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SCREENING FOR UNHEALTHY PREGNANCY RISK IN BRIDES-TO-BE AT THE RELIGIOUS AFFAIRS OFFICE (KUA) IN SINGOSARI DISTRICT, MALANG REGENCY

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ABSTRACT
A healthy pregnancy requires physical and psychological preparation which a prospective mother must prepare before pregnancy occurs. In this regard, the impact of unprepared prospective mothers can cause risky pregnancies that lead to maternal illness and death. The purpose of this study was to determine pregnancy risk screening in prospective brides. Descriptive quantitative research design with a survey approach, with a population of 32 brides-to-be, sampling using total sampling technique with a sample size of 32 people. This research instrument uses a questionnaire. The results showed that 19% were married at the ideal age (20–35 years), 69% of Body Mass Index was within normal limits, 81% were not severe, and 41% had mild anemia. Based on the results of screening with the Kescatin (Reproductive Health for Prospective Brides and Couples of Reproductive Age) application, it was concluded that most respondents (69%) were found to be not ready to get pregnant, so it is hoped that prospective brides will conduct preconception screening independently through the Kescatin application so that the risk of complications of pregnancy and childbirth can be avoided.

Keywords: bride-to-be; maternal health risk; preconception screening; reproductive health.

INTRODUCTION
Reproductive health is the beginning that can be prepared for the development of maternal and child health, before pregnancy occurs. Preconception health is comprehensive health during the reproductive period for both women and men. The importance of preconception care is to minimize the risk during pregnancy and prepare for a healthy pregnancy by implementing a healthy lifestyle. Preconception health care is driven by biomedical, behavioral and social prevention aspects in order to increase the ownership of healthy babies (Rahman et al., 2024).

A healthy pregnancy requires physical and psychological preparation which a prospective mother must prepare before pregnancy occurs. In this regard, the impact of unprepared prospective mothers can cause risky pregnancies that lead to maternal illness and death (Umami & Bachri, 2021). Other factors that influence the high risk of pregnancy are due to inadequate screening and referral practices among traditional birth attendants at Community Health Center (*Puskesmas*), poor pregnancy planning, lack of knowledge and compliance of women of childbearing age to come to local health facilities. The purpose of this study was to determine the description of pregnancy risk screening in prospective brides.

Unpreparedness during preconception can have long-term impacts such as complications during pregnancy and childbirth, depression, and even death in mothers and children. According to the World Health Organization (WHO), maternal mortality reached 295,000 people in 2017. This is still far from the target of reducing maternal mortality in the Sustainable Development Goals (SDGs) which target 70 out of 100,000 live births on a global scale (WHO et al., 2019). On a national scale, in 2021, maternal mortality in Indonesia reached 7,389 cases with one of the causes of death being bleeding (Rahmanda et al., 2023).

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Based on the results of the 2017 Indonesia Demographic and Health Survey (IDHS) obtained from interviews with 70% of women who answered that the examination needed before marriage was a physical examination and around 30% of prospective brides who married at the Religious Affairs Office (KUA) did not conduct premarital screening (BKKBN et al., 2018). According to Prof. Andon's speech, he said that until now Indonesia is also still struggling with the very complicated problem of maternal complications (Prihati et al., 2023).

Based on data from the 2015 Inter-Census Population Survey (SUPAS), the maternal mortality rate (MMR) in Indonesia reached 305/100,000 live births. This is due to complications during pregnancy, childbirth, and postpartum that could have been prevented (Irawati et al., 2019). Detection of risk factors for maternal mortality such as chronic energy deficiency (CEC), anemia in pregnant women occurs in the age group of 15–24 years. The prevalence of non-pregnant women with Chronic Energy Deficiency (CED) in East Java is 13.9%, while the national average is 14.5% (Tarsikah et al., 2023).

One of the factors associated with unhealthy pregnancy is early marriage, as it is often linked to insufficient physical, psychological, and reproductive readiness. In Indonesia, early marriage remains a public health concern. In 2021, Malang Regency is still one of the areas where early marriage is still high. It was recorded that 7.32% of early marriages in Malang Regency. Singosari sub-district is still in the high category. Cases of early marriage amounted to 13.19% of the 1,066 total marriages for one year in 2022. Early marriage is considered risky because of insufficient readiness in terms of health (Tarsikah et al., 2022).

Reproductive health risks can be identified by premarital screening. Premarital screening is a series of health tests for men and women who are about to get married to find out about each other's health conditions. Preconception health care has cared that refers to biomedical, behavioral, and social prevention interventions that can increase the likelihood of having a healthy baby. To be able to create preconception health can be done through preconception screening The benefits of preconception screening are reducing maternal and infant mortality, preventing unwanted pregnancies, preventing complications in pregnancy and childbirth, preventing stillbirth, premature and low birth weight babies, preventing birth defects, preventing neonatal infections, preventing the incidence of underweight and stunting as a result of maternal nutritional problems, reducing the risk of diabetes and cardiovascular disease in pregnancy and preventing transmission of Human Immunodeficiency Virus (HIV) from mother to fetus (Yulivantina et al., 2021).

