, the postpartum period is still a neglected aspect of women's health care. Even though numerous studies have been conducted in recent decades to investigate various aspects of postnatal care, more work remains to be done [8]. Not surprisingly, postpartum health care's relevance and content have been criticized for not being sufficient to meet mothers' demands in terms of health [26]. As a result, the Ethiopian Ministry of Health strongly advised reducing maternal mortality by improving the quality of maternal health services [27]. However, 70 % of maternal mortality in 2019 occurs in Ethiopia due to health-related QoL during the postpartum period [28], and there are insufficient studies that examine women's postpartum health-related QoL. Furthermore, many women are typically unaware of the long-term mental and physical health problems that can occur as a consequence of pregnancy, childbirth, and puerperium; as a result, they are unprepared when such problems arise, and their QoL (quality of life) will be harmed for an extended period of time [29]. The majority studies on postpartum health QoL have been conducted in developed countries [13,30,31], with few in developing countries [32], and there are no adequate studies that examined postpartum health-related QoL among Ethiopian women, with the exception of one study conducted in Arba-Minch, Ethiopia [33], which is limited on physical and mental health problems. As a result, this study provides a good picture of the factors influencing maternal health QoL and attempted to investigate the influencing factors for maternal health-related QoL through postpartum women in Jimma Town, including physical, psychological, and social problems.

## 2. Materials and methods

### 2.1. Study setting, and period

This study took place in Jimma, Oromia region, 357 km from the national capital, Addis Ababa. Jimma has a total population of 207, 573 people, according to the 2023 world countries population by AZNations 2018–2023 [34]. The city is divided into 17 kebeles, 13 of which are urban and 4 of which are rural. Two hospitals, four health centers, 34 drug stores, 113 clinics run by private and non-governmental organizations, and 15 health centers [35] are available in the city. The study was conducted from May 15 to June 14, 2022.

2.2. Study design, and source population

A community-based cross-sectional study was carried out, with quantitative data collected. The sources of population in this study were all active postpartum women lived in Jimma town.

2.3. Inclusion and exclusion criteria

All postpartum women who live in Jimma town and gave birth within the last 6 months were included. Postpartum women, those with mental illnesses, and those who had lived in Jimma for less than six months were excluded.

2.4. Sample size determination

The size of the sample was computed using the single population approach, with a 95 % CI, a 5 % margin of error, and 62.3 % of postpartum women reporting lower level health-related QoL from a related study in Arba-Minch, Ethiopia [33]. The sample size was 362, and with a 10 % non-response rate, the final sample size was 397.

2.5. Sampling procedure

There are 17 kebeles in Jimma town. Approximately 7 or 41.2 % of these kebeles (Ginjo Guduruu, Mendera qochi, Aweytu mandaraa, Bosaa Kitto, Booree, Hermata Mantiina, and Bocho Booree) were chosen at random using the lottery method as representatives [35]. The estimated number of post-partum women in the seven Kebeles was then calculated using the estimated 6 months total birth report obtained from the Jimma town health bureau, as shown in the figure below. The sample was then distributed in proportion to each kebele. Finally, participants were chosen through systematic random sampling using health extension workers' birth records as a framework. Systematic sampling was chosen due to its ease of application from the register list; all women were chosen (Fig. 1).

2.6. Data collection instrument and data quality assurance

The data were collected through structured face-to-face interviews and self-administered questionnaires by trained nurses and public health officers. The survey questionnaire was pre-tested by investigators, supervisors, and data collectors among 5 % of the study subjects. To ensure high data quality, the structured pre-tested questionnaire was written in English, then translated into Amharic and Afan Oromo for ease of use, and then back-translated to English for consistency by two different language experts who speak English, Afan Oromo, and Amharic. To check the consistency, the questionnaire was translated from Afan Oromo and Amharic to English. The trained supervisors were closely monitoring the data collectors.

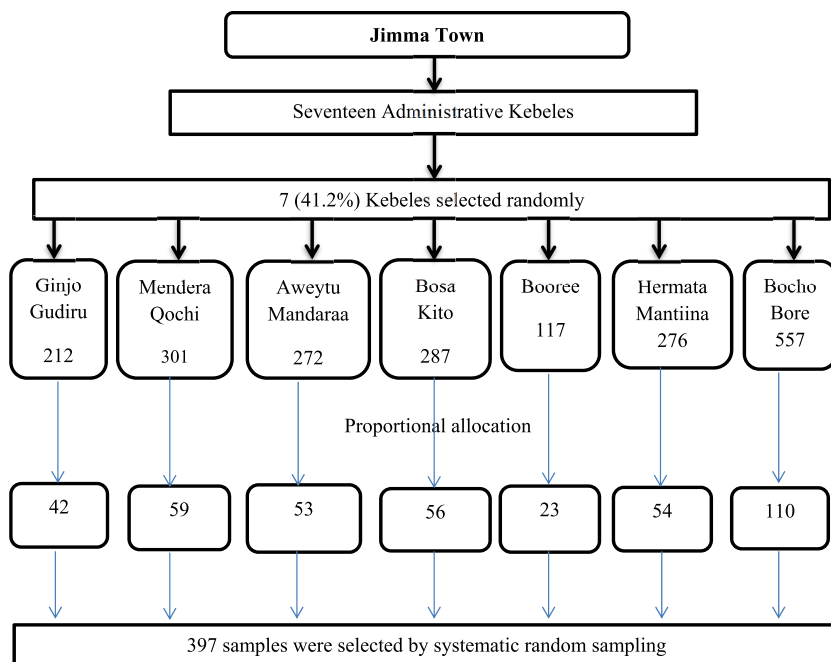


Fig. 1. Framework of the sampling Procedure.

