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The Impact of Education Classes for Pregnant Women on Knowledge About Pregnancy Complications



Abstract: Pregnancy does not always exhibit normal signs, and pregnant women may experience serious problems during pregnancy. Efforts to increase pregnant women's knowledge regarding the early detection of pregnancy complications include classes for pregnant women. Pregnant women's classes are a means of learning together about health for pregnant women in the form of face-to-face groups so that, through pregnant women's classes, it is hoped that pregnant women will be able to detect complications early. Therefore, it is hoped that it can indirectly reduce the incidence of pregnancy complications and the Maternal Mortality Rate (MMR). This study aimed to determine the effect of class education for pregnant women on their knowledge about pregnancy complications in the Cipayung District Health Center Area. This research used a quasi-experimental design and a pre-posttest with control. The population comprised pregnant women in the Cipayung sub-district community health center area, and the sample included pregnant women in the Cipayung and Munjul sub-district community health center area and Rangon cottage, with a purposive sampling strategy with a sample size of 60 people, 30 people in the intervention group, and 30 people in the control group. The data analysis used was a paired t-test (paired t-test), dependent and independent. The results showed that there was a difference in knowledge before and after the intervention, 8,65 and there was an influence of class education for pregnant women about pregnancy complications had an influence on knowledge ($p = 0.001$). Class education influenced pregnant women's knowledge of pregnancy-related complications.

Keywords: Class Education, Knowledge, Pregnancy, Complications.

A. INTRODUCTION

The maternal mortality rate is still in the range of 300 per 100,000 live births and is the highest among ASEAN countries. Maternal mortality in Indonesia remains dominated by three main causes: bleeding, hypertension in pregnancy, and infection. It was identified that 20% of pregnancies were prenatally at risk and 55% had poor pregnancy outcomes (Bobak, 2015)

Pregnancy is a natural event; however, pregnancy complications can occur in each trimester. Complications during pregnancy cannot be underestimated, because if they do not receive proper treatment, they can threaten the lives of the pregnant mother, baby, or both. Risky pregnancies can occur due to several factors, including poverty, inadequate nutrition, infections, sexually transmitted diseases (STDs), and the use of substances such as alcohol and drugs. For mothers, previous birth experiences, neonates, and families can also influence the risk of pregnancies.

Factors that put pregnancy and the fetus at risk include physiological, therapeutic, environmental, and idiopathic anatomical conditions. The psychosocial aspects include the characteristics of parents, children, support systems, and family situations.

Pregnancy does not always present with normal signs, and pregnant women may encounter serious complications. One way to improve their knowledge about early detection of pregnancy complications is through pregnancy classes. These classes are designed to enhance mothers' understanding and skills in areas such as pregnancy, prenatal care, childbirth, postpartum care, and newborn care. They serve as a platform for face-to-face group learning about health. Through these sessions, it is expected that pregnant women will be better equipped to detect complications early, thereby contributing to a reduction in pregnancy complications and, indirectly, lowering the maternal mortality rate (MMR).

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Nurses' roles in providing nursing care must prioritize prevention, for example, nutrition, hygiene, and infection prevention. Health promotion efforts are still carried out using teaching aids such as videos and illustrations/leaflets. Health promotion can include weight management, physical condition, and immunization (Fauziah, 2012)

Andi and Afriani's research (2022) revealed a significant impact of implementing pregnancy classes on the ability to detect early pregnancy complications. In contrast, Yulanda and Anita's study (2014) found no correlation between pregnant women's knowledge of pregnancy danger signs and their attitudes toward early detection of complications at the Kartasura Community Health Center. Risna and Ayu (2016) demonstrated a significant relationship between pregnant women's knowledge of danger signs and pregnancy complications and their compliance with antenatal visits; however, no significant association was found between this knowledge and the choice of delivery location. Similarly, Komariah and Nugroho (2019) concluded that knowledge, age, and parity were related to the incidence of pregnancy complications.

Based on the description above, one of the successes in preventing maternal deaths lies in the accuracy of decision-making when complications occur, therefore we are interested in researching the influence of classroom education for pregnant women on knowledge about pregnancy complications in the Cipayung District Health Center Area, Indonesia.