Pregnancy planning is pregnancy planning to prepare for pregnancy to support the creation of a healthy pregnancy and produce quality offspring desired by the family. Healthy pregnancy planning must be done before pregnancy. A well-planned pregnancy process will have a positive impact on the condition of the fetus and the physical and psychological adaptation of the mother for the better (Yanti & Adriyani, 2021). Healthy pregnancy produces healthy babies. Research has found that at the age of 21–35 years is the lowest risk of maternal health problems. In addition, when viewed from the development of women's maturity at the age of 21–35 years have reproductive maturity and emotional and social aspects.

Health status factors in women of childbearing age are influenced by physical, psychological, environmental, socio-cultural, and economic factors. A person's health can affect the pregnancy process and the quality of life of their offspring. The health check can be done before pregnancy, but it is better to do it within three to six months before marriage so that it can make better decisions after knowing the health risks that prospective couples may experience if they continue to marry (Permatasari et al., 2022).

Medically, preconception screening is done to find out the medical risks, behavioral and social health conditions of a woman. It is very important for expectant mothers to undergo medical screening before pregnancy. Therefore, the expectant mother must be prepared to accept the presence of the fetus and stay healthy during pregnancy. Regular check-ups, including treatment of pre-pregnancy conditions to show that the patient is cured or fit to be pregnant and under control (Marbun et al., 2023). Awareness of premarital screening and its impact on preventing high-risk marriages has become a concern for the health care system. Premarital screening has reduced the incidence of hereditary diseases by reducing the incidence of genetic

blood disorders including sickle cell anemia, thalassemia, and infectious diseases including hepatitis B, hepatitis C, and HIV/AIDS (Alkalbani et al., 2022) .

The purpose of antenatal health services is to prepare the mother to undergo a healthy and safe pregnancy and delivery and have a healthy baby. According to the Ministry of Health, the examination carried out is a physical examination which includes vital signs, nutritional status such as Body Mass Index (BMI) and Mid-Upper Arm Circumference (MUAC), supporting examinations, immunization checks, nutritional supplements, and information that has been received by the bride-to-be (Oktalia et al., 2023).

In modern times, preconception screening can be accessed through Android-based telecommunication devices. The Indonesian Ministry of Health has developed a mobile application-based preconception screening called the "*Kescatin*" application. This application can be downloaded for free on your smartphone. The "*Kescatin*" application consists of two modules, namely the screening module and the education module. The screening module contains questions about the health conditions of prospective brides and grooms, both physical health and reproductive health. These questions include disease history, immunization history, family history, history of pregnancy and childbirth, and history of contraceptive use.

Factors that influence pregnancy are age, BMI, MUAC, and Hemoglobin. The mother's age at the time of pregnancy affects the health of the pregnant woman and her fetus, related to the maturation of the reproductive organs and the mother's psychological state, namely the desire and ability to become pregnant. Risk complications that will be experienced by pregnant women aged <20 years include miscarriage, premature birth, difficult labor, serotonin, premature rupture of membranes, anemia, giving birth to a low birth weight (LBW) baby. Pregnant women aged <20 years will have a 5.117 times greater risk of experiencing pregnancy complications when compared to pregnant women aged 20–35 years.

Body Mass Index (BMI) is a crucial indicator in the preconception period because it reflects the adequacy of nutritional reserves and hormonal balance needed to support the fertilization process and fetal growth. Expectant mothers with an ideal BMI (18.5-25.0 kg/m^2) have a greater chance of having a healthy pregnancy, because the body is in optimal condition to regulate reproductive hormones and prepare the uterus for implantation of the fetus. Conversely, if the BMI is below the normal limit or less than 18.5 kg/m^2, expectant mothers are at risk of experiencing Chronic Energy Deficiency (CED), which can trigger ovulation disorders and irregular menstrual cycles, making it difficult to get pregnant.

If pregnancy occurs with a low BMI, the risk of medical complications increases significantly for both the mother and the fetus. The fetus is at high risk of Intrauterine Growth Restriction (IUGR), premature birth, and low birth weight (LBW) due to insufficient nutrient intake through the placenta. Meanwhile, for the mother, this condition is susceptible to triggering iron deficiency anemia, a weakened immune system, and the risk of bleeding during delivery. Therefore, nutritional interventions through the consumption of calorie-dense foods and monitoring the mid-upper arm circumference (MUAC) with a minimum threshold of 23.5 cm are highly recommended for expectant mothers to ensure physical readiness before entering pregnancy.

Hemoglobin (Hb) plays a vital role for expectant mothers because it functions as a protein in red blood cells that binds oxygen and distributes it throughout the body's tissues, including the reproductive organs. Optimal hemoglobin levels—usually above 12 g/dL for non-pregnant women—ensure that the uterus and egg receive an adequate oxygen supply to support fertilization and early cell division of the fetus. If hemoglobin levels are sufficient at the start of pregnancy, the body has a strong reserve to cope with the natural blood thinning (hemodilution) that occurs as pregnancy progresses, thus minimizing the risk of extreme fatigue and circulatory problems early on.