## 2.7. Study variables

The outcome variable was maternal health-related QoL. While independent variables such as age, marital status, religion, occupational status, and monthly income were considered socio-demographic related factors, obstetrics related factors included parity, state of last pregnancy, received ANC, the place of the child's birth, mode of delivery, birth outcome, history of admission to the hospital while pregnant, and history of admission to the hospital after giving birth, and postpartum depression and social support.

## 2.8. Measurements

There are numerous QoL-related outcome measures; to mention a few, there include the 36-item short form survey (SF36), the 12-item short form survey (SF12), the World Health Organization Quality of Life Assessment-BREF (WHOQOL-BREF), the Multidimensional Scale of Perceived Social Support (MSPSS), maternal sleep measurements, and the Edinburgh Postnatal Depression Scale (EPDS) [36,37].

Though, in this study health related quality of life is measured using Medical outcome study short form survey (MOS SF-36), which was validated and translated for Ethiopia by a validation study [33,38]. The Edinburgh Postnatal Depression Scale is also used to assess postpartum depression (EPDS). The EPDS classified study participants who scored higher than or equal to the standardized mean value as having postpartum depression [39].

The domain score was determined by adding the scores of each item in each domain. The raw scale scores were then transformed from 0 to 100 using the formula [35].

$$\text{Transformed scale} = \frac{\text{Actual raw score} - \text{lower possible score}}{\text{Possible raw score range}} \times 100$$

A validation study confirmed and converted the 36 short-form questions used to assess health-related QoL for Ethiopia [40,41]. These questionnaires were capable of assessing postpartum mothers' overall health-related quality. The first two items assess the overall perception of QoL as well as the change in overall health status. The arithmetic mean of the transformed scores of the eight domains was then calculated, and participants scoring greater than or equal to the standardized mean value of 50 were considered to have a high quality of life.

In this study eight important aspects of Health related QoL were identified. These are Physical functioning (PF), Role limitations due to physical health, and Role limitations due to emotional problems, Energy/fatigue, Emotional well-being, Social functioning (SF), Boy Pain (BP) and General health (GH). The social support factor was built from six questions (SSQ6) about respondents' access to three types of social support, namely Appraisal Support, Belonging Support, and Tangible Support, all of which are frequently mentioned in the literature [42]. The responses were dichotomized, with the values 0 (definitely false or probably false) or 1 (probably true or true). The total score was then computed using the responses of the respondents. Those study participants whose scores on the social support questions were equal to or higher than the mean were considered to have social support.

Finally, the SF-36 questionnaire's Cronbach's coefficient was verified during the pre-test to see if the measure was relevant in the Ethiopian Context. The overall Cronbach's coefficient was 0.812, while the individual Cronbach's coefficient for each of the eight domains was greater than 0.70. The SF-36 questionnaire was then shown to be valid and reliable by the outcomes.

## 2.9. Operational definitions

**Overall health-related QoL mean score** was the arithmetic average of the transformed score of the eight domains [41].

**Higher health-related QoL** was defined as participants who scored greater than or equal to the standardized mean value of 50 [40].

**Lower health-related QoL** was defined as participants who scored less than the mean value of standardization [40].

## 3. Method of data handling and analysis

After the data was gathered, entered into Epi-data, and imported to SPSS and further cleaning was done by running frequencies for each variable to identify and manage outliers. Summary statistics such as mean and standard deviation were computed for continuous variables, and absolute and relative frequencies were done for categorical data. The bivariate analysis was performed to select the candidate variables with  $p < 0.25$ . Then, the candidate variables were extracted into the multivariable logistic model to identify the important factors associated with the maternal health-related QoL. Model adequacy was checked by Hosmer & Lemeshow goodness of test ( $P\text{-value} > 0.05$ ) and finally, a multivariable logistic model was used to determine the factors associated with women's health QoL with a  $p\text{-value} < 0.05$ . For every analysis, we used IBM Corp.'s SPSS 21.0 (Armonk, NY).

## 4. Results

### 4.1. Socio-demographic related characteristics

This study included 383 eligible post-partum mothers, for a response rate of 96.47 %. The majority of the participants (85.4 %) were married, 64.2 % were between the ages of 26 and 35, and 58.5 % had children before postpartum period. The results also show

that the majority of study participants (46.2 %) had elementary education, 39.2 % of maternal partners had no formal education, 28.7 % were self-employed, 36.8 % had a monthly income between 2000 and 3499 birr, 37.9 % were Protestant, 29.3 % had 3-4 children before the postpartum period, and 27.7 % were from Bocho Bore kebele (Table 1).

