

ORIGINAL RESEARCH ARTICLE

Effectiveness of a comprehensive model in changing the caring attitudes of husbands of pregnant women: A quasi-experimental study

DOI: 10.29063/ajrh2026/v30i6.7

Yesi Maifita^{1,2*}, Tukimin bin Sansuwito¹ and Santhana L. Panduragan¹

Faculty of Nursing, Lincoln University College, Selangor, Malaysia¹; STIKes Pitala Sakti Pariaman, Indonesia²

*For Correspondence: Email: maifitay@gmail.com

Abstract

The increasing noncompliance of pregnant women with antenatal care (ANC) is often associated with a lack of emotional and practical support from their husbands. Strengthening the caring attitudes of husbands through structured education is considered a potential approach to improving maternal health behaviors. This study aimed to analyze the effect of a comprehensive caring model on changes in the caring attitudes of husbands toward their pregnant wives in Padang Pariaman Regency, Indonesia. A quasi-experimental study with two group pretest–posttest design was conducted among 92 men per group (intervention and control) selected by cluster sampling from November to December 2024. A closed-ended questionnaire was used to assess caring attitudes before and after the intervention, and data were analyzed using paired t-tests at a 5% significance level ($\alpha = 0.05$). The results showed that most respondents were aged 20–30 years, had high school education, and worked as casual laborers. The mean caring attitude score increased from 44.52 before the intervention to 63.22 after, with a statistically significant improvement ($p = 0.000 < 0.05$). These findings indicate that the comprehensive caring model effectively enhances husbands' caring attitudes toward their pregnant wives. Strengthening husbands' support through targeted education may improve antenatal compliance and maternal health outcomes (*Afr J Reprod Health 2026; 30 [6]: 66-77*).

Keywords: Attitude, Primary Health Care, Pregnant women

Résumé

La non-observance croissante des soins prénatals (antenatal care, ANC) chez les femmes enceintes est souvent associée à un manque de soutien émotionnel et pratique de la part de leurs maris. Le renforcement des attitudes de bienveillance des maris par une éducation structurée est considéré comme une approche potentielle pour améliorer les comportements de santé maternelle. Cette étude visait à analyser l'effet d'un modèle global de bienveillance sur les changements des attitudes de bienveillance des maris envers leurs épouses enceintes dans le district de Padang Pariaman, en Indonésie. Une étude quasi-expérimentale avec un devis prétest–posttest à deux groupes a été menée auprès de 92 hommes par groupe (intervention et contrôle), sélectionnés par échantillonnage en grappes, de novembre à décembre 2024. Un questionnaire à questions fermées a été utilisé pour évaluer les attitudes de bienveillance avant et après l'intervention, et les données ont été analysées à l'aide du test t apparié avec un seuil de signification de 5 % ($\alpha = 0,05$). Les résultats ont montré que la majorité des répondants étaient âgés de 20 à 30 ans, avaient un niveau d'éducation secondaire et travaillaient comme ouvriers occasionnels. Le score moyen des attitudes de bienveillance est passé de 44,52 avant l'intervention à 63,22 après celle-ci, avec une amélioration statistiquement significative ($p = 0,000 < 0,05$). Ces résultats indiquent que le modèle global de bienveillance améliore efficacement les attitudes de bienveillance des maris envers leurs épouses enceintes. Le renforcement du soutien des maris par une éducation ciblée pourrait améliorer l'observance des soins prénatals et les résultats de santé maternelle. (*Afr J Reprod Health 2026; 30 [6]: 66-77*).

Mots-clés: Attitude, Soins de santé primaires, Femmes enceintes

Introduction

Pregnancy is a condition in which a woman carries a developing embryo or fetus, ultimately resulting in the birth of a baby. The typical duration of pregnancy was calculated from the first day of the last menstrual period (LMP), lasting approximately

280 days or 40 weeks, which is equivalent to approximately 9 months and 7 days, respectively. A pregnancy that reaches exactly 40 weeks is considered full-term, while a pregnancy that extends beyond 43 weeks is called postmature, and less than 37 weeks is termed premature. The pregnancy period was divided into three trimesters:

Trimester I (0-3 months), Trimester II (4-6 months), and Trimester III (7-9 months or more).¹

Globally, in 2023, approximately 287,000 women died during or after pregnancy and childbirth, including more than 700 deaths caused by preventable factors.² Data from the Indonesian Central Statistics Agency (BPS, 2023) show a decline in Indonesia's maternal mortality rate from 230 per 100,000 live births in 2020 to 205 in 2023; however, this figure remains far from the Sustainable Development Goals (SDGs) target of 70 per 100,000 by 2030. In West Sumatra Province, the maternal mortality rate ranks third nationally at about 178 deaths per 100,000 live births, while Padang Pariaman Regency records 90 deaths per 100,000 live births, categorized as moderate.^{3,4} Despite government efforts to reduce maternal deaths through enhanced antenatal care (ANC), iron supplementation, reproductive health education, delayed marriage programs, maternal and postpartum care, tetanus immunization, and pregnancy classes, maternal mortality rates remain a significant public health concern.