B. LITERATURE REVIEW

1. Education

Education is a transformative process aimed at changing the attitudes and behaviors of individuals or groups to foster maturity and growth through teaching and training. According to Fitriani, education involves equipping individuals with knowledge and skills through structured learning, enabling them to meet the expectations of their educators. This process transforms individuals from a state of unawareness to awareness, and from being dependent on others to manage their health to becoming self-reliant. WHO defines health education as a systematic effort to empower individuals and communities to gain control over their health and enhance it by fostering awareness of behavioral patterns and lifestyles that influence health outcomes (McCarthy et al., 2023).

Beyond mere information dissemination, education serves as a means of empowerment, aimed at enabling individuals, groups, and communities to safeguard and improve their health. This involves enhancing knowledge, cultivating a willingness to act, and building capacities in ways that align with local cultural contexts. Health education, as a practical concept, encourages active participation by integrating efforts from, by, and within the community itself. This approach ensures that educational initiatives resonate with the unique social and cultural fabric of the population, thereby increasing their effectiveness and sustainability (Dushkova & Ivlieva, 2024).

At its core, education is the intentional act of delivering health messages to individuals, groups, or communities. These messages are designed to impart critical knowledge and inspire informed decision-making about health and well-being. By receiving these messages, individuals and groups are empowered to make positive changes that lead to improved health outcomes. This dual focus on knowledge acquisition and behavioral change ensures that education not only informs but also equips people with the tools to lead healthier and more independent lives, contributing to broader societal progress (Otu, 2024).

According to Chayatin, Rozikin, and Supradi, health education has three main objectives that focus on empowering individuals to achieve effective understanding and action on health. The first objective is to help individuals identify the health problems they face and identify the needs they want to fulfill. Thus, individuals can have a clear picture of the health priorities that must be improved. The second objective is to encourage individuals to understand what they can do about these health problems, including utilizing existing resources optimally. This aims to increase awareness of their potential and expand access to available solutions. The third objective is to facilitate the most appropriate decision-making to improve health. With wise decision-making, it is hoped that individuals can make positive, sustainable changes in their lives (Barbosa et al., 2021).

Meanwhile, Mubarak explains that the targets of health education can be grouped into three levels based on the target recipients of education. First, is individual education, which is an approach taken by providing education directly to individuals. This approach is usually personal and adapts to the specific needs of individuals, so it is more effective in providing direct impact. Second, is group education, which targets certain groups in society (Tang et al., 2022). This goal allows for a wider dissemination of health information with dynamic interactions between group members, thus creating discussions that enrich shared insights. Third, community education, which focuses on the population as a whole. This approach usually involves health campaigns or mass education programs aimed at raising collective awareness of specific health issues (Fayn et al., 2021).

Overall, both the goals and objectives of health education are designed to build awareness, increase knowledge, and encourage real action in improving the quality of individual and community health. The combination of approaches that focus on individuals, groups, and communities provides a comprehensive impact, making health education an important element in the public health system (Krishnamurthy et al., 2022).

2. Pregnancy

The pregnancy period begins with conception and ends with the birth of the fetus. The typical duration of a pregnancy is around 280 days, or approximately 40 weeks, which is equivalent to 9 months and 7 days. This period is calculated from the first day of the woman's last menstruation (Aprilyadi, 2022). Pregnancy is commonly divided into three trimesters: the first trimester spans from conception to the end of the third month, the second trimester covers the fourth to the sixth month, and the third trimester lasts from the seventh month until the birth at the ninth month (Louchet et al., 2024).

Pregnancy is not just a biological event; it involves various physical, emotional, and social changes. For the mother, physical changes are often noticeable, such as hormonal shifts, weight gain, and the developing fetus inside the womb. These transformations are accompanied by emotional fluctuations, which can include mood swings and heightened sensitivity due to the changing hormone levels. On a social level, pregnancy can affect family dynamics, with expectations, responsibilities, and relationships often undergoing shifts to accommodate the upcoming addition to the family (Haddad-Tóvolli & Claret, 2023).

Typically, pregnancy proceeds normally, leading to the birth of a healthy, full-term baby through the birth canal. However, not all pregnancies follow this pattern. There are cases where complications or unexpected outcomes arise, requiring special medical attention. This is where risk assessment systems play a role, although they cannot definitively predict whether a pregnant woman will experience complications during her pregnancy (Melaku, 2022). As a result, antenatal care, or prenatal services, are essential to monitor the health of the mother and fetus. Regular check-ups ensure that the pregnancy progresses as expected, help identify potential issues early on, and provide the necessary support to both the mother and the baby throughout the pregnancy (Billah et al., 2021).

