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EFFECTS OF HEALTH EDUCATION WITH MODULE DEVELOPMENT ON HEALTHCARE CADRES' KNOWLEDGE AND ATTITUTE REGARDING EARLY DETECTION OF HIGH-RISK PREGNANCY

Pengaruh Pendidikan Kesehatan dengan Pengembangan Modul terhadap Pengetahuan dan Sikap Kader Kesehatan tentang Deteksi Dini Kehamilan Risiko Tinggi

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ABSTRAK

Metode pendidikan kesehatan yang efektif perlu dilakukan untuk memperkuat peran kader kesehatan dalam mencegah angka kematian ibu dan bayi dengan cara meningkatkan pengetahuan dan sikap kader tentang deteksi dini kehamilan risiko tinggi. Penelitian ini bertujuan untuk mengetahui pengaruh metode edukasi dengan pengembangan modul terhadap pengetahuan dan sikap kader tentang deteksi dini kehamilan risiko tinggi di masyarakat. Penelitian ini menggunakan desain quasi-experiment with comparison group yang dilaksanakan pada bulan April hingga November 2019 di sebuah Puskesmas di kota Bukittinggi, Sumatera Barat, Indonesia. Sampel penelitian terdiri dari 50 kader yang dibagi secara acak dibagi ke dalam kelompok kontrol (n= 25) dan kelompok intervensi (n= 25). Peserta dalam kelompok intervensi menerima modul yang dikembangkan oleh peneliti dan peserta dalam kelompok pembanding menerima buku panduan Kesehatan Ibu dan Anak (KIA) biasa. Pengetahuan dan sikap kader kesehatan diukur dengan menggunakan kuesioner Pengetahuan tentang Kehamilan Berisiko Tinggi dan Skala Sikap yang telah dimodifikasi oleh peneliti. Analisa data menggunakan uji-t berpasangan dan uji-t independen untuk statistik inferensial. Hasil penelitian ini menemukan bahwa skor rata-rata pengetahuan kader pada kelompok intervensi secara signifikan lebih tinggi daripada kelompok pembanding. Metode edukasi dengan pengembangan modul yang efektif secara signifikan meningkatkan pengetahuan kader sebagai pendidik kesehatan bagi ibu hamil di masyarakat. Dengan mengimplementasikan program edukasi dengan modul, efektivitas kader kesehatan dalam mendeteksi dini kehamilan berisiko tinggi dapat ditingkatkan secara signifikan, sehingga memberikan dampak dalam perawatan kesehatan yang lebih baik bagi ibu dan bayi.

***Kata kunci**: kader kesehatan, kehamilan berisiko tinggi, modul, pendidikan kesehatan, pengetahuan, sikap*

ABSTRACT

Effective health education methods need to be addressed appropriately to strengthen the role of healthcare cadres in preventing maternal and infant mortality rates by gaining their knowledge and attitude regarding early detection of high-risk pregnancy. This study aimed to identify the effect of education methods with module development on the knowledge and attitude of cadres about early detection of high-risk pregnancy in the community. A quasi-experimental design with a comparison group was conducted from April to November 2019 at a Public Health Center in Bukittinggi city, West Sumatra, Indonesia. The study samples comprised 50 cadres randomly divided into a

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control group of (n= 25) and an experimental group of (n= 25). Participants in the intervention group received a module that was developed by the researcher and participants in the comparison group received a regular Maternal and Child Health (MCH) handbook. The healthcare cadres' knowledge and attitude were assessed by using a modified Knowledge of High-risk pregnancy questionnaire and Attitude Scale, respectively. Data were analyzed using paired t-tests and independent t-tests for the inferential statistic. This study found the mean score of cadres' knowledge in the intervention group was significantly higher than those in the comparison group. The education methods with an effective module development significantly improved the cadres' knowledge as health educators for pregnant mothers in the community. By implementing the education program with a module, the effectiveness of healthcare cadres in early detection of high-risk pregnancies can be significantly enhanced, leading to better health outcomes for mothers and infants.

