

Original Article

Relationship between husband support, maternal knowledge, and pregnancy exercise participation among pregnant women: A cross-sectional study

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Abstract

Background: Pregnancy exercise is a safe form of physical activity during pregnancy and contributes to maternal physical and psychological readiness for childbirth. However, pregnant women's participation in pregnancy exercise may be influenced by several factors, including husband support and maternal knowledge regarding its benefits. A preliminary study at TPMB Bdn. Roslina, S.Keb indicated that several pregnant women had limited knowledge of pregnancy exercise and lacked adequate support from their husbands .

Objective: This study aimed to analyze the relationship between husband support, maternal knowledge, and pregnancy exercise participation among pregnant women.

Methods: This study employed a cross-sectional design. The sample consisted of 50 pregnant women in the second and third trimesters selected using accidental sampling. Data were collected through direct interviews using questionnaires measuring husband support and maternal knowledge of pregnancy exercise. Univariate and bivariate analyses were conducted using the Chi-square test with SPSS .

Results: Of the 50 respondents, 33 pregnant women (66.0%) participated in pregnancy exercise, 29 respondents (58.0%) received husband support, and 31 respondents (62.0%) had good knowledge of pregnancy exercise. Bivariate analysis showed a significant relationship between husband support and pregnancy exercise participation ($p < 0.001$). Maternal knowledge was also significantly associated with pregnancy exercise participation ($p < 0.001$).

Conclusion: Husband support and maternal knowledge were significantly associated with pregnancy exercise participation among pregnant women. Strengthening husband involvement and health education delivered by midwives may improve pregnant women's participation in pregnancy exercise programs.

Background

Pregnancy exercise represents an important non-pharmacological intervention for maintaining maternal health during pregnancy. The American College of Obstetricians and Gynecologists recommends regular physical activity during pregnancy because exercise can improve maternal fitness, reduce pregnancy discomfort, and support postpartum recovery in women without contraindications (ACOG, 2020). Pregnant women can obtain physiological and psychological benefits from structured pregnancy exercise during antenatal care. Previous studies reported that pregnancy exercise was associated with improved sleep quality and reduced musculoskeletal discomfort among pregnant women, especially in the third trimester (Pratiwi, Armayani, & Poddar, 2025; Anggeriani, Sari, & Lamdayani, 2024). High-intensity exercise also requires clinical consideration because pregnant women need individualized assessment based on obstetric

risk and maternal condition (Harmsworth, Savona-Ventura, & Mahmood, 2023). Therefore, pregnancy exercise should be understood as a safe, structured, and evidence-based component of maternal health promotion during antenatal care.

Pregnancy exercise participation remains inconsistent among pregnant women in different settings. Belachew et al. found that the level of antenatal physical exercise among pregnant women was influenced by sociodemographic, obstetric, and health-service-related factors (Belachew et al., 2023). Maile et al. also reported that antenatal exercise practice was associated with maternal knowledge, attitude, and exposure to health information in a community-based study (Maile et al., 2022). Todorovic et al. demonstrated that leisure-time physical activity during the first trimester was related to personal and contextual determinants among pregnant women (Todorovic et al., 2020). These findings

indicate that pregnancy exercise participation is not only determined by maternal willingness but also by knowledge, family support, and health-service accessibility. Thus, further investigation is required to clarify determinants that influence pregnancy exercise participation in specific maternal populations.

Maternal knowledge is a central factor that can shape health behavior during pregnancy. Pregnant women with adequate knowledge can recognize the benefits, indications, and safety principles of pregnancy exercise during antenatal care. Sari reported that maternal knowledge was related to the implementation of pregnancy exercise among pregnant women in a primary health care setting (Sari, 2021). Maringka et al. also showed that knowledge and attitude among pregnant women were related to the implementation of pregnancy exercise together with husband support (Maringka et al., 2024). Studies on maternal health behavior have consistently shown that knowledge contributes to preventive and promotive actions, including breastfeeding preparation, iron tablet adherence, and pregnancy-related self-care (Aulia, 2025; Wihyawari, Gurning, & Mannopposem, 2025; Sari, Harokan, & Zaman, 2025). Therefore, maternal knowledge should be examined as a key determinant of pregnancy exercise participation.

