

Premarital Screening: A Catalyst for Achieving Good Health and Well-Being

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ABSTRACT

Background: Premarital screening is a comprehensive examination that must be done before marriage, which includes examinations of reproductive organs, genetic diseases, infectious diseases, and blood-borne infections. The screening aims to avoid the risk of long-term diseases for couples and their descendants. This screening can also prevent maternal and infant mortality, birth defects, and stunting because risk factors can be detected and addressed early in the mother and baby-to-be. Despite its importance, premarital screening behavior is not culturally embedded. **Objective:** This study aimed to determine factors associated with premarital screening behavior. **Methods:** This research uses systematic review as its design from Google Scholar and Scopus databases that discuss the determinants of premarital screening behavior with quantitative methods. Articles were collected with the keywords "premarital" and "screening" published within the last five years, from 2018 to 2023. **Results:** The researchers discovered 1,151 articles. 10 articles fulfilled the criteria and objective of this study and were further reviewed. Older age, female, higher education level, consanguineous relationship between parents, history of genetic diseases, good knowledge and positive attitude, and the establishment of government regulations are factors associated with premarital screening behavior. **Conclusion:** Health promotion may be expanded to raise public awareness of the necessity of premarital health screening. It is also intended that future researchers would investigate premarital health screening behavior using various research approaches, such as cross-sectional or qualitative research.

Keywords: premarital; screening; marriage; SDGs

INTRODUCTION

In 2021, the World Health Organization (WHO) reported that approximately 40,618 children are born with thalassemia every year globally, with around 62.8% of these children requiring blood transfusions in their lifetime (WHO, 2021). WHO has identified 11 countries in the sub-region with a high prevalence of thalassemia, including Indonesia in the Southeast Asia region, where the prevalence of carriers ranges from 3% to 20%, and more than 2,500 children are born with thalassemia each year (WHO, 2021). In 2021, an estimated 258,347 people with thalassemia in Indonesia will receive blood transfusions on an ongoing basis during their lifetime (BPJS Kesehatan, 2021).

According to data from Badan Penyelenggara Jaminan Sosial (BPJS),

catastrophic or high-cost diseases will be the top health financing in Indonesia in 2021 (about IDR 90.33 trillion). This is an increase of 25-31% of the total health financing since 2014. The catastrophic diseases listed in order of healthcare financing incurred are heart disease, cancer, stroke, kidney failure, thalassemia, hemophilia, leukemia, and liver cirrhosis (BPJS Kesehatan, 2021). Of the eight diseases, thalassemia and hemophilia are caused solely by a genetic factor inherited from parents (Al-Kindi *et al.*, 2019).

Marriage is an important stage in the life of many people and is usually considered to be a major milestone in their lives. From a health perspective, the union of two people in marriage requires additional attention, particularly about their health status and medical history. One of the preventive measures that can

be taken to avert many health problems that can result from marriage is premarital screening (Suresh *et al.*, 2023). Seven years closer to the 2030 Sustainable Development Goals (SDGs), which aim to ensure universal access to sexual and reproductive health care services, including for family planning, information and education, and integration of reproductive health into national strategies and programs, one area of concern is premarital screening behavior (United Nations, 2023).

Premarital screening involves the testing of couples planning to get married for common genetic disorders, including thalassemia, hemophilia, and sickle cell anemia, as well as infectious diseases, including hepatitis B, hepatitis C, and HIV/AIDS (Alhosain, 2018). It can help reduce the risk of maternal and infant mortality and birth defects (Al-Balushi & Al-Hinai, 2018). Through early detection in expectant mothers, premarital screening can prevent the birth of stunted babies (Shojaiefar *et al.*, 2021). In addition, it can reduce the spread of the above-mentioned diseases, thereby reducing the financial burden of their treatment, both individually and on the health burden of the country (Natarajan & Joseph, 2021). Premarital screening can also serve as a tool for healthcare professionals to educate couples and provide them with the knowledge they need to build healthy families and produce high-quality offspring (AlOtaiby *et al.*, 2023).

Premarital screening has become a mandatory program in some countries and is now a prerequisite for marriage (Al-Shroby *et al.*, 2021). In Saudi Arabia, for example, the program is becoming increasingly popular and accepted by couples to ensure a disease-free life and healthy offspring (Alhousseini *et al.*, 2023). The program has been implemented in Indonesia as well (Kemenkes RI, 2019). The success of the program depends on the involvement of various parties related to marriage, including the Ministry of Health, BKKBN, Ministry of Religious Affairs, and Puskesmas. However, the program was found to be sub-optimally implemented (Fitriani, 2020). Although several policies support the implementation of the program, there are currently no specific guidelines that regulate the implementation of health

check-ups for prospective marital individuals. Due to the lack of information and knowledge, the majority of individuals do not undergo a health check-up before their marriage (BKKBN, 2020). Despite its importance, getting screened before marriage is still not widely practiced in Indonesia. If all couples were aware of the benefits of premarital screening, there could be prevention of many long-term health problems for both partners and their future children (Saffi & Howard, 2015). Therefore, it is essential to investigate the determinants related to the conduct of premarital screening as an input for reproductive health programs and preventive measures for public health concerns.