Keywords: attitude, health education, healthcare cadres, high-risk pregnancy**,** knowledge, module

INTRODUCTION

The World Health Organization (WHO) reports that nearly 800 women die every day related to complications during pregnancy and childbirth in 2020. Meanwhile, the infant mortality rate (IMR) worldwide in 2020 was around 19 deaths per 1000 live births [1]. High maternal mortality rates in some regions of the world reflect inequalities in access to quality health services and highlight the gap between the rich and poor [2]. The MMR in low-income countries in 2020 is 430 per 100,000 live births compared to 12 per 100,000 live births in high-income countries. Nearly 95% of all maternal deaths will occur in low and lower-middle-income countries by 2020, including in Indonesia. Indonesia is one of the ASEAN countries with a fairly high number of maternal deaths, namely 214 per 100,000 live births [3]. High-risk pregnancy is one of the major factors that can lead to high maternal and infant mortality rates [4]. This condition may be caused by a lack of knowledge of mothers about pregnancy, low socioeconomic status, education levels, and limited information regarding pregnancy care. [5].

The strategy to reduce MMR and IMR in Indonesia can be realized by promoting the degree of public health as mentioned in the Healthy Indonesia program in the 2015-2019 National Medium Term Development Plan. Ministry of National Development Planning of Indonesia has set target indicators to reduce MMR from 359 per 100,000 live births to 306 per 100,000 live births and IMR from 32 per 1000 live births to 24 per 1000 live births [6].

A reduction in MMR and IMR can occur if the number of high-risk pregnant women decreases. In 2010, approximately 34% of mothers belonged to high-risk pregnancy in Indonesia [3]. The category of single high risk reached 22.4% with details of maternal age less than 18 years at 4.1%, maternal age over 34 years old at 3.8%, birth spacing less than 24 months at 5.2%, and number of children more than three at 9.4% [7].

According to health profile data for West Sumatra in 2012, the number of pregnant women with high risk in West Sumatra was 23,037 pregnant women. In the city of Bukittinggi, 568 pregnant women were included in the high-risk group in December 2017 out of a total of 2,546 pregnant women. This data indicates that at least 22% of the total pregnant women in Bukittinggi City are at high risk during their pregnancy. The highest number of high-risk pregnant women, one of which is in the working area of the Rasimah Ahmad Bukittinggi Health Center, consisted of 84 people.

In many communities, especially in rural or underserved areas, the prevalence of high-risk pregnancies can be significant. This increases the demand for healthcare services and support [8]. Nevertheless, there is often a limited number of health officers

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available to provide the necessary care and support for these high-risk pregnancies. This creates a gap between the need for healthcare services and the capacity to deliver them [3]. Therefore, a healthcare provider can use them to provide an essential intervention and healthcare service in the community, including for pregnant women[9].

Healthcare cadres, being members of the community, can play a crucial role in bridging this gap. They can provide essential information, early detection, and support to pregnant women, thereby reducing the burden on health officers [10]. Cadres are often the closest individuals to the community and can reach pregnant women more effectively and efficiently than health officers who may be stretched thin [11].

To anticipate the prevalence of high risk during pregnancy, it is necessary to approach individuals who are closest to the community to provide information about high-risk pregnancies, particularly pregnant women [12]. Healthcare cadres are included as one of the health volunteers who are the closest individuals to the community. The involvement of healthcare cadres in the reduction of MMR and IMR as a whole was started earlier by the Ministry of Health by training them about pregnancy and its risks [13]. One of the duties of a healthcare cadre is to assist pregnant women. In general, this activity serves to detect the risks that may occur of three late births, and provide motivation and counseling to pregnant women including their families [14]. Healthcare cadres were previously prepared in terms of their knowledge and attitude to be able to early detection of high-risk pregnancies. One source of learning media that can be used is the module [15].

Modules as the primary educational media, healthcare cadres can benefit from a structured, flexible, and engaging learning experience that is both cost-effective and scalable. This approach not only enhances their knowledge and skills but also ensures a consistent and high-quality training process, ultimately contributing to better maternal and child health outcomes. Moreover, modules provide a structured and systematic way of delivering educational content[16]. This ensures that all necessary topics are covered comprehensively and in a logical sequence. Healthcare cadres can learn at their own pace, allowing them to spend more time on challenging topics and less time on concepts they already understand at any time, and making it easier for cadres to fit learning into their schedules [17].

