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Interventions to Prevent Chronic Energy Deficiency in Women of Reproductive Age

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ABSTRACT

Women of childbearing age (WUS) belong to a vulnerable group whose health status must be considered, especially their nutritional status. Ignorance about nutritious food can lead to high cases of KEK in WUS. The provision of health education is expected to increase knowledge in WUS so as to increase efforts to prevent KEK early and can reduce the incidence of KEK, especially during pregnancy and the First 1000 Days of Life (HPK). This study aims to analyze the effect of health education on the level of knowledge of WUS about the prevention of KEK. This study used PreExperimental method with one group pre-test post-test design. The sampling technique used in this study was total sampling with a population of 42 WUS in Surat Village. This study was analyzed using the Wilcoxon Signed Rank Test. The results of this study indicate that there is an increase in knowledge value with an average value of each respondent as much as 29% after the provision of health education on the prevention of KEK with the significance value of the Wilcoxon test is 0.000 which means that the significance value is less than the ρ-value (sig <0.05).

Keywords: *Health Education, Knowledge Level, KEK, WUS*

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INTRODUCTION

Women of Childbearing Age (WUS) are women of reproductive age, starting from the age of their first period until the cessation of menstruation or menopause. Prospective mothers are included in the vulnerable group whose health status, especially their nutritional status, must be considered. WUS who suffer from Chronic Energy Deficiency (CED) will have a negative impact on themselves and other generations throughout the life cycle, namely on the fetus during the pregnancy process. During pregnancy, a person requires a greater intake of nutrients, including protein, carbohydrates, fats, vitamins, and minerals. Increased energy metabolism during pregnancy also helps the growth and development of the fetus's organs (Prisabela, Nadhiroh, and Isaura 2023).

The Sustainable Development Goals (SDGs) set global targets for health development by 2030. Meeting the nutritional needs of the body for growth and brain development can produce quality human resources. This nutritional support must be

planned from the beginning of pregnancy, in accordance with target 2.2 of the SDGs, which aims to end all forms of malnutrition, including meeting the nutritional needs of pregnant women (Heryunanto et al. 2022).

According to the 2018 Basic Health Research (Riskesdas) data from East Java Province, 19.6% of women of childbearing age and pregnant women are at risk of CED. Meanwhile, according to the 2022 East Java Health Profile, 47,635 pregnant women are at risk of CED out of a total of 590,205 pregnant women, equivalent to 8.07% (Dinkes Jawa Timur 2023). Based on data from the Kediri Regency Health Office Profile in 2022, there were 2,204 pregnant women with KEK out of a total of 24,830 pregnant women, representing 8.9% in Kediri Regency. Meanwhile, in 2023, there were 1,955 pregnant women with KEK out of a total of 20,450 pregnant women examined, representing 9.5%. These data indicate an increase in pregnant women with KEK and it is one of the highest complications occurring in pregnant women in Kediri Regency. Meanwhile, the highest data on pregnant women with KEK in Kediri Regency is in Mojo District with a total of 121 pregnant women or a percentage of 16.9% in 2023. In Mojo District, data obtained from the Mojo Community Health Center UPTD in 2023 shows that Surat Village had 14 pregnant women with KEK or a percentage of 21.2%, indicating one of the places with the most KEK in Mojo District. Based on data obtained from interviews conducted by researchers in Surat Village, Kediri Regency, it was found that out of 10 women of childbearing age (WUS), 8 WUS were unaware of KEK and its prevention. Three WUS with a LILA <23.5 cm stated that they had never received health education regarding further management. This statement is supported by the response from the Mojo Community Health Center officer in Surat Village who stated that no counseling or education regarding KEK prevention had been provided to the women of childbearing age.

Women who experience malnutrition or nutritional deficiencies pre-pregnancy or early in pregnancy are at greater risk of miscarriage, premature birth, stillbirth, and overall developmental delays. Infants born to mothers who are malnourished from pre-pregnancy through the first trimester are also at risk of brain and spinal cord failure because the central nervous system is highly vulnerable for two to five weeks. Women of childbearing age (WUS) are preparing for their first pregnancy and motherhood. The experience of a first pregnancy is often risky and causes anxiety in mothers. This is due to the fact that childbirth and pregnancy are new experiences for them. As research conducted by (Ratnadila and Dewantara 2021) the number of parities has a strong correlation with the level of anxiety in pregnant women during pregnancy and childbirth. The higher the number of parities, the lower the level of anxiety due to the knowledge and experience from previous pregnancies. This is in line with research (Nugraha et al. 2019) that the first pregnancy experienced by a mother is a pregnancy that is at risk of experiencing KEK due to the readiness of pregnant women and inadequate experience which can cause energy intake in pregnant women to be insufficient.