The Family Health Directorate has launched an application to make it easier for prospective brides and grooms to undergo pregnancy readiness screening. The *Kescatin* app is a mobile application developed by the Indonesian Ministry of Health to screen prospective brides and grooms for pregnancy. It can be downloaded for free on smartphones. This application has three main features, namely a Pocket Book containing digital educational materials on

reproductive health, a Pregnancy Check for self-assessment, and a Screening feature that requires users to fill in physical data such as height, weight, Upper Arm Circumference (MUAC), and medical history and psychological conditions.

Kescatin can be used by brides-to-be to find out their health condition before marriage. The screening results will indicate whether the bride-to-be is fit to get pregnant or not. If the screening results show that the bride-to-be is not fit to get pregnant, then they are advised to consult a doctor or other health professional.

All data entered in the screening form will be integrated online into the Ministry of Health's e-Cohort system, allowing healthcare professionals to monitor users' preconception readiness in real-time. If the health status obtained from the screening is "Ready to get pregnant", it can be explained that the bride-to-be has a good general health condition and is ready for marriage. If the health status is "May be pregnant under surveillance", it can be explained to the bride-to-be some indications of potential health risks and conditions that are monitored by health workers periodically. And if the health status is "not pregnant", it can be explained that the bride-to-be has health risks or problems that need to be addressed by health workers and the screening results need to be consulted immediately to the *puskesmas* or hospital to get a diagnosis and an appropriate treatment plan and postponed to plan a pregnancy (BKKBN, 2019).

Previous studies have shown that pregnancy readiness is influenced by several factors, including reproductive age, nutritional status (BMI and MUAC), and anemia status among prospective brides, and most of these studies emphasize the importance of preconception screening in preventing high-risk pregnancies and reducing maternal mortality. However, existing research has generally focused on conventional screening conducted in health facilities, while studies examining the use of digital applications such as *Kescatin* for independent pregnancy readiness screening among prospective brides remain limited. The novelty of this study lies in the use of the *Kescatin* application as a self-screening tool to assess pregnancy readiness in a more practical and digital way, enabling early detection of pregnancy risk factors. This study is based on the preconception health framework, which explains that pregnancy readiness is determined by multiple factors, including ideal reproductive age (20–35 years), nutritional status measured by BMI and MUAC, and anemia status, which together serve as the main indicators in assessing readiness for pregnancy.

METHOD

This type of research is descriptive quantitative with a survey approach. This study is intended to determine the risk of unhealthy pregnancy in prospective brides. The study was conducted at the Religious Affairs Office (KUA) of Singosari District, East Java, Indonesia. The population in this study were all prospective brides at KUA Singosari. The sample was taken using a total sampling technique totaling 32 prospective brides. This approach was used because the population size was relatively small and accessible, allowing all eligible participants to be included in order to ensure full representation of the population and to minimize sampling bias. The inclusion criteria were prospective brides registered at KUA Singosari during the data collection period, willing to participate by providing informed consent, and able to complete the questionnaire independently, while those who were absent during data collection or refused to participate were excluded. Data collection in this study was a questionnaire and observation adapted from the *Kescatin* android application launched by the Ministry of Health in the "Check Worthy of Pregnancy" section. This study was conducted from April until May 2024. Prior to participation, informed consent was obtained from all respondents to ensure voluntary involvement in the study. Data were analyzed using Microsoft Excel, where responses were coded, tabulated, and analyzed using descriptive statistics, including frequency distributions and percentages, and the results were presented in tables and described narratively.

RESULTS AND DISCUSSION

The time of data collection in this study was carried out in April-May 2024. Data was collected by first providing an informed consent form to prospective respondents. The data collection tool was a questionnaire adopted from the *Kescatin* application. The materials used were hemoglobin checks, Body Mass Index (BMI), and Mid-Upper Arm Circumference (MUAC). A total of 32 respondents used the *Kescatin* application to prepare for a healthy pregnancy. From the results of the research conducted on screening prospective brides at Singosari KUA using the "*Kescatin*" application, the following results were obtained.

Table 1: General data on characteristics of prospective bride respondents.

Characteristics	f	%
Last Education		
Elementary School	2	6
Junior High School	6	19
Senior High School	21	66
Bachelor's degree	3	90
Work		
Doesn't work	8	25
Self-employed	15	47
Farmer	2	6
Businessman	4	13
Civil Servant	3	9
Lainnya	0	0
Wedding		
First married	27	84
≥ 1 time married	5	16
Total	**32**	**100**

Source: Primary data, 2024.

Based on Table 1, it shows that 66% of respondents have a final education of high school/vocational high school. Based on the table, it shows that the majority of prospective brides at the KUA Singosari have a fairly high level of education. As many as 47% of respondents have jobs in the informal sector, namely self-employed. Based on the table, it shows that attention needs to be paid so that they can easily access reproductive health and pregnancy services. Plus, a small portion (25%) of prospective brides do not have jobs. On the other hand, most respondents are married for the first time, namely 27 respondents (84%).

Table 2: Cross tabulation of Age, BMI, MUAC with *Kescatin* screening results.

