Application of Social Cognitive Theory as a Predictor for Health Screening Utilization among Pre-Marital Couples

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ABSTRACT

Background: Circumstances in the early stages of development have a tremendous impact on a person's risk of developing diseases in adulthood. Numerous diseases can start in childhood and are generated by various traumas in early life, including improper treatment during pregnancy, maternal malnutrition, and maternal disease, one of which is diseases related to reproductive health. Premarital health screening is a series of tests that must be carried out by prospective brides and grooms before marriage, which aims to reduce the burden of inherited diseases by reducing the number of high-risk marriages. This study aimed to analyze the use of health screening among pre-marital couples through the Social Cognitive Theory.

Subjects and Method: A cross-sectional study was conducted in Nias, Indonesia, in October-November 2024. A sample of 200 brides and grooms was selected using fixed disease sampling. The data were collected using questionnaire and analyzed using a path analysis.

Results: Outcome expectation was positively and indirectly associated with pre-marital health screening (b= 0.58; 95% CI= 0.01 to 1.15; p= 0.046). Knowledge, reinforcement, and observational learning were indirectly associated with pre-marital health screening among pre-marital couples.

Conclusion: Social cognitive theory can be used to predict health screening uptake among pre-marital couples.

Keywords: health screening, pre-marital couple, social cognitive theory

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BACKGROUND

The hypothesis of the fetal origin of adult disease proposed by David Barker states that circumstances in early development have a huge impact on a person's risk of developing a disease in adulthood. A study conducted on humans and animals has shown that many diseases can start in childhood and are generated by various traumas in early life, one of which is maternal malnutrition and diseases, such as diseases related to reproductive health

(Guo et al, 2022). Reproductive health is the starting point for the development of health for both mother and child, which can be prepared from an early age, even when a person is not yet married. Good preconception health can be obtained by doing preconception screening or premarital screening (WHO,2013).

Premarital health screening is a series of tests that must be undergone by prospective brides and grooms before marriage, and it is one of the forms of pre-conception health services, which aims at women from their adolescence to the pre-conception in order to prepare a healthy pregnant woman (Delatycki et al, 2020). Bener et al (2019) mention that the health screening program is conducted before and after birth or when they are considering marriage. Premarital health screening potentially reduces the burden of inherited diseases by reducing the number of high-risk marriages.

Based on data from the WHO, in 2023, the prevalence of HIV patients is 39 million, of which 1.1 – 2.1 million are children, and the occurrence of hepatitis in 2023 is 1.23 million people infected with the hepatitis B virus. In addition to HIV and hepatitis, genetic diseases such as blood disorders also have a considerable prevalence, with an estimated 5% - 7% of the world's population carrying mutated genes that can affect the production of hemoglobin molecules, resulting in more than 330,000 babies being affected by birth each year. In Indonesia, the prevalence of hepatitis is 877,531, while the prevalence of HIV and AIDS, based on data from SIHA, until March 2023 it is reported as many as 37-7,650 HIV cases and for AIDS cases as many as 145,037. From this data, as many as 2,133 pregnant women are infected with HIV, and as many as 134 babies were born to HIV-positive mothers. The prevalence of thalassemia carriers in Indonesia is 10,973

cases as of 2021. In North Sumatra, the prevalence of hepatitis, according to SKI data in 2023, is 48,469 cases; the prevalence of HIV and AIDS, based on data from SIHA is 731 cases and 98 cases, respectively. Meanwhile, thalassemia is 163 cases. The Health Office of North Sumatra Province reports that until 2022, the number of HIV/AIDS patients in Nias Regency is 88 cases. As for the number of cases of hepatitis and thalassemia, no reports are received.

Given the increasing incidence of infectious diseases that can be transmitted through mothers and children and other genetic diseases, premarital health screening is required to reduce the burden of inherited diseases. Not many people have undergone premarital health screening. This is influenced by several factors, one of which is environmental factors. Social cognitive theory is a psychological perspective on human function that emphasizes the important role played by the social environment in motivation, learning, and self-regulation (Schunk & Usher, 2019). Social cognitive theory directs attention to improving self-efficacy, skills, and knowledge to encourage tertiary preventive behaviors (Ghoreishi et al., 2019). This theory functions in understanding tertiary preventive behavior among prospective brides and grooms because it can explain how individuals can develop and maintain behaviors to prevent the occurrence of disease. Departing from this phenomenon, the researcher has the desire to be able to explain tertiary preventive behavior in the form of health screening among prospective brides and grooms.