According to data from the Indonesian Central Statistics Agency (2023), we observed disparities in maternal mortality rates across regions. West Sumatra province ranked third, with 178 deaths per 100,000 live births. In Padang Pariaman province, the maternal mortality rate was 90 per 100,000 live births, which is considered moderate.⁵ To address this, the government focuses on strengthening antenatal care (ANC) through iron supplementation, reproductive health education, delayed marriage programs, immunization, and pregnancy classes. However, ANC coverage in Padang Pariaman remains below target, with only 85–90% visit rates (target 95%), K4 visits at 64.4%, and 53.1% of pregnant women never completing antenatal checkups. Antenatal services that are incomplete and do not meet established standards, along with non-compliance among pregnant women regarding pregnancy checkups, can lead to various negative consequences. These consequences may include insufficient information provided to pregnant women, failure to detect early warning signs of complications during pregnancy and childbirth, such as anemia, and missed opportunities to identify potential issues, such as

pelvic deformities, spinal abnormalities, or multiple pregnancies.⁶

The success of antenatal care is influenced by the predisposing, enabling, and reinforcing factors. Predisposing factors include knowledge, attitudes, education, age, parity, and income.⁷ Enabling factors include the accessibility of health services and the availability of healthcare workers, while reinforcing factors include support from husbands and family, attitudes of healthcare workers, and exposure to media. The support provided by husbands is a critical aspect that warrants further investigation. Many pregnant women regularly attend antenatal care appointments due to their husbands' concern for the well-being of both the mother and the unborn child.^{4,8,9}

Caring is the ability to dedicate oneself to others, provide attentive supervision, and express feelings of empathy, love, and affection, along with a respectful attitude towards others,¹⁰ In this context, the components of caring behaviour exhibited by husbands during antenatal care include participation, attention, support or motivation, and active involvement. Support can manifest in both biological and psychological forms.^{11,12} Some examples of a husband's caring when his wife is pregnant include being attentive, assisting with household chores, accompanying her to regular prenatal check-ups, and being mindful of her need for safety and comfort. Additionally, he should consistently remind her of everything that contributes to a smooth pregnancy. Pregnant women who receive comprehensive support from their husbands tend to respond positively; they feel comfortable, safe, and relieved as their stress levels decrease. This support fosters mutual trust through effective communication and cultivates a sense of respect between partners.¹³

The lack of care from a husband during his wife's pregnancy can negatively impact both the pregnancy and the health of the mother and fetus.¹ One of the primary factors contributing to the suboptimal health status of pregnant women is the absence of caring behaviour from their husbands. The success of a woman's pregnancy through childbirth relies heavily on the support and involvement of her husband.⁹ Unfortunately, the

phenomenon of husbands paying little attention during their wives' pregnancies remains prevalent in society. The factors affect utilization of antenatal care are predisposing factor (knowledge, attitude, education, age, parity and income), enabling factor (accessibility of service and health worker's availability) and reinforcing factors (husband support's/ family support, health workers' attitude and exposure to media).^{4,8,9} Spousal cooperation is vital due to the fact that a large number of pregnant women can afford to check antenatally mainly because their husbands care about the health of the expectant mother and newborn being. Attention This personality type cares to express empathy, love and concern toward others.¹⁰

Types of husbands' care-taking behaviour are attention, support, encouragement for health-seeking and active participation such as helping household work, accompanying the wife in ANC visits and ensuring her physical comfort and safety.¹³ This support decreases stress in pregnant women and enhances couple relationship communication and mutual regard. On the other hand, failure to receive attention from husbands has been reported to adversely affect maternal and fetal health, because husbands have no adequate information on their roles in general. Comprehensive caring training has been shown to be effective for improving the factors of knowledge, attitudes, and caring behavior of husbands.¹⁴ Global healthcare systems emphasize the importance of offering continuous, family centered supportive care throughout pregnancy to ensure optimal maternal outcomes. The WHO Antenatal Care Model (2016) outlines a framework that promotes respectful, individualized maternity care, involving partners especially husbands to improve monitoring and adherence to antenatal visits.¹⁵ This approach aligns with the Continuum of Care Model, which highlights the role of family support in pregnancy monitoring to enhance the early detection of complications and encourage preventive measures. Similarly, the Midwifery Model of Care recognizes the significance of emotional, informational, and practical support from spouses as essential for achieving high-quality pregnancy monitoring and reducing maternal risk. Global evidence shows that partner involvement

increases women's compliance with ANC schedules, reduces stress, enhances communication, and improves readiness to identify warning signs during pregnancy.¹⁶ Moreover, studies indicate that family support significantly influences the frequency and regularity of antenatal care visits, ultimately contributing to better health outcomes for both mothers and infants.¹⁷