METHODS

Research articles using quantitative methods published between 2018 and 2023 were selected for further examination using a cross-sectional approach. This is a systematic review that is a comprehensive analysis of different search engines for scientific articles. The researchers used 'premarital' AND 'screening' in English and Bahasa Indonesia as keywords to search for articles on Google Scholar and Scopus databases. Articles were selected based on their title, abstract, year of research, and methods. Furthermore, the selection of articles was carried out by adjusting the inclusion and exclusion criteria that had previously been established. The exclusion criteria were as follows: (1) publication in non-accredited journals and (2) articles written in languages other than English or Indonesian. Inclusion criteria for the study were (1) quantitative research using primary data, (2) research findings on determinants affecting premarital screening behavior, (3) research published within the last 5 years (2018-2023), and (4) full-text accessibility.

A total of 1,151 articles were retrieved using several search engines. After filtering the titles and abstracts, 30 articles were obtained. Based on the year and inclusion criteria, 19 articles that met all criteria were selected. Finally, 10 articles that most comprehensively addressed determinants of premarital screening were analyzed.

Figure 1 presents the PRISMA framework, adapted from Tricco *et al.* (2018), which serves as a selection guide

for the articles to be reviewed in this study.

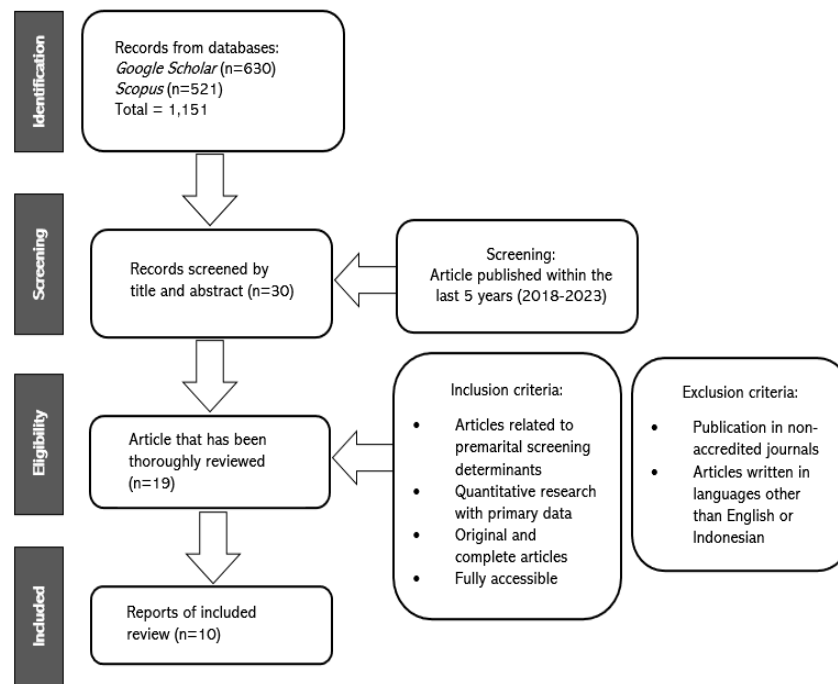


Figure 1. PRISMA Flowchart

RESULTS

Analysis of the ten articles that met the study criteria resulted in 7 determinants associated with premarital screening behavior: age, sex, education

level, parental endogamous marriage, history of genetic diseases, knowledge and attitude, and government regulations. Table 1 provides additional details of the articles.

Table 1. Article Review of the Findings Determinants of Premarital Screening Behavior

| No | Author | Title | Participants, Sample Size | Methods | Results |
|----|---|--|--|---|---|
| 1 | Rahma M. Al-Kindi, Saraswathi Kannekanti, Jansi Natarajan, Lina Shakman, Zeinab Al-Azri, Naifain I. Al-Kalbani (2019) | Awareness and Attitude Towards the Premarital Screening Programme Among High School Students in Muscat, Oman | 1,541 high school seniors from 10 public schools | A study using questionnaires to collect quantitative data | Endogamous marriage in parents, family history of genetic disease, and being female were all significantly associated with premarital health screening behavior (p=0.018, 0.001, and 0.016, respectively) |