Category	Screening Results						Amount	
	Not ready to get pregnant		Pregnant with supervision		Ready to get pregnant			
	f	%	f	%	f	%	f	%
Age								
< 20 years	10	31	0	0	0	0	10	31
20-35 years	9	28	2	6	8	25	19	59
> 35 years	3	9	0	0	0	0	3	9
BMI								
Thin	6	19	0	0	2	6	8	25
Normal	15	47	2	6	5	16	22	69
Obesity	1	3	0	0	1	3	2	6

MUAC								
CED	6	19	0	0	0	0	6	19
No CED	16	50	2	6	8	25	26	81
Total	**22**	**69**	**2**	**6**	**8**	**25**	**32**	**100**

Source: Primary data, 2024.

Table 2 shows the characteristics of brides-to-be with *Kescatin* application screening results in brides-to-be based on age who are not ready to get pregnant as many as 22 respondents (69%) with various ages and obtained 8 respondents (25%) with the category ready to get pregnant in the age group 20–35 years. Table 1 also shows the characteristics of brides-to-be with *Kescatin* application screening results in brides-to-be based on BMI who are not ready to get pregnant as many as 22 respondents (69%) and obtained 8 respondents (25%) with the category ready to get pregnant in various BMI categories. In addition to showing the characteristics of bride-to-be with *Kescatin* application screening results in brides-to-be based MUAC who are not ready to get pregnant as many as 22 respondents (69%) and obtained 8 respondents (25%) with the category ready to get pregnant in the MUAC group without CED.

Table 3: Cross tabulation of hemoglobin levels with *Kescatin* screening results.

Category	**Screening Results**						**Amount**	
	Not ready to get pregnant		**Pregnant with supervision**		**Ready to get pregnant**			
	f	**%**	**f**	**%**	**f**	**%**	**f**	**%**
Severe anemia	3	9	0	0	0	0	3	9
Moderate anemia	6	19	0	0	0	0	6	19
Mild anemia	12	38	0	0	1	0	13	41
No anemia	1	3	2	6	7	25	10	31
Total	**22**	**69**	**2**	**6**	**8**	**25**	**32**	**100**

Source: Primary data, 2024.

Table 3 shows the characteristics of brides-to-be with the results of the *Kescatin* application screening in prospective brides in terms of hemoglobin levels. It is known that most of them (69%) were found to be not ready for pregnancy and 8 respondents (25%) were found to be ready for pregnancy in the non-anemic group.

DISCUSSION

Preconception screening is a method used to determine a woman's medical, behavioral, and social health risks through specific medical procedures. In the digital era, preconception screening can now be accessed through the "*Kescatin*" application using Android-based smartphones. The general health examinations examined in this study included age at marriage, BMI, MUAC, and hemoglobin levels. Based on the study results, the majority (69%) of prospective brides screened using the *Kescatin* application showed they were not ready for pregnancy. This can be influenced by age, BMI, MUAC, and hemoglobin levels that are below normal limits. Age, BMI, MUAC, and hemoglobin levels are important factors to consider in assessing pregnancy readiness. Women who wish to become pregnant are advised to consult a doctor or midwife for prenatal examinations and counseling. These examinations can help determine their health status and identify potential risks that may occur during pregnancy.

According to research by Seliawati et al. (2023), some women with a normal BMI can experience anemia due to adequate dietary intake but not meeting the iron requirements for hemoglobin formation due to impaired iron absorption in the body. BMI is not the only factor that can influence anemia; anemia is also related to macronutrient and micronutrient consumption, such as lipid intake, iron, vitamin C, and others that contribute to iron absorption and metabolism.

Normal BMI cannot be used as a benchmark for anemia. On the other hand, the ideal age for marriage for women is between 20 and 35 years. Women who marry under 20 or over 35 have a higher risk of pregnancy complications. This is because a woman's reproductive organs are not fully mature at a young age, and maternal health risks increase with age.

Meanwhile, a small percentage of respondents (6%) were screened as pregnancies under supervision. This refers to pregnancies that require further attention and monitoring by healthcare professionals due to certain risk factors that could endanger the health of the mother and fetus. Therefore, regular antenatal checkups are recommended during pregnancy.

On the other hand, 25% of respondents were screened as ready for pregnancy. Factors supporting the pregnancy-ready screening result include an ideal age (20–35 years), a BMI within normal limits, a MUAC greater than 23.5 cm, and the absence of anemia. According to Hartini (2022), preparing for pregnancy is important as early as possible to prepare the body for pregnancy and maintain health throughout the nine months of pregnancy. A healthy pregnancy requires physical and mental preparation; therefore, pregnancy planning and preconception screening must be carried out before pregnancy. A well-planned pregnancy process will have a positive impact on the condition of the fetus.

Overall, the results obtained were that 69% of respondents had screening results that were not ready for pregnancy, 25% of respondents had screening results that were ready for pregnancy, and 6% of respondents had screening results that required supervision by health workers for their pregnancy.