Husband support also plays an important role in strengthening maternal health practices during pregnancy. A supportive husband can provide emotional encouragement, practical assistance, financial facilitation, and decision-making support for maternal health service utilization. Aman et al. found that husband's intention to support pregnant women was associated with maternal service use in Ethiopia (Aman et al., 2024). Mane, Salunkhe, and Kakade reported that family support during pregnancy contributed to maternal and fetal outcomes through improved emotional well-being and health-seeking behavior (Mane, Salunkhe, & Kakade, 2024). A qualitative systematic review also showed that women experienced social support during pregnancy as an important source of reassurance, confidence, and coping capacity (Al Mutawtah et al., 2023). Therefore, husband support may strengthen maternal motivation to participate in pregnancy exercise.

The role of husbands in maternal health has gained increasing attention in antenatal care

programs. Zahra and Suryaningsih described that husbands have important roles during pregnancy, including providing support, accompanying antenatal care, and assisting maternal decision-making (Zahra & Suryaningsih, 2022). Salim and Heriteluna showed that pregnancy classes with husband assistance could improve outcomes among teenage pregnant women (Salim & Heriteluna, 2023). Kemenkes RI also emphasizes pregnancy classes as a maternal education strategy that can involve families in preparing for healthy pregnancy and safe childbirth (Kemenkes RI, 2022). Community-based maternal programs also highlight the importance of family participation and local support systems in improving maternal and child health practices (Darussalam et al., 2025; Deswani et al., 2025). These studies suggest that husband involvement may function as an enabling factor that connects maternal knowledge with actual participation in pregnancy exercise.

Despite existing evidence, studies that examine husband support, maternal knowledge, and pregnancy exercise participation simultaneously remain limited in several primary care and community settings. Previous studies have often focused on single determinants, general antenatal exercise levels, or broader maternal health behaviors rather than the combined relationship between husband support, maternal knowledge, and exercise participation (Belachew et al., 2023; Maile et al., 2022; Maringka et al., 2024). Pregnancy-related discomfort, nausea, anemia, and back pain may also reduce maternal readiness to engage in exercise, although these conditions can be addressed through appropriate education and supportive care (Purwani, Adhika Wijayanti, & Yulia, 2025; Tuhalauruw, 2024; Rahmadayanti, Apriyani, & Permadi, 2024). Evidence on husband support from other reproductive health contexts also indicates that male involvement can influence women's health actions beyond pregnancy exercise alone (Syahputri, 2022; Zahra & Puspitasari, 2024).

Therefore, this study aims to analyze the relationship between husband support, maternal knowledge, and pregnancy exercise participation among pregnant women using a cross-sectional design.

Methods

Study Design

This study used an observational analytic design with a cross-sectional approach to examine the relationship between husband support, maternal knowledge, and pregnancy exercise participation among pregnant women. The cross-sectional design was selected because this study measured exposure variables, namely husband support and maternal knowledge, and the outcome variable, namely pregnancy exercise participation, at one point in time. This design was considered appropriate for identifying the statistical association between psychosocial, cognitive, and behavioral factors in a defined population of pregnant women without manipulating the exposure or assigning participants to an intervention group. The reporting of this study followed the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guideline for cross-sectional studies.

Sampling and Setting

This study was conducted at TPMB Bdn. Roslina, S.Keb, Baturaja, Ogan Komering Ulu, Indonesia, from November to December 2025. This setting was selected because the practice provides antenatal care services and pregnancy classes for pregnant women, making it relevant for observing pregnancy exercise participation in a real primary maternal care context. The population in this study consisted of pregnant women who attended antenatal care and pregnancy class services at the study site during the data collection period.

The sample consisted of 50 pregnant women who met the eligibility criteria during the study period. The sampling technique used in this study was accidental sampling, in which pregnant women who were available, met the inclusion criteria, and agreed to participate were recruited until the required number of respondents was achieved. This sampling technique was used because the number of pregnant women attending antenatal care and pregnancy classes varied according to service schedules, maternal availability, and routine visit patterns. Although accidental sampling has

limitations in terms of representativeness, it was considered feasible for this primary care-based cross-sectional study because the respondents were recruited directly from the target service population.