KEK in pregnant women and women of childbearing age can be caused by several factors, as research conducted by Harismayanti and Syukur in 2021 revealed (Harismayanti and Syukur 2021), several factors influencing the issue of KEK include consumption

patterns, parity, nutritional intake, economic situation, knowledge level, consumption of supplementary foods, and consumption of FE tablets. Lack of knowledge about nutritious food can contribute to the high incidence of KEK in women of childbearing age (WUS) and pregnant women. This lack of knowledge will influence behavior regarding nutritious food consumption during pregnancy preparation and throughout pregnancy. (Artha et al. 2025).

Several efforts have certainly been made by the government to address the problem of KEK, as stated in the Regulation of the Minister of Health of the Republic of Indonesia No. 51 of 2016 concerning Nutritional Supplementation Product Standards, including efforts to improve nutrition that include the promotion of balanced nutrition, food fortification, providing additional food including MP-ASI, providing nutritional supplements (Vitamin A capsules and Iron Tablets/TTD), and monitoring and overcoming malnutrition. Health education for women of childbearing age is also one of the efforts in providing guidance and health counseling to the community aimed at improving health levels through an understanding of KEK prevention, so that mothers can know the steps to prevent KEK early and its treatment efforts (Hapsari et al. 2022). Providing health education on the prevention of CED is expected to reduce stunting rates in toddlers during the first 1,000 days of life (HPK) and maternal and fetal mortality. Health education can indirectly influence understanding of the importance of eating a healthy diet during pregnancy to prevent CED (Sulistianingrum 2023).

METHOD

This research has passed the ethical feasibility test Number: 500 / FIK / EP / X / 2024 dated October 14, 2024. The design used in this study is the PreExperimental type with the one group pre-test post-test design method. The sample in this study amounted to 42 respondents with the criteria of women of childbearing age aged 15-49 years who are married and do not have children. The research instrument used a questionnaire with a validity test in 30 respondents, the limit of the r table value with a significance of 0.05 (5%) is 0.361, while the Cronbach's alpha value is 0.820 (> 0.361), so the questionnaire can be said to be reliable. The data collection procedure begins with giving a questionnaire before health education (pretest) regarding respondents' knowledge about KEK to respondents. Then explaining how to fill out the questionnaire to respondents and inviting respondents to fill it out according to the knowledge they have, then providing health education about KEK, including prevention efforts with a lecture method using leaflets and powerpoint media which is carried out for 60 minutes once. Next, in the final stage, a posttest was conducted. To compare the pre-test and post-test results, the Wilcoxon Signed Rank Test was used to analyze them.

FINDING AND DISCUSSION

RESEARCH RESULT

Based on the results of the study, which involved 42 women of childbearing age, the following results were obtained:

Table 1: Characteristics of Research Respondents by Age, Last Education, Information Acquisition Experience, and Occupation

Category	Frequency	Percentage (%)
Age		
15-25 Years	17	40,5
26-35 Years	23	54,8
36-45 Years	2	4,8
Last Education		
Elementary School	2	4,8
Middle School	9	21,4
High School	23	54,8
College	8	19,0
Information Acquisition Experience		
Ever	11	26,2
Never	31	73,8
Job		
Working	19	45,2
Not Working	23	54,8

The results of the comparison of knowledge in respondents in the pretest with the posttest showed that the results of respondents who had good knowledge, namely 5 increased to 31 people, respondents who had a sufficient level of knowledge, namely 10 increased to 11 people, while respondents who had a low level of knowledge became non-existent in the posttest with a total of 42 WUS as respondents. The results of the Wilcoxon test, obtained a Sig. 2-tailed value (p-value): 0.000 and an alpha value (α): 0.05 so that the p-value <α then H1 is accepted. The average value of the questionnaire answer score was found to have increased from a pretest score of 9.81 to a posttest score of 14.74. This increase in value was an average of 4.92 or equivalent to 29% for each respondent from the pretest to the posttest value. While the results of the Wilcoxon test obtained a p-value = 0.000 <α = 0.05 which means there is an Effect of Health Education on KEK Prevention on the Level of Knowledge in Women of Childbearing Age in Surat Village, Kediri Regency.

