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Social support interventions in health cadres on knowledge and self-efficacy in managing pregnant women with iron deficiency anemia in Indonesia

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Abstract

Background: Anemia in pregnant women is not only a health concern for the mothers themselves but also has an impact on the health of the fetus. The role of health cadres is crucial in addressing anemia in pregnant women. **Purpose:** To evaluate the influence of community support interventions on the knowledge and self-efficacy of health cadres in managing anemia in pregnant women in the Thousand Islands region, Indonesia. **Method:** The research design is quasi-experimental with a single intervention group. A total of 30 health cadres on Kelapa Island and Harapan Island received community support interventions for managing anemia in pregnant women. Assessments of knowledge and self-efficacy were conducted before and after the intervention. Data analysis was performed using paired sample t-tests. **Results:** Indicate that community support interventions significantly improved the knowledge of health cadres about anemia in pregnant women ($p < 0.05$). Furthermore, the self-efficacy of health cadres also experienced a significant increase after the intervention ($p < 0.05$). **Conclusion:** Community support interventions effectively enhance health cadres' knowledge and self-efficacy in managing anemia in pregnant women in the Thousand Islands region. This study has implications for improving the quality of health services and the management of anemia in pregnant women.

Keywords: Anemia; Community Health Worker; Community Support; Knowledge; Self-efficacy.

INTRODUCTION

Pregnancy is a condition that describes the period during which a fetus develops in the uterus, typically lasting for 40 weeks or more than nine months, calculated from the last menstrual period (National Institutes of Health, 2023). Expectant mothers should strive to maintain healthy behaviors to ensure the well-being of the developing fetus. The Ministry of Health of Indonesia suggests several efforts to keep pregnant women in good health, including having at least six prenatal check-ups with two ultrasound examinations, regularly taking iron tablets, attending prenatal classes, and maintaining a balanced diet along with routine iron tablet consumption (Ministry of Health of the Republic of Indonesia, 2022).

Maintaining clean and healthy behaviors during pregnancy is crucial to avoid various complications that are often experienced during childbirth. However, in practice, keeping expectant mothers healthy can be challenging (Herzog-Petropaki, Derksen, & Lippke, 2022). A study in China found that pregnant women are still frequently exposed to cigarette smoke, have low diversity in their diet, experience unhealthy weight gain, and lack folate

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intake (Ma, Gao, Li, Sun, Wang, Zhang, Dill, Medina, & Rozelle, 2020). Qualitative studies also report similar findings, with five participants having smoked during pregnancy and four participants having consumed alcohol during pregnancy (Grant, Morgan, Mannay, & Gallagher, 2019). If left unaddressed, these issues can lead to various complications during pregnancy.

The Centers for Disease Control and Prevention (CDC) mentions that common pregnancy complications include high blood pressure, preeclampsia, premature birth, miscarriage, gestational diabetes, urinary tract infections, and anemia (Centers for Disease Control and Prevention, 2023). The World Health Organization (WHO) defines anemia as a condition in which the red blood cell count or hemoglobin concentration in the body is less than 11 g/dL (World Health Oraniza, 2022). The body requires sufficient hemoglobin to carry oxygen throughout the body, so when hemoglobin levels are low, it can lead to fatigue, weakness, dizziness, and difficulty breathing (World Health Oraniza, 2022).

Anemia is a prevalent public health issue among pregnant women (World Health Oraniza, 2023). Global data shows that 37% of pregnant women suffer from anemia (World Health Oraniza, 2023). In Indonesia, the prevalence of anemia among pregnant women is also alarming. The 2018 Basic Health Survey (*Riskesdas*) results indicate that approximately 48.9% of pregnant women have anemia. This indicates an 11.8% increase in the prevalence of anemia among pregnant women compared to the 2013 *Riskesdas* results (Ministry of Health of the Republic of Indonesia, 2018). Undiagnosed and untreated anemia can have serious consequences for the health of both the mother and the fetus (Garzon, Cacciato, Certelli, Salvaggio, Magliarditi, & Rizzo, 2020). If not addressed, it can potentially lead to complications such as miscarriage, bleeding during pregnancy, premature birth, fetal development issues, birth-related and postpartum complications, low birth weight, developmental problems in children, and even an increased risk of death for both the mother and the fetus (Hidayanti & Rahfiludin, 2020; Widoyoko & Septianto, 2020; Wulandari, Sutrisminah, & Susiloningtyas, 2021).

In general, anemia in pregnant women can be triggered by various factors, including iron deficiency, folate deficiency, and vitamin B12 deficiency (Timmons, 2023). Suboptimal dietary patterns among pregnant women and limited access to healthcare services often influence these factors. In island regions such as the Thousand Islands of Indonesia, where medical resources and nutrition are limited, the risk of anemia among pregnant women is often higher. A study indicates that pregnant women living in island regions face a higher risk of anemia due to a lack of dietary variety, limited access to healthcare services, and a lack of knowledge about anemia prevention (Jeffers, Wilson, Tappis, Bertrand, Veenema, & Glass, 2022; Kaforau, Tessema, Bugoro, Pereira, & Jancey, 2022).

