

Application of the Health Belief Model on the Reproductive Health Services Uptake in Adolescents: A Meta-Analysis

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ABSTRACT

Background: Adolescence is a period of transition from childhood to adulthood and is characterized by changes in physical, psychological, and social behavior that can affect their lives at high risk. Various problems that occur in adolescents are influenced by various dimensions of life within them, both biological, cognitive, moral and psychological dimensions as well as the influence of the surrounding environment. This study aimed to estimate the effect of the Health Belief Model, especially its construction of perceived vulnerability, perceived seriousness, and perceived benefits in the use of reproductive health services with a meta-analysis.

Subjects and Method: This study is a review of meta-analytical studies. This research article was obtained from the electronic databases of PubMed, Springer Link, Elsevier and Google Scholar. The articles used in this study are articles published from 2011-2021. The search for articles was carried out by considering the eligibility criteria defined using the PICO model. P: adolescents. I: perceived vulnerability, perceived seriousness, perceived benefit. C: Low perceived vulnerability, perceived seriousness, perceived benefit. O: use of reproductive health services. The articles included in this study are full text articles with a Srocsectional study design. This article was analyzed using the Review Manager 5.3 application.

Results: There are 9 articles in total. The results showed that there was high heterogeneity ($I^2=82\%$; $p < 0.0001$), so that the data analysis on the florest plot used a random effect model. The perception of vulnerability that is felt to be strong increases the likelihood of using reproductive health services by 2.42 times compared to the perception of vulnerability that is felt to be weak, and it is not statistically significant (aOR= 2.42; 95% CI= 1.60-3.67; $p= 0.001$).

Conclusion: The use of reproductive health services is not statistically significant in predicting reproductive health in adolescents.

Keywords: health belief model, belief, reproductive health service, reproductive health care

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BACKGROUND

Adolescence is a period of transition from childhood to adulthood and is characterized by changes in physical, psychological, and social behavior that can affect their lives at high risk (Wilson et al, 2010). The number

of problems and crises that occur during adolescence makes many experts in the field of developmental psychology call it a period of crisis. Various problems that occur in adolescents are influenced by various dimensions of life within them, both biolo-

gical, cognitive, moral and psychological dimensions as well as the influence of the surrounding environment.

Currently the thing that stands out in adolescents is from a health point of view (Howard, et al., 2010). They are most vulnerable to various reproductive health problems, such as premature pregnancy, unsafe abortion, and sexually transmitted infections (STIs) including HIV (Mustafa et al, 2017).

Health services for adolescents are not designed according to needs and do not always have favorable conditions to meet the special needs of adolescents this is because, youth access to services is not clearly understood by themselves and service providers. Attracting youth to clinical services remains a challenge and there is a need to create demand and increase youth health-seeking behavior (African Youth Alliance. 2012).

The benefits and objectives of the adolescent reproductive health program are to provide understanding and awareness so that they are aware of the importance of learning this knowledge which can have an impact on healthy living behavior and are also responsible for their reproductive health problems every day, the way to do this is through advocacy, health promotion, IEC, consulting and providing services to adolescents with special problems and providing support in carrying out positive activities involving adolescents (Arsani, 2019).

The Health Belief Model is a health theory that can predict health behavior developed by Strecher and Rosenstock (Nugrahani et al., 2017). This study aims to estimate the effect of the Health Belief Model, especially its construction of perceived vulnerability, perceived seriousness, and perceived benefits in the use of reproductive health services with a meta-analysis.

SUBJECTS AND METHOD

1. Study Design

This is a meta-analysis study. This research article was obtained from the electronic databases of PubMed, Springer Link, Elsevier and Google Scholar. The keywords used are "health belief model", or "health belief" or "belief" and "reproductive health services", or "reproductive health care".

2. Inclusion Criteria

The inclusion criteria used in this study were full-text articles with a cross-sectional design. The articles were published in English from 2012 to 2022. Analyzes of perceived vulnerability, seriousness, and perceived benefit to study final results were reported using adjusted odds ratio (aOR).

3. Exclusion Criteria

The articles that were issued in this study were articles with RCT, case-control, quasi-experimental research design and research protocols. Statistical results do not report Adjusted Odds Ratio for outcome variables.

4. Operational Definition of Variables

The use of reproductive health services is carried out by adolescents to prevent and overcome reproductive health problems such as premature pregnancy, unsafe abortion, and sexually transmitted infections (STIs) including HIV.

The Health Belief Model is one of the theories that is often used to understand health attitudes and behavior about disease. HBM consists of several main components, one of which is the perception of benefits. In relation to vaccines, perceived benefit can be defined as an individual's belief in carrying out the vaccination.