**Table 1**  
Socio-demographic and Obstetrics related characteristics.

Factors	Category	Frequency	Percent (%)
Age	16–25 years	67	17.5
	26–35 years	246	64.2
	36 years & above	70	18.3
Marital Status	Single	8	2.1
	Married	327	85.4
	Divorced	32	8.4
Educational Level	Separated	16	4.2
	Non-formal education	32	8.4
	Elementary	177	46.2
	Secondary	91	23.8
Partners Educational Level	Higher	83	21.7
	Non-formal education	28	7.3
	Elementary	150	39.2
	Secondary	110	28.7
Occupation	Higher	95	24.8
	Governmental	93	24.3
	NGO	23	6.0
	Self-employee	110	28.7
	Daily labor	91	23.8
Monthly Income	Housewife	66	17.2
	<2000 ETB	92	24.0
	2000-3499 ETB	141	36.8
	3500-4999 ETB	105	27.4
	≥5000 ETB	45	11.7
Religion	Orthodox	89	23.2
	Muslim	134	35.0
	Protestant	145	37.9
	Other	15	3.9
Had a children before postpartum period	Yes	224	58.5
	No	159	41.5
Number of Children	1–2	89	23.2
	3–4	112	29.3
	5	23	6.0
	Primiparous	260	67.9
	Multiparous	123	32.1
State of last Pregnancy	Planned	351	91.6
	Unplanned	32	8.4
Received ANC	Yes	310	80.9
	No	73	19.1
The place of the child's birth	Home	73	19.1
	Health institution	310	80.9
Mode of Delivery	Vaginal	314	82.0
	Cesarean	69	18.0
Birth outcome	Alive	322	84.1
	Dead	61	15.9
Hospital admission during pregnancy	Yes	375	97.9
	No	8	2.1
Hospital admission after pregnancy	Yes	368	96.1
	No	15	3.9
Postpartum Depression	Depressed	159	41.5
	Not depressed	224	58.5
Social support	No	94	24.5
	Yes	289	75.5
Kebele	Ginjo Guduru	42	10.6
	Mendera Qochi	59	14.9
	Aweytu Mandaraa	53	13.3
	Bosa Kito	56	14.1
	Booree	23	5.8
	Hermata Mantiina	54	13.6
	Bocho Bore	110	27.7

\*1\$ = 55 Ethiopian Birr.

## 4.2. Obstetrics related characteristics

The majority of participants (67.9 %) were primiparous, 91.6 % had a planned last pregnancy, 80.9 % received ANC during the previous pregnancy, 80.9 % gave birth at a health institution, 82 % were delivered vaginally, 84.1 % gave live birth, 96.1 % were being admitted to the hospital after giving birth, 97.9 % were admitted to the hospital while pregnant, 58.5 % were not depressed postpartum, and 75.5 % received social support during the postpartum period (Table 1).

## 4.3. Maternal health-related QoL among postpartum women

Fig. 2 depicts postpartum women's maternal health-related QoL. According to the findings, 196 (51.2 %) of postpartum women had poor health-related QoL, while 187 (48.8 %) had better QoL. The 36 short form questions were used to generate eight domains of health-related QoL for the study. It shows that the smallest mean score, with a Mean  $\pm$  SD of  $24.58 \pm 30.975$ , was recorded in body pain, and the highest score, with a Mean  $\pm$  SD of  $65.75 \pm 26.56$ , was recorded in physical functioning. The mean score for overall health-related QoL was 50.58, with a standard deviation of 11.45 (Table 2).

## 5. Results of a bivariate and multivariable binary logistic model

The finding showed that the p-value for the Hosmer and Lemeshow test is greater than 0.05, indicated that the logistic model is appropriate for the data set. The bivariate logistic analysis revealed that age, partner education, having children before postpartum period, parity, state of pregnancy, the place of the child's birth, birth outcome, ANC follow-up, admission to the hospital while pregnant, and postpartum depression were identified as candidate factors for multivariable binary logistic analysis. However, only age, education level of women partners, parity, state of last pregnancy, ANC follow-up, birth outcome, and admission to the hospital while pregnant were significantly associated with lower maternal health-related QoL ( $p < 0.05$ ) in multivariable logistic regression analysis.

Postpartum women aged 16–25 years were 10.09 times more likely to experience lower health-related QoL than women aged 36 years (AOR = 10.09; 95 % CI: 3.45, 29.51). Postpartum women partners who did not attend formal education were 3.67 times more likely to have lower health-related QoL than women's partners who did attend higher education (AOR = 3.67; 95 % CI: 1.25, 10.72) (Table 3).

Multiparous women were 2.21 times more likely to be poor health-related quality of life than primiparous women (AOR = 2.21; 95 % CI: 1.14, 4.29). Unplanned pregnant women were 7.36 times more likely to have lower health-related QoL than planned pregnant women (AOR = 7.36; 95 % CI: 1.98, 27.37).