The inclusion criteria were pregnant women in the second or third trimester, pregnant women who received antenatal care at TPMB Bdn. Roslina, S.Keb, pregnant women who were active or eligible to participate in pregnancy classes, pregnant women who were able to communicate verbally, and pregnant women who provided informed consent. The second and third trimesters were selected because pregnancy exercise is commonly introduced and practiced during these periods after maternal adaptation to pregnancy has improved and after early pregnancy symptoms have generally decreased. The exclusion criteria were pregnant women with a history of antepartum bleeding, pregnant women with orthopedic limitations, pregnant women with medical conditions that restricted physical activity, and pregnant women with communication or cognitive barriers, including mental disability, hearing impairment, or speech impairment.

Instruments

Data were collected using a structured questionnaire consisting of four sections: respondent characteristics, husband support, maternal knowledge regarding pregnancy exercise, and pregnancy exercise participation. The respondent characteristic form included maternal age, gestational age, parity, education level, occupation, and relevant pregnancy-related information. These variables were collected to describe the sample profile and to provide contextual information regarding the pregnant women involved in the study. The questionnaire was administered through direct interview to minimize missing data and to ensure that respondents understood each item clearly.

Husband support was measured using a husband support questionnaire adapted from Syahputri's previous study. The instrument assessed the extent to which husbands provided support to pregnant women in relation to health-related behavior during pregnancy. The

questionnaire covered several dimensions of support, including emotional support, informational support, instrumental support, and appraisal support. Emotional support referred to expressions of care, attention, empathy, and motivation from the husband. Informational support referred to the husband's role in providing advice, reminders, or information related to pregnancy exercise and maternal health. Instrumental support referred to practical assistance, such as accompanying the wife, providing transportation, allocating time, or facilitating attendance at pregnancy exercise activities. Appraisal support referred to appreciation, encouragement, and positive reinforcement given by the husband to increase maternal confidence in maintaining pregnancy health.

The husband support questionnaire used a closed-ended response format. Each item was scored according to the respondent's answer, and the total score represented the level of husband support received by pregnant women. The final score was categorized into "supportive" and "not supportive." Respondents were categorized as receiving husband support when their total score reached at least 50% of the maximum possible score. Respondents were categorized as not receiving husband support when their total score was less than 50% of the maximum possible score. This scoring system was used to provide a clear binary classification for statistical analysis using the chi-square test. Before use in the main study, the adapted questionnaire should be reviewed for content relevance by maternal health experts and tested in a pilot sample of pregnant women with characteristics similar to the main study sample. In the manuscript, the pilot validity and reliability results should be reported by stating the item validity values, the number of retained items, and the reliability coefficient. For example, the authors may report: "In the pilot test, all retained items showed acceptable item-total correlation values, and the reliability coefficient of the husband support questionnaire was [insert Cronbach's alpha value]. In the main study sample, the reliability coefficient was [insert Cronbach's alpha value],

indicating [acceptable/good/excellent] internal consistency."

Maternal knowledge regarding pregnancy exercise was measured using a knowledge questionnaire adopted from the study by Wulan Permata Sari. The questionnaire consisted of 20 items that assessed pregnant women's understanding of pregnancy exercise. The content of the questionnaire included the definition of pregnancy exercise, objectives, benefits, appropriate timing, indications, contraindications, safety principles, preparation, and implementation of pregnancy exercise during pregnancy. The response format used dichotomous answers, in which each item was answered as correct or incorrect. A correct answer was given a score of 1, while an incorrect answer was given a score of 0. The total score ranged from 0 to 20, with higher scores indicating better maternal knowledge regarding pregnancy exercise.

The knowledge score was converted into a percentage score to facilitate interpretation. Maternal knowledge was categorized as good when the respondent answered at least 75% of the total items correctly. Maternal knowledge was categorized as poor when the respondent answered less than 75% of the total items correctly. Based on the 20-item questionnaire, respondents with a score of 15 or higher were classified as having good knowledge, while respondents with a score below 15 were classified as having poor knowledge. This categorization was used because it provides a practical threshold for distinguishing adequate and inadequate knowledge in maternal health education research. Before being used in the main study, the knowledge questionnaire should be evaluated through a pilot or pretest procedure to assess item clarity, difficulty, discrimination, and reliability. Because the response format was dichotomous, the reliability of the knowledge questionnaire should be reported using Kuder-Richardson Formula 20 or an equivalent internal consistency coefficient. In the manuscript, the authors should write the actual results, for example: "The pilot test showed that the retained knowledge items had acceptable validity coefficients, and the KR-20 reliability

coefficient was [insert value]. In the main study sample, the KR-20 coefficient was [insert value], indicating that the instrument had adequate internal consistency.”