As such, application of comprehensive caring to husbands is expected to increase husband's involvement during pregnancy by aiming at promoting his active support for pregnancy in general as well as keeping mental and physical health of their wives and motivating compliance with antenatal checkups.⁸ Interviews in Lubuk Alung District (20th July 2023) found that 80% of pregnant women did not accompany their husbands to the check-ups, because they worked and felt that routine checks were unnecessary; this additionally reflects Padang Pariaman Regency lower husband support.(add reference)

This research is conducted to find out the effectiveness of training in comprehensive caring model on changing husbands' attitude in terms of caring at the time their wives are pregnant, in Padang Pariaman Regency. Adoption of the model for the husbands of pregnant women, rather than health workers, in an attempt to empower them as active partners in supporting pregnancy is unique and novel. Unlike prior studies that predominantly discussed the medical issue, this research addressed the psychosocial dimension of maternal health in response to a local socio-cultural condition in Padang Pariaman where husbands' participation remains scarce. Therefore, this research offers an additional context-based support for the impact of family- and culture-oriented caring training in improving antenatal care participation and male involvement in maternal health

Methods

Research design

This quasi-experimental study employed a one-group pretest posttest design. This design allows comparison between groups to assess the effect of the comprehensive caring model on husbands' caring attitudes.¹⁸ The intervention group received

the comprehensive caring model training, while the control group did not receive the intervention. Measurements of husbands' knowledge, attitudes, and caring behaviors were conducted twice: before the intervention (pretest) and after the intervention (posttest). The study included a follow-up period from October 2024 to March 2025, during which both groups were monitored to ensure completion of the intervention, attendance, and post-intervention assessments. The overall research timeline spanned March 2022 to March 2025, covering preparation, data collection, intervention implementation, and evaluation stages.

Research setting

Data collection was conducted in three sub-districts in Padang Pariaman Regency Batang Anai, Lubuk Alung, and IV Koto Aur Malintang which were selected because they had the highest numbers of pregnant women in the regency. These areas represent clusters with substantial pregnancy populations, making them suitable for intervention and comparison.

Sample size

The study population comprised 2,827 husbands of pregnant women. Using cluster sampling, three sub-districts with 1,054 pregnant women were identified. From this population, a sample of 92 respondents was determined using simple random sampling based on Slovin's formula:

$$n = \frac{N}{1 + N(e)^2}$$

Where:

n = required sample size

N = population size (1,054 husbands of pregnant women in selected clusters)

e = margin of error (0.1)

$$n = \frac{1054}{1 + 1054(0.1)^2} = 91.33 = 92$$

Eligibility criteria

The inclusion criteria were: being the husband of a pregnant woman, residing in Padang Pariaman Regency, and willingness to participate. Pregnant women had to live with their husbands, be able to read, and provide informed consent. Exclusion

criteria were: pregnant women not living with their husbands, women who were not currently pregnant, and residence outside the study area.

Data collection tools and procedures

Instrument development

A closed-ended questionnaire with 14 Likert-scale items (1 = strongly disagree to 5 = strongly agree) was used to measure husbands' caring attitudes toward their pregnant wives. Items were categorized into positive and negative attitudes. Reliability testing yielded a Cronbach's alpha of 0.90, indicating excellent internal consistency. Questionnaires, interviews and observations were used to gather the data. The questionnaires were distributed prior and after the intervention to assess any modifications of knowledge and attitudes among the participants. In-depth interviews were conducted with pregnant women in the selected sub-districts at the initial survey to obtain qualitative information. Internal observations during training sessions were also conducted in order to determine participants' focus and general state of being over the course of the program.

Training procedures

The intervention was conducted over three consecutive weeks at the Multipurpose Hall of Padang Pariaman Regency. On the first week, participants were provided with informed consent forms and completed the pre-test questionnaire prior to the training. The post-test questionnaire was administered at the end of the training program which was carried out in the second and third weeks.

Statistical analysis

Data were analyzed using both univariate and bivariate methods. Univariate analysis described the distribution, mean, minimum, maximum, and standard deviation of caring attitude scores. The Kolmogorov-Smirnov test confirmed normal data distribution ($p = 0.07 > 0.05$), allowing the use of a paired t-test with a 5% significance level in the bivariate analysis. Statistical analyses were performed using IBM SPSS Statistics version 30.¹⁹