Birth outcomes were found to be significantly related to health-related QoL. Women giving birth to a dead baby were 3.15 times more probable to have a lower health-related QoL than women who gave live birth (AOR = 3.15; 95 % CI: 1.54, 6.42). Furthermore, postpartum women who were not admitted to the hospital while pregnant were more probable to have a lower health-related QoL than women who were not admitted to the hospital while pregnant (AOR = 5.50; 95 % CI: 3.86, 26.30) (Table 3).

## 6. Discussion

This study examined associated factors in relation to the health-related quality of life (QOL) among postpartum women in Jimma Town. According to the findings, approximately 51.2 % of the study participants had poor health-related QoL, with a confidence

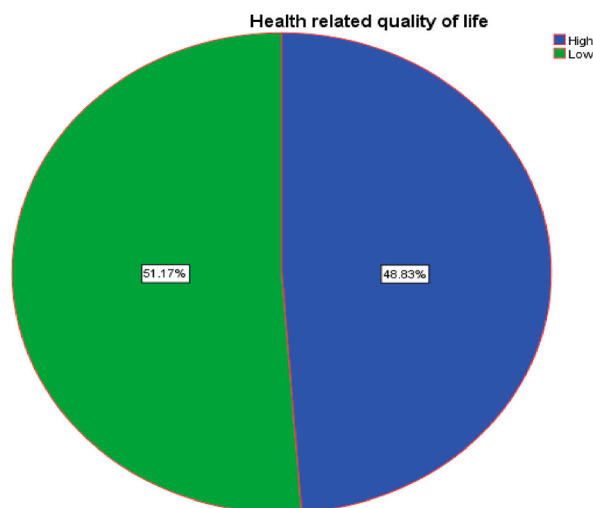


Fig. 2. Pie charts for health-related QoL.

**Table 2**  
Mean Score of SF-36 health-related QoL summary score of study participants.

SF-36 Health-related QoL	Mean $\pm$ SD	95 % CI
Physical functioning	65.75 $\pm$ 26.56	(63.08, 68.43)
Physical health	57.18 $\pm$ 40.33	(53.12, 61.23)
Emotional problems	51.56 $\pm$ 44.57	(47.08, 56.04)
Energy/fatigue	58.81 $\pm$ 19.29	(56.87, 60.75)
Emotional well-being	44.33 $\pm$ 17.91	(42.53, 46.13)
Social functioning	51.43 $\pm$ 24.93	(48.93, 53.94)
Boy Pain	24.58 $\pm$ 30.97	(21.47, 27.69)
General Health	51.01 $\pm$ 21.27	(48.87, 53.14)
Overall Quality of life	50.58 $\pm$ 11.45	(49.43, 51.73)

**Table 3**  
Bivariate and multivariate binary logistic regression results of factors associated with overall health-related QoL of study participants.

Variable	Categories	Overall HRQoL		COR(95 % CI)	AOR (95 % CI)	P-value
		Low (%)	High (%)			
Age	16–25 years	56(83.6)	11(16.4)	5.70(2.56,12.68)	10.09(3.45,29.51)	<0.001
	26–35 years	107(43.5)	139(56.5)	0.863(0.507,1.47)	1.11(0.580,2.123)	0.75
	36 years & above	33(47.1)	37(52.9)	1		
Partners educational level	Non-formal	22(78.6)	6(21.4)	3.74(1.39, 10.06)	3.67(1.25,10.72)	0.02
	Elementary	72(48.)	78(52)	0.943(0.564,1.57)	0.913(0.518,1.61)	0.75
	Secondary	55(50)	55(50)	1.02(0.590,1.76)	0.957(0.522,1.75)	0.89
Had other children	Higher educator	47(49.5)	48(50.5)	1		
	Yes	128(57.1)	96(42.9)	1.78 (1.18, 2.69)	1.80(0.971,3.36)	0.06
Parity	No	68(42.8)	91(57.2)	1		
	Primiparous	70(56.9)	53(43.1)	1		
State of last Pregnancy	Multiparous	126(48.5)	134(51.5)	0.712(0.462,1.09)	2.21(1.14,4.29)	0.02
	Planned	175(49.9)	176(50.1)	1		
Received ANC	Unplanned	21(65.6)	11(34.4)	1.92(0.899,4.10)	7.36(1.98, 27.37)	0.003
	No	45(61.6)	28(38.4)	1.69(1.04,2.85)	0.756(0.330,1.731)	0.51
The place of the child's birth	Yes	151(48.7)	159(51.3)	1		
	Home	43(58.9)	30(41.1)	1.47 (0.87, 2.46)	1.99(0.902,4.424)	0.09
Birth outcome	Health institution	153(49.4)	157(50.6)	1		
	Dead	26(42.6)	35(57.4)	1.51 (0.86, 2.62)	3.15(1.54, 6.42)	0.002
Hospital admission during pregnancy	Alive	170(52.8)	152(47.2)	1		
	No	2(25)	6(75)	3.21 (0.64, 16.14)	5.50(3.86, 26.30)	0.002
Postpartum Depression	Yes	194(51.7)	181(48.3)	1		
	Depressed	87(54.7)	72(45.3)	1.27 (0.85, 1.92)	1.22(0.762,1.95)	0.41
Depression	Not depressed	109(48.7)	115(51.3)	1		

interval ranging from 47.32 to 56.81. The mean score for overall health-related QoL in this study was 50.58. The result is higher compared to a study that found 45.15 in Arba-Minch, Ethiopia [33], but lower compared to other studies that found 66.32 in Iran [26], and 71.74 in Spain [43]. The difference might be attributed to socioeconomic disparities among study participants. A higher socioeconomic status is associated with a higher quality of life [44].