A study by Al-Rahmad (2015) showed a significant difference between the cadres' knowledge before and after receiving the module as a training strategy [11]. Similarly, Murni and Fizran (2018) found that most healthcare cadres had insufficient knowledge about their roles and duties as associates for high-risk pregnant women and also their ability to detect early high-risk pregnancies. The lack of knowledge of these healthcare cadres is related to the absence of a guidebook for health cadres in providing information or counseling to pregnant women. The existing regular Maternal and Child Health (MCH) handbooks may have not fulfilled the needs of healthcare cadres regarding detailed information about risks in pregnancy [18].

The MCH Handbook is a simple tool as information, educational, and communication tool for disseminating important information about Maternal and Child Health to families and communities. The MCH handbook also can be a tool for the early detection of disorders or problems in mothers and children, a communication and counseling tool for mothers, families, and the community regarding maternal and child health services including referrals and standards for MCH services, nutrition, immunization, and child development. The MCH handbook is a communication tool because health workers can provide important records that can be read by other health workers and mothers and families, for example, complaints, examination results, birth records, services provided to mothers/infants/toddlers, results of additional examinations, and references. The MCH handbook is useful for reducing delays in

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high-risk control, reducing the impact of infection, compliance with midwifery service standards, and reducing delays in referrals to hospitals.

A preliminary study that was conducted among ten healthcare cadres at the Rasimah Ahmad Public Health Center, Bukittinggi West Sumatra in September 2019 found that most of the healthcare cadres lack knowledge and attitude regarding their roles and duties as companions for high-risk pregnant women and early detection of high-risk pregnancy due to the insufficient of information resources or learning media that can be used by healthcare cadres in carrying out their duties. Based on the results of interviews with mother and child program holders, the achievement of the target for early detection of high-risk pregnancy was still below the target, which was 49.4%, while the target should have been 58%. The reason is that the community has not been fully monitored by officers, then the mobility of the population is high, other causes are healthcare cadres do not report the case appropriately.

The study aimed to evaluate the impact of implementing a health education strategy with module development in comparison to the regular Mother Childhood Handbook (MCH) on the knowledge and attitudes of healthcare cadres regarding the early detection of high-risk pregnancies. The objective was to assess whether the new approach could lead to improved understanding and perception among healthcare professionals in identifying high-risk pregnancies at an early stage. By comparing the two strategies, the study sought to determine which method was more effective in enhancing the knowledge and attitudes of healthcare cadres toward early detection of high-risk pregnancies. The findings of this study could potentially contribute to the development of more effective training and educational programs for healthcare professionals, ultimately leading to better maternal and child health outcomes. Overall, the study aimed to provide valuable insights into the most effective approach for educating healthcare cadres on the early detection of high-risk pregnancies, with the ultimate goal of improving maternal and child health.

METHODS

The study design employed in this research was a quasi-experimental approach with pre-test and post-test measurements using a comparison group. The study was carried out within the working area of the Rasimah Ahmad Public Health Center, Bukittinggi City, spanning from April to November 2019. The target population for this study comprised 115 healthcare cadres. The sample size was determined using the finite population formula, resulting in 25 participants per group. The sampling technique utilized was purposive sampling, based on specific inclusion criteria, which encompassed the ability to communicate effectively, literacy skills, a minimum education level of junior high school, and active involvement in posyandu for over a year. Cadres who were unwilling to participate in the study were excluded from the research.

In the experimental group, participants were tasked with learning about the definition of high-risk pregnant women and early detection of high-risk pregnancies through the module that was developed by the researcher. Meanwhile, the control group focused on acquiring knowledge related to maternal and child health through the MCH Handbook. Each participant was allocated a week to engage with the respective learning modules provided by the researcher. This approach allowed for a comprehensive examination of the effectiveness of the interventions, shedding light on their potential impact within the context of the study. The duration of the study, coupled with the targeted population and specific learning objectives, aimed to provide valuable insights into the potential benefits of the interventions on the knowledge and practices of healthcare cadres.

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The development of the module has undergone a rigorous review process by experts in maternal and child health, obstetrics, and public health education. These experts assess the content for accuracy, relevance, and comprehensiveness. Based on the feedback from experts and pilot testing, the module is revised and improved to address any identified gaps or weaknesses. After the revisions, the module undergoes a final round of validation to ensure it meets the desired educational standards and objectives. By ensuring that the module has received construct validity from related parties and has been tested through pilot studies and continuous evaluation, it is more likely to be an effective educational tool for healthcare cadres. This thorough validation process helps to ensure that the module is both accurate and practical, ultimately contributing to better outcomes in the early detection of high-risk pregnancies.