During the third trimester of pregnancy, a variety of physiological changes take place as the body adapts to accommodate the growing fetus. One of the key changes is the enlargement of the uterus. As the uterus expands to accommodate the developing fetus, the lower segment of the uterus becomes thinner and wider. This allows for the increased space needed for the fetus to grow (Petrenko et al., 2021). Additionally, the physiological retraction circle of the uterine wall becomes more visible, indicating the process of uterine preparation for labor. Another significant change is the descent of the fetal head into the upper entrance of the pelvis, which can lead to increased pressure on the urinary bladder. This pressure often results in frequent urination, a common discomfort experienced by pregnant women during this stage of pregnancy (van Haren et al., 2024).

The uterine muscles also undergo important transformations during the third trimester. These muscles experience both hyperplasia (an increase in the number of muscle cells) and hypertrophy (an increase in the size of muscle cells). As a result, the uterine muscles become larger, softer, and more flexible, allowing them to accommodate the expanding uterus due to fetal growth. These changes are vital for the body to effectively manage the stresses of carrying a growing fetus and prepare for the process of labor (Heller et al., 2023). Understanding the relationship between the size of the uterus and gestational age is crucial, as discrepancies in size can be indicative of pregnancy abnormalities. For instance, conditions such as twin pregnancies, hydatidiform molar pregnancies, or pregnancies with hydramnios (excessive amniotic fluid) may result in a uterus that feels larger than expected, potentially signaling the need for further medical evaluation (Yu et al., 2024).

3. Pregnancy Complications

Pregnancy complications are health issues that can arise during pregnancy, affecting the health of the mother, the baby, or both. These complications can be caused by various factors, including maternal age, health conditions, and lifestyle choices. For example, women who are either too young (<20 years) or too old (>35 years) may face higher risks during pregnancy (Kumar et al., 2022). Additionally, women who have had more than three children may also be at an increased risk of complications. Another factor contributing to pregnancy complications is poor knowledge or lack of awareness about the early detection of pregnancy-related issues, which can delay the identification of potential risks (Ahmad et al., 2021).

Several common pregnancy complications include ectopic pregnancies, where the fertilized egg implants outside the uterus, often in the fallopian tube, which can lead to severe health risks for the mother. Miscarriage is

another common complication, occurring in approximately 10-20% of pregnancies within the first 20 weeks (Franasiak et al., 2021). In some cases, the fetus may develop congenital abnormalities, which can have long-term consequences for both the child and the family. Hyperemesis gravidarum (HG) is a severe condition characterized by persistent vomiting during pregnancy, which can lead to dehydration, malnutrition, and other serious health concerns if left untreated (Ornoy et al., 2021).

To reduce the risk of pregnancy complications, women need to receive proper healthcare both before and during pregnancy. Prenatal care plays a critical role in identifying and managing potential issues early on. By seeking regular medical checkups and following recommended guidelines, women can increase the chances of a healthy pregnancy and minimize the likelihood of complications (Mirzadeh & Khedmat, 2022). Early detection and intervention in pregnancy complications can significantly improve outcomes for both the mother and the baby, making it crucial for expectant mothers to prioritize their health and seek medical advice whenever necessary (Marshall et al., 2022).

C. METHOD

The research design used was quasi-experimental with a control group design. The study population comprised pregnant women, and the sample for this study was 30 pregnant women in the class of pregnant women. The control group consisted of 30 people; thus, the total sample consisted of 60 people. The research strategy was that the intervention group in the class of pregnant women was given a pre-test, then the interventionist was given education about pregnancy complications, followed by a post-test. The control group consisted of pregnant women who completed the pre-test and post-test without intervention. The data analysis used in the research was a paired t-test (paired t-test) dependent and independent. This study received ethical approval from the ethics committee of Poltekkes Kemenkes Jakarta III, Indonesia (reference number LB.02.02/F.XIX.21/9822/2024).

D. RESULT AND DISCUSSION

This study sought to examine the impact of education about pregnancy complications on the knowledge of pregnant women in the Cipayung District Health Center area. The sample consisted of 30 respondents in the intervention group and 30 respondents in the control group. The findings are presented as follows.