The findings show that 80.9 % of the participants received ANC during their prior pregnancies, which is in line with a study that found 70.25 percent of women in urban Ethiopia used ANC [45]. The findings also indicate that most people (91.6 %) had planned pregnancies in the past, which is consistent with an earlier study's result that revealed only 13.7 % of pregnancies were unwanted [46]. This might be due to women who had plan for their pregnancies give more attention to pregnancy-related issues such that maternal morbidity and mortality, early birth, premature delivery, neonatal death, and infant abuse, and visits to the ANC.

Women between the ages of 16 and 25 were more likely to have lower health-related QoL than women over the age of 35. This finding corresponds to studies conducted in Ethiopia [33], which found that being younger increases the likelihood of having a lower level of health-related QoL. However, the finding contradicts a research conducted in Iran, which found that younger-aged women had a higher quality of life [26]. The inverse relationship could be explained by the fact that the majority of younger age women seem to be primiparous, have less experience with pregnancy and birth, and are more likely to develop postpartum depression.

Postpartum women partners who did not attend elementary school were more likely to have lower health-related QoL than women's partners who did attend higher education. This finding is in line with a study reported in Iran [26], China [28], and Ethiopia [33] that explored a postpartum mother whose husband was uneducated had a higher risk of having poor health-related QoL. One possible explanation is that educated partners are more likely than uneducated partners to make healthcare decisions for their families. Because women who do not have a formal educated partner are less likely to participate in ANC, are more likely to give birth at home, and are less likely to seek immediate health care until a complication occurs.

The finding showed that a multiparous woman has a greater likelihood of lower health-related QoL than a primiparous woman. This finding is in line with a study reported in North Jordan, which found that high-primiparous women had lower QoL outcomes than

low-primiparous women [47]. The study also found a relationship between birth outcome and health-related QoL. Women who had a dead birth were more likely to have lower health-related QoL than women who had a live birth. This is because maternal and child health is inextricably linked. The presence of skilled health professionals during childbirth plays an important role in both time management and the reduction of maternal and infant mortality [48].

Unplanned pregnancies were significantly associated with a lower health-related QoL. This finding is similar to Ali's study, which revealed that unwanted and unplanned pregnancies can reduce women's quality of life [49]. A study conducted in Northeastern Brazil reported similar findings, which reveals that non-acceptance of pregnancy, was associated with lower health-related QoL scores [31]. Similarly, the finding is consistent with Woolhouse's research, which found that women who planned their pregnancy had higher health-related QoL scores among postpartum women [47]. This is because planned pregnancy aids in the delivery of a healthy baby. A planned pregnancy was more likely to result in the health of the babies as well as the mother.

Furthermore, when all other factors in the model were held constant, women who were not admitted to the hospital while pregnant were more likely to have lower health-related QoL than women who were admitted to the hospital. It's possible that postpartum women being admitted to a hospital is significant for a number of reasons, such as scheduled tests, procedures, and emergency medical care, as a result, it is more probable that they will have higher health-related quality of life.

Measuring quality in general is an essential step toward improvement, but it can be difficult due to the complex and interrelated characteristics of women's involvement with the protective healthcare system. The availability of infrastructure and supplies, the level of training of health care workers, provider-patient relationships, and a variety of other factors all have an impact on the quality of care a woman receives, and some of these factors are easier to quantify than others.

## 7. Conclusion

The findings revealed that nearly half of postpartum women (51.2 %) had poor health-related QoL. The mean score for overall health-related QoL was 50.58. Body pain had the lowest mean score, with a Mean  $\pm$  SD of 24.5830.97, while physical functioning had the highest, with a Mean  $\pm$  SD of 65.7526.56. This study also concludes that age, non-formal education of partner, multiparousness, unplanned pregnancy, gave dead birth, and women who being not admitted to the hospital while pregnant were found to be more chance to have lower health-related QoL at 0.05 levels of significance. As a result, health extension workers in Jimma must pay special attention to significant factors in order to implement measures to prevent and improve women's postpartum health-related QoL, as well as educate women about the risk of unwanted pregnancies in order to reduce low health-related QoL; and health officers should deliberate actions to be taken to improve the QoL of postpartum mothers by focusing on maternal services, such as requiring them to give birth at health institutions.