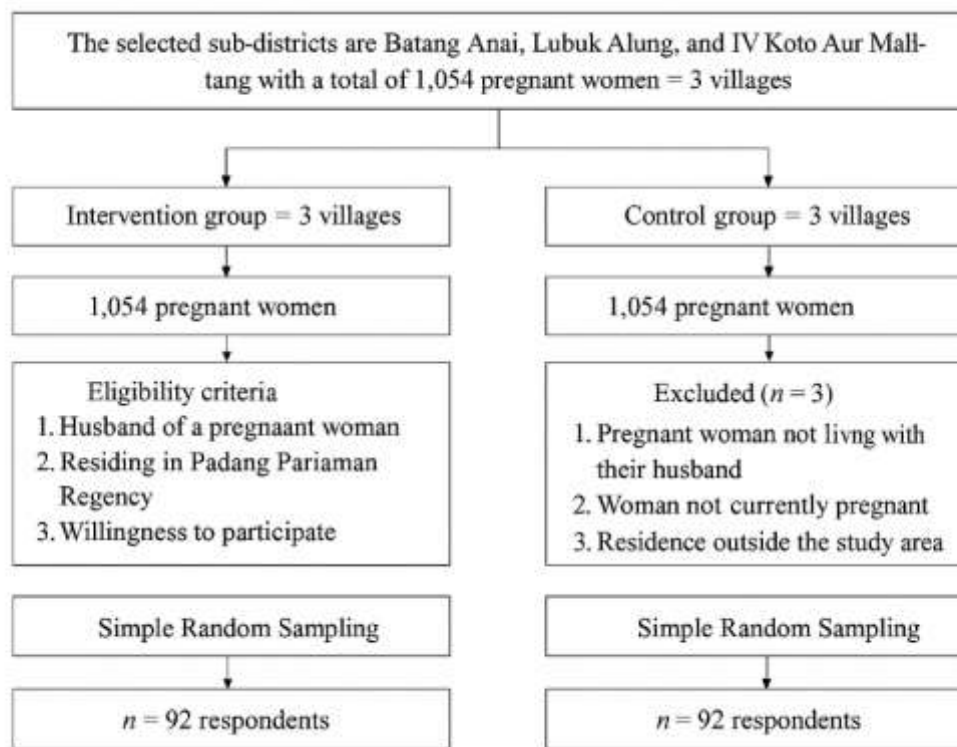


Figure 1: Sampling procedure of husband of pregnant woman

Table 1: Educational content and strategies applied in the comprehensive care model training for intervention and control groups

Educational content	Intervention Group	Control Group	Duration
Comprehensive care model training: 1) Attitude 2) Caring behavior	Theoretical: Lectures (module, leaflet, flipchart) Practical: Role play (scenario, props, name tags, accessories for each participant) Respondents completed pre-test (30–45 min) before training and post-test after 3 days.	Role play (scenario, props, name tags, accessories for each participant) Respondents completed pre-test (30–45 min) and were not given training, only completing the post-test after 3 days.	35 min for lectures 25 min for role play Total: 60 min per session Training conducted for 3 consecutive days

Ethics approval and consent to participate

This study received ethical approval from the Ethics Committee of Alifah University of Padang (Reference No: 004162/KEP Universitas Alifah Padang/2024). Written informed consent was obtained from all respondents prior to participation.

Results

In this study, the validity test was conducted on a questionnaire designed to evaluate the knowledge, attitudes, and behaviors of husbands caring for pregnant women, using a sample of 30 prospective respondents.

Table 2: The result of validity test

Variable	Number of items	Statement	Pearson Coefficient Correlation	Sig (2-tailed)	Interpretation
Attitude	1	In your opinion, pregnant women should have more frequent pregnancy checks	0.560	0.001	Valid
	2	In your opinion, doing prenatal checks from the start will make it easier to know the development of the baby and the mother	0.726	0.000	Valid
	3	In your opinion, husbands should accompany their wives in carrying out pregnancy checks	0.832	0.000	Valid
	4	In your opinion, checking the wife's pregnancy should not only be done if there are complaints	0.719	0.000	Valid
	5	In your opinion, checking a wife's pregnancy should not only be done if there are complaints.	0.786	0.000	Valid
	6	In your opinion, the husband should help reduce the wife's household workload during pregnancy	0.826	0.000	Valid
	7	In your opinion, the husband should provide healthy and nutritious food for the wife during pregnancy	0.863	0.000	Valid
	8	In your opinion, the husband should listen to the wife's concerns and worries about her pregnancy	0.840	0.000	Valid
	9	In your opinion, the husband should ensure the wife gets enough rest during pregnancy	0.676	0.000	Valid
	10	In your opinion, the husband should provide emotional support to the wife during pregnancy	0.789	0.000	Valid
	11	In your opinion, the husband should accompany the wife in activities that help maintain health during pregnancy, such as light exercise	0.838	0.000	Valid
	12	In your opinion, the husband should understand and appreciate the physical and emotional changes the wife experiences during pregnancy	0.906	0.000	Valid
	13	In your opinion, the husband should remind the wife to regularly take vitamins and supplements as recommended by the doctor	0.609	0.000	Valid
	14	In your opinion, the husband should accompany the wife when attending pregnancy classes or seminars related to pregnancy	0.596	0.001	Valid
Caring behavior	1	Respect his wife and family	0.415	0.023	Valid
	2	Attention to his wife and family	0.588	0.001	Valid
	3	Forgetting wife when busy	0.683	0.000	Valid
	4	Advise the wife to say the complaints that are felt	0.491	0.013	Valid