SUBJECTS AND METHOD

1. Study Design
The study design used in this study was cross-sectional to assess the use of health

screening among prospective brides and grooms on social cognition theory.

2. Population and Sample

The target population in this study was individuals who were at marriageable age, namely 19-35 years old, in the Nias Regency area, which amounts to 41,020, with a sample of 200 people. The sampling technique used in this study was fixed disease sampling.

3. Study Variables

Independent variables: outcome expectations, knowledge, reinforcement, and observational learning. Dependent variables: behavior of using premarital health screening.

4. Operational Definition of Variables

Premarital Health Screening Utilization Behavior Decisions, attitudes, and actions of the prospective brides and grooms to conduct a health examination before the wedding.

Outcome Expectation The expected outcome of the behavior conducted, in this case, is the behavior of willingness for premarital health screening

Knowledge is everything that a person knows that is obtained from various sources of information.

Observational learning: The process of observing what others are doing that is then applied on oneself

Reinforcement : Responses to a person's behavior that can then affect a person's continuation of premarital health screening.

5. Study Instruments

The instrument used in this study was a questionnaire. The questionnaire was compiled by the researchers based on existing theories to measure variables, namely knowledge, outcome expectation, observational learning, and reinforcement. The questionnaire had been tested for validity and reliability.

6. Data analysis

Univariate analysis aims to explain and describe the characteristics of each study variable. Bivariate analysis in this study used the Logistic Regression test, and multivariate analysis using path analysis.

7. Research Ethics

The ethical aspects in this study included informed consent, anonymity, and data confidentiality. The ethical clearance of this study was obtained from the Health Research Ethics Committee of Dr. Moewardi Hospital, Surakarta No. 2.481/X/-HREC/2024.

RESULTS

1. Sample Characteristics

The characteristics of the study subjects are presented in Table 1. The table shows that out of the 200 study subjects, the majority were women with a total of 152 people (76%). Most of the study subjects were senior high school graduates with a total of 92 people (46%), followed by bachelor's degree as many as 74 people (37%), associate's degree as many as 27 people (13.5%), junior high school as many as 4 people (2%) and the last wass Master's/ Doctorate Degree as many as 3 people (1.5%). The majority of the study subjects earned less than Rp1,000,000, which was 87 people (43.5%), and the most common employment status of the study subjects was "others", where the study subjects did not mention the type of their occupation with a total of 111 people (55.5%).

Table 1. Characteristics of research subjects

Classification	N	%
Gender		
Male	48	24
Female	152	76
Education Level		
Elementary School	0	0
Junior High School	4	2
Senior High School	92	46
Associate's Degree	27	13.5
Bachelor's Degree	74	37
Master's/Doctor's	3	1.5
Employment		
Unemployed	28	14
Self-employed	18	9
Private employee	29	14.5
Civil Servant	14	7
Others	111	55.5
Income		
Rp1,000,000	87	43.5
Rp1,000,000 – Rp3,000,000	84	42
Rp3,000,000	29	14.5

2. Univariate analysis

Table 2 shows the results of descriptive analysis in the form of continuous data, explaining that the study subjects had an average age of 25.66 years with a minimum age of 20 years and a maximum of 34 years with a standard deviation of 3.00.

Table 2. Frequency distribution of research subject characteristics (continuous data)

Variable	Mean.	Min.	Max.	SD
Age (years)	25.66	20	34	3.00

3. Bivariate Analysis

Table 3 showed that outcomes expectation increased the utilization of premarital health screening (OR= 1.78; 95% CI= 1.01 to 3.15; p= 0.046), high knowledge (OR= 6.29; 95% CI= 4.41 to 11.63; p<0.001), observational learning (OR= 26.77; 95% CI= 12.50 to 57.32; p<0.001), reinforcement (OR= 21.19; 95% CI= 10.09 to 44.50; p<0.001) increased premarital health screening.