### 7.1. Strengths and limitations of the study

This study had several advantages. To begin, it employs primary data, which provides raw information and firsthand evidence. Second, this is the second study to identify health-related QoL during the postpartum period in an Ethiopian setting, in contrast to the first study, which addressed concerns about physical and mental health. While the study was limited to a community-based study, it was unable to address factors such as infertility, chronic illness, and birth-related comorbidities that may affect quality-of-life. Additionally, as the literature demonstrated, some variables that had a significant impact on maternal health-related quality of life (QoL), such as marital status, mother's educational attainment, income level, having children prior to the postpartum period, ANC visit, the place of the child's birth, and postpartum depression, were not significant. This could be due to the small sample size resulting from using the primary source of data, which requires money, time, and human effort.

### Ethics approval and informed consent

The ethical approval and letter of support were provided by Jimma University's Institute of Health Science's Institutional Research Ethical Review Board (IRB) with approval code of IHPPGJ/611/22. Consent was obtained verbally from family members or medical professionals for women under the age of 18. Participants over the age of eighteen provided written consent. Personal identifiers were not used on the data collection forms, with the exception of the investigators, and the recorded data was entered by a third party. Before the interview, a participant was informed that they had complete discretion to discontinue or refuse to participate in the study.

### Consent for publication

Not applicable.

### Funding statement

There was no outside funding for this study.

### Data availability statement

The data used for this study has been in the hands of the first and corresponding authors. So, it will be sent with a reasonable



request.

### CRedit authorship contribution statement

**Abebe Debu Liga:** Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing. **Yasin Negash Jabir:** Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – review & editing. **Seble Assefa:** Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Resources, Supervision, Validation, Writing – review & editing. **Gurmesa Tura Debelew:** Supervision, Validation, Writing – review & editing. **Bekalu Teka Worku:** Supervision, Validation, Writing – review & editing.

### Declaration of competing interest

The authors declared that they have no competing interests or personal interactions that could have been believed to affect the work presented in this study.

### Acknowledgment

The authors would like to thank the data collectors, study participants, and Jimma City Health Bureau for their valuable cooperation in providing the necessary baseline information.

### Abbreviations

ANC	Antenatal care
CI	Confidence interval
EPDS	Edinburgh Postnatal Depression Scale
HRQoL	Health-Related Quality-of-Life
IRB	Institutional Research Ethics Review Board
QoL	Quality of Life
SF-36	Short form 36 Questions
SPSS	Statistical Package of Social Science
WHO	World Health Organization
UNICEF	United Nations Children Fund

### Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.heliyon.2024.e29328>.

### References

- [1] Whoqol Group, The world health organization quality of life assessment (WHOQOL): position paper from the world health organization, *Soc. Sci. Med.* 41 (10) (1995) 1403–1409.
- [2] Marcel Post, Definitions of quality of life: what has happened and how to move on, *Top. Spinal Cord Inj. Rehabil.* 20 (3) (2014) 167–180.
- [3] Stefan Kohler, Kristi Sidney Annerstedt, Vishal Diwan, Lars Lindholm, Bharat Randive, Kranti Vora, Ayesha De Costa, Postpartum quality of life in Indian women after vaginal birth and cesarean section: a pilot study using the EQ-5D-5L descriptive system, *BMC Pregnancy Childbirth* 18 (2018) 1–13.
- [4] Funda Özdemir, Aslihan Öztürk, Özlem Karabulutlu, Ayfer Tezel, Determination of the life quality and self-care ability of the mothers in post-partum period, *J. Pakistan Med. Assoc.* 68 (2) (2018) 210–215.
- [5] Kristin P. Tully, Alison M. Stuebe, Sarah B. Verbiest, The fourth trimester: a critical transition period with unmet maternal health needs, *Am. J. Obstet. Gynecol.* 217 (1) (2017) 37–41.
- [6] Susan B. Coyle, Health-related quality of life of mothers: a review of the research, *Health Care Women Int.* 30 (6) (2009) 484–506.
- [7] D. Da Costa, M. Dritsa, N. Rippen, I. Lowensteyn, S. Khalife, Health-related Quality of Life in Postpartum Depressed Women, vol. 9, *Archives of women's mental health*, 2006, pp. 95–102.
- [8] Van der Woude, A.A. Daisy, MA Pijnenborg Johanna, Jolanda de Vries, Health status and quality of life in postpartum women: a systematic review of associated factors, *Eur. J. Obstet. Gynecol. Reprod. Biol.* 185 (2015) 45–52.
- [9] Guannan Bai, Ida J. Korfage, Eva Mautner, Hein Raat, Determinants of maternal health-related quality of life after childbirth: the generations R study, *Int. J. Environ. Res. Publ. Health* 16 (18) (2019) 3231.
- [10] Kristin Haraldstad, A. Wahl, Randi Andenæs, John Roger Andersen, Marit Helen Andersen, E. Beisland, Christine Råheim Borge, et al., A systematic review of quality of life research in medicine and health sciences, *Qual. Life Res.* 28 (2019) 2641–2650.
- [11] Bouchra Assarag, Dominique Dubourg, Abderrahmane Maaroufi, Bruno Dujardin, Vincent De Brouwere, Maternal postpartum morbidity in Marrakech: what women feel what doctors diagnose? *BMC Pregnancy Childbirth* 13 (1) (2013) 1–8.
- [12] Véronique Filippi, Doris Chou, Carine Ronsmans, Wendy Graham, Lale Say, Levels and causes of maternal mortality and morbidity, *Disease control priorities 2* (2016) 51–70.
- [13] Charlotte Oyston, Philip N. Baker, Current challenges in pregnancy-related mortality, *Obstet. Gynaecol. Reprod. Med.* 30 (2) (2020) 55–61.