DISCUSSION

A. Analysis of Knowledge Level Before Providing Health Education on Preventing Chronic Energy Deficiency

Based on the pretest results of the knowledge level of KEK Prevention in 42 women of childbearing age (WUS) as respondents, the results were classified into three categories. Table V.2 shows that 5 respondents (11.9%) had good knowledge, 10 respondents (23.8%) had sufficient knowledge, and 27 respondents (64.3%) had insufficient knowledge. Based on this knowledge data, it can be concluded that before being provided with health education, the knowledge of most respondents was still insufficient.

In the results of the research conducted, one factor that can influence knowledge in women of childbearing age is age. Based on the results, 23 respondents, or 54.8% of women of childbearing age, were aged 26-35 years. This is supported by research (Suryani et al. 2021), This explains that young people have the ability to grasp information well and are able to access various health information circulating on the internet and elsewhere. Furthermore, age is related to a person's level of knowledge, where the older they are, the more experience and information they will acquire, especially in taking early precautions against health problems. Women aged 20 to 35 are of reproductive age, where they tend to prepare for pregnancy and are ready in terms of reproductive organs, the ability to care for their babies and themselves, and a stable mental state (Iskandar et al. 2022). However, the results of this study differ from previous research, which still showed that 64.3%, or 24 respondents, still had insufficient knowledge. This may be due to a lack of prior information on KEK prevention.

Another factor that can influence knowledge in WUS is the level of education. The higher a person's level of education, the easier it is to access information, which means they will have more knowledge (Ganjar et al. 2024). Education level can determine how easily someone can understand and accept new information. The lower a person's education, the more difficult it will be to accept the information provided (Irnani and Sinaga 2017). The results of the final education data for the women of childbearing age who were respondents in this study showed that 23 respondents (54.8%) had a high school education. However, this result contrasts with previous research, which found that respondents with high school or college education still had insufficient knowledge due to a lack of prior information on CED prevention. Therefore, health information is crucial for increasing knowledge and changing attitudes.

WUS knowledge can also be influenced by work, because someone who works and is outside the home will have many relationships and opportunities to learn more than WUS who spend more time at home (Ramli et al. 2020). Women of childbearing age who work in the workplace are more likely to obtain information from their colleagues, thus increasing their knowledge. This statement is not entirely consistent with the results of this study, which showed that 23 respondents, or 54.8% of unemployed women of childbearing age, did not all have lower levels of knowledge than employed women.

A person's level of knowledge can also be influenced by information, which can be changed or enhanced through various sources of information obtained through formal and non-formal education. The presence of new information about something provides a new cognitive basis for the formation of knowledge about that thing (Hayati and Nidia 2023). People's choice of information sources is influenced by their background, one of which is their residential environment. People living in rural areas, with a predominantly low-educated population, are more likely to seek and obtain health-related information, including from health cadres at integrated health posts (Posyandu) (Artha et al. 2025).

B. Analysis of Knowledge Level After Providing Health Education on Preventing Chronic Energy Deficiency

Based on the post-test results of the level of knowledge of KEK prevention among 42 women of childbearing age (WUS) as respondents, the results were classified into three categories. Table V.3 shows that 31 respondents (73.8%) had good knowledge and 11 respondents (26.2%) had adequate knowledge. Based on this knowledge data, it can be concluded that after receiving health education, the knowledge of most respondents improved to good.

In this study, the average respondent experienced an increase in knowledge, one factor being age. According to the Indonesian Ministry of Health (2009), the age categories appropriate for this study are late adolescence (17-25 years), early adulthood (26-35 years), late adulthood (36-45 years), and advanced adulthood (>45 years). In this study, many respondents were aged 26-35, entering the early adulthood phase. As stated by (Permatasari and Suprayitno 2021), Being over 25 years old indicates an age when cognitive and emotional abilities have reached their peak for accepting new information. This makes it easier for women over 25 to absorb new information, especially when given education on KEK prevention, resulting in increased knowledge after receiving health education.

