
The Effect Of Health Education Using Leaflet Media On The Level Of Knowledge About Menstrual Hygiene In Adolescents At PP An-Najiyah 1 Jombang

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Abstract

The natural process that occurs in adolescent girls every month is menstruation. Lack of knowledge regarding hygiene practices during menstruation can cause various infections, including reproductive tract infections. Providing health education using leaflet media is considered one of the media that is quite effective media in increasing adolescent knowledge. This study aims to determine the effect of health education using leaflet media on the level of knowledge about menstrual hygiene in adolescents at PP An-Najiyah 1 Jombang. The research design used was an analytic pre-experimental design with a one-group pretest-posttest approach. The population in this study were adolescents in classes I, II, and III of MTS, totalling 47 adolescents. Sampling using purposive sampling with a total of 25 respondents. The research instrument used was a knowledge questionnaire, then analyzed using the Wilcoxon test. The results of the study before the intervention most adolescents had sufficient knowledge, as many as 15 respondents (60%), and after being given the intervention, almost all adolescents had good knowledge, as many as 20 respondents (80%). Wilcoxon test results obtained a p value = 0.000 < 0.005, then H1 is accepted. This study concludes that there is an effect of health education using leaflet media on the level of knowledge about menstrual hygiene in adolescents at PP An-Najiyah 1 Jombang. It is hoped that future researchers can develop more varied educational media, and the number of samples is expanded so that the results of research are more representative.

Keywords: Menstrual Hygiene, Knowledge, Leaflet

INTRODUCTION

According to the World Health Organisation (2024), adolescence is considered a fascinating stage, beginning from childhood and progressing toward adulthood. One of the physical changes experienced during adolescence is the maturation and functioning of reproductive organs. A characteristic sign of the female adolescent phase is menstruation (Nur et al., 2024). As explained by Entin Jubaedah (2019) in Herlinadiyaningsih & Arisani (2022), during menstruation, genital hygiene is often neglected by adolescents, which increases the risk of infections during menstruation. This is because the cervix is open during menstruation, allowing blood to exit the body, and this condition can serve as a pathway for bacteria to enter, potentially leading to infections of the uterus and pelvic cavity.

Based on the 2017 Indonesia Demographic and Health Survey (SDKI), the behaviour of maintaining hygiene during menstruation among adolescent girls is still relatively poor. About 63% of the causes are due to a lack of knowledge and information about menstrual hygiene. Insufficient understanding of menstrual hygiene management can lead to various reproductive health issues, including leukorrhea, urinary tract infections (UTIs), and reproductive tract infections (RTIs).

The World Health Organisation (2023) states that the global adolescent population aged 10-19 years is approximately 1.2 billion, accounting for 18% of the world's population. The prevalence of menstruating adolescents worldwide, based on WHO data from 2018, is one-fifth of Indonesia's population within the same age group. Furthermore, the level of sex education and reproductive health awareness in Southeast Asian countries, including Indonesia, remains below 40%. In Indonesia, data from Riskesdas (2018) shows that 70.1% of adolescents have experienced menstruation, while the 2022 SDKI survey reports that 75.6% of those aged 15-19 have minimal knowledge about reproductive health. In East Java, 73.58% of adolescents aged 10-19 have experienced menstruation; according to Riskesdas

(2018), 77.3% of adolescents in East Java have limited knowledge about reproductive health, and in Jombang Regency, this figure rises to 79.76%.

Preliminary research, including interviews with five female students at PP An-Najiyah 1 Jombang on January 28, 2025, revealed that these students, who have experienced menstruation, do not understand the meaning of menstrual hygiene management. They are unaware of proper genital cleansing, the appropriate use of soap, or the correct disposal of sanitary pads. Data from the management of PP An-Najiyah 1 Jombang shows that all 47 students from grades I, II, and III MTs have never received education on menstrual hygiene. Although the pondok has facilities such as LCD projectors and notice boards, and health education is routinely delivered by Puskesmas Tambakrejo Jombang every two months, these sessions are generally general and do not specifically address menstrual hygiene. This may be because the health workers are responsible for multiple pondoks under the Bahrul Ulum Foundation, leading to uneven education outreach. Additionally, the health workers conduct routine cleanliness inspections once a month to maintain a healthy environment.