Identifying the marriageable age of prospective brides is a form of early prevention against risky pregnancies and childbirth. Research at the Singosari Office of Religious Affairs (KUA) found that 59% of respondents married at the ideal age (20–35 years). Manuaba (2001) categorizes reproductive age into too young (<20 years) and too old (>35 years). Both of these ages fall into category 4 of too late pregnancy, which poses risks during pregnancy and childbirth. Therefore, the ideal age for reproduction is between 20 and 35 years. Most marriages occurred in the 20s (20–26 years). Based on information from respondents, this is because at this age, most respondents have completed their education and have stable jobs. Mature reproductive age, particularly between 20 and 35 years, is often associated with good physical condition and peak fertility, so pregnancies at this age tend to be more stable. Conversely, pregnancy at a younger age (<20 years) or older (>35 years) can increase the risk of prematurity, miscarriage, postpartum hemorrhage, and fetal growth retardation. Furthermore, women under 20 years of age are less physically and mentally mature, which can also affect their body's readiness for pregnancy. On the other hand, as many as 31% of respondents married at too young an age (<20 years). Based on information gathered from respondents, the reasons respondents married early were due to the customs of arranged marriages and other reasons that forced them to marry early due to their own actions and to avoid sanctions for themselves and their families from prevailing norms in society. Mothers over 35 years old, the uterus and other body parts will experience a decline in organ function and health. As women age, the quality of a woman's egg cells decreases, this causes a higher possibility of chromosomal abnormalities in the fetus. In addition, the risk of pregnancy complications such as gestational diabetes, preeclampsia, premature birth, fetal death in the womb, and macrosomia. To minimize the increased risk of pregnancy, respondents are advised to plan their pregnancy carefully and have more regular pregnancy check-ups to detect pregnancy risks early and receive immediate management.

Based on the research results, as many as 69% of prospective brides have a normal BMI (18.5-25.0). Based on information gathering on respondents, things that support respondents to have a normal BMI are maintaining a regular diet and a healthy diet, and light physical activity. Physical activity such as working is significantly related to BMI status and body fat composition. Light physical activity will facilitate the accumulation of fat in the body. The higher a person's physical activity, the better their nutritional status. If the mother's nutritional status is lacking before and during pregnancy, it will cause low birth weight (LBW).

This aligns with the theory that a mother with a low BMI will affect the fetus she is carrying. Mothers with a low BMI are more likely to conceive of a low-birth-weight baby. It can be concluded that mothers with an abnormal BMI will have an impact on fetal growth due to the

fetus's inadequate nutritional needs or intake, which can impact fetal growth in the womb. As many as 25% of respondents had an underweight BMI (<18.5). Based on information gathered from respondents, factors contributing to their underweight BMI were their age being under 20 years old and their nutritional needs not being met properly.

As many as 6% of respondents had an obese BMI, based on information gathering that supports respondents having an obese BMI due to age over 35 years, lack of physical activity and irregular eating patterns. Based on research conducted by Budiman et al. (2023), it proves that age range influences the incidence of obesity. It is known that there is a relationship between age and the incidence of obesity. Meanwhile, the results of research by Ortiningsih et al. (2021), one of the factors causing preeclampsia where excessive BMI is associated with reduced organ perfusion due to vasospasm and endothelial activation. In pregnant women, endothelial dysfunction occurs triggered by excessive BMI or obesity, which will cause endothelial damage and lead to preeclampsia. This is in accordance with the theory in the book on maternal and infant nutrition, in general, someone with an excessive BMI or obesity has a diet low in fiber and high in calories and fat. Low fiber results in less consumption of fruits and vegetables and decreased antioxidants which is one of the causes of the increased risk of preeclampsia. Lifestyle factors also influence the occurrence of obesity. Lifestyle, including diet and physical activity are associated with the occurrence of obesity and cardiovascular disease.

A total of 81% of respondents had a normal upper arm circumference (MUAC), which is a measurement of ≥ 23.5 cm. This means that most respondents did not experience CED. The results of collecting information from respondents and measuring a normal BMI on average will not experience CED and have an ideal body weight. Mothers who do not have CED have a lower risk of giving birth to babies with low birth weight. In addition, the MUAC is very important for assessing the health of pregnant women and their nutritional status during pregnancy. On the other hand, as many as 19% of respondents had an abnormal MUAC, which is below 23.5 cm. This means that a small number of respondents experienced chronic energy deficiency (CED). Abnormal upper arm circumference can contribute to anemia in pregnant women, because an abnormal MUAC can be an indicator of chronic energy deficiency. This condition can lead to disruptions in the provision of adequate nutrition to support fetal growth and the needs of pregnant women themselves, including the need for iron which is important for red blood cell production.

When a pregnant woman experiences a protein-energy deficiency or inadequate nutrition, it can lead to various health problems, including anemia. Anemia in pregnant women is often caused by iron deficiency, which is needed to form hemoglobin in red blood cells. Iron deficiency can result in suboptimal red blood cell production, leading to anemia. Furthermore, malnutrition or undernutrition in pregnant women can also affect the mother's overall health, including reducing immunity and increasing the risk of complications during pregnancy and childbirth. Therefore, it is important to monitor and assess the nutritional status of pregnant women, including through MUAC measurements, to prevent and address potential health problems such as anemia.