- [14] Trupti N. Bodhare, Pruthwiraj Sethi, Samir D. Bele, Dasari Gayatri, Achanta Vivekanand, Postnatal quality of life, depressive symptoms, and social support among women in southern India, *Women Health* 55 (3) (2015) 353–365.
- [15] Ching-Yu Cheng, Eileen R. Fowles, Lorraine O. Walker, Postpartum maternal health care in the United States: a critical review, *J. Perinat. Educ.* 15 (3) (2006) 34.
- [16] Babette W. Prick, Denise Bijlenga, AJ Gerard Jansen, Kim E. Boers, Sicco A. Scherjon, Corine M. Koopmans, Marielle G. Van Pampus, et al., Determinants of health-related quality of life in the postpartum period after obstetric complications, *Eur. J. Obstet. Gynecol. Reprod. Biol.* 185 (2015) 88–95.
- [17] Angela Vinturache, Nikki Stephenson, Sheila McDonald, Muci Wu, Hamideh Bayrampour, Suzanne Tough, Health-related quality of life in pregnancy and postpartum among women with assisted conception in Canada, *Fertil. Steril.* 104 (1) (2015) 188–195.
- [18] World Health Organization, Department of making pregnancy Safer, and world health organization, in: *Counselling for Maternal and Newborn Health Care: A Handbook for Building Skills*, World Health Organization, 2010.
- [19] Behnaz Torkan, Souzan Parsay, Minoor Lamyian, Anoshirvan Kazemnejad, Montazeri Ali, Postnatal quality of life in women after normal vaginal delivery and caesarean section, *BMC Pregnancy Childbirth* 9 (1) (2009) 1–7.
- [20] Nadia Ramzan, Samreen Misbah, Shehla Baqai, Syed Fawad Mashhadi, Imtenan Sharif, Mommana Ali, Postpartum health-related quality of life among mothers: an Analytical cross-sectional study in A tertiary care hospital of rawalpindi, *Pakistan Armed Forces Medical Journal* 71 (2) (2021) 629–633.
- [21] Pamela D. Hill, Jean C. Aldag, Barbara Hekel, Gina Riner, Pamela Bloomfield, Maternal postpartum quality of life questionnaire, *J. Nurs. Meas.* 14 (3) (2006) 205.
- [22] Sinem Bağcı, Kamile Altuntuğ, Problems experienced by mothers in postpartum period and their associations with quality of life Annelerin doğum sonunda yaşadıkları sorunlar ve yaşam kalitesi ile ilişkisi, *Journal of Human Sciences* 13 (2) (2016) 3266–3279.
- [23] Julie Jomeen, Colin Martin, Perinatal quality of life: is it important for childbearing women? *Pract. Midwife* 15 (4) (2012) 30–34.
- [24] Kim E. Dickson, Aline Simen-Kapeu, Mary V. Kinney, Luis Huicho, Linda Vesel, Eve Lackritz, Joseph de Graft Johnson, et al., Every Newborn: health-systems bottlenecks and strategies to accelerate scale-up in countries, *Lancet* 384 (9941) (2014) 438–454.
- [25] Tedla Amanuel, Azmach Dache, Aregahegn Dona, Postpartum hemorrhage and its associated factors among women who gave birth at Yirgalem General Hospital, Sidama Regional State, Ethiopia, *Health Services Research and Managerial Epidemiology* 8 (2021) 23333928211062777.
- [26] Nazanin Rezaei, Arman Azadi, Raziieh Zargousi, Zinab Sadoughi, Zahra Tavalae, Maryam Rezayati, Maternal health-related quality of life and its predicting factors in the postpartum period in Iran, *Sci. Tech. Rep.* 2016 (2016).
- [27] FMOH, Federal Democratic Republic of Ethiopia Ministry of Health. HSTP: Health Sector Transformation Plan, 2015, 2015/16-2019/20.
- [28] Neamin Tesfay, Rozina Tariku, Alemu Zenebe, Fitsum Woldeyohannes, Critical factors associated with postpartum maternal death in Ethiopia, *PLoS One* 17 (6) (2022) e0270495.
- [29] Elizabeth Shaw, Cheryl Levitt, Sharon Wong, Janusz Kaczorowski, McMaster University Postpartum Research Group, Systematic review of the literature on postpartum care: effectiveness of postpartum support to improve maternal parenting, mental health, quality of life, and physical health, *Birth* 33 (3) (2006) 210–220.
- [30] Carlos Zubaran, Katia Foresti, Marina Verdi Schumacher, Mariana Rossi Thorell, Lucia Cristina Muller, Aline Luz Amoretti, An assessment of maternal quality of life in the postpartum period in southern Brazil: a comparison of two questionnaires, *Clinics* 64 (2009) 751–756.
