

Physical Activity and Postpartum Quality of Life: A Cross-Sectional Analysis

Qur'ana Fauziyah, Faizah Betty Rahayuningsih*

Faculty of Health Sciences, Universitas Muhammadiyah Surakarta, Surakarta, Indonesia

Corresponding author: fbr200@ums.ac.id

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ABSTRACT

The postpartum period is a critical phase marked by substantial physical and psychological changes that may affect maternal well-being and quality of life. Physical activity plays an important role in supporting recovery and facilitating adaptation to new maternal roles. This study aimed to analyze the relationship between physical activity capacity and quality of life among postpartum mothers in the working areas of the Tlogowungu and Miri Community Health Centers. A quantitative cross-sectional design was applied. The study involved 90 postpartum mothers selected using purposive sampling. Physical activity capacity was measured using a postpartum physical activity questionnaire based on activities of daily living, while quality of life was assessed using the Indonesian version of the Maternal Postpartum Quality of Life Instrument (MPQOL-I). Data were analyzed using the Chi-square test with a significance level of $p < 0.05$. The results showed that most respondents were classified as independent in physical activity (73.3%) and had a high quality of life (86.7%). Chi-square analysis demonstrated a significant relationship between physical activity capacity and quality of life in both the Tlogowungu group ($p = 0.006$) and the Miri group ($p = 0.001$). Independent t-test results indicated significant differences in mean physical activity capacity and quality of life between the two study areas ($p = 0.034$). Physical activity capacity is significantly associated with quality of life among postpartum mothers. These findings highlight the importance of integrating safe and appropriate physical activity promotion into postpartum care services in primary health care settings to improve maternal well-being.



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INTRODUCTION

The postpartum period represents a critical transitional phase characterized by profound physical and psychological adaptations that influence maternal adjustment to new roles and daily activities (Wahdakirana & Rahayuningsih, 2021). This stage involves various physiological and functional changes, including nutritional status, lactation, personal hygiene, rest, early ambulation, perineal wound healing, and physical activity, all of which influence postpartum recovery (Handayani & Hamidah, 2024). Mothers may also experience breastfeeding difficulties, elimination disturbances, and psychological distress that affect their overall well-being (Dhamanik et al., 2020; Wulandari & Mufdlilah, 2020). Emerging evidence suggests that appropriate postpartum physical activity supports physical recovery, enhances maternal well-being, and facilitates adaptation during the postpartum period (Paisal et al., 2024).

Postpartum health remains a public health priority because complications during this period continue to affect maternal well-being and quality of life (Cahyaningtyas & Julian, 2023). Quality of life reflects individuals' subjective perceptions of their position in life within the context of their culture, value systems, expectations, and personal goals (Purnanda, 2023). Among postpartum mothers, quality of life is influenced by physiological recovery, adaptation to maternal roles, and psychosocial conditions following childbirth (Aziza & Rahayuningsih, 2022). Several

factors, including postpartum depression, social support, delivery mode, and prepartum mental health, have been reported to influence postpartum quality of life (Pebryatie et al., 2022). Among these factors, physical activity is considered a modifiable behavior that may contribute to improving maternal quality of life during the postpartum period (Wulandari & Mufdlilah, 2020).

Physical activity is an essential component of postpartum recovery that encompasses both structured exercises and routine functional activities. Common postpartum physical activities include early mobilization, Kegel exercises, postpartum exercise programs, and activities of daily living that promote gradual physical rehabilitation (Wulandari & Mufdlilah, 2020). Regular engagement in these activities improves physical functioning, supports psychological well-being, and facilitates maternal adaptation during the postpartum period. Furthermore, higher levels of physical activity have been associated with better sleep quality, reduced psychological distress, faster physical recovery, and improved quality of life among postpartum mothers (Yadeta et al., 2025). These findings suggest that physical activity is an important modifiable factor that contributes to optimizing postpartum recovery and enhancing maternal quality of life.