A total of 31% of respondents did not suffer from anemia, meaning their hemoglobin levels were ≥ 12 g/dL. Data from non-anemic respondents revealed that some prospective women consumed iron and folic acid tablets to plan for future pregnancies. Respondents took iron tablets daily during menstruation and folic acid three months before marriage. Furthermore, respondents reported adequate nutrition by eating three meals a day containing carbohydrates, protein, and fiber. As many as 41% of respondents experienced mild anemia, 19% experienced moderate anemia, and 9% of respondents experienced severe anemia. Based on information gathered from respondents, those suffering from anemia were due to unmet nutritional needs. Low income will affect pregnant women experiencing anemia during pregnancy, because the nutritional needs during pregnancy are not met daily. Increased income will lead people to spend their income on marketed goods, both to support efforts to improve nutrition, in the form of highly nutritious foods, materials for improving sanitation, and efforts to get early treatment when sick. This condition affects the risk of prematurity.

The results of the study found that most of the results of the *Kescatin* application screening of prospective brides were found to be not ready to conceive. This can be influenced by indicators of age, BMI, MUAC, and hemoglobin levels that are below normal limits. Age, BMI, MUAC, and hemoglobin levels are important factors that need to be considered to assess pregnancy readiness. Women who want to get pregnant are advised to consult a doctor or midwife for prenatal screening and counseling. This examination can help determine her health status and identify potential risks that may occur during pregnancy.

Government program on premarital screening conducted before conception to consider reproduction. Premarital screening has the potential to reduce the burden of inherited diseases by reducing the number of high-risk marriages and early management of high-risk women. What is done before conception such as age of marriage, upper arm circumference, body mass index, and hemoglobin levels. As long as the screening results indicate they are not ready to become pregnant, the couple must consider pregnancy (Bener et al., 2019).

Respondents married too young (<20 years old). Based on information gathered from the respondents, the reasons why they married early were due to customary arranged marriages and other reasons that forced them to marry early due to their own actions and to prevent them and their families from being sanctioned by the norms in the community.

Other influential factors are body mass index, upper arm circumference and hemoglobin levels. A person who does not have CED has a lower risk of delivering a LBW baby. In addition, MUAC is very important for assessing the health of pregnant women and nutritional status during pregnancy. Usually, women who are going to get married go on a diet to make their bodies look slim. This diet is generally done by reducing the daily portion of food. In fact, women who are going to get married do not need to go on a diet for a long period of time, so the intake of nutrients from food does not match the body's needs (Lestari et al., 2018).

In respondents with normal body mass index and upper arm circumference do not guarantee that someone is not anemic. During pregnancy, nutritional needs increase including the need for iron which is important for the production of red blood cells. When a pregnant woman experiences protein energy deficiency or insufficient nutrition, this can lead to various health problems, including anemia. Anemia in pregnant women is often caused by iron deficiency, which is necessary to form hemoglobin in red blood cells. Iron deficiency can result in suboptimal red blood cell production.

If before pregnancy a woman is obese, it will affect the pregnancy that will come. Obesity before pregnancy can have a significant impact on the course of pregnancy. Being overweight or obese before conception can increase the risk of various complications during pregnancy. The risk of obesity that arises during pregnancy such as preeclampsia, gestational diabetes, miscarriage, large baby weight (Zhang et al., 2023).

In addition, malnutrition in pregnant women can also affect the mother's overall health, including lowering the immune system and increasing the risk of complications during pregnancy and labor. Therefore, it is important to monitor and assess the nutritional status of pregnant women, including through MUAC measurements, to prevent and address potential health problems such as anemia. Therefore, respondents are encouraged to fulfill their nutrition, periodic monitoring of health (Bener et al., 2019; Yulivantina et al., 2021).

The meaning of this is a pregnancy that requires further attention and monitoring by health workers due to certain risk factors that can endanger the health of the mother and fetus. Therefore, when pregnant, efforts are made to conduct routine antenatal examinations.

Things that support the results of screening ready to get pregnant are influenced by ideal age (20–35 years), BMI within normal limits, MUAC more than 23.5 cm, and not experiencing anemia (Alkalbani et al., 2022; Benner et al., 2019; Yulivantina et al., 2021)). Preparing for pregnancy is important to do as early as possible so that the body is ready to conceive and remain healthy throughout the 9 months of pregnancy . A healthy pregnancy requires physical and mental preparation; therefore, pregnancy planning and preconception screening should be done before pregnancy (Yanti & Adriyani, 2021; Marbun et al., 2023). A well-planned pregnancy process will have a positive impact on the condition of the fetus (Zhang et al., 2023).

Things that support the results of pregnancy readiness screening are influenced by ideal reproductive age (20–35 years), normal Body Mass Index (BMI), Mid-Upper Arm Circumference (MUAC) above 23.5 cm, and the absence of anemia, which are key indicators of maternal health status (Bener et al., 2019; Alkalbani et al., 2022; Yulivantina et al., 2021). Preparing for pregnancy should be done as early as possible to ensure that the body is physically ready for conception and can maintain health throughout pregnancy. A healthy pregnancy requires both physical and psychological preparation; therefore, pregnancy planning and preconception screening should be conducted before conception (Yanti & Adriyani, 2021; Marbun et al., 2023). Proper pregnancy planning has been shown to contribute to better maternal conditions and positive fetal outcomes (Zhang et al., 2023; BKKBN, 2019).

