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ORIGINALS

Educational intervention strategies as a tool to improve prenatal attachment

Estrategias de intervención educativa como herramienta para mejorar el apego prenatal

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ABSTRACT:

Introduction: Maternal-fetal attachment is a cognitive and emotional affiliative relationship between a mother and fetus that contributes to fetal well-being. The prenatal attachment education package is an educational tool designed to enhance partner support, reduce anxiety, and improve maternal-fetal attachment. **Objective:** To evaluate the impact of the prenatal attachment education package on partner support, anxiety, and maternal-fetal attachment in primigravida women.
Methods: A quasi-experimental design with a non-equivalent control group approach was used. Using purposive sampling, a total of 107 participants were selected, with 53 in the intervention group and 54 in the control group. Instruments used: 1) Social Support Survey; 2) Perinatal Anxiety Scale; and 3)

Maternal-Fetal Attachment Scale. Normally distributed data were analyzed using paired t-tests, independent t-tests, effect size, and path analysis.
Results: The prenatal attachment education package had a significant impact on increasing partner support, reducing anxiety, and improving maternal-fetal attachment compared to the pre-intervention condition ($p < 0.05$). The effect of the education package was greater than that of the standard program ($p = 0.000$).
Conclusion: The prenatal attachment education package has been proven to increase partner support, reduce anxiety, and enhance maternal-fetal attachment in primigravida women. It can be used as a guide in prenatal classes and as a supplement to standard maternal and child health education materials.

Keywords: prenatal education; anxiety; maternal-fetal relations; pregnant.

RESUMEN:
Introducción: El vínculo materno-fetal es una relación afiliativa cognitiva y emocional entre la madre y el feto que contribuye al bienestar fetal. El paquete educativo de vinculación prenatal es una herramienta diseñada para aumentar el apoyo de la pareja, reducir la ansiedad y mejorar el vínculo materno-fetal. **Objetivo:** Evaluar el impacto del paquete educativo de vinculación prenatal sobre el apoyo de la pareja, la ansiedad y el vínculo materno-fetal en mujeres primigestas.
Métodos: Se utilizó un diseño cuasi-experimental con un enfoque de grupo control no equivalente. Mediante un muestreo intencional, se reclutaron 107 sujetos: 53 en el grupo de intervención y 54 en el grupo control. Los instrumentos utilizados fueron: 1) Encuesta de Apoyo Social; 2) Escala de Ansiedad Perinatal; y 3) Escala de Vínculo Materno-Fetal. Los datos con distribución normal fueron analizados mediante pruebas t pareadas, pruebas t independientes, tamaño del efecto y análisis de trayectoria.
Resultados: El paquete educativo de vinculación prenatal tuvo un impacto significativo en el aumento del apoyo de la pareja, la disminución de la ansiedad y la mejora del vínculo materno-fetal en comparación con antes de la intervención ($p<0,05$). El impacto del paquete educativo fue mayor que el del programa estándar ($p = 0,000$).
Conclusión: El paquete educativo de vinculación prenatal ha demostrado ser eficaz para aumentar el apoyo de la pareja, reducir la ansiedad y mejorar el vínculo materno-fetal en mujeres primigestas. Puede utilizarse como una guía en las clases prenatales y como complemento del material estándar.

Palabras clave: educación prenatal; ansiedad; relaciones materno-fetales; mujer embarazada.

INTRODUCTION

The infant mortality rate (IMR) is one of the indicators of the health of the population, related to the health of the mother and the baby, and is also a global policy objective within the Sustainable Development Goals. The goal for 2030 is to reduce the rate ofInfant mortality rate is 12 per 1,000 live births; however, global IMR data for 2020 reached 28 per 1,000 live births. In 2021, the IMR in Indonesia was 19.5 per 1,000 live births, with 35.2% of cases due to low birth weight and premature infants.[1] Prenatal care is a key factor in successfully reducing IMR. As established in Ministerial Decree No. 21 of 2021 of the Ministry of Health of the Republic of Indonesia, prenatal care is optimized through prenatal classes based on the Maternal and Child Health Book.

Prenatal care programs and prenatal classes have been shown to be effective in reducing IMR, although the established goal has not yet been reached. Prenatal care programs are more focused on physical health, but they still do not adequately address the emotional changes during pregnancy.[2,3]

Pregnancy poses a risk of emotional problems due to the threat of changes in role, personal identity, and economic status. Emotional problems can have a negative impact on the mother's health, the well-being of the fetus, and infant mortality.[4] Pregnant women who experience stress or anxiety display less caring behaviors

toward their fetus, low attachment, and poor prenatal care practices, which affect fetal development and can lead to low birth weight and premature births. Premature or low birth weight babies have a poor thermoregulatory system developed, low surfactant production, weak respiratory muscles and reduced immunity, which increases the risk of hypothermia, asphyxia and infections, and therefore, infant mortality.