Maintaining reproductive health is crucial, especially in ensuring proper menstrual hygiene. Poor hygiene practices, such as changing pads less than four times a day, using inappropriate types of pads, applying antiseptics directly to the genital area, or not changing underwear at least twice daily, especially during menstruation, can lead to infections (Sari, S.P., et al., 2021). Improper cleaning after urination, defecation, or bathing without changing pads can also contribute to health risks. According to Herlinadiyaningsih & Arisani (2022), inadequate hygiene during menstruation can promote the overgrowth of fungi and bacteria in the genital area, causing itching and infections such as leukorrhea, bacterial vaginitis, trichomoniasis, and vulvovaginitis. If left untreated, these infections may spread to internal reproductive organs, leading to difficulties in conception and reduced quality of life. Therefore, menstrual hygiene management must be prioritised. UNICEF (2016), in Dolang & Kiriwenno (2020), states that a lack of understanding about reproductive health and sexuality can hinder adolescents' ability to manage menstrual hygiene effectively.

One effective solution to improve knowledge about menstrual hygiene is through health education. Educational interventions, such as counselling and leaflets, have been proven to enhance knowledge, attitudes, and potentially change behaviours (Dolang & Kiriwenno, 2020). Specifically, studies consistently demonstrate the efficacy of leaflets as a health education medium due to their ability to convey information concisely, their portability, and the potential for repeated readings (Abeer, Tamar, & Murbiah, 2024). This makes them particularly suitable for dissemination among adolescents (Sari, 2019; Sitepu et al., 2025). Research indicates that information delivered via leaflets tends to be clearer and more detailed, facilitating better comprehension.

Studies by Herlinadiyaningsih & Arisani (2022), Dolang & Kiriwenno (2020), and Indrayani & Andriyati (2022) have already demonstrated that leaflet media effectively increases adolescents' knowledge. Further strengthening this, a study by Jubaedah, Yuhandini, & Sriyatin (2020) found a significant difference in adolescent knowledge about menstrual personal hygiene before and after health education using leaflets. Similarly, research by Sitepu, Anggraini, & Hasibuan (2025) concluded that health education using leaflet media significantly improved adolescent girls' knowledge of personal hygiene during menstruation. Moreover, a comprehensive literature review by Permana & Syafei (2024) highlighted that educational media, including leaflets, positively impact knowledge and behavior regarding menstrual hygiene in adolescent girls, proving to be a significant influence.

Given the current situation where many adolescents lack proper knowledge about menstrual hygiene, especially in regions like Jombang, and considering the limited targeted health education they receive, there is an urgent need for innovative approaches. The novelty of this research lies in exploring the impact of health education delivered specifically through leaflet media on adolescents' understanding of menstrual hygiene at PP An-Najiyah 1 Tambakberas Jombang. The study aims to fill a gap in existing health education strategies by providing tailored, accessible information that can be easily adopted and understood by adolescents, thereby improving their health behaviours and reducing the risk of reproductive health problems. The purpose of this research is to evaluate the effect of health education via leaflet media on the level of knowledge about menstrual hygiene among adolescents in PP An-Najiyah 1 Tambakberas Jombang, with the hope of informing future health promotion programs and policies aimed at adolescent reproductive health."

RESEARCH METHODS

This study employs a quantitative research design with a pre-experimental approach, specifically utilising a one-group pretest-posttest design to evaluate the effect of health education through leaflet media on adolescents' knowledge of menstrual hygiene. Quantitative research aims to collect numerical data that can be analysed statistically to determine relationships or effects, and in this case, it measures changes in knowledge levels before and after the intervention (Mukhyi, 2023). The pretest-posttest design involves administering a baseline assessment (pretest) to a single group of respondents, followed by the delivery of the educational intervention, and then conducting a post-test to measure any changes in the dependent variable. This approach allows for assessing the immediate impact of the intervention on participants' knowledge.

The study was conducted at PP An-Najiyah 1 Jombang, involving adolescent female students in grades I, II, and III MTs, totalling 47 individuals as the population. A purposive sampling technique was employed to select 25 respondents who met specific inclusion criteria, namely females aged 13-15 years who had experienced menstruation and were willing to participate, while excluding students engaged in activities that prevent participation at the time of data collection. Purposive sampling was chosen to ensure the sample's relevance to the research objectives, considering characteristics such as age, menstruation experience, and willingness to participate (Murgono, 2004). Before data collection, ethical approval was obtained from STIKES Bahrul Ulum Jombang, and necessary permissions were secured from the school authorities. Respondents were informed about the purpose of the study and provided informed consent to participate voluntarily.