In this study, another factor influencing knowledge is a person's level of education, which significantly impacts their knowledge of how to receive information. The higher a person's education, the easier it is to receive information and the broader their knowledge. Furthermore, those with a high school/vocational school education and above have a better absorption rate than those with lower levels of education, as the higher a person's education, the more knowledge and experience they can utilize to achieve their goals (Sulistianingrum 2023). This is proven by the results of the study where most respondents with a final education of high school/vocational school or equivalent to 54.8% had an increase in knowledge to good with a higher average value compared to respondents with lower education after being given health education on preventing KEK.

The results of this study are in line with research conducted by (Ganjar et al. 2024) Health education about KEK can improve the knowledge of pregnant women in the Ganjar Agung Community Health Center area. The study explains that health education is essentially an activity or effort to convey health messages to the community, groups, or individuals with the hope that through these messages, the community, groups, or individuals will gain better knowledge about health, which in turn is expected to influence behavior. The results of this study showed that the level of knowledge of women with special needs (WUS) increased significantly compared to before receiving health education about KEK prevention.

C. Analysis of the Influence of Health Education on the Level of Knowledge Regarding the Prevention of Chronic Energy Deficiency

In this study, a non-parametric statistical test was conducted using the Wilcoxon test. The results showed that the significance value of the Wilcoxon test on the knowledge value was 0.000, which means that the significance value is less than the ρ-value (sig < 0.05), so the resulting hypothesis is H1, namely the influence of health education on the prevention of KEK on the level of knowledge of women of childbearing age in Surat Village.

The results of this study are in line with research (Hal et al. 2024) A study on the effect of providing health education using lectures and leaflets on adolescents showed a p-value of 0.024 from the Wilcoxon Signed Rank Test. This significance value indicates that health education using lectures and leaflets can improve adolescent girls' knowledge of how to prevent anemia. Another medium used in this study was PowerPoint slides, which can improve respondents' knowledge after receiving health education. This is similar to research conducted by (Hanifah et al. 2021) The impact of education using PowerPoint slides on improving high school students' knowledge is discussed. PowerPoint slides can present engaging material with a variety of images, colors, and designs. PowerPoint slides allow communicators to stay connected with their audience.

In this study, a combination of leaflets and PowerPoint slides in health education media was used to increase knowledge among women of childbearing age (WUS) about preventing KEK. The results of this study also align with research conducted by (Wahyuni et al. 2021) This study examined the effectiveness of leaflets and PowerPoint media on adolescent girls' knowledge of menstrual personal hygiene. The results showed that all adolescent girls who participated in the counseling gained improved knowledge about menstrual personal hygiene. This may be due to the use of engaging media and information delivery methods.

Overall, the impact of health education on a person's health knowledge not only increases understanding but also creates a foundation for the prevention, acceptance, and comprehensive management of health issues. This increase in knowledge can occur due to the influence of health education provided, particularly regarding the nutritional needs of women of childbearing age (WUS). Through the educational process, a person will learn and strive to understand the information provided. For example, a person who initially knew nothing becomes knowledgeable, leading to a change in knowledge level for the better. This is in line with the statement (Marbun et al. 2020) which states that health education is a learning process carried out to obtain information or knowledge so that someone who does not know can become knowledgeable.

The expected outcome of health education is that individuals will be able to identify and understand behaviors that promote health. Health education, in this case, can increase knowledge about nutritional status as a means of preventing and managing chronic energy deficiencies (CED) in women of childbearing age (WUS). Providing health education to women of childbearing age (WUS) is expected to reduce the incidence of

CED, including during pregnancy, which can affect the condition of the mother and fetus, and increase the risk of death (Irnani and Sinaga 2017). Chronic energy deficiency syndrome (CED) in women of childbearing age (WUS) before pregnancy can lead to inadequate nutrient intake, leading to anemia and other risks during pregnancy. This is evidenced by a pattern of inadequate iron consumption, which puts them at risk of CED. If not addressed promptly, they can lead to several complications, such as bleeding, difficult and prolonged labor, premature delivery, and even low birth weight (LBW) (Suryani et al. 2021). Therefore, KEK is one of the problems that needs to be paid attention to by WUS at this time, with one of the interventions that can be carried out being providing health education about KEK prevention.

CONCLUSION

Health education on the prevention of KEK has an impact on the level of knowledge of WUS in Surat Village, Kediri Regency, with the average score of the questionnaire answers increasing before and after health education was given.

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