Despite growing evidence demonstrating the benefits of postpartum physical activity, studies examining the relationship between physical activity capacity and maternal quality of life in Indonesian primary health care settings remain limited. Previous studies have predominantly focused on specific postpartum exercise interventions or individual health outcomes, with relatively little attention given to mothers' functional physical activity capacity in performing activities of daily living and its association with overall postpartum quality of life. Moreover, evidence incorporating community-based sociocultural contexts in primary health care services is still scarce. Therefore, this study addresses these gaps by investigating the association between physical activity capacity and quality of life among postpartum mothers in two community health center settings with different sociocultural characteristics. The novelty of this study lies in assessing physical activity based on functional daily activities rather than structured exercise alone and evaluating its relationship with maternal quality of life using the Indonesian version of the Maternal Postpartum Quality of Life Instrument (MPQOL-I). Accordingly, this study aims to examine the association between physical activity capacity and quality of life among postpartum mothers in the working areas of the Tlogowungu and Miri Community Health Centers.

METHOD

This study employed a quantitative observational design using a cross-sectional approach, in which data on physical activity capacity and quality of life were collected simultaneously at a single point in time. A cross-sectional design was considered appropriate because the primary objective of this study was to examine the association between physical activity capacity and quality of life among postpartum mothers rather than to determine causal relationships or evaluate intervention effects. This design also enables efficient assessment of the relationship between variables within a natural primary health care setting while minimizing the time and resources required for data collection.

Conducted from July to August 2025, this study spanned the jurisdictions of Tlogowungu Community Health Center (Pati Regency) and Miri Community Health Center (Sragen Regency). The target population comprised all postpartum mothers within these areas ($N = 900$). The sample size was calculated using the Slovin formula with a 10% error margin, yielding 90 participants. Purposive sampling was applied based on predefined inclusion criteria. The recruitment process was conducted in collaboration with community health center midwives, who identified eligible postpartum mothers from maternal health records. Potential participants were approached during scheduled postnatal care visits or home visits, screened for eligibility

according to the inclusion and exclusion criteria, and provided with an explanation of the study objectives and procedures. Mothers who voluntarily agreed to participate and signed written informed consent were subsequently enrolled in the study until the required sample size was achieved.

Inclusion criteria encompassed postpartum women aged 16–45 years, within 1–42 days post-delivery, clinically stable, free from major obstetric complications, and consenting to participate. Exclusion criteria comprised those with postpartum complications, congenital anomalies, or illiteracy.

Physical activity capacity was assessed using a 12-item questionnaire developed to evaluate postpartum functional activities of daily living, including mobility, self-care, and light household activities. Responses to each item were scored according to the instrument guidelines, with higher scores indicating greater functional independence in performing daily activities. Total scores were subsequently categorized into levels of physical activity capacity for statistical analysis.

Quality of life was assessed using the Indonesian version of the Maternal Postpartum Quality of Life Instrument (MPQOL-I), which consists of 16 items covering physical, psychological, social, and maternal role domains. The instrument was administered and scored according to the validated Indonesian adaptation, with higher total scores reflecting better postpartum quality of life. For the purpose of analysis, quality-of-life scores were categorized into predefined levels based on the instrument's scoring procedure. The bivariate relationships observed between physical activity capacity and quality of life after delivery were examined via a chi-square test ($\alpha = 0.05$). Additionally, independent-samples t-tests compared mean differences in these outcomes across the two study sites. Ethical clearance was obtained from the Dr. Moewardi Hospital Research Ethics Committee (No. 2.272/X/HJREC/2025).

This study has several methodological limitations that should be considered when interpreting the findings. First, the cross-sectional design allows identification of associations between physical activity capacity and quality of life but does not permit causal inference. Second, the use of purposive sampling and recruitment from only two community health centers may limit the generalizability of the findings to other postpartum populations with different demographic or sociocultural characteristics. Finally, data were collected using self-reported questionnaires, which may be subject to recall and social desirability bias. Despite these limitations, standardized instruments and consistent data collection procedures were employed to enhance the validity and reliability of the study findings.