Data collection involved several stages, beginning with pretests to assess baseline knowledge about menstrual hygiene, followed by health education delivered through a combination of lectures and leaflet media over approximately 30 to 45 minutes. The leaflet was designed as an educational tool containing information on menstrual hygiene practices, impacts of poor hygiene, and efforts to maintain reproductive health, validated for content and reliability. After the intervention, post-tests were conducted using the same questionnaire to evaluate knowledge gains. The questionnaires consisted of 12 closed items covering various aspects of menstrual hygiene, with validity confirmed through a correlation coefficient exceeding the critical value ($r > 0.361$) and reliability verified with a Cronbach's alpha of 0.676, indicating good internal consistency.

Data analysis was performed using standard procedures, beginning with data editing to ensure completeness, clarity, relevance, and consistency. Responses were coded numerically to facilitate statistical analysis, followed by data entry into SPSS software. Data cleaning was conducted to address missing or inconsistent responses, ensuring the accuracy of the dataset. Descriptive statistics provided an overview of the respondents' characteristics and knowledge levels. To assess the effect of the health education intervention, the Wilcoxon signed-rank test was employed because of its suitability for ordinal data and small sample size. This non-parametric test compared pretest and posttest scores to determine whether significant differences existed, thus indicating the effectiveness of the leaflet-based health education. Ethical considerations such as maintaining respondent anonymity and confidentiality were strictly observed throughout the research process, ensuring that personal data was protected and that participation was fully voluntary, by research ethics guidelines (Setiana, 2021). Overall, this methodology provides a rigorous framework for evaluating the impact of health education interventions on adolescents' knowledge of menstrual hygiene, aligning with standard academic and journal publication requirements.

RESULTS AND DISCUSSION

General Data

Table 1. Frequency Distribution Based on the Age of Respondents at PP An-Najiyah 1 Jombang on April 22, 2025

Age	Frequency(f)	Presentase(%)
13 y.o	9	36%
14 y.o	14	56%

15 y.o	2	8%
Total	25	100%

Based on table 1 obtained from 25 respondents, it was found that most of the respondents were in the age category of 14 years, with a total of 14 adolescents (56%), while almost half of the respondents were in the age category of 13 years, with a total of 9 adolescents (36%) and a small proportion of respondents were in the age category of 15 years, with a total of adolescents (8%).

Table 2. Frequency Distribution Based on Respondent Class at PP An-Najiyah 1 Jombang On April 22, 2025

Class	Frequency(f)	Presentase(%)
I MTS	7	28%
II MTS	18	72%
Total	25	100%

Based on Table 2, among the 25 respondents, the majority were categorised within the second grade of MTS (Junior High School), totalling 18 respondents (72%). Nearly half of the respondents were in the first grade of MTS, amounting to 7 adolescents (28%).

Table 3. The Frequency Distribution of Respondents' Duration of Menstruation at PP An-Najiyah 1 Jombang as of April 22, 2025

Length of menstruation	Frequency(f)	Presentase(%)
5-7 days	14	56%
>7 days	11	44%
Total	25	100%

Based on Table 3, among the 25 respondents, the majority experienced menstruation lasting the longest, which is 5-7 days, totalling 14 respondents (56%). Nearly half of the respondents experienced menstruation lasting more than 7 days, amounting to 11 respondents (44%).

Table 4. Frequency Distribution Based on Respondents' Source of Information at PP An-Najiyah 1 Jombang On April 22, 2025

Resources	Frequency(f)	Presentase(%)
Social media	7	28%
Parents	5	20%
Teacher	0	0%
Health workers	0	0%
Not yet exposed	13	52%
Total	25	100%

Based on table 4 obtained from 25 respondents, it was found that most respondents had not been exposed to information about menstrual hygiene, as many as 13 respondents (52%), while almost half of the respondents received information from social media, as many as 7 respondents (28%) and a small proportion of respondents received information from parents as many as 5 respondents (20%).