Despite the importance of pregnancy planning and preconception screening in improving maternal and fetal outcomes, this study has several limitations. The study was conducted with a relatively small sample size of 32 respondents from a single KUA in Singosari, which may limit the generalizability of the findings. In addition, the descriptive design only provides an overview of pregnancy readiness without examining causal relationships between variables. The use of self-reported data and screening results from the *Kescatin* application may also introduce response bias. Furthermore, the study did not assess long-term pregnancy outcomes following screening, nor did it include broader psychosocial or environmental factors that may influence pregnancy readiness.

CONCLUSION

Preconception screening aims to reduce maternal and infant mortality rates, prevent unwanted pregnancies, prevent complications in pregnancy and childbirth, reduce stillbirths, low birth weight (LBW), premature births, prevent birth defects, neonatal infections, prevent stunting as a result of maternal nutritional problems, reduce the risk of diabetes and cardiovascular pathology in pregnancy and prevent transmission of Human Immunodeficiency Virus (HIV) from mother to fetus. Most of the respondents were married at the ideal age of 20 to 35 years old, normal BMI (18.5-25), not Chronic Energy Deficiency (CED) but after screening was found to be unprepared for pregnancy. Almost half of the respondents had mild anemia or hemoglobin levels below normal in brides-to-be, namely 11-11.9 gr/dL and after screening was found to be not ready to conceive.

From the results of preconception data, the bride and groom are actually eligible to become pregnant, but from the results of screening using the *Kescatin* application, most are not ready to become pregnant. As researchers, we give advice to prospective brides who have preconception screening results with unpreparedness for their pregnancy are expected to regulate nutritional patterns, maintain weight, consume Fe tablets and conduct regular checks to health workers. For policy makers, it is hoped that they can collaborate with the health department to make a policy of preconception screening as a condition for applying for marriage so that the risk of complications of pregnancy and childbirth can be avoided and get management as early as possible. In accordance with preconception screening care and standards. And for health workers, it is expected to conduct preconception screening in prospective brides as a preventive effort against high rates of pregnancy complications and maternal health risks and provide education to prospective brides about unhealthy pregnancy and pregnancy planning.

Artificial Intelligence (AI) Use Disclosure

The authors used AI tools to support grammar correction and language improvement. All ideas, analysis, interpretations, and conclusions are the sole responsibility of the authors. AI was not used to generate data, conduct analysis, or replace the authors' critical thinking throughout the research process.

REFERENCES

Alkalbani, A., Alharrasi, M., Achura, S., Al Badi, A., Al Rumhi, A., Alqassabi, K., Almamari, R., & Alomari, O. (2022). Factors affecting the willingness to undertake premarital screening test among prospective marital individuals. *SAGE Open Nursing, 8*, 23779608221078156. https://doi.org/10.1177/23779608221078156

Bener, A., Al-Mulla, M., & Clarke, A. (2019). Premarital screening and genetic counseling program: Studies from an endogamous population. *International Journal of Applied and Basic Medical Research*, *9*(1), 20–26. https://doi.org/10.4103/ijabmr.ijabmr_42_18

BKKBN (National Population and Family Planning Board), Statistics Indonesia (BPS), Ministry of Health (Kemenkes), & ICF. (2018). *Indonesia demographic and health survey 2017. BKKBN, BPS, Kemenkes, and ICF*. https://dhsprogram.com/pubs/pdf/FR342/FR342.pdf

BKKBN. (2019). *Performance accountability report (LAKIP) BKKBN 2019*. BKKBN.

Budiman, B., Ramadhani, N. R., & Ruliani, S. N. (2023). Hubungan kualitas tidur, obesitas dan stres dengan kejadian hipertensi pada usia lansia awal (46–55 tahun*). Open Access Jakarta Journal of Health Sciences, 2*(5), 717–725. https://doi.org/10.53801/oajjhs.v2i5.135

Hartini, I. (2022). Pengaruh penggunaan e-modul prakonsepsi terhadap perilaku persiapan kehamilan sehat pada wanita usia subur di Kabupaten Wonosobo. *Journal of Health (JoH), 9*(2), 63–72. https://doi.org/10.30590/joh.v9n2.474

Irawati, H., Kartini, A., & Nugraheni, S. A. (2019). Pengaruh *booklet* terhadap pengetahuan dan sikap kesehatan reproduksi calon pengantin terkait pencegahan risiko kehamilan di Kabupaten Pemalang. *Manajemen Kesehatan Indonesia*, *7*(2), 124–132. https://doi.org/10.14710/jmki.7.2.2019.124-131

Lestari, Y. P., Paratmanitya, Y., & Suliyah, S. (2018). Intake of iron and inhibitor are not related with anemia on the premarriage women. *Indonesia Jurnal of Nutrition and Dietetics*, *6*(3), 99–106. https://doi.org/10.21927/ijnd.2018.6(3).99-106

Manuaba, I. B. G. (2001). *Kapita selekta penatalaksanaan rutin obstetri, ginekologi, dan KB*. EGC. https://books.google.com/books?id=C8weUWECoqMC