Instruments in this study used three questionnaires including; 1) Participants characteristic questionnaire, 2) Knowledge questionnaire developed by researchers to assess knowledge of participants with a validity value of 0.959 and a reliability of 0.914. This questionnaire consists of 10 questions with a scale of 0 to 40, and 3) the attitude questionnaire adapted from Riduwan (2015) which uses 4 Likert scales with a minimum score of 10 and a maximum score is 40 [19].

Descriptive statistics were used to describe the distribution of variables with frequency, and percentage. The comparisons of participant's mean scores of knowledge and attitude between pre and post-intervention in each group were assessed using parametric paired t-tests since the assumption of the data showed normal distribution. For comparison analysis of pre-and post-intervention results between the two groups was used Independent t-tests. p-value less than 0.05 ($p < .05$) indicated statistical significance.

All participants have signed the informed consent form to participate in this study. To protect human rights and welfare of the health research subject, this study was approved by the Research Ethics Committee of the Faculty of Medicine, Andalas University West Sumatra Indonesia on May 03, 2019 (No. 166//KEP-FK/2019).

RESULT

Characteristic of the participants

Table 1. Frequency and Percentage of Demographic Data for the Intervention and the Comparison Groups (N = 50)

Characteristics	Intervention group (*n* = 25)		Control group (*n* = 25)	
	n	%	n	%
Age (years)				
21 – 30	3	12.0	0	0.0
31 – 40	3	12.0	1	4.0
> 40	19	76.0	24	96.0
Educational level				
Junior school	6	24.0	3	12.0
Senior high school	16	64.0	17	68.0
Diploma/Bachelor	3	12.0	5	20.0
Occupation				
Self-employee	4	16.0	3	12.0
Housewife	21	84.0	22	88.0

The characteristics of the participants are shown in Table 1. The distribution of respondent’s age was in the range of 40 year old for both groups, whereas 76% of participants in the intervention group and 96% of participants in the comparison group

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were 40 years old. Based on the level of education of the participants, it was found that both groups had a high school educational background, where 64% of the participants in the intervention group had a high school education back ground, while in the comparison group, as many as 68% were high school graduates. Characteristics of participants based on occupation, namely that of the 50 participants in this study it was found that almost all of them had jobs as housewives, where there were 84% of participants in the intervention group and 88% in the comparison group.

The Effect of Health Education with Module Development

Statistical analysis was conducted in order to determine the within-group effect and between-group effect of health education with module development on knowledge and attitude of health cadres about high-risk pregnancy.

The comparisson of posttest knowledge and attitude scores between two groups. In this study, the comparison of post-test scores between the groups was analyzed by using an independent t-test since the data met the assumption for normality and homogeneity. The mean of knowledge score of the participants in the intervention group after receiving the intervention (M = 14.49, SD = 2.52) was significantly higher than those in the control group (M = 12.92, SD = 2.19). Therefore, there was a significant difference in the mean of comfort scores after receiving the intervention between the subjects in the experimental group and the subjects in the control group (p = .003) as presented in Table 2.

Table 2. The Mean of posttest scores of Knowledge and Attitude Between the Intervention Group and Comparison Group (N = 50)

Variables	Intervention group (n=25)		Control group (n=25)		
	M	SD	M	SD	P
Knowledge	14.49	2.52	12.92	2.19	.00*
Attitude	33.56	2.48	34.40	2.52	.24

*p value < .05 , paired t-test

The comparisson of knowledge and attitude scores within the groups.

The comparison of pretest and post-test scores in each group was analyzed by using a paired t-test for the parametric statistic since the data showed normal distribution and the homogeneity was met. As shown in Table 3, the mean score of knowledge of the participants in the intervention group was significantly increased after receiving the intervention (p = .003). Also, the knowledge scores of the participants in the Control group who received the usual book increased significantly (p = .03). However, participants in the intervention group had significantly higher comfort scores than the Control group.

Table 3. The Mean of Pretest and Posttest Scores of Knowledge and Attitude Within the Intervention Group and Comparison Group (N = 50).