Health volunteers or health cadres, known as "*kader kesehatan*," are trained volunteers who have received limited informal medical training and are recruited from the community to assist in delivering healthcare services (Olaniran, Smith, Unkels, Bar-Zeev, & van den Broek, 2017). They are responsible for community health activities in their areas and focus on community health initiatives, including promotion, prevention, and community-based treatment, including maternal care (Hartzler, Tuzzio, Hsu, & Wagner, 2018; Lehmann & Sanders, 2007; Parajuli, Shrestha, Sah, Heera, Amgain, & Pyakurel, 2020). However, in practice, health cadres often face various challenges. Lack of knowledge and self-efficacy among health cadres is a challenge that ultimately affects efforts to prevent and manage anemia (Darmawati, Siregar, Kamil, & Tahlil, 2020; Purwati & Noviyana, 2018).

Nevertheless, studies show that health cadres play a crucial role in bridging the gap between communities and healthcare providers. They disseminate information on health promotion and disease prevention, including maternal healthcare, leveraging the strong relationships they have built within the community (Phiri, Prust, Chibawe, Misapa, Broek, Van Den, & Wilmink, 2017).

RESEARCH METHOD

This research employs a quasi-experimental pre-test-post-test one-group design. The intervention applied is a community support intervention, with a

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focus on enhancing the knowledge and self-efficacy of Health Cadres in addressing anemia in pregnant women in the Thousand Islands of Indonesia. The study was conducted in Pulau Kelapa and Pulau Harapan from September to November 2023. Data were collected before the intervention (pre-test) to obtain an initial understanding of knowledge and self-efficacy and then after the intervention (post-test) to assess the changes (Schweizer, Braun, & Milstone, 2016).

The sample in this study consist of 30 female participants selected using a total sampling method, meaning all Health Cadres who meet the inclusion criteria are included in the study. Inclusion criteria include active health cadres engaged in community health activities. Exclusion criteria comprise Health Cadres who are unwilling to participate or do not give permission to participate in the study, as well as those experiencing serious health conditions or not meeting the physical or psychological requirements for participation.

This study utilizes three types of questionnaires to collect data from respondents. Firstly, a demographic data questionnaire, which includes information on age, gender, educational level, and years of service as health cadres. Its purpose is to understand the basic characteristics of the respondents. Secondly, a knowledge questionnaire was modified from previous research (Subramaniam, Jagadeesh, Ramalingam, & Saranya, 2020). This questionnaire uses a Guttmann scale and consists of 10 true-or-false questions. It is designed to measure the level of health cadres' knowledge regarding the control of anemia in pregnant women. Lastly, a self-efficacy questionnaire was modified from previous research (Vaezi, Niknami, Zarei, & Hidarnia, 2020). This self-efficacy questionnaire employs a Likert scale with a rating range from 1 (Strongly Disagree) to 4 (Strongly Agree). It comprises ten questions and aims to measure the level of self-efficacy of health cadres in controlling anemia in pregnant women.

Subsequently, the researcher conducted validity and reliability tests for both questionnaires used in this study, namely the knowledge questionnaire and the self-efficacy questionnaire, involving 20 different respondents from the main respondent group in this study. The results of the validity test for the 10-item knowledge questionnaire showed that all question items had significance values less than 0.05 (p-value <0.05), indicating the validity of the instrument. Furthermore, the reliability test results for the knowledge questionnaire produced a Cronbach's Alpha value of 0.823, indicating a high level of reliability.

Additionally, the validity test results for the 10-item self-efficacy questionnaire also showed significance values less than 0.05 (p-value <0.05) for all question items, confirming the instrument's validity. Moreover, the reliability test results for the self-efficacy questionnaire yielded a Cronbach's Alpha value of 0.886, indicating a high level of reliability.

The intervention applied in this study focuses on community support related to anemia in pregnant women (Adams, Richmond, Watson, Cené, Urrutia, Ataga, Dunlap, & Corbie-Smith, 2021; Hartzler et al., 2018). This intervention is conducted through three sessions to enhance the knowledge and self-efficacy of health cadres in managing anemia in pregnant women.

The first session of this intervention is a time when health cadres share their experiences. They discuss the challenges and obstacles they face in preventing and managing anemia in pregnant women. The focus is on building shared understanding and facilitating the exchange of practical knowledge among health cadres.

The second session involves health education provided by the researcher. The educational material is designed to strengthen the theoretical understanding of health cadres regarding the condition of anemia, its consequences for the health of both mother and fetus and prevention and management strategies.