| No | Author | Title | Participants, Sample Size | Methods | Results |
|----|--|---|---|---|---|
| 2 | Mokhtar abdo Almoliky, Heba Abdulrhman, Showqi Hasan Safe, Malak Galal, Heba Abdu, Basma Towfiq, Shatha Abdullah, Mohammed Waleed, Mujeeb A. Sultan (2022) | Knowledge and attitude of Engaged and Recently Married Couples Toward Premarital Screening: A Cross-Sectional Study | 189 participants | A study using questionnaires to collect quantitative data | Premarital screening behavior is associated with being a woman, having good knowledge about genetic diseases, and displaying positive attitudes toward the consequences of health screening |
| 3 | Syed Sameer Aga, Yara Abdulaziz Alghamdi, Amal Abdullah Alghamdi, Muhammad Anwar Khan (2021) | Knowledge, Awareness, and Attitude of Medical Students Concerning Genetics and Premarital Screening | 302 medical students | A study using questionnaires to collect quantitative data | Higher levels of education, higher costs of health screening, the presence of consanguineous relationships between parents, enacted government regulations, and gender have been found to influence premarital screening behavior |
| 4 | Ali Alkalbani, Maryam Alharrasi, Susan Achura, Ammar Al Badi, Amjad Al Rumhi, Khalid Alqassabi, Raya Almamari, Omar Alomari (2022) | Factors Affecting the Willingness to Undertake Premarital Screening Test Among Prospective Marital Individuals | 400 students between the ages of 20 and 30 from various departments at a state university | A study using questionnaires to collect quantitative data | Female ($p=0.016$), being married ($p=0.009$), and having a parental relationship ($p=0.007$) were significantly correlated with the adoption of premarital screening behavior |
| 5 | Walid A. Al-Shroby, Suha M. Sulimani, Sultana A. Alhurishi, Maram E. Bin Dayel, Nora A. Alsanie, Najla J. Alhraiwil (2021) | Awareness of Premarital Screening and Genetic Counseling among Saudis and its Association with Sociodemographic Factors: a National Study | 6,263 participants were randomly selected from 20 regions utilizing the stratification method | A study using questionnaires to collect quantitative data | Women who are over 18 years old, have a bachelor's degree or higher education, are married, and earn a high income are more likely to undergo premarital screening |

| No | Author | Title | Participants, Sample Size | Methods | Results |
|----|---|--|---|---|--|
| 6 | Shahad AlOtaiby, Abdulhadi Alqahtani, Ruba Saleh, Abeer Mazyad, Abdulrazaq Albohigan, Emad Kutbi (2023) | Comprehension of premarital screening and genetic disorders among the population of Riyadh | A random sample of 652 participants aged 16-60 was selected from the general population | A study using questionnaires to collect quantitative data | Premarital screening behavior is associated with women, college graduates, and the presence of government regulations |
| 7 | Abdulbari Bener, Mariam Al-Mulla, Angus Clarke (2018) | Premarital Screening and Genetic Counseling Program: Studies from an Endogamous Population | 873 participants aged 18-40 years from primary healthcare facilities | A study using questionnaires to collect quantitative data | The main factors associated with premarital screening are older age, higher level of education, awareness of genetic diseases, parental approval of marrying a relative, high-income level, employment status, and strong relationship with partner |
| 8 | Safia M. Binshihon, Manal O. Alsulami, Wed M. Alogaibi, Asmaa H. Mohammedsaleh, Hayfa N. Mandourah, Bushra S. Albaity, Mohamad H. Qari (2018) | Knowledge and attitude toward hemoglobinopathies premarital screening program among the unmarried population in Western Saudi Arabia | 1,039 single individuals in the general population | A study using questionnaires to collect quantitative data | University graduates or those with a higher level of education ($p=0.001$), individuals over the age of 25 ($p=0.005$), and those with a family history of genetic disease ($p=0.001$) were found to be more likely to undergo premarital screening. |
| 9 | Zaid Altaany, Omar F. Khabour, Karem H. Alzoubi, Almuthanna K. Alkaraki, Ghaith Al-Taani (2021) | The Perception of Premarital Genetic Screening within Young Jordanian Individuals | 432 participants over the age of 18 were surveyed at shopping centers or universities | A study using questionnaires to collect quantitative data | Female gender, higher education, government mandates, and history of genetic conditions affect health screening attitudes before marriage |

| No | Author | Title | Participants, Sample Size | Methods | Results |
|----|---|---|---|---|---|
| 10 | Maha Ali, Norelhouda Elshabory, Hanan Elzeblawy Hassan, Nehad Zahra, Hayam Alrefai (2018) | Perception about Premarital Screening and Genetic Counseling Among Males And Females Nursing Students | 203 students in the third year of nursing program | A study using questionnaires to collect quantitative data | Females ($p=0.005$), those with consanguineous parental relationships ($p=0.019$), and those with a personal ($p=0.001$) or family ($p=0.035$) history of genetic disease were associated with premarital screening behaviors |