RESULTS

Based on Table 1, the demographic and obstetric characteristics of the 90 postpartum mothers included in the study are summarized, with an equal distribution of participants from the Tlogowungu and Miri Community Health Centers (45 respondents each). Overall, most respondents were aged 26–30 years, had completed senior high school education, and were housewives. The majority were multiparous mothers experiencing their second pregnancy. A notable difference between the two study areas was observed in the mode of delivery, with vaginal birth predominating in the Tlogowungu Community Health Center, whereas cesarean section was more common in the Miri Community Health Center.

Table 1. Respondent characteristics

Category	Frequency		Percentage	
	Tlogowungu Community Health Center (n=45)	Miri Community Health Center (n=45)	Tlogowungu Community Health Center	Miri Community Health Center
Age (years)				
<20	4	2	8.9	4.4
21-25	8	13	17.8	28.9
26-30	23	19	51.1	42.2
31-35	6	8	13.3	17.8
>35	4	3	8.9	6.7
Education				
Elementary School	3	1	6.7	2.2
Junior High School	12	12	26.7	26.7
High School	26	26	57.8	57.8
Associate Degree	0	0	0.0	0.0
Bachelor's Degree	4	6	8.9	13.3
Occupation				
Housewife	35	34	77.8	75.6
Civil servant	0	0	0.0	0.0
Private employee	7	7	15.6	15.6
Entrepreneur	3	4	6.7	8.9
Number of Pregnancies				
1	18	14	4.0	31.1
2	20	23	44.4	51.1
3	2	7	4.4	15.6
4	4	1	8.9	2.2
5	1	0	2.2	0.0
Type of Delivery				
Normal	33	14	73.3	31.1
Cesarean section (CS)	12	31	26.7	68.9
Postpartum period (days)				
1-7 days	11	14	24.4	31.1
8-14 days	14	10	31.1	22.2
15-21 days	19	4	42.2	8.9
22-28 days	1	8	2.2	17.8
29-35 days	0	5	0.0	11.1
36-42 days	0	4	0.0	8.9
Number of children				
1	24	15	53.3	33.3
2	17	22	37.8	48.9
3	1	6	2.2	13.3
4	2	2	6.7	4.4
5	0	0	0.0	0.0

Validity test

The physical activity ability instrument was developed with reference to the concept of Activities of Daily Living (ADL), which assesses an individual's independence in daily activities. This instrument covers the dimensions encompassing mobility, self-care, and daily functional activities relevant to the condition of postpartum mothers. The development of instrument items took into account the cultural context of the research area to ensure that they were appropriate

for the functional activities of postpartum mothers. Items were declared valid if the calculated r value was greater than the table r value.

Table 2. Validity test of research instruments

Instrument	Item Code	r Calculated	r Table	Description
Physical activity ability	P1	0.456	0.361	Valid
	P2	0.684	0.361	Valid
	P3	0.488	0.361	Valid
	P4	0.779	0.361	Valid
	P5	0.593	0.361	Valid
	P6	0.754	0.361	Valid
	P7	0.574	0.361	Valid
	P8	0.571	0.361	Valid
	P9	0.626	0.361	Valid
	P10	0.617	0.361	Valid
	P11	0.573	0.361	Valid
	P12	0.674	0.361	Valid
MPQOL-I	P13	0.657	0.361	Valid
	P14	0.652	0.361	Valid
	P15	0.721	0.361	Valid
	P16	0.684	0.361	Valid

Based on Table 2, the validity test results show that the physical activity ability variable, consisting of 12 indicators, involving 30 test respondents, had a calculated r value $>$ table r (0.361) at a significance level of $\alpha = 0.05$ ($df = 28$). Based on these results, all indicators in the physical activity ability variable were declared valid. The MPQOL-I instrument, adapted from Mokhtaryan-Gilani et al. (2022), consists of 16 indicators and has undergone translation and linguistic adaptation into Indonesian before undergoing validity testing. Validity testing was conducted on 30 postpartum mothers using Pearson Product-Moment correlation testing at a significance level of 5%. All items of the instrument showed a calculated r value $>$ table r (0.361) with $p < 0.05$, thus declaring it valid and reliable.

