



The Effectiveness Interactive Application on Adolescent Girls' Knowledge Regarding Premenstrual Syndrome

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Abstract Background: One issue regarding adolescent reproductive health is a lack of knowledge and appropriate attitudes concerning premenstrual syndrome (PMS) specifically regarding the concepts of menstruation and PMS, the factors influencing PMS, and methods for symptom management. Consequently, innovative health education approaches are needed, such as the use of interactive Android-based applications, which serve as an engaging medium for adolescents.

Objectives: This study aimed to determine the effectiveness of the interactive application in improving adolescent girls' knowledge regarding PMS.

Method : A quasi-experimental research design was employed, with data collected via questionnaires. The study involved 60 adolescent girls in the Bandung area—divided into an intervention group (n=30) and a control group (n=30)—selected through simple random sampling. Data analysis included quantitative methods (frequency distribution) and analytical testing (Mann-Whitney U test).

Results: Results showed improvements in knowledge scores in both the intervention and control groups; however, the effectiveness analysis demonstrated that health education delivered via interactive application was more effective than the approach used for the control group. It is recommended that this interactive Android application be utilized in adolescent reproductive health programs to enhance the knowledge of adolescent girls.

Keywords: Premenstrual Syndrome; interactive application.

BACKGROUND

Premenstrual Syndrome (PMS) is a reproductive health issue affecting adolescent girls. The incidence of PMS among women is quite high, affecting approximately 95% of them. Research conducted on adolescent girls in Bandung revealed a PMS prevalence rate of 54.2%.¹ A preliminary study involving 100 adolescent girls in Bandung found that 60% experienced PMS symptoms.

PMS can impact an adolescent's health both physically and psychologically as the symptoms range from mild to severe. These recurring physical and psychological symptoms typically manifest 7 to 14 days before the menstrual cycle and interfere with various aspects of a woman's life.^{2,3} Research indicates that the menstrual cycle influences emotional and

physical processes in all women. Approximately 5% of women experience severe symptoms that can affect their daily activities.^{4,5} PMS symptoms in adolescents can also impact academic performance; the condition affects school-related activities by reducing concentration, disrupting communication with peers, potentially lowering study productivity, and increasing absenteeism.⁶

Many factors influence PMS symptoms, including personality, anxiety, obesity, physical activity, and nutritional intake. High PMS prevalence is observed in adolescents with introverted personalities, high anxiety levels, excess weight, a lack of exercise, high sugar consumption, and insufficient intake of calcium, potassium, and vitamin B6. Therefore, adolescents require the knowledge and attitudes necessary to effectively manage PMS symptoms.^{7,8,9}

Adolescents currently lack sufficient knowledge and appropriate attitudes regarding the management of PMS symptoms. Research has shown a significant relationship between adolescent girls' knowledge and their behaviors in managing PMS symptoms.¹⁰ Another study found that 81% of adolescents possessed limited knowledge about PMS, and 49.4% did not take any measures to manage the symptoms they experienced.¹¹

To improve adolescents' knowledge and attitudes regarding PMS, it is necessary to develop innovative health education media utilizing multimedia technology. One such multimedia tool is an Android application designed for smartphones—known as "Sahabat Remaja" (Adolescent's Friend)—that has been developed to address this need. Currently, Indonesia ranks fifth globally in terms of the number of Android smartphone users. Given current technological advancements, Android platforms can serve as a medium for disseminating educational health information, particularly among adolescents.¹²

Based on this context, the researcher proposes a study on the effectiveness of the interactive application regarding the knowledge and attitudes of adolescent girls. The study aims to determine the effectiveness of this application in influencing adolescent girls' knowledge and attitudes concerning Premenstrual Syndrome.

METHODE

This study is analytical in nature and employs a quasi-experimental design featuring a control group with pre- and post-test assessments. Measurements were taken both before and after the intervention. The intervention for the control group consisted of health education using conventional media (leaflets), whereas the intervention group received health education via an interactive Android-based application. The study, involving both the case and control groups, will be conducted in the Bandung area. The study population consists of all adolescent girls in Bandung Indonesia. The sample size consisted of 30 respondents in the intervention group and 30 respondents in the control group.

Sampling was conducted using a simple random sampling technique. Inclusion criteria are Aged 13–18 years, already menstruating, history of PMS symptoms. Exclusion criteria are Unable to operate an Android smartphone.

RESULTS

This study was conducted with 60 respondents—comprising 30 in the intervention group and 30 in the control group—in the city of Bandung. The data analysis results are presented below:

Variable			Intervention Group (n=30)	Control Group (n=30)	P Value*
Knowledge					
Median	Pre	test	85 (62-100)	85 (62-100)	0,038
(Range)			96 (85-100)	92 (62-100)	
Median	Post	test			
(Range)					

*Mann Whitney test

Based on Table 1, the intervention group—which received health education via the interactive application—showed an increase in the median knowledge score (from 85 to 96). The control group, which did not receive health education through the interactive application, also demonstrated improvements in knowledge; there was an increase in the median knowledge score (from 85 to 92). As the data were not normally distributed, the Mann-Whitney test was employed; the results indicated that health education delivered via the interactive application had an effect on adolescent girls' knowledge regarding premenstrual syndrome ($p < 0.05$).

DISCUSSION

Current applications are highly effective in mitigating issues frequently faced by adolescents. Smartphone-based learning activities are more engaging for children and adolescents because the content can be presented through audiovisual media. Based on the aforementioned theory, Android-based applications are preferred by adolescents, as they frequently utilize digital technology in their daily lives—including when seeking health information. A key advantage of this Android-based application is its audiovisual nature; the target audience can both view and listen to the material, thereby capturing the attention and interest of adolescent girls.¹⁶

Based on the study, the researchers posit that the respondents' average knowledge scores increased because the Android-based application conveyed messages through both visual and auditory channels—senses through which most human knowledge is acquired. Consequently, regardless of the specific health issues addressed, the Android-based application successfully fostered changes in the target audience's knowledge.¹⁶ Furthermore, the researchers assume that this Android-based educational application serves as a vehicle for change in educational outcomes, specifically regarding knowledge.

CONCLUSION

Results showed improvements in knowledge in both the intervention and control groups; however, the effectiveness analysis demonstrated that health education delivered via interactive application was more effective than the approach used for the control group. It is recommended that this interactive Android application be utilized in adolescent reproductive health programs to enhance the knowledge and attitudes of adolescent girls.

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