Knowledge Level Before Intervention

Table 5. Frequency Distribution of Knowledge Before Getting Health Education Using Leaflet Media

Knowledge level (Pre-Test)	Frequency(f)	Presentase(%)
Good	2	8%
Enough	15	60%
low	8	32%
Total	25	100%

The table presents the distribution of respondents' knowledge levels about menstrual hygiene before receiving health education through leaflet media. Based on the pretest results, only 8% of the participants were classified as having a good level of knowledge, indicating that just two respondents out of twenty-five possessed a high understanding of menstrual hygiene. The majority, accounting for 60%, demonstrated an adequate level of knowledge, with fifteen respondents falling into this category. Meanwhile, 32% of the respondents, equivalent to eight individuals, were categorised as having a low level of knowledge, reflecting limited understanding of menstrual hygiene practices. Overall, the data indicate that before the intervention, most respondents did not have optimal knowledge about menstrual hygiene, highlighting the need for targeted educational efforts.

Knowledge Level After Intervention

Table 6. Frequency Distribution of Knowledge After Getting Health Education Using Leaflet Media

Knowledge level (Post-Test)	Frequency(f)	Presentase(%)
Good	20	80%
Enough	5	20%
Low	0	0%
Total	25	100%

The table illustrates the distribution of respondents' knowledge levels regarding menstrual hygiene following the health education intervention using leaflet media. The results show a significant improvement compared to the pretest. Specifically, 80% of the participants, or twenty respondents, achieved a good level of knowledge, indicating a substantial increase in understanding after the intervention. Additionally, 20% of the respondents, representing five individuals, attained an adequate level of knowledge. Notably, no respondents fell into the low knowledge category after the intervention, with a 0% prevalence. This data demonstrates that the health education session effectively enhanced the respondents' understanding of menstrual hygiene, with the majority reaching a high level of knowledge post-intervention.

The Effect of Health Education Using Leaflet Media on The Level of Knowledge About Menstrual Hygiene Among Adolescents At PP An-Najiyah 1 Jombang

Table 7. The Results Of The Study Of The Effect Of Health Education Using Leaflet Media On The Level Of Knowledge About Menstrual Hygiene In Adolescents At PP An-Najiyah 1 Jombang

Knowledge Level	Pre-test		Post-test	
	F	%	F	%
Good	2	8%	20	80%
Enough	15	60%	5	20%
Low	8	32%	0	0%
Total	25	100%	25	100%
Wilcoxon Test	0,000			

Based on the data presented in the table above, the results from 25 respondents indicate that before the intervention, the majority of participants had an adequate level of knowledge, with 15 respondents (60%). Nearly half of the respondents had a low level of knowledge, totalling 8 individuals (32%), while a small proportion had a good level of knowledge, accounting for 2 respondents (8%). Following the intervention, there was a notable improvement in knowledge levels, with almost all respondents exhibiting a good level of understanding—specifically, 20 respondents (80%)—and a small proportion maintaining an adequate level, totalling 5 respondents (20%).

Furthermore, the analysis using the Wilcoxon test yielded a p-value of 0.000, which is less than the significance level of 0.05. This indicates that the null hypothesis (H0) is rejected, and the alternative hypothesis (H1) is accepted, demonstrating that health education using leaflet media has a significant effect on the level of knowledge regarding menstrual hygiene among adolescents at PP An-Najiyah 1 Jombang.

Discussion

1. Knowledge Level of Adolescents Before Receiving Health Education Using Leaflet Media on Menstrual Hygiene

Based on the analysis of the knowledge level before the intervention, which involved health education using leaflet media, Table 5 indicates that out of 25 respondents, the majority had an adequate level of knowledge, totalling 15 respondents (60%). Nearly half of the respondents had a low level of knowledge, amounting to 8 respondents (32%), while a small proportion, 2 respondents (8%), possessed good knowledge. These findings suggest that most respondents did not yet have optimal knowledge, as they mostly fell into the adequate and low categories. Therefore, health education is necessary to improve their understanding. Additionally, from the data in Table 4, it was observed that most respondents had not been exposed to information about menstrual hygiene, with 13 respondents (52%) indicating a lack of exposure.