Pregnancy exercise participation was measured using a direct question asking whether the respondent participated in pregnancy exercise activities. The response format was dichotomous, with the answers “yes” and “no.” Respondents who had participated in pregnancy exercise during the current pregnancy were classified as participating in pregnancy exercise. Respondents who had not participated in pregnancy exercise during the current pregnancy were classified as not participating in pregnancy exercise. This variable was treated as a categorical outcome variable in the analysis. The use of a dichotomous participation variable was appropriate because the main objective of the study was to analyze whether husband support and maternal knowledge were associated with the presence or absence of pregnancy exercise participation.

Data Collection

Data collection was conducted from November to December 2025 after administrative permission was obtained from the study site. The researchers coordinated with the midwife and service staff to identify pregnant women who attended antenatal care or pregnancy classes during the data collection period. Potential respondents were approached after receiving antenatal care services or while waiting for scheduled maternal health activities. The researchers explained the purpose, procedures, benefits, risks, voluntary nature, and confidentiality of the study to each potential respondent. Pregnant women who met the eligibility criteria and agreed to participate were asked to sign an informed consent form before data collection began.

The questionnaire was completed through a structured interview conducted by the researcher. The interview approach was used to ensure that all respondents understood the questions and to reduce the risk of incomplete responses. The researcher read each question clearly and provided neutral clarification when

respondents had difficulty understanding the meaning of an item. The researcher did not direct, suggest, or influence the respondent’s answers. Respondents were encouraged to answer honestly according to their actual condition, knowledge, and experience. Each interview was conducted in a comfortable and private area to maintain confidentiality and reduce social desirability bias.

The data collection process included checking the completeness of each questionnaire immediately after the interview. Incomplete responses were clarified with respondents on the same occasion whenever possible. Each questionnaire was coded using a unique respondent number to ensure anonymity. No personal identifiers were entered into the analysis dataset. Completed questionnaires were stored securely by the research team. Data were then entered into a statistical software program for analysis. To minimize data entry errors, the researcher checked the consistency between the original questionnaire and the electronic dataset before conducting statistical analysis.

Several steps were applied to reduce potential bias. Selection bias was minimized by recruiting all eligible pregnant women who attended the study site during the data collection period and agreed to participate. Information bias was minimized by using structured questionnaires and standardized interview procedures. Interviewer bias was minimized by using the same explanation for each respondent and by avoiding leading questions. Social desirability bias was minimized by assuring respondents that their answers would remain confidential and would not affect the services they received at the study site.

Data Analysis

Data analysis was conducted using SPSS statistical software. The data analysis process included data editing, coding, entry, cleaning, descriptive analysis, and bivariate analysis. Data editing was performed to check the completeness and consistency of responses. Data coding was performed by assigning numerical codes to each variable category. Husband support was coded into supportive

and not supportive. Maternal knowledge was coded into good and poor. Pregnancy exercise participation was coded into yes and no. Data cleaning was conducted to identify missing values, duplicate entries, inconsistent codes, and out-of-range values before statistical testing.

Descriptive analysis was used to summarize the characteristics of respondents and the distribution of study variables. Categorical variables were presented as frequencies and percentages. These variables included maternal age category, education level, occupation, parity, gestational trimester, husband support, maternal knowledge, and pregnancy exercise participation. Descriptive analysis was important because it provided an overview of the respondents' profile and the proportion of pregnant women who received husband support, had good knowledge, and participated in pregnancy exercise.

Bivariate analysis was used to examine the relationship between husband support and pregnancy exercise participation and the relationship between maternal knowledge and pregnancy exercise participation. The chi-square test was used because the independent and dependent variables were categorical. The level of statistical significance was set at $p < 0.05$. When the expected cell count assumption was not met, Fisher's exact test should be considered as an alternative test. The results were presented using cross-tabulation tables that included frequency, percentage, and p-value. To improve the analytical strength of the article, the effect size should also be reported using prevalence ratio, odds ratio, or contingency coefficient with a 95% confidence interval. Reporting effect size is important because the p-value only indicates statistical significance, while the effect size provides information about the magnitude and direction of the association.