Perception of High Vulnerability is a person's perception which refers to a person beliefs about the possibility of experiencing risk or the possibility of experiencing reproductive health problems.

5. Data Analysis

The collected articles were processed using the Review Manager application (RevMan 5.3). Data processing was carried out by calculating effect sizes and heterogeneity to determine the merging model, research and form a final meta-analysis of the results in the form of forest plots and funnel plots.

RESULTS

Process of searching article was carried out by searching several journal databases including PubMed, Springer Link, Elsevier and Google Scholar, it can be seen using the PRISMA flowchart shown in Figure 1.

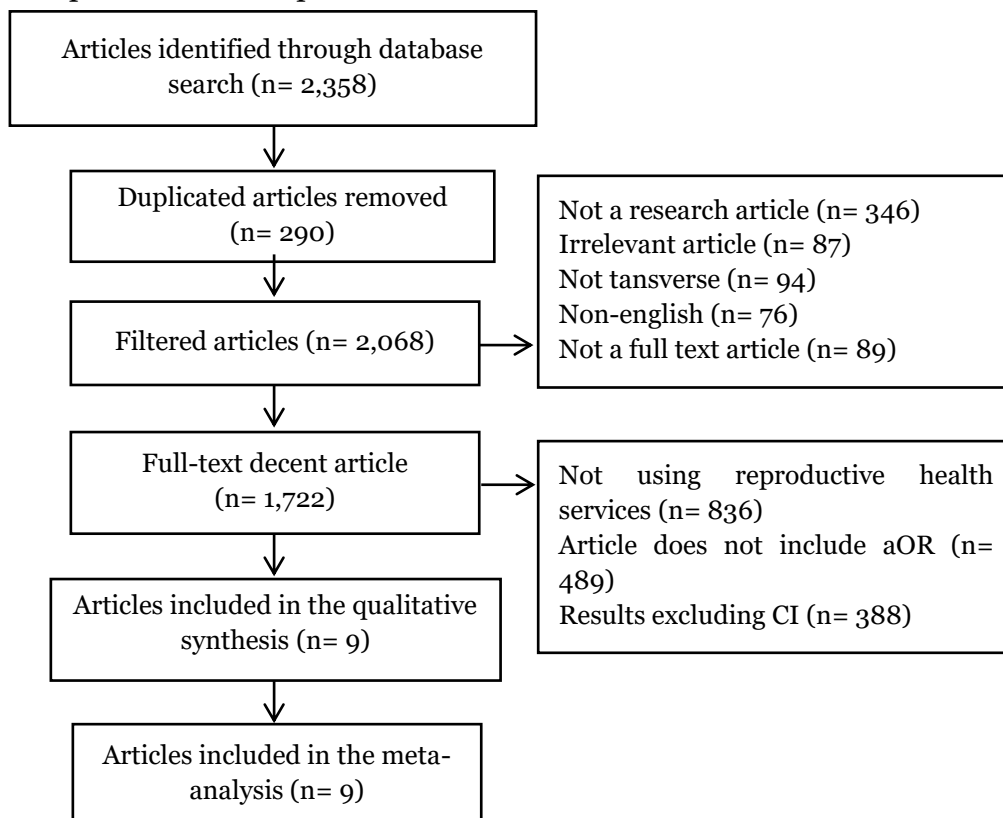


Figure 1. Results of Prisma Flow Diagrams



Figure 2. Research Distribution Map

Figure 2 illustrates where the main study was conducted. In total there are 9 secondary studies originating from 2 continents, namely Asia and Africa. The three main studies are from Asia namely Nepal, Dasmairinas, and Indonesia. Four of the main studies were from Africa and four from Ethiopia. A total of 9 articles were designed as a cross-sectional study that analyzed the use of reproductive health services in adolescents.

Based on table 1, it can be seen that there are nine articles with a total sample of 6,897. Six studies state that the perception of vulnerability has a significant correlation with the use of reproductive health services.

Figure 3 shows that there is high heterogeneity ($I^2 = 82\%$; $p < 0.001$), so that the data analysis on the forest plot uses a random effect model. The perception of vulnerability that is felt to be strong increases the likelihood of using reproductive health services by 2.42 times compared to the perception of vulnerability that is felt to be weak, and it is not statistically significant (aOR = 2.42; 95% CI = 1.60-3.67; $p = 0.001$).

Figure 4 showed the result of the funnel plot, it can be concluded that there are 6 plots on the left, and 3 plots on the right. The plot on the right is had standard errors between 0.5 and 1. The plot on the left side had standard error between of 0 and 0.5.