- [31] Samila Gomes Ribeiro, Caroline Batista de Queiroz Aquino, Eveliny Silva Martins, Tatiana Gomes Guedes, Priscila de Souza Aquino, Ana Karina Bezerra Pinheiro, Factors that interfere in the quality of life related to the health of women in the postpartum period in northeastern Brazil, *Texto & Contexto-Enfermagem* 30 (2021).
- [32] Regis Hitimana, Lars Lindholm, Gunilla Krantz, Manasse Nzayirambaho, Jeanine Condo, Jean Paul Semasaka Sengoma, Anni-Maria Pulkki-Brännström, Health-related quality of life determinants among Rwandan women after delivery: does antenatal care utilization matter? A cross-sectional study, *J. Health Popul. Nutr.* 37 (2018) 1–10.
- [33] Yirgalem Tola, Gistane Ayele, Negussie Boti, Manaye Yihune, Firdawek Gethahun, Zeleke Gebru, Health-related quality-of-life and associated factors among post-partum women in Arba Minch Town, *Int. J. Wom. Health* (2021) 601–611.
- [34] World countries population, Population of Jimma, Retrieved from, <https://www.aznations.com/population/et/cities/jimma>, 2023.
- [35] Habtamu Kerebih, Mاتیwos Soboka, Prevalence of common mental disorders and associated factors among residents of Jimma town, South West Ethiopia, *Population* 8 (2016) 6–8.
- [36] Yu-Jeong Jeong, Ju-Hee Nho, Hye Young Kim, Ji Young Kim, Factors influencing quality of life in early postpartum women, *Int. J. Environ. Res. Publ. Health* 18 (6) (2021) 2988.
- [37] Crispin Jenkinson, "quality of life", *Encyclopedia Britannica* (8 Jun. 2023). <https://www.britannica.com/topic/quality-of-life>. (Accessed 14 June 2023).
- [38] Derege Kebede, Atalay Alem, Teshome Shibre, Alemayehu Negash, Negussie Deyassa, Teferra Beyero, Health related quality of life (SF-36) survey in Butajira, rural Ethiopia: normative data and evaluation of reliability and validity, *Ethiop. Med. J.* 42 (4) (2004) 289–297.
- [39] Lluisa Garcia-Esteve, Carlos Ascaso, Julia Ojuel, Puri Navarro, Validation of the Edinburgh postnatal depression scale (EPDS) in Spanish mothers, *J. Affect. Disord.* 75 (1) (2003) 71–76.
- [40] Ware, John E. "SF-36 health survey, in: Manual and Interpretation guide.", The health institute, 1993, 6-1.
- [41] Liliane Lins, Fernando Martins Carvalho, SF-36 total score as a single measure of health-related quality of life: scoping review, *SAGE open medicine* 4 (2016) 2050312116671725.
- [42] Irwin G. Sarason, Henry M. Levine, Robert B. Basham, Barbara R. Sarason, Assessing social support: the social support questionnaire, *J. Pers. Soc. Psychol.* 44 (1) (1983) 127.
- [43] Martínez-Galiano Juan Miguel, Antonio Hernández-Martínez, Julián Rodríguez-Almagro, Miguel Delgado-Rodríguez, Quality of life of women after giving birth: associated factors related with the birth process, *J. Clin. Med.* 8 (3) (2019) 324.
- [44] Jonathan Aseye Nutakor, Lulin Zhou, Ebenezer Larnyo, Stephen Addai-Danso, Debashree Tripura, Socioeconomic status and quality of life: an assessment of the mediating effect of social capital, in: *Healthcare*, vol. 11, MDPI, 2023, p. 749, 5.
- [45] Getahun Dejene Yemane, The factors associated with antenatal care utilization in Ethiopia, *Annals of Medicine and Surgery* 79 (2022) 104092.
- [46] Adino Tesfahun Tsegaye, Menderie Mengistu, Alemayehu Shimeka, Prevalence of unintended pregnancy and associated factors among married women in west Belessa Woreda, Northwest Ethiopia, 2016, *Reprod. Health* 15 (1) (2018) 1–8.
- [47] Ghadeer Alzboon, Gülşen Vural, Factors influencing the quality of life of healthy pregnant women in North Jordan, *Medicina* 55 (6) (2019) 278.
- [48] Asteray Assmie Ayenew, Azezu Asres Nigussie, Biruk Ferede Zewdu, Childbirth at home and associated factors in Ethiopia: a systematic review and meta-analysis, *Arch. Publ. Health* 79 (1) (2021) 1–18.
- [49] Azzizi Ali, Relationship between unwanted pregnancy and health-related quality of life in pregnant women, *J Coll Physicians Surg Pak* 26 (6) (2016) 507–512.