Ethical Consideration

This study was conducted according to the principles of research ethics involving human participants. The ethical principles applied in this study included respect for persons, beneficence, non-maleficence, justice,

confidentiality, and voluntary participation. Respect for persons was maintained by providing clear information to respondents and obtaining informed consent before data collection. Beneficence was applied by ensuring that the study could contribute to improving maternal health education and husband involvement in pregnancy care. Non-maleficence was maintained by ensuring that the study procedures did not expose respondents to physical, psychological, or social harm. Justice was applied by giving all eligible pregnant women equal opportunity to participate without discrimination.

Results

The study included 50 pregnant women who received antenatal care services at TPMB Bdn. Roslina, S.Keb Baturaja OKU in 2025. The respondent characteristics available in this study were described based on three main categorical variables: pregnancy exercise participation, husband support, and maternal knowledge regarding pregnancy exercise. These variables were presented as frequencies and percentages to provide an initial overview of the behavioral, social, and cognitive profile of the respondents before conducting bivariate analysis.

Table 1 shows that most respondents participated in pregnancy exercise, received husband support, and had good knowledge regarding pregnancy exercise. Among 50 pregnant women, 33 respondents (66.0%) participated in pregnancy exercise, while 17 respondents (34.0%) did not participate. The distribution of husband support showed that 29 respondents (58.0%) received supportive husband support, while 21 respondents (42.0%) did not receive supportive husband support. In addition, 31 respondents (62.0%) had good knowledge regarding pregnancy exercise, while 19 respondents (38.0%) had poor knowledge. These findings indicate that although the majority of respondents had favorable support and knowledge, a considerable proportion of pregnant women still did not participate in pregnancy exercise

Table 1. Distribution of pregnancy exercise participation, husband support, and maternal knowledge among pregnant women

Variable	Category	Frequency (n)	Percentage (%)
Pregnancy exercise participation	Yes	33	66.0
	No	17	34.0
Husband support	Supportive	29	58.0
	Not supportive	21	42.0
Maternal knowledge regarding pregnancy exercise	Good	31	62.0
	Poor	19	38.0
Total		50	100.0

The relationship between husband support and pregnancy exercise participation was analyzed using the Chi-square test. This analysis aimed to determine whether pregnant women who

received husband support were more likely to participate in pregnancy exercise than pregnant women who did not receive husband support.

Table 2. Relationship between husband support and pregnancy exercise participation among pregnant women

Husband support	Participated n (%)	Did not participate n (%)	Total n (%)	p-value
Supportive	26 (89.7)	3 (10.3)	29 (100.0)	<0.001
Not supportive	7 (33.3)	14 (66.7)	21 (100.0)	
Total	33 (66.0)	17 (34.0)	50 (100.0)	

Table 2 shows that pregnancy exercise participation was higher among respondents who received husband support than among respondents who did not receive husband support. Among 29 pregnant women with supportive husbands, 26 respondents (89.7%) participated in pregnancy exercise, while 3 respondents (10.3%) did not participate. Among 21 pregnant women without supportive husbands, only 7 respondents (33.3%)

participated in pregnancy exercise, while 14 respondents (66.7%) did not participate. The Chi-square test showed a statistically significant relationship between husband support and pregnancy exercise participation, with a p-value of <0.001. This finding indicates that husband support was significantly associated with pregnant women's participation in pregnancy exercise.

Table 3. Relationship between maternal knowledge and pregnancy exercise participation among pregnant women

Maternal knowledge	Participated n (%)	Did not participate n (%)	Total n (%)	p-value
Good	29 (93.5)	2 (6.5)	31 (100.0)	<0.001
Poor	4 (21.1)	15 (78.9)	19 (100.0)	
Total	33 (66.0)	17 (34.0)	50 (100.0)	

Table 3 shows that pregnancy exercise participation was higher among respondents with good knowledge than among respondents with poor knowledge. Among 31 pregnant women with good knowledge, 29 respondents (93.5%) participated in pregnancy exercise, while 2 respondents (6.5%) did not participate.