Table 3. The results of the bivariate analysis of Social Cognitive Theory as a predictor of the use of health screening among pre-marital couples

Variable	Premarital Health screening				OR	95% CI		p
	No		Yes			Lower Limit	Upper Limit	
	n	%	n	%				
Outcome Expectation								
Positive	51	43.97	65	56.03	1.78	1.01	3.15	0.046
Negative	49	58.33	35	41.67				

Variable	Premarital Health screening				OR	95% CI		p
	No		Yes			Lower Limit	Upper Limit	
	n	%	n	%				
Knowlegde								
Good	29	28.71	72	71.29	6.29	4.41	11.63	<0.001
Poor	71	71.72	28	28.28				
Observational Learning								
Strong	20	18.69	87	81.31	26.77	12.50	57.32	<0.001
Weak	80	86.02	13	13.98				
Reinforcement								
Strong	24	21.62	87	78.38	21.19	10.09	44.50	<0.001
Weak	76	85.39	13	14.61				

4. Path analysis

Path analysis is used to determine the magnitude of the influence of one variable on other variables, both direct and indirect influences. The magnitude of the influence of exogenous variables is called the path coefficient. Meanwhile, the path coefficient itself does not have a unit, so it can be concluded that the larger the path coefficient, the greater the influence given by the variable
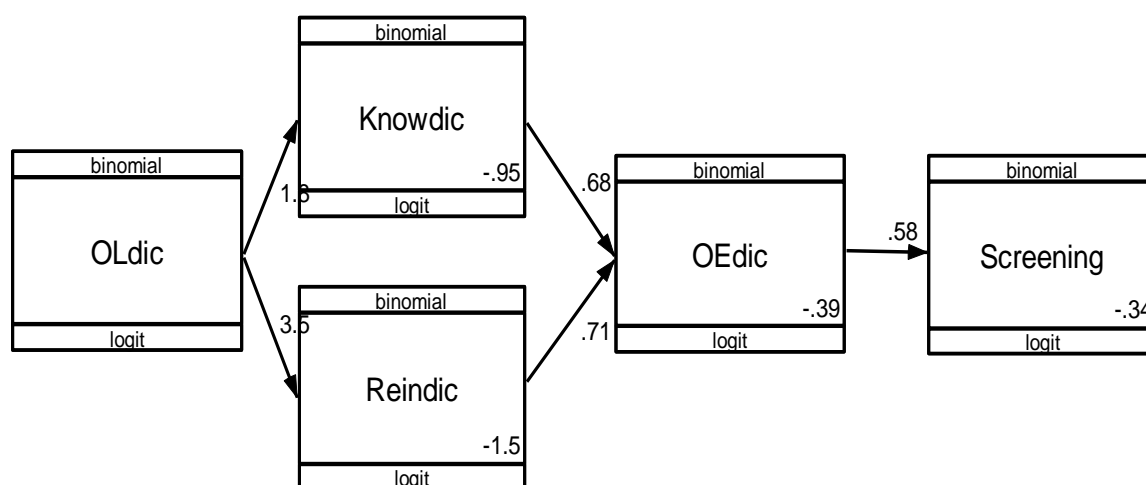
Figure 1. Structural model with estimated path analysis about the Application of Social Cognitive Theory as a Predictor of the Utilization of Health Screening among Premarital Couples

Figure 1 shows that the utilization of health screening among prospective brides and grooms was directly influenced by the expected outcome. Furthermore, the utilization of health screening among prospective brides and grooms was directly influenced by knowledge and reinforcement through outcome expectations, and observational learning through knowledge and reinforcement. Model estimation in path analysis using path coefficient values, standard error, 95% CI, and p-value described in Table 4.

Table 4 Results of path analysis on the application of social cognitive theory as a predictor of the use of health screening in pre-marital couples

Dependent variables		Independent variables	Path Coefficients	95% CI		p
				Lower Limit	Upper Limit	
Direct influence						
Screening (Yes)	←	Positive Outcome Expectation	0.58	0.01	1.15	0.046
Indirect influence						
Positive	←	Knowledge (Good)	0.67	0.08	1.23	0.027
Outcome	←	Reinforcement	0.71	0.10	1.31	0.021
Expectation						
Knowledge	←	Observational Learning	1.80	1.18	2.41	<0.001
Reinforcement	←	Observational Learning	3.48	2.69	4.26	<0.001

Table 4 showed that strong outcome expectation directly increased the likelihood of health screening in pre-marital couples (b= 0.58; CI 95%= 0.01 to 1.15; p= 0.046). Health screening pre-marital couples indirectly affected by knowledge, observational learning, and reinforcement.

High knowledge increased the likelihood of positive outcome expectation (b= 0.67; 95% CI= 0.08 to 1.23; p= 0.027). Reinforcement increased positive outcome expectation (b=0.71; 95% CI= 0.10 to 1.31; p= 0.021). Observational learning increased knowledge about pre-marital health screening (b=1.80; 95% CI=1.18 to 2.41; p<0.001) and reinforcement (b= 3.48; 95% CI= 2.69 to 4.26 ; p<0.001).