Marbun, M., Jamir, F., Wulandari, S., Jingsung, J., Oktaviani, I., & Ekasari, T. (2023). *Asuhan kebidanan pada pranikah dan prakonsepsi*. Global Eksekutif Teknologi. https://fkeb.delihusada.ac.id/wp-content/uploads/2024/11/FullBook-Asuhan-Kebidanan-Pranikah-dan-Prakonsepsi.pdf

Oktalia, J., Yulita Ichwan, E., Hartaty Angraini, D., & Widyastuti, D. (2023). Educational media in increasing knowledge and participation of prospective fathers in preparation for healthy pregnancy article history. *Ilmu dan Teknologi Kesehatan, Jurnal*, *10*(2), 2338–9095. https://doi.org/10.32668/jitek.v10ii.1101

Ortiningsih, R., Kasiati, K., & Handayani, S. (2021). Premarital counseling affects primigravidas' knowledge and attitude on reproductive and sexual health. *Jurnal Ners, 16*(1), 49–53. https://doi.org/10.20473/jn.v16i1.21401

Permatasari, D., Suryani, L., & Mukhoirotin. (2022). *Asuhan kebidanan pranikah dan pra konsepsi* (R. Watrianthos, Ed.). Yayasan Kita Menulis. https://kitamenulis.id/2022/10/03/asuhan-kebidanan-pranikah-dan-pra-konsepsi/

Prihati, D. R., Rahayu, R. D., Prastyoningsih, A., & Sugito, S. (2023). Skrining kesehatan dan persepsi calon pengantin tentang pernikahan di Puskesmas Klaten Selatan*. Jurnal Kesehatan Kusuma Husada, 14*(2), 47–57. https://doi.org/10.34035/jk.v14i2.1043

Rahman, N. I. N., Laily, A., Gusriani, & Johan, R. B. (2024). Skrining pranikah calon pengantin perempuan dalam mempersiapakan calon ibu dan bayi sehat berkualitas di Kota Tarakan. *Jurnal Pengabdian Masyarakat Mandira Cendikia, 3*(1), 12–18. https://journal.mandiracendikia.com/index.php/pkm/article/view/777

Rahmanda, J. M. F., Maryanah, & Mulyati, S. (2023). The effectiveness of premarital health counseling on the attitude of prospective brides in preparing for a healthy pregnancy. *International Journal of Science and Society, 5*(4), 551–559. https://doi.org/10.54783/ijsoc.v5i4.816

Seliawati, L., Sugijati, S., & Yulindahwati, A. (2023). Hubungan indeks massa tubuh dan lingkar lengan atas dengan kejadian anemia pada calon pengantin di Puskesmas Singosari Kabupaten Malang. *Jurnal Kebidanan, 12*(1), 45–52. https://j-innovative.org/index.php/Innovative/article/view/3039

Tarsikah, Apsari, D. D., & Ilmillah, H. (2023). Overview of general conditions and risky behaviors in brides to be at KUA Kedungkandang. *MIKIA: Mimbar Ilmiah Kesehatan Ibu dan Anak (Maternal and Neonatal Health Journal)*, 11–26. https://doi.org/10.36696/mikia.v7i1.119

Tarsikah, T., Amelia, D., & Aristina, N. E. (2022). Program pengembangan desa mitra pada kader KIA dan BKR dalam upaya integrasi skrining catin. *JMM (Jurnal Masyarakat Mandiri)*, *6*(3), 2426. https://doi.org/10.31764/jmm.v6i3.8614

Umami, R., & Bachri, S. (2021). Upaya peningkatan kesehatan reproduksi calon pengantin wanita melalui pendampingan perencanaan kehamilan sehat di KUA Kaliwates, Jember. *Jurnal IDAMAN (Induk Pemberdayaan Masyarakat Pedesaan), 5*(2), 153–158. https://doi.org/10.31290/j.idaman.v5i2.153-158

WHO (World Health Organization), United Nations Children's Fund, United Nations Population Fund, World Bank Group, & United Nations Population Division. (2019). *Trends in maternal mortality 2000 to 2017: Estimates by WHO, UNICEF, UNFPA, World Bank Group and the United Nations Population Division*. World Health Organization. https://www.who.int/publications/i/item/9789241516488

Yanti, L., & Adriyani, F. H. N. (2021). *Upaya pemberdayaan ibu dalam perencanaan kehamilan yang sehat*. Proceedings of the National Seminar on Research and Community Service (SNPPKM), 2021. https://doi.org/10.30633/jas.v4i2.1549

Yulivantina, E. V., Mufdlilah, M., & Kurniawati, H. F. (2021). Pelaksanaan skrining prakonsepsi pada calon pengantin perempuan. *Jurnal Kesehatan Reproduksi*, *8*(1), 47–53. https://doi.org/10.22146/jkr.55481

Zhang, Z., Ding, W., Wang, H., Cheng, Y., Zhang, Y., Zhu, X., & Xu, X. (2023). Unhealthy eating behaviors during pregnancy and gestational weight gain—Huai'an City, Jiangsu Province, China, 2020–2021. *China CDC Weekly, 5*(35), 773–778. https://doi.org/10.46234/ccdcw2023.147