Reliability test

Based on Table 3, the reliability test results show that the physical activity ability instrument consisting of 12 items has a Cronbach's alpha value of 0.879, while the Maternal Postpartum Quality of Life Instrument (MPQOL-I) with 16 items shows a value of 0.961. Both instruments have Cronbach's alpha values $>$ 0.6, so they are considered reliable and suitable for measuring physical activity ability and the quality of life of postpartum mothers.

Table 3. Reliability Test

Instrument	Cronbach's Alpha value	N of Items	Requirements	Description
Physical Activity Ability	0.879	12	> 0.6	Reliable
Maternal Postpartum Quality of Life (MPQOL-I)	0.961	16	> 0.6	Reliable

Normality test

Normality testing was performed using the Shapiro-Wilk test because each study group consisted of fewer than 50 participants. All variables showed p -values greater than 0.05, indicating that the data were normally distributed. These results satisfied the assumption for subsequent

parametric comparisons of mean values between groups, whereas the association between physical activity capacity and quality of life was analyzed using the Chi-square test because both variables were categorized r.

Homogeneity test

Homogeneity of variance was assessed using Levene's test prior to the independent-samples t-test. The results indicated that the variances of physical activity capacity and quality of life were homogeneous ($p > 0.05$), indicating that the assumptions for the independent-samples t-test were satisfied. The homogeneity test results show significance values of 0.759 and 0.532 (> 0.05), indicating that the variance in physical activity ability and quality of life in both groups, namely in the Tlogowungu and Miri areas, is homogeneous.

Overview of physical activity

Table 4 shows the results of the physical activity ability test on 90 postpartum mothers, showing that the predominant number of participants were classified within the independent group, specifically 66 individuals (73.3%). In contrast, 24 respondents (26.7%) fell into the mildly dependent category, with no participants identified as moderately dependent, severely dependent, or totally dependent. The independent category indicates the ability of postpartum mothers to perform daily functional activities without the help of others. The distribution of physical activity ability was then analyzed in relation to the quality of life of postpartum mothers.

Table 4. Overview of physical activity

Physical Activity Ability Category	Frequency	Percentage
Independent	66	73.3
Mild dependence	24	26.7
Moderate dependence	0	0.0
Severe dependence	0	0.0
Total dependence	0	0.0
Total	90	100

Overview quality of life

Based on Table 5, the majority of postpartum mothers (86.7%) were classified as having a high quality of life, whereas only a small proportion were categorized as having moderate (4.4%) or low (8.9%) quality of life.

Table 5. Overview of quality of life

Quality of life category	Frequency	Percentage
Low	8	8.9
Medium	4	4.4
High	78	86.7
Total	90	100

The relationship between physical activity ability and quality of life

Table 6 shows the Chi-square test results reveal a significant correlation between postpartum women's physical activity capabilities and their quality of life in both the Tlogowungu group ($p = 0.006$) and the Miri group ($p = 0.001$). In both research areas, postpartum mothers with independent physical activity ability mostly had a high quality of life. In addition, the

independent t-test results indicate a difference in mean physical activity capacity ($p = 0.034$) and quality of life ($p = 0.034$) between the Tlogowungu and Miri health center groups. These findings indicate that physical activity ability has a significant relationship with the quality of life of postpartum mothers.

In addition, independent t-test analysis showed significant differences in the mean physical activity ability and quality of life scores between the Tlogowungu and Miri groups ($p = 0.034$ for both variables), indicating variation in functional capacity and perceived well-being between the two study areas.