The emotional relationship between mother and fetus demonstrates the crucial role of maternal-fetal attachment, which indirectly influences the baby's well-being and health.[5]

Maternal-Fetal Attachment (MFA) is a cognitive and emotional affiliation relationship related to situational psychosocial factors that influences the mother-fetus connection and can be measured with the Maternal-Fetal Attachment Scale (MFA-S). Studies have shown that high MFA is associated with good health practices and a reduction in adverse neonatal outcomes.[6]

A study of pregnant women in Iran revealed that as the MFA strengthened, mothers tended to take better care of their own health and that of their fetus, resulting in healthy babies. The results showed that MFA ($p < 0.01$, $r = 0.23$), health practices ($p < 0.05$, $r = 0.11$), and the average birth weight of the babies were 3052.38 grams.[7] In cases of low MFA, mothers show less interest in the fetus, focus more on meeting their own needs, and fail to adequately follow prenatal care. This leads to less attention to the needs of the fetus and to adequate intake of nutrients, iron, and folic acid, which are crucial for fetal growth. This lack of attention affects the distribution of nutrients and oxygen to the body's cells and tissues, reducing the amount of these vital elements transferred across the placenta to meet the fetus's needs. As a result, the fetus may experience hypoxia, increasing the risk of low birth weight and prematurity. These conditions increase the risk of neonatal death.[8]

Partner support plays an important role in anxiety levels, MFA, and the impact on neonatal outcomes. A husband's attention and affection can generate a sense of security and well-being in the mother, reducing anxiety and improving MFA. This contributes positively to the physical and emotional health and well-being of both mother and fetus.[9] Partner involvement in pregnancy serves as a link between anxiety, MFA, and birth outcomes. Studies show that partners who support the pregnancy are more likely to contribute to a reduced risk of low birth weight and miscarriage.[10]

Pregnant women face physical, emotional, socioeconomic, and lifestyle changes that can trigger anxiety. In mothers who have not been able to accept the pregnancy, high anxiety indicates less concern for the fetus, rejection, neglect, or the need to harm the fetus.[11] Previous research has shown that the greater the maternal anxiety, the lower the MFA. Primagravida is also a trigger for anxiety, worsening the mother's emotional state and MFA abilities.[12]

One of the identified problems is the lack of structured prenatal educational intervention classes that increase partner support, reduce anxiety, and improve MFA. In standard government prenatal class programs, the materials offered focus on physical care, childbirth preparation, and postpartum care.

The Prenatal Attachment Education Package is a module designed as a guide for healthcare professionals to provide education to pregnant women and their partners, accompanied by a booklet and videos as a means for independent learning by the mother and her partner. The Prenatal Attachment Education Package has been developed and has beenconsidered suitable for use based on developmental research.[13] The prenatal education package includes: knowledge of the MFA, attachment skills, managing pregnancy emotions, and partner support.

The objective of this research is to evaluate the impact of the prenatal education package on partner support, anxiety, and MFA in primigravidas. This study is expected to contribute to the training of midwives and nurses to improve prenatal health promotion services through the education of health professionals.

METHODS

This study uses a quasi-experimental design, a nonequivalent control group design approach. The sample consisted of 107 subjects, composed of 53 in the intervention group and 54 in the control group, selected using the purposive sampling technique. Inclusion criteria: 1) gestational age 16-24 weeks; 2) normal pregnancy; 3) living with partner; 4) not using drugs; 5) having received prenatal care, recorded in the maternal and child health book; 6) planned pregnancy; 7) regional minimum income; 8) having had an ultrasound at least once; 9) knowing how to read and write. Exclusion criteria: 1) having psychiatric problems; 2) being ill; and 3) verbal communication disorders.

The experimental group received an MFA educational package intervention and still received a standard program; the control group received only a standard program (Figure 1).

The research site was the Regional Health Center of Bantul Regency Yogyakarta Indonesia, namely, Piyungan Health Center, Sedayu-II, Kasihan-I, Bantul-II, Banguntapan-II, Kasihan II, Sewon-II and Imogiri-I, 4 health centers were selected from experimental groups and 4 from control groups.

Research instruments: 1) Medical Outcomes Study: Modified Social Support Survey; 2) Modified Perinatal Anxiety Screening Scale; and 3) Cranley MFAS. Instrument validity testing used content index validity, product moment correlation, and Cronbach's alpha.