5	Ignore the wife's complaints	0.591	0.001	Valid
6	Ask the wife about the experience of care during pregnancy	0.979	0.000	Valid
7	Give an explanation to the wife in gentle and honest language	0.436	0.016	Valid
8	Fulfill all costs required during pregnancy	0.570	0.001	Valid
9	Respond quickly to solve all problems with wife's pregnancy complaints	0.682	0.000	Valid
10	Explain about the necessary actions for the wife	0.749	0.000	Valid
12	The husband encourages his wife to discuss her health.	0.582	0.001	Valid
13	Letting the wife recover by herself without motivation	0.675	0.000	Valid
14	Encourage my wife to ask about things that I don't understand about the condition of her illness	0.376	0.041	Valid
15	Be friendly to your wife and other family members	0.084	0.000	Valid
16	Listen to the wife's feelings with patience	0.573	0.001	Valid
17	Helping the wife not to worry about her condition	0.698	0.000	Valid
18	Care for the wife	0.912	0.000	Valid
19	Shows a sullen face	0.467	0.009	Valid
20	Shows understanding of the wife's condition	0.792	0.000	Valid
21	Shows indifference when asking about wife's complaints	0.462	0.008	Valid
22	Ask the wife if she understands the explanation given by the health worker	0.472	0.008	Valid
23	Ask the wife about the complaints experienced	0.614	0.000	Valid
24	Give the wife health education about her complaints	0.498	0.005	Valid
25	Encourage other family members to get involved in helping the wife	0.922	0.000	Valid
26	The husband explains the purpose of health procedures that must be done during pregnancy.	0.519	0.003	Valid
27	Paying attention to the comfort of the environment around the wife (for example the cleanliness of the bed, table and surroundings)	0.707	0.000	Valid
28	Pay attention to the safety of the environment around the wife	0.464	0.010	Valid
29	Pray and encourage other family members to pray for healing for your wife	0.650	0.000	Valid
30	Helping the wife meet the needs of urinating, defecating, bathing, changing clothes	0.930	0.000	Valid
31	Help your wife without expecting anything in return	0.521	0.004	Valid
32	Take action hastily	0.438	0.016	Valid
33	Advise the wife to eat nutritious food	0.632	0.000	Valid

34	Lack of attention to the need for worship during pregnancy	0.388	0.034	Valid
35	Encourage the wife to ask about the condition of the disease	0.576	0.001	Valid
36	Give an explanation of the wife's condition when the wife asks	0.452	0.012	Valid
37	Ensuring the correctness of the drug for the wife	0.731	0.000	Valid
38	The husband makes an effort to find medication that suits his wife's response.	0.716	0.000	Valid
39	Control the wife's complaints and conditions at any time	0.662	0.000	Valid
40	Set the room so quiet at night so the wife can sleep	0.567	0.001	Valid
41	Train the wife to take care of herself	0.396	0.030	Valid
42	Supervise the wife while in the room	0.561	0.001	Valid

If the Pearson correlation coefficient (r-count) > 0.361, then the item is declared valid. Furthermore, if the data significance value (Sig 2-tailed) < 0.05, the item is valid. The results of the questionnaire data validity test in this study are presented in the following Table: 2

Reliability test

The results of the reliability test on the responses to the questionnaire assessing the knowledge, attitudes, and caring behaviors of husbands of pregnant women, which was administered to 30 participants prior to the research, are presented in the following table 3. Based on the results of the reliability test presented in the table above, it is evident that the three factors examined in this study possess reliable questionnaire instruments. The questionnaire for the knowledge variable is classified as reliable (Cronbach's alpha = 0.7), while the attitude variable is classified as very reliable (Cronbach's alpha = 0.9), and the caring behavior variable is also classified as very reliable (Cronbach's alpha = 0.8).

Attitudes of husbands towards pregnancy care for pregnant women

The attitudes of the husbands toward caring for their pregnant wives, both before and after receiving comprehensive care model training, are

presented in Table 4. The data presented in Table 4 indicate that the average attitude of husbands toward caring for their pregnant wives, prior to receiving comprehensive care training was 44.52, with a standard deviation of 9.18. The average response to the attitude-related questions in the questionnaire was 3.2, indicating a hesitant stance (negative vibration). The maximum score among all the respondents was 56, while the minimum score was 14. In contrast, after undergoing the comprehensive caring model, the average attitude of husbands toward caring for their pregnant wives increased at 63.22, and the standard deviation decreased to 6.24. The average response to the attitude aspect questions was 4.5, reflecting agreement and strong agreement (positive vibes). The maximum score for total responses increased to 70, while the minimum score was 40.