This situation aligns with research by Fitriani, Lindayani, & Akhmad (2024), which found that most adolescents had sufficient knowledge, with 36 respondents (51.4%), primarily due to a lack of adequate understanding or information about menstrual hygiene. The source of information is a crucial factor influencing knowledge, as individuals exposed to more information tend to have higher understanding (Ulath, Tukiman, Hamka, Dusra, & Selly, 2022). Similar findings were reported by Yulfitria, Fitriana, Hamidah, & Karningsih (2020), who noted that the average pre-test knowledge score among adolescents was 9.39. This low score was attributed to limited exposure to information about menstrual hygiene. The lack of information sources can result in poor knowledge, which may negatively impact attitudes and behaviours among young girls (Budiadi, Karmi, & Kurnia, 2023). Besides the scarcity of information sources, age also influences an individual's knowledge, as shown in Table 1, where most adolescents are in the 14-year-old age group, totalling 14 respondents (56%). Age is closely related to maturity; as

individuals grow older, they tend to become more mature, which enhances their thinking and action capabilities, leading to increased knowledge acquisition (Gunawan, Suryawati, Indira, & Darmaputra, 2024). This is supported by Nurhayati & Qothimah (2023), who explain that age can influence knowledge levels, as physical and psychological changes occur with increasing age, resulting in more mature thinking.

Another factor, as shown in Table 2, is the educational level, where most respondents are in Grade VIII of Junior High School (MTS), totalling 18 respondents (72%). Education is a vital aspect influencing behaviour and attitudes, as it can develop and change perspectives (Qolbah, Hamidah, Purnamawati, & Subiyatin, 2023). This is supported by research conducted by Bahtiar & Nasir (2023), which states that education can influence the cognitive and affective conditions of adolescents based on their age, thereby impacting their behaviour.

The fact aligns with theoretical expectations: before the health education intervention using leaflet media, most respondents still had insufficient knowledge, primarily due to limited exposure to information. This situation is also observed at PP An-Najiyah 1 Jombang. It is unfortunate because information plays an essential role in increasing awareness and understanding of maintaining hygiene during menstruation. Moreover, age influences the absorption of information—the older the individual, the better their understanding. This occurs because maturity in thinking allows individuals to better process and accept information. Besides age, education also plays a significant role in enhancing knowledge, as educated individuals tend to have broader thinking abilities.

2. Knowledge Level of Adolescents After Receiving Health Education Using Leaflet Media on Menstrual Hygiene

Based on the analysis of adolescents' knowledge after the intervention of health education using leaflet media, Table 6 shows that out of 25 respondents, almost all possessed good knowledge, totalling 20 respondents (80%), while a small proportion, 5 respondents (20%), had adequate knowledge. This indicates an increase in knowledge following the intervention.

According to Bobak (2004), as cited in Qolbah, Hamidah, Purnamawati, & Subiyatin (2023), knowledge is defined as a person's understanding of an object through their senses, such as sight, smell, or hearing. An individual's knowledge is influenced by internal factors (from within oneself) and external factors (from the environment). Consistent with the research by Indrayani & Andriyati (2022), health education about menstrual hygiene is vital for students as a foundation for maintaining reproductive health. The evidence shows that after the health education, nearly all adolescents experienced a change; 33 respondents (86.8%) had good knowledge. This was supported by their enthusiasm and numerous questions during the health education session about menstrual hygiene. Similar findings were reported by Syamson, Murtini, & M (2022), who found that health education about menstrual hygiene helped adolescents understand and increase their knowledge about cleanliness during menstruation. This was evidenced by the significant difference between pre- and post-intervention, with 19 respondents (86.4%) demonstrating good knowledge after the education session. Additionally, Herlinadiyaningsih & Arisani (2022) reported that health education could effectively improve adolescents' understanding of menstrual hygiene, as indicated by the mean scores increasing from 68.75 before the intervention to 88.59 afterwards, with a difference of 19.84.

The alignment between empirical facts and theoretical expectations confirms that after the health education intervention using leaflet media, most adolescents had good knowledge. The

availability of information sources can enhance understanding regarding the importance of maintaining hygiene during menstruation, including practices such as changing pads every 4-5 hours, proper vaginal washing (front to back), and hand hygiene before and after touching the vagina.