The third session of the intervention includes case studies and role-playing methods. Here, health cadres engage in case scenarios through role-playing. The goal of this method is to provide direct experience to health cadres in identifying, managing, and providing basic health education to pregnant women at risk or suffering from anemia. Additionally, role-playing aims to enhance the communication and counselling skills of health cadres in real-life contexts.

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The data collection process in this study is designed to encompass three main stages: the preparation stage, the intervention implementation stage, and the evaluation stage. Each stage has different focuses and methodologies to ensure comprehensive and accurate data.

The preparation stage is the initial step in data collection. During this stage, the determination and preparation of data collection tools are carried out, including research site permits, validation and reliability testing of instruments, selection and approach to research subjects, and explanation of the research objectives and procedures to them. Additionally, training is provided to the researcher and research assistants to ensure consistency and accuracy in data collection, including community support interventions. This stage also includes the selection and approach to research subjects and an explanation of the research objectives and procedures them.

The intervention implementation stage in this research involves three sequential steps. First, through sharing sessions, health cadres discuss their challenges in preventing anemia in pregnant women. Second, they receive in-depth health education on pregnancy and the risks of anemia. Finally, in case studies using role-play, they apply the knowledge learned in real-life case scenarios.

The evaluation stage is the final stage in data collection, where the effectiveness of the intervention is assessed. In this stage, data collection is conducted again to measure the knowledge and self-efficacy of health cadres in managing anemia in pregnant women after the intervention.

Data analysis is conducted using SPSS software version 23 to evaluate the impact of the community support intervention provided to respondents. Demographic data of the respondents are analyzed using frequency distribution analysis, which includes variables such as age, gender, educational level, and years of service as health cadres. Furthermore, normality tests using the Shapiro-Wilk test are conducted to assess whether the data are normally distributed. The results of the normality test indicate that both variables, knowledge and self-efficacy, have a normal distribution with significance values ($p>0.05$) for all these variables. This meets the criteria for using parametric statistical tests. To assess the impact of the community support intervention on the knowledge and self-efficacy of health cadres in controlling anemia in pregnant women, the statistical test used is the paired sample t-test.

This research has undergone an ethical evaluation process and obtained ethical approval from the Ethics Committee of the Faculty of Nursing, Universitas Muhammadiyah Jakarta, on September 9, 2023. Before conducting the research, the researcher provided a comprehensive explanation to all respondents about the research objectives, the process to be carried out, and the benefits that can be obtained from their participation. This ethical action provides participants with the opportunity to understand this research fully and gives them time to ask questions or provide necessary clarifications. Afterward, as a form of consent to participate in the research, participants signed an Informed Consent form.

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RESEARCH RESULTS

Table 1. Characteristic of Participants (N=30)

Variable	Results
Age (Mean ±SD) (Range)(Year)	(45.28±6.483) (25-50)
Education (n/%)	
Elementary School	4/13.3
Junior High School	8/26.7
Senior High School	15/50.0
University	3/10.0
Length of Experience as a Health Cadre (n/%)	
<5 Years	10/33.3
5-10 Years	15/50.0
>10 Years	5/16.7

The table above shows the average age of the participants with a mean and standard deviation (45.28 ± 6.483) and an age range between 30 to 50 years. In terms of education, half of the respondents had a senior high school background (50%), followed by 26.7% of respondents with a junior high school education, 13.3% of respondents with an elementary school education, and 10% of respondents with university education. Their experience as health cadres shows that 50% have contributed for 5 to 10 years, 33.3% have five years of experience, and a small number 5 (16.7%) have more than ten years of experience.

Table 2. Results of Pre- and Post-Implementation Data Analysis of the Information Support Intervention

Variable	(Mean±SD)	t	df	p-value
Knowledge (pre-and post-test)	(3.466±0.730)	26.000	29	0.000*
Self-efficacy (pre-and post-test)	(17.400±4.148)	22.971	29	0.000*

*) significant if α<0.05 with paired t-test

Based on Table 2, the research results using a paired t-test indicate a difference in the average scores for the variable knowledge of health cadres regarding the control of anemia in pregnant women (3.466) and self-efficacy in controlling anemia in pregnant women (17.400) before and after the implementation of the community support intervention. The statistical analysis also shows a p-value <0.05 for the variable knowledge of health cadres regarding the control of anemia in pregnant women (p-value= 0.000) and self-efficacy in controlling anemia in pregnant women (p-value= 0.000). Therefore, this research concludes that there is significant influence of the variables of knowledge and self-efficacy of health cadres regarding the control of anemia in pregnant women before and after the implementation of the community support intervention, with significance values lower than the alpha level (p<0.05).