Variables	Pretest		Posttest		
	M	SD	M	SD	p
Intervention group (n=25)					
Knowledge	13.00	1.35	14.96	2.52	.00*
Attitude	32.72	3.45	33.56	2.48	.15
Control group (n=25)					
Knowledge	11.80	2.00	12.92	2.19	.03*
Attitude	34.48	3.66	34.40	2.52	.92

**p* value < .05 (Paired t test)

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Nevertheless, the mean score of participant's attitudes as shown in Tabel 3 revealed there is no significant difference before and after receiving the developed module in the intervention group, as well as the attitude score of the participants after receiving the usual MCH handbook in the control group ($p > .05$).

DISCUSSION

Consistently, numerous studies have provided health education with module development on knowledge and attitudes in various populations. Such as a study by Abdullah (2022) reported that the mean respondent's knowledge after receiving a developed module regarding diet programs for children increased significantly [20]. Likewise, the average attitude of the participants showed a significant increase after being given the module. In contrast, the results of this study are different from the research conducted by Willis (2018) on the effect of health education with modules and visual media on women's knowledge and attitudes in dealing with menopause, showing no significant change in the knowledge and attitudes of participants after receiving health education with modules and social media [21].

A study conducted by Rahmad (2015) regarding the effectiveness of using the module on the knowledge and accuracy of healthcare cadres in interpreting the results of toddlers weight public health service, that the training by using a developed module had a significant effect on increasing knowledge and cadre's competency ($p < .05$) compared to the training without modules [22]. Similarly, Ramawati (2013) found that there was a strong significant relationship between the utilization of module on mother's knowledge about postpartum lactation management and the effectiveness of module use in increasing mothers' knowledge about postpartum lactation management by 75 % [17].

In this study, a module as health education material was developed systematically and using a proper language that may easily be understood by the healthcare cadres. According to the age and level of knowledge of the healthcare, cadres could be studied independently with minimal guidance from health professionals. The development of the module can be a reference material for healthcare cadres in providing counseling to the community [23]. The main objective of the module system is to increase the efficiency and effectiveness of health cadres, both in terms of time, funds, facilities, and personnel to optimally achieve goals [17].

In this case, Notoatmojo (2007) argues that the strategy for obtaining behavior change is by providing information to raise awareness and ultimately cause other people to behave according to the knowledge they have [24]. Attitude is the reaction or response of someone who is still close to a stimulus or object. The manifestation of attitude cannot be seen immediately but can only be interpreted in advance from closed behavior. Attitudes show the connotation of appropriate reactions to certain stimuli which in everyday life are emotional reactions to social stimuli [25]. Providing information in health services In this case, the stimulation of attitude can be delivered by counseling [26].

The implementation of counseling should be delivered based on the needs of pregnant women during pregnancy visits, both in healthcare centers and in public health services [14]. The role of healthcare cadres in maternal and child health services can be performed by providing information about all health problems related to the health of pregnant women and also healthcare cadres have the rule to be an activator for groups or community organizations [27]. Additionally, healthcare cadres also have to assist healthcare professionals in identifying pregnant women who are at risk by conducting home visits. Healthcare cadres are direct drivers in the community in

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carrying out activities related to health and through collaboration between health workers, families, and community leaders [28].

CONCLUSION

The findings of this study revealed that the mean score of knowledge in the intervention group who received a developed module about high-risk pregnancy was significantly higher than those in the Control group who received the regular MCH handbook. Thus, the mean score of attitude showed there was no significant difference before and after receiving the intervention in both groups. In summary, using modules for health education has proven to effectively enhance knowledge among healthcare cadres, particularly in preventing complications during pregnancy. This approach offers structured and comprehensive information, equipping healthcare cadres with the necessary skills to address maternal health issues. Standardizing the delivery of health education through modules can lead to improved maternal health outcomes and better care for pregnant women, making it a valuable strategy for healthcare settings.

Based on the findings of this study, public healthcare providers should establish regular collaboration with healthcare cadres to enhance the strategy for preventing maternal and infant mortality within the community. Additionally, implementing educational modules can effectively improve the knowledge and attitudes of healthcare cadres towards various health issues prevalent in the community. This approach can contribute to a more proactive and informed healthcare workforce, thereby leading to better outcomes in maternal and infant health. By fostering ongoing collaboration and providing targeted education, public healthcare providers can make significant strides in reducing the incidence of maternal and infant mortality, ultimately improving the overall well-being of the community.

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