3. The Effect of Health Education Using Leaflet Media on Adolescents' Knowledge of Menstrual Hygiene at PP An-Najiyah 1 Jombang

Table 7 presents the research findings from 25 respondents, showing that there was a significant effect of health education using leaflet media on the knowledge level before and after a 1-day intervention, which involved a pre-test and a post-test within the same day, lasting 30-45 minutes. The analysis demonstrated that the health education had a significant influence on adolescents' knowledge of menstrual hygiene at PP An-Najiyah 1 Jombang. This was evidenced by the statistical analysis using the Wilcoxon test, which resulted in a p-value of 0.000, less than 0.005, leading to the acceptance of H1 and the rejection of H0.

Health education is an effective method for increasing individual knowledge through instructional approaches, to influence behaviour at both individual and group levels to improve quality of life (Batubara & Siregar, 2021). Consistent with the research by Dolang & Kiriwenno (2020), health education can change a person's knowledge, as indicated by the increase in the mean score from an initial 20.03 to 24.86 after a 1-day health education session using leaflet media. The statistical test results ($p = 0.000$) confirmed the significant effect of the intervention. According to Notoatmodjo Soekidjo (2012), as cited in Nurhayati & Purwaningroom (2022), health education is considered successful if there is an increase in the output in line with the program's objectives. This was supported by the observed increase in knowledge, from a mean of 18.09 before the intervention to 16.93 afterwards, with a p-value of 0.000, indicating significant improvement. Similarly, research by Basniati, Ramadhany, Tamar, Nurhikmah, & Astuti (2020) showed that health education using leaflet media over one day significantly improved adolescents' knowledge, with a p-value of 0.001.

Interestingly, the pre-test results in Table 5 revealed that a small number of adolescents, only 2 respondents (8%), already had good knowledge before the intervention. Further investigation showed that these respondents had been exposed to information from various sources, including social media and their parents. This is supported by Ulath, Tukiman, Hamka, Dusra, & Selly (2022), who explain that social media influences knowledge levels because, in today's digital age, social media is a common source for education and information seeking. Additionally, parents, especially mothers, play an essential role in shaping adolescents' understanding. According to Purwanti (2017), as cited in Gunawan, Suryawati, Indira, & Darmaputra (2024), mothers are considered the closest figures to adolescent girls and thus have a significant influence on conveying information related to menstruation and hygiene during menstruation.

In conclusion, exposure to information from the environment—whether through digital media or family—can influence adolescents' knowledge before any intervention. However, health education remains necessary to standardise understanding and ensure that the information received is accurate, comprehensive, and appropriate.

The findings and theoretical frameworks align: providing health education using leaflet media for one day, with pre- and post-tests conducted on the same day, effectively enhances adolescents' knowledge at PP An-Najiyah 1 Jombang. This method proves to be quite effective because leaflets contain visual materials and clear explanations, making the material easier to understand and facilitating logical and mature thinking among adolescents. The results of this study demonstrate that not all adolescents start with the same level of knowledge. Although some

have been exposed to information from various sources, differences in learning styles, ability to filter accurate information, and depth of understanding can influence their level of knowledge. Therefore, continuous health education is essential to improve understanding, ensure the accuracy and completeness of information, and prevent misconceptions caused by misinformation from unreliable sources.

CONCLUSION

Based on the main findings of this study, it's clear that health education using leaflet media significantly improved adolescents' knowledge about menstrual hygiene at PP An-Najiyah 1 Jombang. Before the intervention, most respondents had only moderate or low knowledge, highlighting a critical gap. However, following the educational intervention, a substantial majority demonstrated a high level of understanding. This remarkable improvement was statistically confirmed, with the analysis showing a p-value of 0.000, unequivocally indicating a significant increase in knowledge scores. This outcome strongly suggests that leaflets are an effective and accessible tool for disseminating crucial health information to this specific demographic.

Despite these positive findings, the study did face some limitations. A reduced sample size, due to respondents' conflicting schedules, affected the reach of the intervention. Additionally, the relatively short duration of the intervention might have limited the full extent of its impact and the long-term retention of knowledge.

For future research, we recommend several enhancements to build upon these findings. Expanding the sample size would significantly enhance the generalizability of the results, allowing for broader applicability. Incorporating a control group is also crucial for a more robust comparison, isolating the true effect of the leaflet intervention. Furthermore, exploring and developing more diverse educational media beyond just leaflets, such as digital platforms or interactive workshops, could cater to varied learning styles and potentially yield even greater improvements. Extending the duration of interventions could also strengthen the effectiveness of health education programs,

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