The research instruments used were:

1) The Somerville Perinatal Anxiety Screening Scale, for the detection of anxiety in pregnant women and immediately after childbirth. It consists of 31 items and 4 domains: excessive worry and specific fear; perfectionism and control; social anxiety; and childbirth anxiety; with 4 response options: Never (0), Sometimes (1), Often (2) and Always (3). Total score ranges from 0 to 93, with criteria: 0 - 20: not anxious; 21 - 41: a little anxious; 42 - 62: quite anxious; 63 - 93: very anxious.

2) Modified Social Support Survey, which includes informational, affective, instrumental, and reward support, and is composed of 21 items. Scoring ranges from 0

to 3, including: always = 3, often = 2, rarely = 1, and never = 0. The total score was 63, with scores varying from 43–63: good support; 22–42: sufficient; and 0–21: less.

3) The Cranley Maternal-Fetal Attachment Scale, which consists of 3 aspects, namely cognitive, emotional and behavioral. It includes 24 items with a Likert scale score: 1-5, total score 24-120. Score: 97-120 = MFA is excellent; 73 – 96 = MFA is good; 49-72 = MFA is sufficient; and 24-48 = less MFA.

The instrument's validity test uses two methods: content validity, the Content Validity Index (CVI), and subject validity. The CVI was conducted by three experts in the fields of maternal and child health, health promotion, and clinical psychology. The validity criteria used were 0.80–1.00: very high validity; 0.60–0.80: high validity; 0.40–0.60: moderate validity; 0.20–0.40: low validity; and 0.00–0.20: very low validity. The average CVI score of the three experts on the prenatal anxiety, partner support, and MFAS instrument was >0.80, so the validity was declared very high. Subject validity was conducted on 32 pregnant women at the Bantul Health Center, Yogyakarta, Indonesia. The results of the product moment correlation test were declared valid if the index r > r was established with a significant value of $p < 0.05$. The reliability test with Cronbach's alpha formula was declared reliable if the alpha value was at least 0.80. In the prenatal anxiety, partner support and MFAS instruments, the results of the product moment correlation test $p < 0.05$ and the calculation r of Cronbach's alpha > 0.80 were therefore declared valid and reliable.[14]

At the Sewon-II Health Center, 14 subjects received MFA educational interventions; 13 subjects received MFA at the Kasihan-II Health Center; 14 subjects received MFA at the Bantul-II Health Center; and 12 subjects received MFA at the Sedayu-II Health Center.

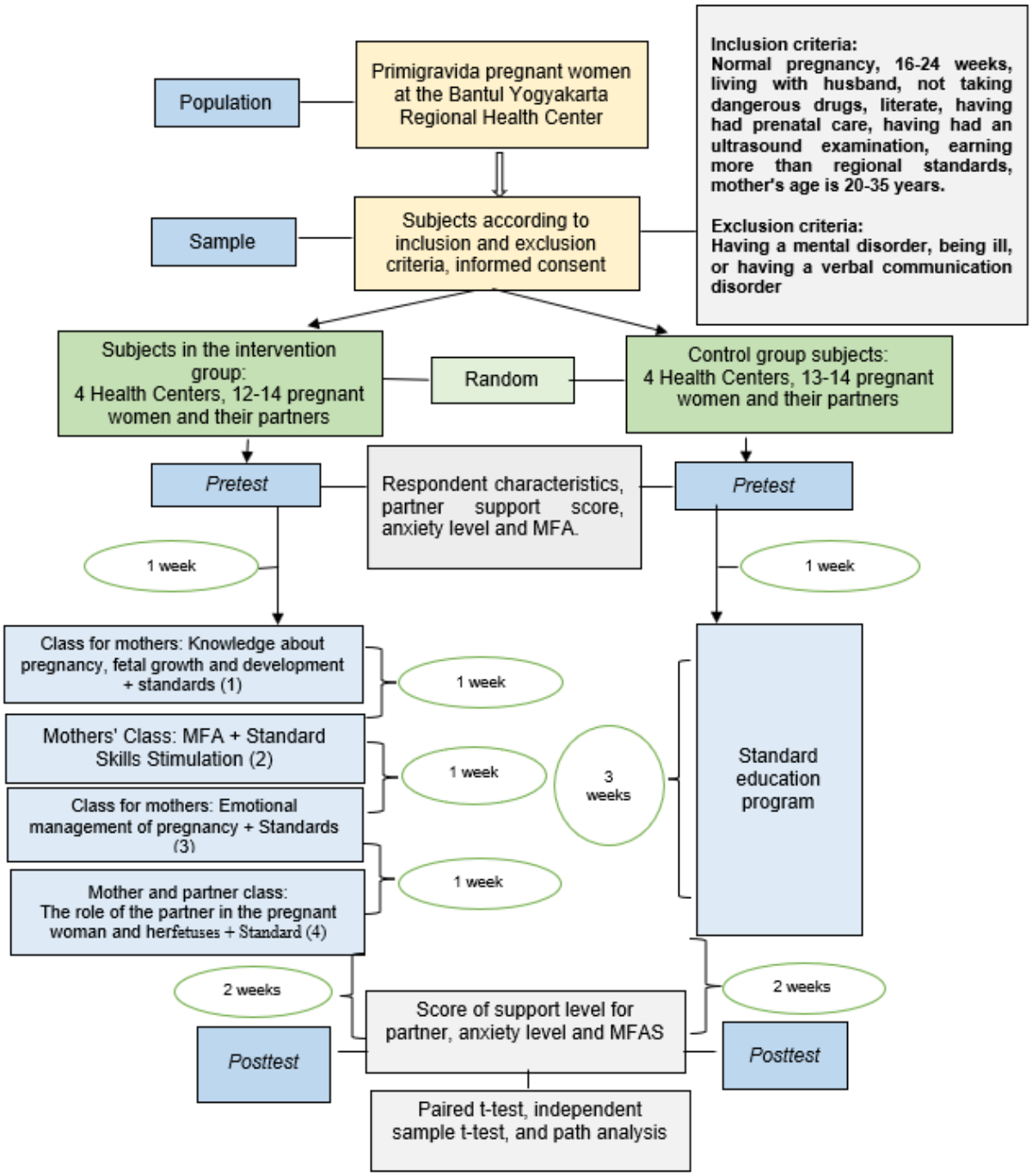
The MFA education package consists of four materials: knowledge about pregnancy and fetal growth and development, MFA stimulation skills, pregnancy emotion management, and husband support. MFA education is delivered over four weeks, with one material delivered each week for 100 minutes. Educational media in the form of modules were used as a guide for facilitators, while the subject was given a booklet containing four materials from the MFA education package, a "Counting Fetal Movements" video to reinforce the MFA stimulation skills material, a "Benson Relaxation" video to reinforce the pregnancy emotion management material, and a "The Role of Partner Support" video on husband support. The education was delivered by midwifery nurses who had participated in the MFA education package facilitator training at each health center and were declared graduates.