DISCUSSION

1. The effect of outcome expectation on pre-marital health screening

The results show that there was a significant association between the expected outcome and the use of health screening among prospective brides and grooms. Prospective brides and grooms who had a strong outcome expectation were more likely to have a premarital health screening. This study is in line with

a study conducted by Morrison and Stuifbergen (2014), which states that a person with a positive outcome expectation can be associated with high motivation to do physical activity. This can be used in this study, where prospective brides and grooms who have positive outcome expectations have high motivation to conduct premarital health screening.

Outcome expectation refers to an individual's belief about the likelihood of action leading to a particular outcome, furthermore, outcome expectation also refers to belief regarding the physical or psychological benefit that will result and the extent to which those benefits will be achieved (Huttunten-Lenz et al., 2018; Garland, et al., 2022).

According to Reisi et al (2016) the outcome expectation will motivate individuals to behave, individuals will be more motivated to engage in behaviors if they believe that there will be useful or beneficial consequences of the behavior. Schpunk and Dibenedetto (2020) also mention that outcome expectation can sustain motivational outcomes over a long period when one believes that they will produce success.

2. The effect of knowledge on the utilization of health screening

among prospective brides and grooms

The results of the study show that there was a strong positive association indirectly between knowledge and the utilization of health screening among prospective brides and grooms through outcome expectation. This study shows that prospective brides and grooms who had good knowledge had a positive and strong outcome expectation about screening, so that it was possible to decide to undergo premarital health screening.

Knowledge is the result of education. There are several types of knowledge, namely general knowledge, knowledge that increases personal awareness, and knowledge that improves skills. A person gains knowledge as they age because of the exposure to the information they obtain, and besides that, knowledge is also obtained from formal education. Knowledge allows a person to recognize health risks and the benefits of health-related choices. Behavior that is based on good knowledge will last longer than behavior that is not based on good knowledge. (Kaveh et al., 2022; Arlinghaus and Johnston, 2018).

3. **The effect of reinforcement on the utilization of health screening among prospective brides and grooms**

The results of the study show that there was an indirect strong positive association between reinforcement and the utilization of health screening among prospective brides and grooms through outcome expectation. This study shows that prospective brides and grooms who received reinforcement about health screening had the possibility to conduct premarital health screening.

This study is in line with a study conducted by Geerling et al (2019) which states that positive reinforcement is asso-

ciated with greater increase in physical activity in adults with diabetes. Reinforcement can start from oneself or from the environment, and its nature can be positive or negative. Reinforcement can increase a person's motivation to behave appropriately. Different types of boosters can be used to motivate a person such as attention, appreciation and praise (Adibsereshki et al., 2015; Neherta and Refnandes., 2023).

Scott et al (2023) mentioned that there is behavioral therapy proposed by B.F. Skinner, namely behavior modification that shows that behavior can be formed through reinforcement and/or punishment. Positive reinforcement occurs when a behavior is driven by rewards, where the reinforcement or reward is an important plan of the behavior. Reinforcement must be valuable for the program to be effective. A person will be motivated if he gets a reward when he does so. This can apply to prospective brides and grooms where when they get reinforcement and motivation about health screening both from themselves and their environment, they have a greater chance of doing premarital health screening.

4. **The effect of observation learning on the utilization of health screening among prospective brides and grooms**

The results show that there was an indirect strong positive association between observational learning and the utilization of health screening among prospective brides and grooms through knowledge and reinforcement. This study shows that prospective brides and grooms who observed other couples who underwent premarital health screening were likely to undergo premarital health screening.

This study is in line with Rostamian and Kazemi (2016) who states that observational learning is a reinforcing factor for

physical activity in adolescents. Observational learning is observing what others are doing. By observing the behavior of others, one will acquire a wide variety of behaviors, thoughts, and emotions (Govindaraju., 2021).

Behavioral changes can and do occur through observation. Observational learning can occur verbally, modeling, and consequentially. Verbal processes are more likely to influence learning, while consequences are more likely to affect the extent to which an individual's behavior changes through observation. Observational learning involves two steps, namely deducing the intentions of others according to observation and processing the results of other people's actions which then combine information sources to study the association among stimulus, response, and results that will later be used to obtain the desired results. Observational learning allows one to acquire knowledge without taking risks (Frlying et al., 2011; Kang et al., 2021).

AUTHOR CONTRIBUTION

Fifi Fidyaningrum was the principal researcher in this study who determined the topic, conducted study and collected data. Argyo Demartoto and Bhisma Murti were the principal research assistants in the study.

CONFLICT OF INTEREST

There was no conflict of interest in this study

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