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Differences in knowledge and attitudes of bride to be women before and after receiving health education about preconception nutrition through a WhatsApp group

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Abstract

Preconception health, particularly nutritional status, is a crucial factor in pregnancy preparation and is closely associated with maternal and neonatal outcomes. In West Kalimantan, the proportion of pregnant women at risk of Chronic Energy Deficiency (CED) reached 14.0% in 2017. Additionally, the prevalence of Low Birth Weight (LBW) increased from 3.20% in 2016 to 3.62% in 2017. This study aimed to determine differences in knowledge and attitudes of prospective brides before and after receiving health education on preconception nutrition delivered through a WhatsApp group in the West Pontianak Office of Religious Affairs (KUA) area. This study employed a quasi-experimental design with a one-group pretest–posttest approach. A total of 41 respondents were selected using consecutive sampling. Primary data were collected using a structured questionnaire. The results showed a significant improvement in both knowledge and attitudes of prospective brides after the health education intervention, with a p-value < 0.05 (p = 0.000). In conclusion, health education delivered through WhatsApp groups is effective in improving knowledge and attitudes regarding preconception nutrition among prospective brides.

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INTRODUCTION

Prospective brides and grooms are couples who will soon enter marriage and begin family life, which is closely related to the preconception period because conception generally occurs shortly after marriage. The quality of the next generation is strongly influenced by conditions before and during pregnancy. Therefore, preconception health, particularly nutritional status, is an essential aspect of pregnancy preparation due to its close relationship with maternal and neonatal outcomes (Marzon, 2024; Kandel, 2024). Nutritional status is a key determinant of pregnancy success and infant well-being, and its management is more effective when initiated before pregnancy (González-Fernández et al., 2024). Women aged 20–35 years are the most appropriate target group for the prevention of nutritional problems, as this period is optimal for physical and psychological readiness to achieve healthy pregnancy outcomes (Hamid, 2014). The preconception period generally occurs three to six months prior to conception and represents a critical window for health interventions.

Energy intake is one of the most important nutritional factors during pregnancy, as it directly affects fetal growth and birth weight (Lassi et al., 2014; Marni, 2014). The total additional energy requirement during pregnancy is approximately 80,000 kcal, equivalent to about 300 kcal per day, with lower increases in the first trimester compared to the second and third trimesters (Arisman, 2010). Inadequate energy intake before and during pregnancy may result in chronic energy deficiency (CED), which remains a major public health problem in developing countries, including Indonesia. Malnutrition is an indirect yet preventable cause of maternal and infant mortality (Proverawati, 2010). Pregnant women with CED are at increased risk of anemia, bleeding, abnormal weight gain, infectious diseases, prolonged labor, premature birth, postpartum hemorrhage, and operative delivery. Furthermore, CED adversely affects fetal outcomes, including miscarriage, stillbirth, neonatal death, congenital anomalies, low birth weight (LBW), anemia in infants, and intrapartum asphyxia (Ervina et al., 2014).

National and regional data indicate that nutritional problems among women of reproductive age remain significant. Based on the 2017 Indonesian Health Profile, the proportion of pregnant women aged 15–49 years at risk of protein-energy malnutrition, indicated by a mid-upper arm circumference (MUAC) < 23.5 cm, reached 21.2% nationally, while in West Kalimantan the prevalence was 14.0%. Additionally, the prevalence of LBW in West Kalimantan increased from 3.20% in 2016 to 3.62% in 2017 (Dinas Kesehatan Provinsi Kalimantan Barat, 2017). Pontianak City, as the provincial capital with 655,857 inhabitants, recorded 11,825 live births in 2017, including 316 LBW cases (Dinas Kesehatan Kota Pontianak, 2017). These data highlight the persistent burden of maternal undernutrition and adverse birth outcomes, emphasizing the importance of early preventive interventions, particularly during the preconception period.

The fulfillment of adequate nutritional status among prospective brides is closely associated with their level of knowledge and attitudes toward preconception nutrition. Nutritional knowledge reflects an individual's ability to understand nutritional concepts and information, which is influenced by experience, education, environment, social factors, facilities, and exposure to counseling (Kismoyo, 2005). According to Lawrence Green in Notoatmodjo (2010), health behavior is influenced by knowledge, beliefs, attitudes, social support, resources, and culture. Previous studies have demonstrated a significant relationship between nutritional knowledge and attitudes as well as nutritional practices among women of reproductive age and pregnant women (Ervina, 2014; Mawaddah, 2008). These findings indicate that improving nutritional knowledge and attitudes before pregnancy is essential to enhance maternal and infant nutritional outcomes. However, existing nutrition programs in Indonesia primarily focus on toddlers, pregnant women, breastfeeding mothers,

adolescents, and disease prevention, while women approaching marriage have not been prioritized as a specific target group.