The control group consisted of 14 subjects at the Piyungan Health Center; 14 subjects at the Banguntapan-II Health Center; 14 subjects at the Imogiri-I Health Center; and 12 subjects at the Kasihan-I Health Center. The control group received education on a routine program conducted at the Health Center for 4 weeks.

Two weeks after receiving the MFA educational package, the experimental and control groups received a post-test using the same questionnaire as the pre-test. Normally distributed data were analyzed using paired t-tests, independent t-tests, effect size, and path analysis.

This study has passed an ethical review by the Ethics Committee of the Diponegoro University Faculty of Medicine, number 42/EC/KEPK/FK-UNDIP/II/2023. The principles of basic ethics, respect for the dignity of the respondents, non-injury, and the principles of justice have been applied. The respondent's consent is evidenced by a signature on the consent form. All data are kept confidential and used only for research purposes.

Image 1: Research stages flow chart.



RESULTS

The study was conducted from November 2023 to March 2024, from subject selection, pretest, and 4-week intervention to posttest.

Sample characteristics

General characteristics of pregnant women include the mother's education and occupation. Partner characteristics include age, education, and occupation (Table 1).

Table 1: Frequency distribution of the characteristics of the research subject.

Characteristics	Intervention Group. n (%)	Control group. n (%)	Significant value
Gestational ages			0.499[c]
16-20 weeks	23 (43.4)	27 (50)	
21-24 weeks	30 (56.6)	27 (50)	
Mother's education			0.423[c]
Primary (Primary and Secondary School)	4 (7.5)	4 (7.5)	
Secondary School (Senior/Vocational Secondary School)	27 (50.9)	29 (53.7)	
Higher education	22 (41.5)	21 (38.9)	
The mother's work			0.062[c]
Housewife	25 (47.2)	22 (40.7)	
Public Official/Armed Forces	4 (7.5)	3 (5,6)	
Private	14 (26.4)	21 (38.9)	
self employed	10 (18.5)	8 (14.8)	
Age of the couple			0.092[c]
< 20 years	1 (1.9)	1 (1.9)	
20-35 years	42 (79.2)	49 (90.7)	
>35 years	10 (18.5)	4 (7.4)	
Couple education			0.102[c]
Primary (Primary and Secondary School)	7 (13.2)	7 (13.2)	
Secondary School (Senior/Vocational Secondary School)	25 (47.2)	31 (57.4)	
Higher education	21 (39.6)	15 (27.8)	
Couple's work			0.072[c]
Public Official/Armed Forces	1 (1.9)	2 (3.7)	
Private	31 (58.5)	31 (57.4)	
self employed	21 (39.6)	21 (38.9)	
Amount	53 (100)	54 (100)	