Effectiveness of the comprehensive caring model in changing the attitudes of pregnant women's husbands toward pregnancy care.

Bivariate tests using a paired t-test were conducted after the data were assessed for normality using the Kolmogorov-Smirnov test. The results of the normality test showed that the data was normally distributed, with a p-value of 0.165, which is greater than 0.05. Statistical testing was performed using a paired t-test at the 5% significance level. The results of the paired t-tests are presented in Table 5

Table 3: Reliability test

Variable	Cronbach's Alpha	N
Attitude	0.9	14
Caring behavior	0.8	42

Table 4: Attitudes of husbands towards pregnancy care for pregnant women

Variable	N	Average Amount	Average Answer	SD	Max	Min
Pretest	92	44.52	3.2	9.18	56	14
Intervention- Control Group						
Posttest	92	63.22	4.5	6.24	70	40
Intervention - Control Group						

Audit: N: number of respondents; SD: Standard Deviation; Max: highest value, Min: smaller value

Table 5: The effectiveness of the Comprehensive Caring Model in Changing the Attitudes of Pregnant Women's Husbands Toward Pregnancy Care

Variable	N	T	df	Sig
Pretest-Posttest	92	10.291	91	0.000

Audit: N: number of respondents; t: two-variable test statistics; df: degrees of freedom; Sig: Significance analyzed using t-test

Data from 92 respondents who received comprehensive care model training indicated a significant impact of this training on the attitudes of husbands of pregnant women in the Padang Pariaman Regency, with a p-value of 0.000 less than the alpha level of 5%. The Findings demonstrate that comprehensive caring model training is effective in fostering more positive attitudes among husbands towards caring for pregnant wives

Discussion

The caring attitude among husbands towards their pregnant wives significantly increased after applying the comprehensive caring model training (Table 1). The mean score rose 18.7 points, from 44.52 for the pre-test to 63.22 for the post-test result following training. A statistical test with the paired-sample t-test showed that $p = 0.000 < \alpha = 0.05$. So, there was an effect of training in husband toward changes of attitude related pregnancy care of Padang Pariaman husbands. At the beginning of the training, respondents had low knowledge and

unsupportive behaviors, while after three days in training they were found with good attitudes and practices toward their wives on pregnancy care. Caring is that process through which one person relates to another as a friend-in-need so as to provide individualized care such as love, sympathy, attention, and emotional support (interpersonal skills) or acts for or on behalf of others according to their needs.²⁰ A pregnant wife's support from her husband is very important. They show support by going with the wife to antenatal clinic, motivating them and giving moral as well as practical support (e.g., accompanying the wife to health facilities or in doing household chores). The husband's presence and participation during ANC has been associated with increased maternal comfort and motivation to attend ANC regularly.^{21,22} By doing so, he contributes to minimizing the risk of complications during pregnancy and childbirth.

Husbands play a supportive role that helps to create a favorable situation for maternal health (such as mental health and psychological distress) during pregnancy. Recent investigations suggest that the involvement of husbands in ANC is

associated with a greater chance of adhering to their ANC schedule and better emotional stability among women attending ANC, as well as better pregnancy outcomes.²³⁻²⁵

So a concerned husband is also an educator who searches for the true evidence-based knowledge about pregnancy, and educates his wife to practice what is healthy during this period and increases her self-confidence that she could go through pregnancy safely.²⁶ These types of support behaviors not only promote a sense of safety and security, but they also reduce maternal stress which is associated with optimal outcomes for both mothers and fetuses.²⁷ The participation of husbands in ANC services and preparation classes for childbirth has been found to improve communication, promote emotional bonding, and help in pregnancy preparedness.²⁸ Therefore husbands should be included in antenatal care as part of the comprehensive health programs to promote maternal well-being, minimize stress and optimize pregnancy outcome.²⁹ Taken together, these results support that training in the comprehensive caring model is effective for enhancing husbands' caring attitude and positively influencing maternal health management. More husband involvement leads to better compliance of pregnant women for ANC examination, emotional stability and preparedness for childbirth. This better family support system helps to prevent pregnancy related complications and lower maternal and infant mortality in Indonesia. A lack of caring attitude from husbands can significantly endanger the safety of both the mother and fetus.³⁰ Therefore, it is essential to enhance husbands attitudes regarding the care of their pregnant wives. An effective approach is to provide a comprehensive care model training. Training can improve skills and motivate individuals to achieve improved outcomes. Well-structured training programs will help participants update their knowledge, enabling them to initially transform negative attitudes into positive ones. Comprehensive training can effectively facilitate changes across various elements, including knowledge, attitudes, skills, and behaviors. By enabling husbands to contribute positively in maternal health with comprehensive caring model, the program is congruent to national health policies

and helps to attain SDGs target of reducing maternal mortality before 2030.