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DISCUSSION

This study aims to identify the effects of community support intervention on the level of knowledge and self-efficacy of health cadres in controlling anemia in pregnant women. Preventing anemia in pregnant women has significant importance in maintaining the health of mothers and the development of the fetus. Anemia in pregnant women can lead to various health problems, including the risk of complications during pregnancy, premature birth, low birth weight babies, and fetal growth disorders (Young, Oaks, Rogers, Tandon, Martorell, Dewey, & Wendt, 2023). Furthermore, anemia in pregnant women can also increase the risk of bleeding during childbirth, which can potentially be life-threatening for the mother (Oktaviani, 2017). Therefore, preventing anemia through an approach that involves increasing the knowledge and self-efficacy of health cadres can play a crucial role in minimizing these risks and supporting maternal health.

Community support interventions for health cadres play a crucial role in improving their knowledge and self-efficacy in managing anemia in pregnant women. In this study, the intervention includes providing accurate and relevant information about the causes, symptoms, diagnosis, and management of anemia in pregnant women. Several studies have indicated that such interventions are effective in enhancing the knowledge of health cadres, which, in turn, can improve their ability to provide better healthcare services to pregnant women in need of specific attention regarding anemia (Adams et al., 2021; Hartzler et al., 2018).

Two significant main outcomes were found in this study regarding the impact of community support on the knowledge and self-efficacy of health cadres in managing anemia in pregnant women. First, the research results show that community support intervention has a significant positive impact on increasing the knowledge of health cadres regarding anemia in pregnant women. In the intervention group, health cadres significantly improved their understanding of the causes, symptoms, and measures for managing anemia. This suggests that the provision of accurate and relevant information can enhance their knowledge, which, in turn, can improve the quality of services they provide to pregnant women in terms of anemia management.

Health knowledge is a theoretical concept that encompasses detailed and specific information about the etiology, prevalence, risk factors, prevention, transmission, symptoms, disease treatment, as well as healthcare services and patient rights (Trevethan, 2017). The knowledge of health cadres is closely related to improving the quality of healthcare services. Health cadres with good knowledge of essential aspects of healthcare can provide higher-quality services to the community (Rahayuningsih & Margiana, 2023). Adequate knowledge about disease prevention, early detection, and management, including anemia in pregnant women, enables health cadres to perform their duties more effectively.

Previous studies have also highlighted the importance of health cadres' knowledge in enhancing the quality of services. Improved knowledge of health cadres about chronic disease management significantly contributes to better patient care and monitoring (Ingram, Doubleday, Bell, Lohr, Murrieta, Velasco, Blackburn, Sabo, De Zapien, & Carvajal, 2017; Mistry, Harris, & Harris, 2021). The results underscore that knowledge acquired by health cadres through training and community support can help them recognize disease symptoms better, plan more effective treatments, and provide better education to their patients.

The second finding of this study also reveals that community support intervention has a positive impact on the self-efficacy of health cadres in controlling anemia in pregnant women. The results show that after receiving the intervention, health cadres feel more confident in performing their tasks related to anemia management. This indicates that in addition to increasing knowledge, the intervention also strengthens the belief of health cadres in their ability to address anemia in pregnant women effectively. A study also mentioned the same, where an education-based training program significantly affected the self-efficacy of health cadres in managing cases in the community (Akhmadi, Sunartini, Haryanti, Madyaningrum, & Sitaresmi, 2021).

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The Social Cognitive Theory by Bandura provides specific insights into understanding the impact of community support interventions on the self-efficacy of health cadres. According to this theory, self-efficacy is defined as an individual's belief in their capacity to perform behaviors that can lead to desired outcomes (Gallagher, 2012). The self-efficacy of health cadres plays a crucial role in the management of anemia in pregnant women. Self-efficacy reflects the level of confidence and self-belief of health cadres in their ability to carry out tasks related to anemia, such as recognizing symptoms, conducting initial assessments, providing appropriate care, and educating pregnant women. Research indicates that high self-efficacy can have a positive impact on anemia management.

The primary limitations of this study lie in the sample size and the limited research location, which was confined to a single island. With a relatively small sample size and a focus on a specific island region, namely Pulau Kelapa and Pulau Harapan, the generalization of research findings to a larger population in the Indonesian archipelago becomes limited. Additionally, the geographic, cultural, and socio-economic variations among islands in this archipelago are not accounted for in this study, which means that the results may not reflect the same conditions on other islands.

CONCLUSION

This research indicates that community support interventions have a positive impact on the knowledge and self-efficacy of health cadres in managing anemia in pregnant women in the Indonesian archipelago. These findings have clinical and policy implications for improving the quality of healthcare services and anemia management in pregnant women. Despite some limitations in this study, these findings make a significant contribution to our understanding of the importance of providing accurate information to health cadres in efforts to address anemia in pregnant women.

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