Description: n = number of subjects; c: chi-square

Table 1 shows that the gestational age of the majority of the experimental group was 20 to 24 weeks, while the control group had an equal number of subjects with gestational ages of 16 to 20 weeks and 20 to 24 weeks. The maternal education was mostly at the secondary level (upper secondary), and the maternal occupation was homemaker. The characteristics of the majority of the couple were 20 to 35 years old, with the husband's education at the secondary level and the partner's occupation as a private employee. The overall results of the chi-square test showed $p>0.05$, indicating that the data from the experimental and control groups were equivalent.

The effect of prenatal attachment education packages on increased partner support, decreased anxiety, and increased primigravida MFA compared to before the intervention

The homogeneity and normality tests were performed using the Kolmogorov-Smirnov test; the results showed a p value > 0.05, so the data were declared homogeneous and normal. Pre- and post-intervention data were analyzed using the paired-sample t test (Table 2).

Table 2: Partner support scores, anxiety levels and MFA, before and after the intervention.

Variables	Cluster	M(OF)S	R	gl	p	M(DE)P	95% CI
Partner Support	Pretest Posttest	47.75 (9.30) 53.21 (8.09)	4.47	52	0.00	-5.45 (8.88)	-7.90 – -3.00
Anxiety level	Pretest Posttest	25.41 (9.25) 19.55 (7.95)	5,079	52	0.00	5.87 (8.41)	3.35 - 8.19
Maternal-fetal attachment scale	Pretest Posttest	88.67(14.38) 101.8 (9.30)	6,918	52	0.00	-1.31(13.88)	-17.01 - -9.36

M (SD) S: mean (standard deviation) of paired-sample correlations; M (SD) P: mean (standard deviation) of paired-sample tests; 95%CI: 95% confidence interval; r: result of calculation; df: degrees of freedom; P: significance (two-tailed).

Table 2 shows the significant effect of antenatal attachment education package intervention on increase in partner support, decrease in anxiety and increase in MFA after intervention compared to before intervention, p-value <0.05. The results also show an increase in mean partner support score from 47.75 to 53.21 with mean 95% CI: -5.45 (-7.90 - - 3.00). Decrease in anxiety from 25.41 to 19.55 with mean 95% CI: 5.48 (3.55 - 8.19) and increase in MFAS from 88.67 to 101.88 with mean 95% CI: -1.31 (-17.1 - -9.36).

The magnitude of the influence of prenatal attachment education packages compared to standard programs on increasing partner support, decreasing anxiety, and increasing MFA in primigravidas

Gain score data that were shown to be normally distributed were tested using an independent sample t-test (Table 3).

Table 3: Results of partner support scores, anxiety levels and MFA in the experimental and control groups.

Variables	Cluster	M(OF)S	r	gl	P	mp	95% CI
Partner Support	Intervention Control	5.45 (8.88) 0.63 (3.58)	3,673	68.20	0.00	4.82	2.24-7.41
Anxiety level	Intervention Control	5.00 (7.51) 0.89 (3.37)	3,642	71.88	0.00	4.11	1.86-6.36
Maternal-fetal attachment scale	Intervention Control	11.19 (13.99) 0.39 (7.02)	5,392	76.30	0.00	11.57	7:30-15:85

M (SD)S: group mean (standard deviation); mp: independent samples t-test mean; r: calculation result; df: degrees of freedom; p: significance (two-tailed); 95%CI: 95% confidence interval.

Table 3 shows the significant effect of the antenatal education package on attachment compared to standard services, p<0.00. The difference is demonstrated by the higher mean score in the experimental group compared to the control group. The magnitude of the effect of the MFA educational package compared to the standard program was tested using Cohen's d effect size, the results are as follows (Figure 2):

Figure 2: Cohen's effect size results.