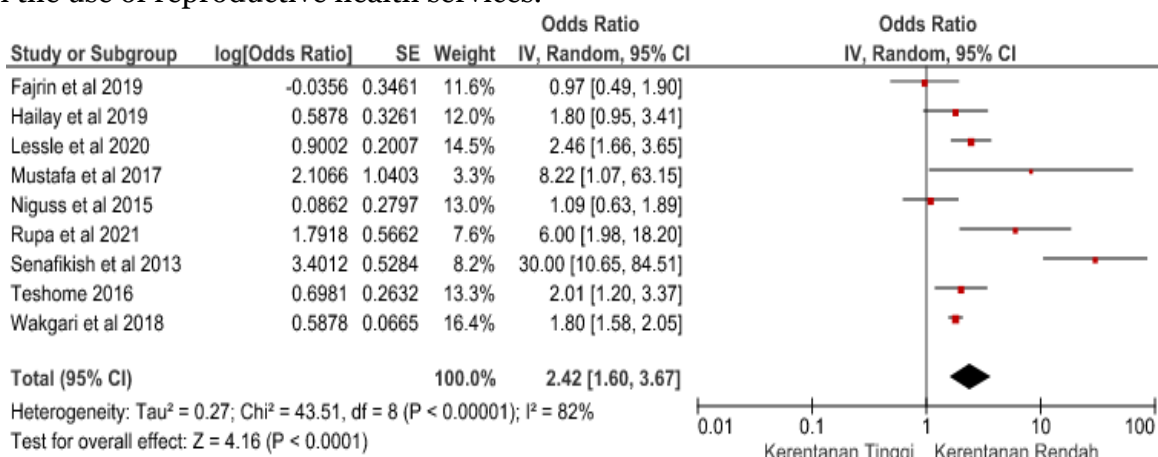


Figure 3. Funnel of the application of perceived vulnerability in the use of reproductive health services

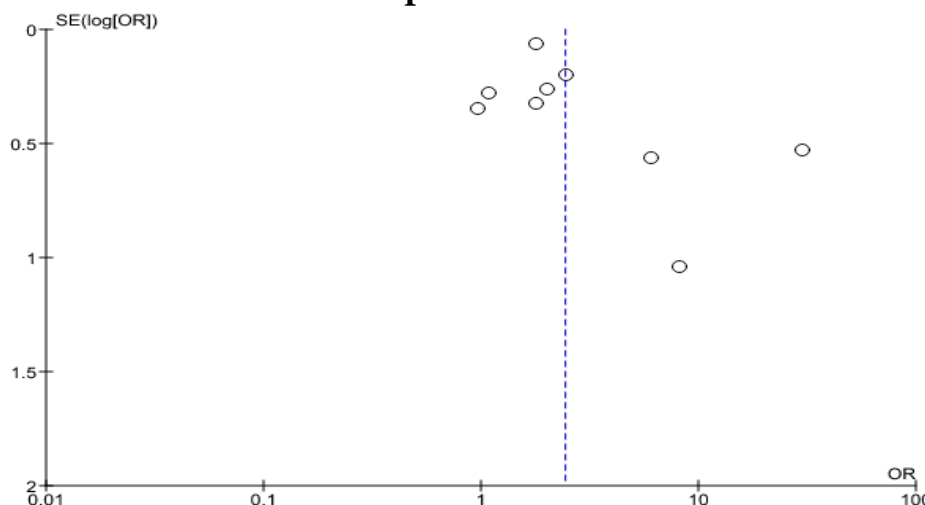


Figure 4. Funnel Plot of the application of perceived vulnerability in the use of reproductive health services

Table 1. Assessment of study quality published by the Centre for Evidence-Based Medicine

No	Indicator	Publication (Author and Year)								
		Teshome (2016)	Hailay et al. (2019)	HWakgari et al. (2018)	Mustafa et al. (2017)	Nigus et al. (2015)	Rupa et al. (2021)	Senafikish et al. (2013)	Leslee et al. (2020)	Fajrin et al. (2019)
1	Does the research formulate the research question (research problem) clearly?	2	2	2	2	2	2	2	2	2
2	Is the cross sectional research method appropriate to answer the research question?	2	2	2	2	2	2	2	2	2
3	Is the research subject selection method clearly explained?	2	2	2	2	2	2	2	2	2
4	Is the sampling technique free of bias (selection)?	2	2	2	2	2	2	2	2	2
5	Is the sample representative of the research target population?	2	2	2	2	2	2	2	2	2
6	Has statistical significance been tested?	2	2	2	2	2	2	2	2	2
7	Are the results of this study reported in aOR?	2	2	2	2	2	2	2	2	2
8	Do you believe the results?	2	2	2	2	2	2	2	2	2
9	Are the results obtained can be applied in the community?	2	2	2	2	2	2	2	2	2
	Total	18	18	18	18	18	18	18	18	18