Table 6. The relationship between physical activity ability and quality of life by study area

Study area	Physical activity ability	Low QoL		High QoL		Total		p-value	Description
		n	%	n	%	n	%		
Tlogowungu	Mild dependence	6	13.3	9	20.0	15	33.3	0.006	Significant
	Independent	2	4.4	28	62.2	30	66.7		
Miri	Mild dependence	5	11.1	4	8.9	9	20.0		
	Independent	3	6.7	33	73.3	36	80.0		

DISCUSSION

Respondent characteristics

The characteristics of the respondents in this study show diversity in demographic and obstetric aspects that have the potential to affect physical activity ability and quality of life in postpartum mothers. Most respondents were in the 26–30 age group, which in the literature is often associated with relatively more stable physical and psychological conditions in the postpartum period (Al Rehaili et al., 2023). This age range falls within the reproductive period, which generally supports the mother's adaptation process after giving birth. The rural community context may influence the relationship between physical activity capacity and quality of life through daily activity patterns, family support, and access to maternal health services (Yadeta et al., 2025). Likewise, educational attainment may act as a confounding factor because mothers with higher education generally have better health literacy, enabling them to understand postpartum self-care recommendations and engage more confidently in safe physical activities. Improved health literacy may subsequently contribute to better physical recovery and quality of life (Siswanti et al., 2024; Wulandari & Mufdlilah, 2020). Therefore, respondent characteristics should be considered when interpreting the association between physical activity capacity and postpartum quality of life.

The majority of respondents were housewives, which allowed them to engage in daily functional physical activities during the postpartum period. Functional physical activities, such as self-care and light household activities, are common activities performed by postpartum mothers. The distribution of postpartum mothers' weight in this study shows relatively varied conditions, which in the literature are related to physical activity and the postpartum recovery process (Bazzazian et al., 2023). The majority of respondents were multiparous mothers, who were considered more experienced in adapting activities and roles in the postpartum period. Several studies show that multiparous mothers have better postpartum adaptation experiences than primiparous mothers (Siswanti et al., 2024). The mode of delivery may influence the degree of autonomy in physical activities and the overall well-being of mothers during the postpartum

period, especially in the physical domain. Similarly, parity and mode of delivery may confound the relationship between physical activity capacity and quality of life. Multiparous mothers often have greater experience in postpartum self-management, allowing them to resume functional activities more confidently than first-time mothers. In contrast, mothers who undergo cesarean delivery frequently experience postoperative pain and delayed mobility, which may reduce physical activity capacity during the early postpartum period and subsequently affect their perceived quality of life. Therefore, these maternal characteristics should be considered as potential confounding factors when interpreting the association identified in this study.

Most respondents were in the early postpartum period up to the third week postpartum, which is a critical period in the process of physical recovery and psychological adaptation for mothers. The number of children among respondents was mostly low to moderate parity, which in several studies did not show a direct association with the quality of life experienced by mothers in the postpartum phase. The literature shows that physical activity, family support, and maternal characteristics are significant factors related to quality of life in the postpartum period. Functional physical activity serves a pivotal function in supporting the physical and psychological health of postpartum mothers and improving their quality of life. The results of this study reinforce the importance of integrating physical activity education into postpartum nursing services at the primary health care level. However, the constraints of this research stem from its cross-sectional methodology, which precludes the establishment of causal relationships, alongside the absence of adjustments for confounding variables via multivariate techniques. Consequently, the demographic attributes of the participants must be regarded as a vital framework for interpreting the physical activity levels and life quality among postpartum mothers.

Physical activity of overview

The findings of this research demonstrate that the majority of postpartum mothers are classified as independent in terms of physical activity ability. These findings indicate that, in general, respondents have sufficient capacity to perform daily functional activities independently without requiring assistance. Regular physical activity during the postpartum period is known to provide benefits for the physical and psychological health of mothers, including weight control (Akbari-Nassaji et al., 2023). This result aligns with the results of a study by Baattaiah et al. (2022), which states that mothers with more optimal levels of physical recovery and energy tend to have higher levels of physical activity independence during the postpartum phase. The capacity for physical activity indicates the mother's recuperation and adjustment to her new responsibilities following delivery. The substantial percentage of mothers exhibiting elevated levels of independence in physical activities within this research serves as a crucial foundation for assessing the well-being of postpartum women, with subsequent statistical evaluation of its significance.