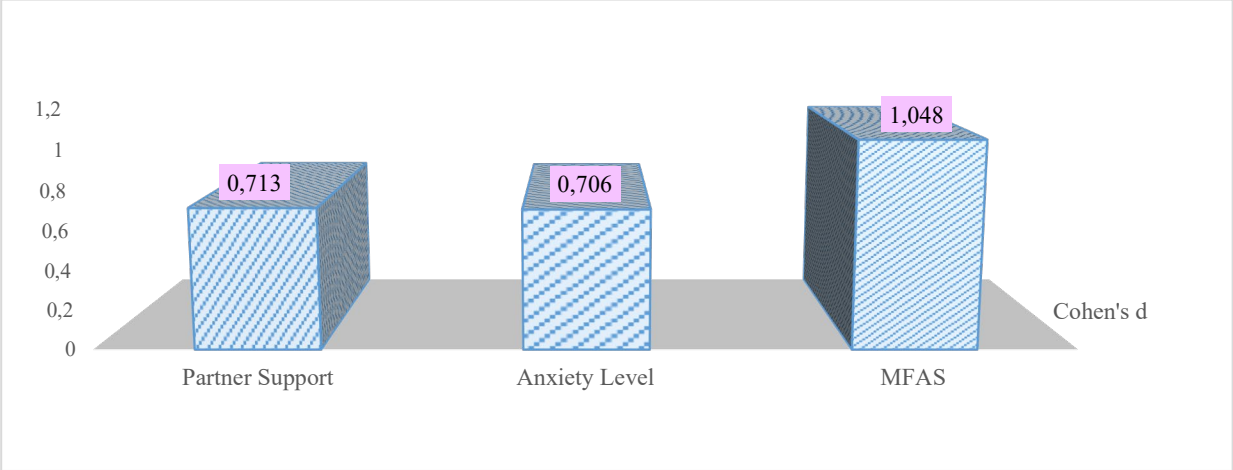
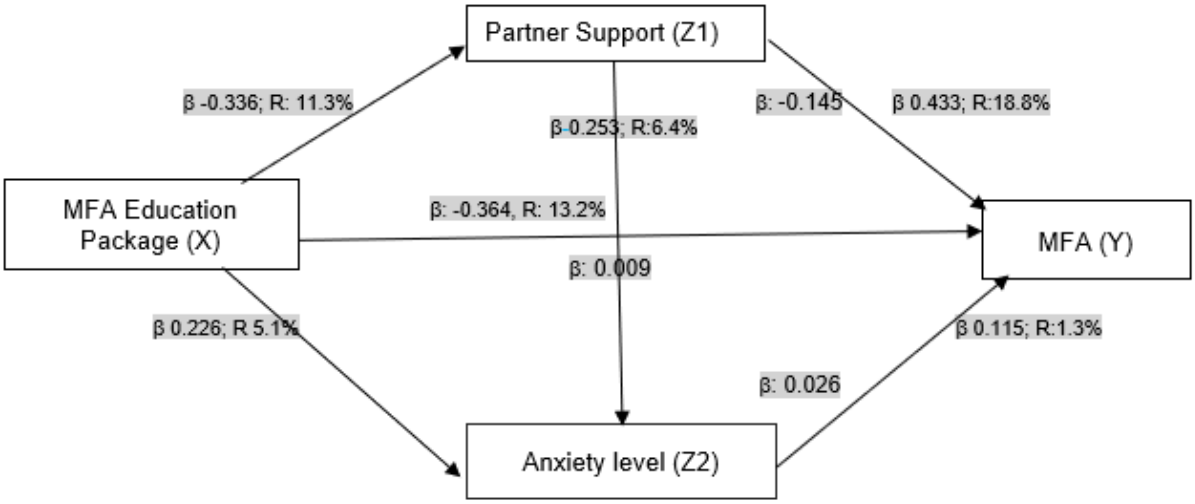


Figure 2 shows the difference in the magnitude of influence of providing prenatal attachment education packages compared to standard programs. The influence of prenatal attachment education packages on partner support, 0.713, and anxiety levels, 0.706 (moderate category) and 1.048 (high category).

The effect of the prenatal attachment education package intervention on increasing primimigravidas' MFA through increased partner support and decreased anxiety

The path analysis results in Figure 3 show a significant effect of providing the MFA educational package on increasing partner support, decreasing anxiety, and increasing MFA, $p < 0.05$. The magnitude of the direct effect of the MFA educational package on husband support level $\beta = -0.336$; R = 11.2%, on anxiety level $\beta = 0.226$; R = 5.1%, and on MFA $\beta = -0.364$; R = 13.2%, so the largest direct effect of the MFA educational package intervention is on MFA.