1. Description of Respondent Characteristics

The analysis results of the respondents' characteristics in the intervention and control groups, categorized by age and gestational age, are as follows:

Table 1. Distribution of Respondent Characteristics Based on Respondent Age, Number of Children, and Gestational Age

Variable	Intervention Groups		Control Groups		Total	
	N	%	N	%	N	%
<u>Age</u>						
>35 years old	4	13.3	7	23.3	11	10
20 - ≤35 years old	26	86.7	23	76.7	49	90
<u>Parity</u>						
> of 4 children	1	3.3	1	3.3	2	3
< of 4 children	29	96.7	29	96.7	58	97
<u>Gestational Age</u>						
1. Trimester 1 (1-12 mg)	5	16.7	5	16.7	10	16
2. Trimester 2 (13-28 mg)	16	53.3	13	43.3	29	48
3. Trimester 3 (29-38 mg)	9	30	12	40.0	21	36

Table 1 shows that the characteristics of the intervention and control groups were that the majority of respondents were under 35 years of age and had fewer than four pregnancies. The majority of gestational ages were in the second trimester, namely, between 13 and 28 weeks, for both the intervention and control groups.

2. Homogeneity test

This assessment was carried out before the bivariate test. For numerical data, an independent t-test was employed as it compares the average values of two data groups, specifically the intervention and control groups. Meanwhile, a chi-square test was applied to categorical data, as it is used to analyze differences in proportions between the two data groups. The results are displayed in the following table.

Table 2. Analysis of respondent equality based on Age, number of children, and gestational age between groups

Variable		Intervention (n=70)		Control (n=70)		pValue*
		N	%	N	%	
Age	<u>Age</u>					
	≥ 35 years old	4	13.3	7	23.3	0.347
	20 - < 35 years old	26	86.7	23	76.7	
2. Paritas	<u>Paritas</u>					
	≥ 4 children	1	3.3	1	3.3	0.231
	< 4 children	29	96.7	29	96.7	
3. Gestational age's	<u>Gestational age's</u>					
	Trimester 1 (1-12 mg)	5	16.7	5	16.7	0.708
	Trimester 2 (13-28 mg)	16	53.3	13	43.3	
	Trimester 3 (29-38 mg)	9	30	12	40.0	

The homogeneity test analysis results in Table 2 indicate no significant differences in respondents' age, number of children, and gestational age between the intervention and control groups before the intervention. This applies to education on pregnancy complications and pregnant women's knowledge.

Table 3. Analysis of Knowledge Scores before and after being given the pregnancy complications education intervention on pregnant women's knowledge in the intervention and control groups

Variable	Groups	Mean	SD	95% CI	T	P value
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Knowledge About Pregnancy Complications	Intervention Groups						
	Before						
	After	71.35	2.690	-2.684-0.783	-3.730	0.001	
	Difference	80.00	3.118				
		8.65					
	Control Groups						
	Before	70.85	2.069	101-235	-0.812		0.423
	After	70.5	2.040				
	Difference	-0.35					

The analysis revealed a significant increase in knowledge within the intervention group ($p = 0.001$), with a greater average score increase (difference = 8.65). In contrast, the control group showed no significant change ($p = 0.423$) following the educational intervention, with an average score difference of -0.35.

The study findings revealed that 13.3% of participants in both the intervention and control groups were either under 20 or over 35 years old, while the majority (67.7%) were between 20 and 35 years of age. Lowdermirk (2013) noted that pregnant women younger than 20 or older than 35 years face an increased risk of pregnancy complications. Women over 35 years of age have a higher likelihood of having a child with chromosomal abnormalities such as Down syndrome and are more prone to gestational diabetes, which can lead to serious issues for both mother and child. Furthermore, older mothers are more likely to require cesarean sections due to complications such as abnormal fetal positioning or other health issues and face an elevated risk of preeclampsia. While these complications vary based on the mother's overall health, age is a significant factor in pregnancy outcomes. More frequent prenatal checkups can help mitigate potential complications.

The majority of the respondents had fewer than four pregnancies. Women with more than four pregnancies are at a higher risk of pregnancy-related complications. This aligns with the findings of Komariah and Nugroho (2020), who found a correlation between knowledge, age, and parity and the occurrence of pregnancy complications. Multiple pregnancies can strain the mother's body, particularly if the pregnancies are closely spaced. This can result in hypertension, gestational diabetes, or preeclampsia, which can be detrimental to maternal health. Mothers with more than four pregnancies also face an increased risk of complications involving other organs, such as the heart or kidneys.