Limitations

This study has several strengths. First, the implementation of a structured and comprehensive caring model that integrates theoretical learning with practical role-playing facilitated active participant engagement, thereby promoting more meaningful changes in attitudes. Second, the use of a pretest-posttest design allowed researchers to measure changes in husbands' caring attitudes before and after the intervention, providing a clear evaluation of the model's effectiveness. However, this study has several limitations. The relatively short follow-up period did not permit a long-term evaluation of the sustainability of changes in caring attitudes. Despite these limitations, the findings of this study have important implications for policy and practice. The significant improvement in husbands' caring attitudes suggests that integrating structured education focused on male involvement into antenatal care programs can enhance family support for pregnant women. From a policy perspective, these results underscore the need to develop and implement maternal health policies that promote active male participation, particularly within primary and community-based healthcare settings. In practice, healthcare workers can adopt this comprehensive caring model as part of routine antenatal education to increase adherence to ANC visits and contribute to improved maternal and infant health outcomes

Conclusion

This study demonstrates that the Comprehensive Caring Model is significantly effective in improving husbands' caring attitudes toward their pregnant wives in Padang Pariaman Regency. The findings highlight the importance of promoting husband-focused interventions as part of community-based and culturally sensitive strategies to strengthen male involvement in maternal health. Wider implementation of this model is recommended, particularly in culturally rooted communities such as the Minangkabau, where men's roles are shaped by strong traditional values.

Acknowledgment

We would like to express our gratitude to the Head of the Pasar Usang, Ketaping, Batu Basa, Lubuk Alung, and Sikabu Health Centers for their assistance during this research

Conflict of interests

No competing interest.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Authors' contributions

YM conceived and designed the study. YM collected the data. YM analyzed and interpreted the results. All authors contributed to drafting, revising, and approving the final manuscript.

Availability of data and materials

The datasets used and analyzed during the current study are available from the corresponding author upon reasonable request.

References

1. Kemenkes RI, Direktorat Jenderal Bina Gizi Dan Kesehatan Ibu Dan Anak, Direktorat Bina Kesehatan Ibu. Pedoman Pelayanan Antenatal Terpadu Kementerian Kesehatan Republik Indonesia. *Pedoman Pelayanan Antenatal Terpadu Edisi Kedua.*; 2015.
2. WHO. *Maternal Mortality.*; 2023. <https://www.who.int/news-room/factsheets/detail/maternal-mortality>
3. Wijayanti E, Putri Y, Handayani Ts. The Relationship Of Mother's Knowledge And Attitude Regarding High Risk Of Pregnancy And Completeness Of Antenatal Care (Anc) In The Working Area Of The Community Health Center Of Beringin Tiga In 2023. *J Midwifery.* 2024;12(1).
4. Hasanah, Imroatul, Fitriyah , N. The Role Of Husbands In Wife's Pregnancy Care In Mulyorejo Village. *J Biometrics Popul.* 2019;7(2).
5. Badan Pusat Statistik Republik Indonesia. Maternal Mortality Rate/MMR Long Form SP2020 Result By Province, 2020. Published Online 2020. https://www.bps.go.id/en/statistics-table/1/mjixosmx/maternal-mortality-rate-mmr---long-form-sp2020-result-by-province---2020.html?utm_source=chatgpt.com
6. Gusna E, Sulaini P, Bachtiar H. Analisis Cakupan Antenatal Care K4 Program Kesehatan Ibu Dan Anak Di Wilayah Kerja Dinas Kesehatan Kabupaten Padang Pariaman. *J Kesehat Andalas.* 2016;5(1). Doi:10.25077/Jka.V5i1.428
7. Helen Utobore Ibingha, Ukamaka Clementina Nwankwo. Barriers And Enabling Factors To Antenatal Clinic Attendance Among Pregnant Women: A Cross-Sectional Assessment At Federal Medical Center Asaba Delta State Nigeria. *Int J Sci Res Arch.* 2025;14(1):100-106. Doi:10.30574/Ijsra.2025.14.1.2626
8. Mulyaningsih S, Hiola FAA, Hिलamuhu, Fendrawati. Literature Study On The Role Of Husbands In Motivating Wife To Conduct Pregnancy Examination. *J KOLABORATIF SAINS.* 2023;6(7):923-930.
9. Lestari P HC, A. E. Husband's Role In Undergoing The Pregnancy Process For Pregnant Women. In: *Semin Nas Kesehat Masy 2020.* ; 2020:121-137.
10. Firmansyah CS, Noprianty R, Karana I. Perilaku Caring Perawat Berdasarkan Teori Jean Watson Di Ruang Rawat Inap. *J Kesehat Vokasional.* 2019;4(1):33. Doi:10.22146/Jkesvo.40957
11. Litasari R, Sunarni N. Literature Review: Active Role Of Husband In Care During Pregnancy. *GENIUS MIDWIFERY J.* 2025;4(1). Doi:https://doi.org/10.56359/Genmj.V4i1.523
12. Pardede JA. Caring Concept In Nursing: Jean Watson Theory Approach. Published Online December 12, 2020. Doi:10.31219/Osf.Io/7d4kt
13. Safitri Y, Lubis DH. DUKUNGAN SUAMI, PENGETAHUAN, DAN SIKAP IBU HAMIL TERHADAP KUNJUNGAN ANTENATAL CARE. *J Kebidanan Malahayati.* 2020;6(4):413-420. Doi:10.33024/Jkm.V6i4.3042
14. Fitri G, Machmud R, Priscilla V. The Effect Of Comprehensive Caring Training On Caring Behavior Of Nurses. *J Ilm STIKES Kendal.* 2020;10(4).
15. World Health Organization. WHO Recommendations On Antenatal Care For A Positive Pregnancy Experience. WHO.
16. Babatunde OO, John-Akinola YO, Desmennu AT. Social Support Provided By Men To Their Spouse During Last Pregnancy. *Niger Med Journal.* Published Online 2022. Doi:https://doi.org/10.60787/Nmj-63-1-88
17. Munaim S, Astuti D, Azizah N. Hubungan Dukungan Suami Dan Keluarga Dengan Keteraturan Ibu Hamil Dalam ANC Di BPM Siti Munaim Kab.Oki Sumsel. *J Sos Teknol.* 2025;5(3):396-405. Doi:10.59188/Jurnalsostech.V5i3.32030
18. McCormack B, Mccance T. The Person-Centred Nursing Framework. In: *Person-Centred Nursing Research: Methodology, Methods And Outcomes.* Springer International Publishing; 2021:13-27. Doi:10.1007/978-3-030-27868-7_2