Health education is a key promotive and preventive strategy to address nutritional problems, including CED and anemia, among women of reproductive age. The Healthy Indonesia Program emphasizes strengthening promotive and preventive efforts through community empowerment, and community health education aims to improve knowledge, awareness, and healthy behaviors (Ali, 2010). In midwifery practice, midwives play a crucial role in providing counseling and health education during the preparation for parenthood. In the digital era, social media and mobile instant messaging services offer innovative platforms for health education delivery. Smartphone usage in Indonesia continues to increase, with WhatsApp being one of the most widely used applications (Puspitasari & Ishii, 2016). Previous studies have shown that WhatsApp-based education can significantly improve knowledge, attitudes, and behaviors (Wibisono, 2017). However, there is still a research gap regarding the use of WhatsApp as a medium for preconception nutrition education specifically targeting prospective brides. The novelty of this study lies in utilizing WhatsApp group-based health education focused on preconception nutrition for prospective brides, a population that has received limited attention in nutrition interventions. Therefore, this study aims to analyze differences in knowledge and attitudes of prospective brides before and after receiving health education on preconception nutrition through WhatsApp in the West Pontianak KUA area.

METHOD

This study employed a quasi-experimental design using a one-group pretest–posttest approach without a control group. The study was conducted in the West Pontianak Office of Religious Affairs (KUA) area. The population consisted of prospective brides registered at the West Pontianak KUA during the study period. The sampling technique used was consecutive sampling, and a total of 41 respondents who met the inclusion criteria were recruited.

The inclusion criteria were prospective brides who were registered for marriage at the West Pontianak KUA, willing to participate in the study, able to access and use WhatsApp, and present during the pretest and posttest sessions. Respondents who did not complete the intervention or failed to fill out the questionnaires completely were excluded from the study. Primary data were collected using a structured questionnaire designed to assess respondents' knowledge and attitudes regarding preconception nutrition. The questionnaire was administered twice: before the intervention (pretest) and after the intervention (posttest). The health education intervention was delivered through a WhatsApp group and included educational materials on preconception nutrition, such as text messages, images, and interactive discussions facilitated by the researcher. The intervention was conducted over a predetermined period to ensure adequate exposure to the educational content.

Data analysis was performed using statistical software. Univariate analysis was conducted to describe the characteristics of respondents and to present the distribution of knowledge and attitude scores, including mean, median, and standard deviation. The Wilcoxon signed-rank test was used for bivariate analysis to determine differences in knowledge and attitudes of prospective brides before and after receiving health education on preconception nutrition through the WhatsApp group. Statistical significance was set at $p < 0.05$.

RESULTS AND DISCUSSION

Table 1. Distribution of Knowledge of Prospective Brides Before and After Receiving Health Education on Preconception Nutrition through WhatsApp Groups in the West Pontianak KUA Region.

Treatment	n	Mean	SD	Median	Min	Max
Pretest	41	7.17	1,642	7	4	11
Posttest	41	14.49	0.810	15	12	15

Based on Table 1, it can be seen that the median knowledge of prospective brides before receiving health education through the WhatsApp group was 7, and after receiving health education through the WhatsApp group, it was 15.

Table 2. Distribution of Attitudes of Prospective Brides Before and After Receiving Health Education on Preconception Nutrition through a WhatsApp Group in the West Pontianak KUA Region.

Treatment	n	Mean	SD	Median	Min	Max
Pretest	41	33.20	2,629	33	28	38
Posttest	41	39.10	1.068	39	36	40

Based on Table 2, it can be seen that the median attitude of prospective brides before receiving health education through the WhatsApp group was 33, and after receiving health education through the WhatsApp group, it was 39.

Table 3. Differences in Knowledge Before and After Receiving Health Education on Preconception Nutrition through a WhatsApp Group in the West Pontianak KUA Region.

Treatment	n	Median (Minimum-Maximum)	Difference	p-value
Pretest	41	7 (4-11)	8	0.000*
Posttest	41	15 (12-15)		

Based on Table 3, the p-value is 0.000 ($p < 0.05$), indicating that there is a significant difference in knowledge before and after receiving health education about preconception nutrition through a WhatsApp group.

Table 4. Differences in Attitudes Before and After Receiving Health Education on Preconception Nutrition via WhatsApp Group in the West Pontianak KUA Region.

Treatment	n	Median (Minimum-Maximum)	Difference	p-value
Pretest	41	33 (28-38)	6	0.000*
Posttest	41	39 (36-40)		

Based on Table 4, the p-value is 0.000 ($p < 0.05$), indicating that there is a significant difference in attitudes before and after receiving health education about preconception nutrition through a WhatsApp group.

DISCUSSION

The results of the statistical analysis showed a significant difference in the knowledge of prospective brides before and after receiving health education on preconception nutrition through a WhatsApp group ($p = 0.000$). This finding indicates that health education delivered via WhatsApp groups is effective in improving respondents' knowledge. Prior to the intervention, the results of the knowledge questionnaire revealed that only 8 respondents answered question number 12 correctly, 7 respondents answered question number 13 correctly, and 3 respondents answered question number 14 correctly. These questions were related to the recommended portion sizes for prospective brides in preparing for pregnancy,

indicating that most respondents had insufficient knowledge regarding appropriate nutritional portions during the preconception period. After the provision of health education through the WhatsApp group, there was a marked improvement in knowledge, with 38 respondents answering question number 12 correctly, 41 respondents answering question number 13 correctly, and 34 respondents answering question number 14 correctly.