Figure 3: Results of the multivariate analysis of the Path Analysis



Information:

β	: Standardized coefficient
R	: Variation of dependent variable by independent variable
X	: Independent variable
Y	: Dependent variable
Z1,Z2	: Intermediate variable

DISCUSSION

The effect of prenatal attachment education packages on increased partner support, decreased anxiety, and increased MFA compared to before the intervention

The prenatal attachment education package has a significant effect on increasing partner support compared to before the intervention. The partner's attention and affection make the mother calmer and happier. The partner's stimulation of the fetus by frequently talking to the fetus can calm the fetus and build emotional bonds through voice and touch, which impact the fetus's cognitive, emotional, and social development.[15] Studies show that husbands who participate in training can transfer skills and support mothers in developing MFA better, providing better care for the fetus than those who do not receive training.[16] Effective partner support can improve health and relationships during pregnancy, resulting in a comfortable psychological relationship that affects the quality of the maternal-fetal relationship.[17]

The prenatal attachment education package intervention has a significant effect on reducing anxiety compared to before the intervention. Anxiety in the first pregnancy can be due to physical changes that cause body image disturbances, relationships with partners, concerns about childbirth, parenting plans, or financial problems. The sympathetic nervous system is stimulated when the mother faces anxiety-provoking situations. There is an increase in catecholamines (adrenaline and noradrenaline), which alter uteroplacental circulation, causing increased blood pressure and vasoconstriction, and having a negative impact on the mother and fetus.[18] Benson relaxation works by inhibiting sympathetic nerve activity, thereby reducing catecholamine levels. This relaxation reduces the body's oxygen consumption,

increasing the amount of oxygen circulating throughout the body. The body's muscles relax, creating a feeling of calm and comfort. Research shows that pregnant women who routinely engage in relaxation training experience a decrease in anxiety scores compared to before relaxation training ($p < 0.05$).[19]

The prenatal attachment education package intervention has a significant effect on reducing anxiety compared to before the intervention. The information, relaxation, and support provided to pregnant women affect the central nervous system by minimizing the body's response. The feeling of relaxation is transmitted to the hypothalamus to produce corticotropin-releasing hormone, which activates the anterior pituitary gland to synthesize 5-hydroxytryptophan into serotonin, increasing serotonin production, increasing happiness, and caring for the fetus.[20] Previous findings showed that attachment training had an effect on increasing the happiness of mothers with a history of unintended pregnancy, $p<0.001$.[21] Another relevant result was that training based on the belief model, attitude, subjective norms and enabling factors increased the MFA and improved the neonatal psychological health indicators, $p<0.001$.[22]

The results of this study demonstrate that the provision of MFA educational packages by nurse-midwives as part of health promotion efforts during pregnancy increases MFA. Good MFA can improve pregnancy care so that both mother and fetus are healthy until birth. Prenatal services in health centers, clinics, and hospitals can use this MFA educational package to increase partner support, reduce anxiety, and increase MFA among pregnant women through prenatal classes.

The magnitude of the influence of prenatal attachment education packages compared to standard programs on increasing partners support, decreasing anxiety, and increasing MFA in primigravidas

The increase in partner support was significantly greater in the MFA educational package intervention group compared to the standard program. The role of partner support can build confidence and awareness in pregnant women that their presence and pregnancy conditions are cared for, loved, and appreciated as part of a family that supports and needs one another. The impact on the pituitary gland produces endorphins, making pregnant women feel safe and comfortable. Mothers become calmer and happier, which is helpful in reducing anxiety.[17] Previous findings confirm that social support, especially from partners, was significantly correlated with higher MFA ($p<0.001$).[23] In the standard program, there is no information or encouragement regarding the importance of husbands' support for pregnant women. The husbands still pay attention to their pregnant wives and their fetuses. The partners do not receive specific information and support about the benefits and techniques of providing support to their pregnant wives. The partners perceptions and beliefs about taboos and fear of harming the fetus make them reluctant to interact with the fetus. This makes the mother feel sad and disappointed, which triggers increased adrenaline and cortisol production. The study's results are consistent with the fact that partners are less concerned about mediating anxiety, which has an impact on fetal development.[16]

The decrease in anxiety was significantly greater in the MFA educational package intervention group compared to the standard program. In the MFA educational package, pregnant women receive knowledge about the physical and emotional changes during pregnancy and efforts to overcome pregnancy complaints, as well as

knowledge about fetal growth and development so they can increase attention, affection, and care during their pregnancy. Efforts to overcome emotional discomfort, implemented through the Benson relaxation technique, are easy for pregnant women to implement independently. Relaxation exercises are important for pregnant women because they can reduce muscle tension, involve conscious contractions, and muscle relaxation throughout the body. Relaxation is useful for reducing muscle tension, making you more comfortable and relaxed, so that the circulation of oxygen and nutrients throughout the body and to the fetus is optimal.[24] Previous findings related to relaxation interventions in pregnant women improved sleep quality compared to those who were not taught relaxation techniques ($p<0.05$).[25] Relaxation reduces emotional tension and increases comfort, so it is important to practice it during pregnancy. In the control group, pregnant women received standard education that included pregnancy care and pregnancy danger signs. Mild anxiety still occurred in pregnant women due to concerns about their first pregnancy and suboptimal support from their husbands. The study results are relevant in that there is a significant correlation between stress-inducing factors and coping mechanisms for overcoming emotional problems with the pregnant women's anxiety level ($r = 0.46$, $p < 0.05$).[24]