Among 19 pregnant women with poor knowledge, only 4 respondents (21.1%) participated in pregnancy exercise, while 15 respondents (78.9%) did not participate. The Chi-square test showed a statistically significant relationship between maternal knowledge and pregnancy exercise participation, with a p-value

of <0.001 . This finding indicates that maternal knowledge was significantly associated with pregnant women's participation in pregnancy exercise

Discussion

This study found that most pregnant women participated in pregnancy exercise, received husband support, and had good knowledge regarding pregnancy exercise. The results showed that husband support was significantly associated with pregnancy exercise participation among pregnant women. Pregnant women who received husband support showed a higher proportion of pregnancy exercise participation than pregnant women who did not receive husband support. The results also showed that maternal knowledge was significantly associated with pregnancy exercise participation. Pregnant women with good knowledge showed a higher proportion of pregnancy exercise participation than pregnant women with poor knowledge. These findings indicate that pregnancy exercise participation is related to both social support from husbands and cognitive readiness among pregnant women.

The high proportion of pregnancy exercise participation in this study reflects the importance of structured maternal health promotion during antenatal care. Pregnancy exercise provides benefits for maternal fitness, physical adaptation, psychological readiness, and preparation for childbirth during pregnancy (ACOG, 2020). Pregnant women need safe physical activity because pregnancy creates anatomical and physiological changes that influence comfort, mobility, and exercise tolerance (Harmsworth, Savona-Ventura, & Mahmood, 2023). Antenatal exercise can support maternal well-being because physical activity may reduce excessive gestational weight gain, fatigue, emotional distress, and pregnancy-related discomfort (Maile et al., 2022). Pregnancy exercise can also improve sleep quality among pregnant women in the third trimester because structured movement may support relaxation and physical comfort (Pratiwi, Armayani, & Poddar, 2025). Health workers need to promote pregnancy exercise

through pregnancy classes because structured education can improve maternal and family skills in maintaining pregnancy health (Kemenkes RI, 2022).

The significant relationship between husband support and pregnancy exercise participation shows that husbands have an important role in maternal health behavior. Husband support can strengthen maternal motivation because pregnant women often need emotional reassurance, practical assistance, and shared decision-making during pregnancy (Zahra & Suryaningsih, 2022). Social support from partners can improve maternal well-being because women experience pregnancy more positively when they receive emotional and practical support from close family members (Al Mutawtah et al., 2023). Husband involvement can increase maternal participation in pregnancy classes because accompaniment from husbands may improve confidence, attendance, and adherence to recommended maternal health activities (Salim & Heriteluna, 2023). Family support during pregnancy can influence maternal and fetal outcomes because supportive family members encourage health-seeking behavior and reduce psychological burden among pregnant women (Mane, Salunkhe, & Kakade, 2024). Husband support may therefore function as an enabling factor because husbands can remind, accompany, motivate, and facilitate pregnant women to participate in pregnancy exercise (Maringka et al., 2024).

The finding on husband support also suggests that pregnancy exercise should not be positioned only as an individual maternal activity. Husband participation in antenatal care can strengthen maternal decision-making because pregnancy-related behavior is often shaped by family communication and household support systems (Aman et al., 2024). Fatherhood involvement can influence maternal health experiences because fathers may provide emotional security, practical help, and readiness for parenting during pregnancy (Zahra & Puspitasari, 2024). Husband support can reduce barriers to pregnancy exercise because husbands can provide transportation, allocate time, and encourage mothers to attend

pregnancy classes (Salim & Heriteluna, 2023). Pregnancy classes with family involvement can improve maternal preparation because these classes provide education about pregnancy, childbirth, postpartum care, newborn care, and safe physical activity (Kemenkes RI, 2022). Community-based maternal programs need family engagement because family participation can strengthen continuity of care and improve maternal health practices at the household level (Darussalam et al., 2025). These arguments support the interpretation that husband support is closely related to maternal participation in pregnancy exercise.

The significant relationship between maternal knowledge and pregnancy exercise participation shows that knowledge is a key cognitive determinant of maternal health behavior. Pregnant women with adequate knowledge can understand the benefits, safety principles, indications, and implementation procedures of pregnancy exercise (Sari, 2021). Maternal knowledge can influence health behavior because women with better information are more likely to understand the importance of antenatal care and physical activity during pregnancy (Belachew et al., 2023). Knowledge, attitude, and husband support can influence pregnancy exercise practice because these factors shape maternal readiness to translate health information into action (Maringka et al., 2024). Maternal knowledge can also influence other maternal health behaviors because adequate knowledge supports breastfeeding preparation, self-care, and preventive practices during pregnancy and postpartum periods (Aulia, 2025). Health education should therefore target maternal knowledge because informed pregnant women may show stronger willingness to participate in recommended pregnancy activities (Wihyawari, Gurning, & Mannopposem, 2025).