DISCUSSION

Age

As we age, our decision-making process typically becomes more mature, which can have an impact on our behavior, particularly health-related behaviors. This suggests that older individuals tend to consider more factors when conducting premarital screening, as demonstrated by the findings of Oluwole *et al.* (2022) with a significance level of $p < 0.001$. This finding is also supported by the research of Zedan Zaien *et al.* (2022). Multiple regression analysis shows that age is significantly correlated with the practice of premarital health screening ($p=0.007$). The study in Saudi Arabia shows that those who are over 20 years of age are more likely to undergo premarital health screening as compared to the younger respondents (Zedan Zaien *et al.*, 2022).

Sex

Sex significantly influences the decision to get screened before marriage. A study on university students in Qatar shows that women have a significantly higher level of knowledge about premarital health screening than men ($p < 0.01$) (Al-Shafai *et al.*, 2022). On the contrary, indicating possible differences in cultural attitudes towards premarital screening, another study from the same year conducted by Alkalbani *et al.* (2022) shows that men in Oman have a stronger desire to undergo premarital health screening than women.

Educational Level

Formal education is defined as the process by which educators deliver material to achieve educational objectives to change behavior (Notoatmodjo, 2007). Research suggests a positive relationship between higher education and better health behaviors. Aga *et al.* (2021) found that students in their third year of college had higher rates of agreement with premarital health screening compared to students in their first year ($p < 0.001$). In addition, studies conducted in Saudi Arabia further demonstrate that an individual's level of education plays a critical role in their decision to undergo premarital health screening ($p=0.019$) (Zedan Zaien *et al.*, 2022).

Parental Endogamous Marriage

According to the Indonesian Dictionary, endogamy is the practice of marrying within one's social group, including relatives (KBBI, 2023). Such marriages typically take place between cousins on either the paternal or maternal side. Parents who are related to each other tend to be a factor in determining the premarital screening behavior of their children. This is because genetic disorders, such as sickle cell anemia, thalassemia, epilepsy, and hemophilia, are typically around 20 times more prevalent in populations where cousins marry. Therefore, premarital screening measures are often implemented to minimize the risk of hereditary diseases (Bener *et al.*, 2019). However, research conducted by Gosadi *et al.* (2021)

indicates that consanguineous couples are reluctant to undergo premarital screening for several reasons. One of these reasons is the belief that marriage is a predetermined destiny, and they are willing to accept all the risks associated with having children without conducting a premarital health examination (Gosadi *et al.*, 2021).

History of Genetic Diseases

One of the factors associated with premarital screening behavior is a personal or family history of genetic disease. This is supported by the results of the research conducted by Al-Shafai *et al.* (2022), which shows that individuals or family members who have a history of genetic diseases are more likely to choose to undergo premarital health screening. This is possible because they have been previously exposed to information or are more interested in studying the disease because of its impact on themselves and their families, both now and for their future offspring (Al-Shafai *et al.*, 2022).

Knowledge and Attitude

Premarital screening behavior can be influenced by good knowledge and positive attitudes toward premarital screening programs. Individuals who possess these qualities are more likely ($p < 0.001$) to choose premarital screening before marriage (Bindhani *et al.*, 2020). This is corroborated by evidence indicating that even though premarital screening is compulsory in Qatar, some couples who lack awareness about the program do not undergo screening before getting married (Al-Shafai *et al.*, 2022).

Government Regulations

The implementation of government policies requiring health screening as a prerequisite for the submission of marriage documents is associated with premarital screening behavior. Studies conducted in Nigeria suggest that the development of policies can improve the access of the community to screening programs and increase the behavior of premarital screening (Oluwole *et al.*, 2022). Research conducted in India indicates that governmental regulations enhance public acceptance, leading individuals to undergo health inspections before marriage (Bindhani *et al.*, 2020).

CONCLUSION

The study found several factors influencing premarital screening behavior, including age, sex, education level, parental endogamous marriage, history of genetic diseases, knowledge and attitude, and government regulations. This systematic review is valuable for the development of premarital screening programs in Indonesia to prevent the broader public health burden, including genetic disorders, sexually transmitted diseases, and the risk of infant disability and death. Furthermore, increased education and promotion by health workers could enhance public awareness of the importance of health checks before marriage. Premarital screening behavior warrants further investigation using other research methods, including cross-sectional approaches to measure the most dominant factors influencing premarital screening behavior and qualitative research methods to explore the reasons for reluctance to undertake premarital screening. Future researchers may find these approaches valuable in gaining a more comprehensive understanding of this topic.

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