Quality of life overview

The results of this study reveal that most postpartum mothers fall into the high quality of life category. The high proportion of quality of life reflects the relatively good welfare of postpartum mothers in both study areas. Our findings align with the research by Siswanti et al. (2024), which indicated that a substantial proportion of postpartum women exhibit a favorable quality of life within primary healthcare contexts. From a theoretical standpoint, postpartum quality of life is determined by the equilibrium between demands and available resources physical health, psychological adaptation, and the social role of mothers. The quality of life of postpartum mothers in this study may be influenced by family support and a social environment that supports

the postpartum adaptation process. Several studies show that light to moderate physical activity in the postpartum period is associated with improved physical and psychological well-being in mothers (Bulguroglu et al., 2023). In addition, various studies show that physical activity and quality of life are lower in postpartum mothers who undergo C-section compared to vaginal delivery (Damtie et al., 2025). This description of quality of life then becomes the basis for analyzing the interplay between physical activity capacity and the overall well-being of women in the postpartum period.

The relationship between physical activity and quality of life

The results of this statistical analysis reveal a significant relationship between physical activity ability and quality of life in postpartum mothers. Mothers who achieve a level of independence in physical activity tend to show better quality of life compared to mothers with mild dependence, and these findings are consistent in both research areas. These findings align with previous research by Bulguroglu et al. (2023), which reported that postpartum physical activity is associated with improved physical and psychological well-being in mothers. Theoretically, these findings support the postpartum adaptation theory, which emphasizes that mothers' functional abilities play an important role in supporting postpartum quality of life. Nonetheless, a key constraint of this research is its cross-sectional methodology, which precludes drawing causal inferences.

These findings have important implications for postpartum care in primary health care settings. Routine assessment of postpartum mothers' physical activity capacity should be incorporated into postnatal care visits to identify women who require additional support. Health professionals, particularly midwives and nurses, should provide structured education on safe functional physical activities, including activities of daily living, early mobilization, and pelvic floor exercises, according to the mother's postpartum condition. Mothers who undergo cesarean delivery or demonstrate limited physical activity capacity may benefit from individualized counseling and home-based follow-up to facilitate gradual recovery. Furthermore, regular monitoring of maternal quality of life during postpartum visits is recommended to enable early identification of mothers experiencing physical or psychosocial difficulties and to provide timely interventions aimed at improving postpartum well-being.

Unlike previous Indonesian studies that mainly evaluated structured postpartum exercise or specific clinical outcomes, the present study demonstrates that functional physical activity capacity in daily living is significantly associated with postpartum quality of life in community health center settings. This finding extends current evidence by highlighting the importance of routine daily physical activities as an integral component of postpartum recovery.

Several limitations should be considered when interpreting the findings of this study. First, physical activity capacity and quality of life were assessed using self-reported questionnaires, which may have introduced recall and social desirability bias, as participants could have overestimated their functional abilities or perceived well-being. Second, the categorization of physical activity capacity and quality-of-life scores into discrete groups may have reduced data variability and limited the ability to detect more subtle differences between participants. Finally, the cross-sectional design precludes causal inference regarding the relationship between physical activity capacity and quality of life. Future studies employing longitudinal designs and multivariable analyses are recommended to better account for potential confounding factors and to clarify the temporal relationship between these variables.

CONCLUSION

This study found a significant association between physical activity capacity and quality of life among postpartum mothers in the working areas of the Tlogowungu and Miri Community Health Centers. Mothers with greater independence in performing physical activities tended to report better quality of life, although differences in the mean levels of physical activity capacity and quality of life were observed between the two study areas. These findings highlight the importance of routinely assessing physical activity capacity and promoting safe functional physical activities as part of postpartum care in primary health care settings to support maternal well-being and quality of life.

AUTHOR'S DECLARATION

Authors' contributions and responsibilities

QF: Research conceptualization, data collection (data acquisition), formal analysis, original draft writing, research result visualization; **FBR:** Supervision of primary research, data validation, review & editing of drafts, conceptual thinking, methodological guidance.

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Availability of data and materials

All data generated and analyzed in this study can be obtained from the corresponding author upon reasonable request.

Competing interests

The authors affirm that no conflicts of interest are present in this study.

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