The intervention of the MFA educational package has an effect on improving MFA. Education on MFA by introducing knowledge about MFA, attachment stimulation skills, partner role and support, and management of emotional changes in pregnancy can be used to change cognitive and emotional strategies and situational factors so that they have an impact on improving MFA. Teaching how to overcome anxiety during the prenatal period can increase knowledge, provide psychosocial support, and change situational factors that have an impact on MFA change. In the control group, most of the MFA results were in the good category, but the mean difference between the experimental group: 11.19 (13.19) and the control group: 0.39 (7.02) was relatively large. This is because the control group did not receive education on the benefits of MFA, MFA stimulation techniques, or fetal movement counting.[26] The influence of the prenatal attachment education package was greater in increasing MFA; this could be because primigravida research subjects, when not exposed to information, did not have sufficient knowledge and understanding about pregnancy, stimulation, and care of the fetus.[27] The study found that prenatal attachment education for primigravidas most readily influenced improved emotional regulation and motivation to act in order to practice high MFA. These results demonstrate the importance of prenatal education using the MFA educational package module guidelines for pregnant women from the first trimester in health centers, clinics, and hospitals. Periodic observations were conducted to determine the impact of implementation.

Partner support and anxiety also affect the increase in MFA, although in this study, there was a relatively small increase in partner support due to the husband's busy work schedule. Likewise, the decrease in anxiety was relatively small because the initial study data were in the non-anxious to mild anxiety category. Partners are the most psychologically close individuals. Partner support in the form of care and affection can create a sense of security and comfort in the mother, impacting anxiety reduction. Pregnancy comfort contributes to increased MFA. This result occurs because the MFA educational package optimizes prenatal psychological health services, which optimizes support for the husband, so that mothers feel more comfortable, happy, and less anxious, and MFA increases, which contributes to the physical health of the mother and fetus. Prenatal education with standard programs

teaches only physical health care without paying attention to prenatal psychological aspects.

The effect of the prenatal attachment education package intervention on increasing primigravida MFA through increased partner support and decreased anxiety

The results of the path analysis showed that the maternal attachment education package significantly influenced the greatest increase in MFA. The indirect influence through partner support and anxiety pathways showed smaller results. This result is due to the fact that primigravida women are experiencing their first pregnancy, and feelings of wonder trigger curiosity about the rapid growth and development of the fetus. Primigravida women have relatively free time to interact with the fetus, describe fetal characteristics, and meet care needs.[28] Although concerned about the first pregnancy, obtaining the expected information is easy to apply in foster homes and pregnancy care. This direct influence is in line with the study's findings that providing training and practice in counting fetal movements in primigravidas can increase sensitivity and develop maternal-fetal intimacy (intervention group (7.63 + 3.85), control group (0.63 + 1.61), $p < 0.001$).[29] This is because MFA education in primigravidas is more readily accepted and impacts cognitive abilities, emotions, and related situational factors. This education is provided from 16 weeks of gestation; the fetus can hear and move gently, feeling external stimulation, felt by the mother, affecting the emotional relationship between mother and fetus. Thinking about the fetus, paying attention to and understanding changes in oneself during pregnancy, and fetal growth and development form an important mentality in attachment actions. Pregnant women's ability to think, understand, and express feelings, desires, and goals to their fetuses is more developed due to understanding, seeking thoughts and feelings about the fetus, the growing interest in fetal development, and the affective function of MFA.[30]

The results of this study were observed through controlling factors that may affect MFA, such as maternal age limited to a healthy productive age of 20 to 35 years. Primigravidas were limited due to their first pregnancy experience, with a range of adaptation to psychological preparation equal across subjects. Socioeconomic status was not controlled, but the majority of pregnant women who received prenatal care at the community health center were middle- to lower-class, so it was homogenized. However, in this study, the partner's care during pregnancy was generally good, so the change in outcomes before and after the intervention was smaller. Prenatal anxiety may be caused by increasing gestational age and concern about childbirth.

CONCLUSIONS

The MFA educational package intervention was shown to have an effect on increasing partner support, decreasing anxiety, and increasing MFA in primigravidas. The effect of the prenatal education package on increasing MFA was in the highest category, while the effect on increasing partner support and decreasing anxiety was in the medium category.

The prenatal attachment education package significantly affected the increase in MFA, but did not demonstrate an effect on increasing partner support and decreasing anxiety.

The MFA educational package can be used by nurses as a guide in prenatal classes, complementing the educational material contained in maternal and child health textbooks.

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