19. Ghasemi A, Zahediasl S. Normality Tests For Statistical Analysis: A Guide For Non-Statisticians. *Int J Endocrinol Metab.* 2012;10(2):486-489. Doi:10.5812/Ijem.3505
20. Watson J. *Nursing: The Philosophy And Science Of Caring (Rev. Ed.)*. Oulder, CO: University Press Of Colorado.; 2008.
21. Sitepu F, Tamtomo D, Prasetya H. Meta-Analysis The Effects Of Education, Pregnancy Planning, Husband Support, And Distance To Health Facilities On The Utilization Of Antenatal Care Service. *J Matern Child Heal.* 2023;8(4):510-525. Doi:10.26911/Thejmch.2023.08.04.12
22. Latifa AR, Werdani KE. Support From Midwives And Spouse On Antenatal Care Visit Adherence In Health Centers Among Primigravida Pregnant Women. *Malahayati Int J Nurs Heal Sci.* 2024;7(7):825-833. Doi:10.33024/Minh.V7i7.540
23. Tri Wijayanti Y, Khair U, and Gustini G. Increasing The Role Of Husbands In Supporting The Mental Health Of Pregnant Women In The Third Trimester Through Childbirth Preparation Education. *J Pengabdian Masyarakat Indones.* 2025;2(3):112-120. Doi:10.61099/Jpmei.V2i3.126
24. Widiatoro R, Khairunnisa1 K, Furqon MFM, Murti B, and Handayani AF. Effects Of Husband Support, Family Income, Employed Mothers, And Antenatal Care Visit On Exclusive Breastfeeding. *J Matern Child Heal.* 2024;9(1):62-77. Doi:10.26911/Thejmch.2024.09.01.06
25. Wong RS, Tung KTS, Tsang HW, Ko JKY, Leung W Cheong, Ip P. Husband Involvement In Antenatal Care Moderates The Link Between Vitamin D Status And Depressive Symptoms In Pregnant Women. *Epidemiol Psychiatr Sci.* 2025;34:E10. Doi:10.1017/S2045796025000022
26. Nurhasanah N. Dukungan Suami Berhubungan Dengan Kunjungan Antenatal Care. *J Kebidanan Malahayati.* 2020;6(3):289-292. Doi:10.33024/Jkm.V6i3.2798
27. A GK, and Mweya CN. Factors Associated With Male Partner Involvement In Maternity Care In Mbeya, Tanzania. *East African Heal Res J.* 2023;7(2). Doi:10.24248/Eahrj.V7i2.729
28. Moyo E, Dzinamarira T, and Moyo P, Murewanhema G, Ross A. Men's Involvement In Maternal Health In Sub-Saharan Africa: A Scoping Review Of Enablers And Barriers. *Midwifery.* 2024;133:103993. Doi:10.1016/J.Midw.2024.103993
29. Hj. Zakiah, Haryono IA, and Nurliani S. DUGALIMAN : Dukungan Suami Dan Keluarga Dalam Persiapan Persalinan Yang Aman. *Nat J Pelaks Pengabdian Masyarakat Bersama Masyarakat.* 2025;3(1):52-62. Doi:10.61132/Natural.V3i1.1065