Most of the mothers' gestational ages were in the second trimester of pregnancy, and the majority of respondents stated that they had no complaints. A small number of patients complained of nausea, vomiting, dizziness, cramps, lower abdominal pain, and back pain. Most respondents had their pregnancy checked or had routine antenatal care at a community health center. This is in line with the results of research, by Ameyaw, Ahinkorah, and Seidu (2020) Half of the mothers who had ANC carried out in health facilities were informed about pregnancy complications.

The research results showed that pregnant women's knowledge about pregnancy complications was good, with an average score of 71.35. In contrast to the results of Mwilike and Beatrice (2018), the majority of respondents had little knowledge about the dangers of pregnancy. Likewise, Maliha Amin et al, 2022, the research results show a high level of compliance of 60% and good knowledge of 74%. Different from the research results of Amoura, Shaimaa, and Khedr. 2021, it was found that the majority of women have insufficient knowledge about the danger signs of pregnancy.

There was a significant difference in the knowledge scores before and after the intervention in the intervention group (8.65). It can be concluded that there is an increase in respondents' knowledge about pregnancy complications, so they are expected to be able to identify signs of pregnancy complications and make the right decision to seek health workers so that they can be handled as early as possible. In line with the results of Shabbir and Rauf's research, 2018 found that pregnant women who took part in an antenatal education program showed a significant increase in their knowledge about pregnancy complications, such as preeclampsia, bleeding, and gestational diabetes. Wulandari and Hidayati (2020) showed that pregnant women who received education about preeclampsia showed a significant increase in knowledge about the signs and symptoms of this condition. In line with research results Kurniati, Fitriahadi, and Fuad GandhiTorizal, 2021, that classes for pregnant women have an important role in increasing mothers' knowledge about the dangerous signs of pregnancy.

It can be concluded that this education helps mothers recognize danger signs early and increases their involvement in pregnancy management. This education increases their awareness of the symptoms of complications and the importance of routine pregnancy checks.

The study's findings revealed a notable impact of education on pregnancy complications in classes for pregnant women, with a statistically significant difference ($p = 0.001$). This aligns with Rajendran and Radhakrishnan's (2021) research, which demonstrated that pregnant women who received information about pregnancy complications through community-level educational programs exhibited superior knowledge than those who did not. Similarly, Amoako and Osei-Akoto (2019) observed a substantial increase in knowledge among pregnant women who were informed of pregnancy complications during antenatal visits. Komariah and Nugroho's (2020) study also reported a significant difference in the understanding of pregnancy complications.

Furthermore, Suryanti Y's 2023 research indicated that education influences pregnant women's ability to detect pregnancy complications. D'Antonio et al. noted that pregnant women with limited knowledge of high-risk pregnancy factors are unlikely to modify their attitudes and behaviors. However, Yulanda and Anita (2014) found no correlation between pregnant women's awareness of pregnancy danger signs and their attitudes toward the early detection of complications. The educational program enhanced participants' understanding of the significance of early detection and risk management in pregnancy.

Gesese et al. (2023) reported that, while expectant mothers demonstrate adequate practices in addressing pregnancy danger signs, their understanding of these signs remains insufficient. Consequently, it is crucial to enhance women's empowerment by improving their educational access, particularly for those in rural areas.

Inadequate comprehension of pregnancy complications among pregnant women hinders their ability to identify early warning signs and make timely and appropriate decisions, contributing to persistently high maternal mortality rates.

This study utilized an intervention featuring animated videos that presented various concepts related to pregnancy and its complications. This approach enabled participants to quickly grasp the information provided.

The limitation of this study: One shortcoming of this study is that the knowledge assessment was conducted only once, immediately following the intervention. A more effective approach might involve reassessing participants several weeks or months after the initial intervention.

E. CONCLUSION

In both the intervention and control groups, most participants were between 20 and 35 years old, with the majority in their second trimester (13–28 weeks gestation). The majority of the patients had experienced fewer than four pregnancies. Pregnant women demonstrate a good understanding of pregnancy-related complications. A notable improvement in knowledge scores was observed in the intervention group when comparing pre- and post-intervention results. The educational program on pregnancy complications delivered in classes for pregnant women showed a significant impact on knowledge levels ($p = 0.001$).

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