The findings suggest that the low level of knowledge observed before the intervention was largely due to limited access to information and a lack of prior exposure to education related to preconception nutritional needs. Health education plays a vital role in improving human quality by providing information and increasing awareness of health-related issues (Laranjo, 2014). Furthermore, health education serves as a means to increase knowledge, shape attitudes, and ultimately encourage desired health behaviors (Wahidah, 2023; Machfoedz, 2009). The increase in respondents' knowledge following the intervention may be attributed to the learning process that occurs through health education, where information that was previously unknown becomes known and understood. This is consistent with Notoatmodjo's (2010) theory, which states that learning is an effort to acquire new elements of behavior, including knowledge, skills, abilities, and values, through one's own mental activities. Knowledge gained through learning is expected to form the basis for changes in attitudes and behaviors.

Health education is one of the most effective approaches for delivering health-related messages so that information can be received and understood properly by the target population. The objectives of health education include providing knowledge about the principles of healthy pregnancy, encouraging positive attitudes and behaviors, and promoting a healthy lifestyle through balanced nutrition. The use of appropriate media can enhance the effectiveness of health education delivery, as visual and textual stimuli help reinforce learning. In this study, the use of digital media through WhatsApp facilitated the dissemination of information in a practical and accessible manner, allowing respondents to engage actively with the educational content.

The findings of this study are consistent with previous research conducted by Wibisono (2017), which demonstrated a significant increase in knowledge following health education delivered through WhatsApp groups ($p < 0.000$). According to Ekadinata, Widyandana, & Widyandana (2017), social media particularly WhatsApp can be optimized as a medium for health education to improve public knowledge. Social media serves as a simple and effective communication platform that enables interaction between educators and learners, as well as peer discussion, thereby enhancing knowledge acquisition. Advances in communication technology, especially the widespread use of smartphones and internet services, have provided substantial opportunities for improving access to health information. WhatsApp, as one of the most popular social media platforms, allows users to exchange messages, images, videos, and engage in group discussions, making it a highly suitable medium for health education (Jumiatmoko, 2016).

In addition to knowledge, this study also found a significant difference in the attitudes of prospective brides before and after receiving health education on preconception nutrition through WhatsApp groups ($p = 0.000$). Prior to the intervention, the attitude questionnaire showed the lowest positive attitude scores on question number 1 (total score 118) and question number 2 (total score 136), indicating that many respondents believed that healthy and nutritious food is expensive and that healthy eating does not need to start before pregnancy. Following the intervention, there was a notable improvement in attitudes, as reflected in higher total scores for question number 1 (157) and question number 3 (161). These results suggest that health education successfully reshaped respondents' perceptions and attitudes toward preconception nutrition.

The negative attitudes observed before the intervention were closely related to the respondents' limited knowledge about preconception nutritional needs. Similarly, Rahim (2013) found a significant improvement in attitudes among preconception women following educational courses for prospective brides ($p < 0.05$). Attitude is a relatively stable outcome of cognitive and emotional processes, and positive changes in attitude generally occur when individuals perceive a strong and meaningful need. Health education acts as a dynamic force that influences physical, mental, emotional, and ethical development. In this context, health education delivered through WhatsApp groups served as a stimulus that shaped respondents' mindsets and attitudes toward preparing for a healthy pregnancy.

The attitude represents an individual's closed response or predisposition toward a stimulus and reflects readiness to act. Therefore, improved attitudes toward preconception nutrition are expected to encourage prospective brides to adopt healthier dietary behaviors in preparation for pregnancy. In this study, the use of WhatsApp groups, a technology that is familiar and widely used by the community (Ellynia, 2023), facilitated interaction, discussion, and information exchange among participants.

WhatsApp, derived from the phrase "what's up," is a multi-platform messaging service that enables users to communicate through internet-based messaging. Its interactive features allow individuals to exchange ideas, build shared understanding, and influence one another's perspectives. As one of the most widely used social media platforms, WhatsApp provides an effective forum for delivering health messages both individually and in groups. The use of WhatsApp in this study facilitated communication between health educators and prospective brides, enabling the dissemination of information on preconception nutritional needs and encouraging interaction among participants. Consequently, WhatsApp-based health education represents a practical and effective approach to improving knowledge and attitudes related to preconception nutrition.

CONCLUSION

Health education on preconception nutrition delivered through WhatsApp groups resulted in meaningful differences in both knowledge and attitudes of prospective brides before and after the intervention. These findings indicate that WhatsApp-based health education is effective in improving understanding and shaping positive attitudes toward preconception nutrition. The results of this study may serve as a reference or comparison for future research employing similar educational methods. Further studies are encouraged to consider additional factors, such as environmental influences, that may affect knowledge and attitudes in order to obtain more comprehensive results.

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