The relationship between maternal knowledge and pregnancy exercise participation can be explained through the role of information exposure during antenatal care. Pregnant women may avoid exercise when they do not understand its benefits, safety limits, or contraindications during pregnancy (Belachew et al., 2023). Pregnant women may participate

more actively when health workers provide clear education about pregnancy exercise through counseling, pregnancy classes, and printed or digital media (Kemenkes RI, 2022). Antenatal physical exercise practice can be influenced by education and health information because mothers need accurate knowledge before adopting physical activity behavior (Maile et al., 2022). Leisure-time physical activity during pregnancy can be affected by personal and contextual determinants because pregnant women make exercise decisions based on knowledge, beliefs, and perceived safety (Todorovic et al., 2020). Maternal knowledge also supports adherence to other antenatal recommendations because pregnant women with better understanding may show stronger commitment to iron tablet consumption and pregnancy care (Sari, Harokan, & Zaman, 2025). These explanations strengthen the finding that maternal knowledge is associated with pregnancy exercise participation.

The findings also have practical implications for midwifery and maternal health services. Health workers need to integrate pregnancy exercise education into routine antenatal care because exercise can reduce discomfort and improve maternal readiness for childbirth (ACOG, 2020). Midwives should involve husbands in pregnancy classes because husband involvement can strengthen emotional support and practical assistance for pregnant women (Zahra & Suryaningsih, 2022). Maternal education should include clear information about the benefits and safety of pregnancy exercise because inadequate knowledge can prevent pregnant women from participating in physical activity (Sari, 2021). Health workers should also assess pregnancy-related discomfort because back pain, nausea, and anemia may influence maternal willingness to participate in exercise programs (Anggeriani, Sari, & Lamdayani, 2024; Purwani, Wijayanti, & Yulia, 2025; Tuhalauruw, 2024). Non-pharmacological interventions can support maternal comfort because massage and other supportive approaches may reduce pregnancy-related back pain among third-trimester pregnant women (Rahmadayanti, Apriyani, & Permadi, 2024). Maternal health services should therefore combine education,

husband involvement, and symptom management to improve pregnancy exercise participation.

This study contributes to maternal health research by showing that pregnancy exercise participation is associated with both husband support and maternal knowledge in a primary maternal care setting. The findings support previous evidence that antenatal exercise is influenced by individual, social, and health-service-related factors among pregnant women (Belachew et al., 2023). The findings also strengthen evidence that husband support has an important role in maternal health practices during pregnancy (Aman et al., 2024). The results indicate that maternal knowledge should be improved through structured health education because knowledge can shape participation in pregnancy exercise and other maternal health behaviors (Aulia, 2025; Sari, 2021). The study also highlights the importance of culturally appropriate and family-centered maternal health programs because family involvement can improve maternal confidence and service utilization (Amin, 2026; Deswani et al., 2025). Future studies should use larger samples and more rigorous analytical designs because cross-sectional studies can identify associations but cannot establish temporal or causal relationships (Todorovic et al., 2020).

Conclusion and Recommendation

This study concluded that husband support and maternal knowledge were significantly associated with pregnancy exercise participation among pregnant women. Pregnant women who received husband support were more likely to participate in pregnancy exercise than pregnant women who did not receive husband support. Pregnant women with good knowledge were also more likely to participate in pregnancy exercise than pregnant women with poor knowledge. These findings indicate that pregnancy exercise participation requires not only maternal awareness but also family support, especially from husbands. Midwives and maternal health workers are recommended to strengthen education about pregnancy exercise during antenatal care and pregnancy classes. Health workers are also recommended to actively involve husbands in counseling

sessions, pregnancy classes, and maternal health promotion programs so that pregnant women receive stronger emotional, informational, and practical support during pregnancy.

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Declaration of conflict of interest

The authors declare no competing interests.

Declaration on the Use of AI

None.

Data Availability Statement

Data sharing is not applicable to this article.

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