Note: Answer 0= No, 1= can't tell, 2= Yes

Table 2. Description of Primary Research included in the Meta-Analysis

No	Author (Year)	Country	Study Design	Sample	Population (P)	Intervention (I)	Comparison (C)	Outcome (O)	aOR (CI 95%)
1	Teshome et al. (2016)	Ethiopia	Cross-sectional	844	Adolescent female	high perception of vulnerability	Low perception of vulnerability	Use of reproductive health	2.01 (1.20 to 3.37)
2	Hailay et al. (2019)	Ethiopia	Cross-sectional	844	Adolescent female	high perception of vulnerability	Low perception of vulnerability	Use of reproductive health	1.84 (0.95-3.35)
3	Wakgari et al. (2018)	Ethiopia	Cross-sectional	874	All student	high perception of vulnerability	Low perception of vulnerability	Use of reproductive health	1.80 (1.58 to 1.10)
4	Mustafa et al. (2017)	Ethiopia	Cross-sectional	402	Adolescent female	high perception of vulnerability	Low perception of vulnerability	Use of reproductive health	8.22 (1.07 to 35.49)
5	Niguss et al. (2015)	Ethiopia	Cross-sectional	658	Youth's age 15 to 24	high perception of vulnerability	Low perception of vulnerability	Use of reproductive health	1.09 (0.630 to 1.907)
6	Rupa et al. (2021)	Nepal	Cross-sectional	384	Female	high perception of vulnerability	Low perception of vulnerability	Use of reproductive health	6.01 (1.978-18.370)
7	Senafikish et al. (2013)	Ethiopia	Cross-sectional	1,290	Adolescent female	high perception of vulnerability	Low perception of vulnerability	Use of reproductive health	30 (10.65 to 83.01)
8	Leslee et al. (2020)	Desmarinas	Cross-sectional	1,218	All student	high perception of vulnerability	Low perception of vulnerability	Use of reproductive health	2.46 (1.66 to 3.66)
9	Fajrin et al. (2019)	Indonesia	Cross-sectional	383	Adolescent	high perception of vulnerability	Low perception of vulnerability	Use of reproductive health	0.965 (0.605 to 1.540)

DISCUSSION

This systematic review and meta-analysis took the theme of the Health Belief Model in the use of reproductive health services. The independent variables of this study were perceptions of vulnerability, perceived seriousness, and perceived benefits. The dependent variable of this research is the use of reproductive health services.

This study used the AOR statistic resulting from multivariate analysis, which aimed to control for confounding factors. Confounding factors can cause study results to be invalid because confounding factors also affect the relationship or affect the population being studied (Anulus et al, 2019).

The forest plot in Figure 3 shows that there is high heterogeneity ($I^2 = 82\%$; $p < 0.001$), so that the data analysis on the forest plot uses a random effect model. The perception of vulnerability that is felt to be strong increases the likelihood of using reproductive health services by 2.42 times compared to the perception of vulnerability that is felt to be weak, and it is not statistically significant (aOR = 2.42; 95% CI = 1.60 to 3.67; $p = 0.001$). The funnel plot in Figure 4 can be concluded that there are 6 plots on the left, and 3 plots on the right. The plot on the right is between standard errors of 0.5 and 1. The plot on the left is between standard errors of 0 and 0.5.

Application of the perception of vulnerability in the use of reproductive health services. This study shows that the perception of vulnerability in the use of reproductive health services that is perceived as strong has a slightly greater likelihood of using reproductive health services compared to the perceived vulnerability of being weak.

The results of this study are in line with research conducted by Anulus et al (2019), which stated that perceived susceptibility to use of reproductive health servi-

ces could affect susceptibility to reproductive health services, but it was not statistically significant. This is also in line with Teshome's research (2016), adolescent girls who feel vulnerable to reproductive health problems will use reproductive health services higher.

Perception of vulnerability is a person perception that refers to a person's beliefs about the possibility of experiencing risk or the possibility of experiencing reproductive health problems. Students who have a high perception of vulnerability to reproductive health problems such as HIV/AIDS were found to have a significant relationship with sexual and reproductive health service use (Wakgari et al, 2018).

Perceptions of perceived vulnerability can influence adolescents to use reproductive health services, including benefits if adolescents have an awareness of the perception of vulnerability itself because it can reduce or even prevent the occurrence of reproductive diseases, reduce the severity and even death of reproductive diseases, detect early, and opportunities for recovery and maintenance. reproductive health with longer status.

AUTHOR CONTRIBUTION

Dyah Ayu Kusumawardani and Elsa Jusmasni Ayu designed this journal, collected articles from electronic journal databases, processed the data, and analyzed the data.

FUNDING AND SPONSORSHIP

This study is self-funded.

CONFLICT OF INTEREST

There is no conflict of interest in this study.

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