EFFECT OF TELEHEALTH PROGRAM ON TECHNICAL SCHOOL STUDENTS' ATTITUDE AND PERCEPTION REGARDING THE NEED OF PREMARITAL CARE

Rehab Ibrahim Younis*, Gehan Ahmed Elbahlawan, Seham Shehata Ebrahim** Hedayat Abd-Elraouf Amasha***

*Maternity, Obstetrics and Gynecology Nursing Faculty of Nursing, Damietta University, Egypt.
**Maternity, Obstetrics and Gynecology Nursing Faculty of Nursing, port said University, Egypt.

Corresponding Author: Rehab Ibrahim Younis

Abstract

Background: Despite the increasing liberal attitudes among youth, studies reveal a significant gap in knowledge related to reproductive and premarital health, particularly among technical school students. Telehealth has emerged as a promising educational strategy to bridge this gap by providing accessible, flexible, and engaging learning opportunities.

Aim: To evaluate the effect of telehealth premarital program on technical school students' attitudes and perceptions regarding the need for premarital care.

Design: A quasi-experimental one-group (pre-post) research design was used to assess the impact of the telehealth intervention.

Setting: Conducted in two technical secondary schools in New Damietta City, Egypt: the Military Secondary School for Dual Education and Training, and the New Damietta Military Industrial School.

Sample: A purposive sample of 418 unmarried third-year male and female students who had not previously received premarital counseling was included. The sample was equally divided by gender (209 males and 209 females).

Tools for Data Collection: A self-administered questionnaire assessing students' demographic characteristics and a perception scale developed to evaluate students' attitudes toward premarital screening and genetic counseling using a 3-point Likert scale were used.

Results: The results demonstrated a statistically significant improvement in students' perception scores post-intervention. The telehealth program effectively enhanced awareness and fostered more positive attitudes toward the importance of premarital care.

Conclusion: The telehealth educational program proved to be an effective strategy for improving their perceptions regarding premarital care. It can serve as a valuable tool in school health education and reproductive health promotion.

Recommendations: Integrating telehealth-based educational interventions into school curricula is strongly recommended to improve adolescents' awareness and informed decision-making regarding premarital health issues.

Keywords: Telehealth, Premarital Care Perception, Technical School Students.

INTRODUCTION

Premarital care encompassing premarital screening, counseling, and health education aims to identify and reduce genetic, infectious, and psychosocial risks before marriage and to promote healthy reproductive outcomes and relationship preparedness among young couples. Systematic national guidelines and programs emphasize premarital testing and counseling as preventive public-health measures that reduce morbidity from inherited and transmissible conditions and improve family wellbeing (World Health Organization, 2018).

Young people (including adolescents and technical/vocational students) are an important target for premarital care because many enter marriage at younger ages and because their knowledge, beliefs, and attitudes shape whether they will seek screening and counseling services. Educational interventions in school and university settings have repeatedly shown improvements in knowledge and positive shifts in attitudes toward premarital services, suggesting that structured health education can raise uptake and acceptance among students (Sedek et al., 2022).

Concurrently, telehealth and digital health interventions have expanded to involve sexual and reproductive health education and counseling. Evidence from randomized and quasi-experimental studies and systematic reviews indicates that online and telehealth sexual-health programs are feasible, acceptable to adolescents and young adults, and effective in improving knowledge, self-efficacy, and some protective behaviors. Tele-delivered couple and premarital interventions (including brief "checkup" models) have also demonstrated positive effects on relationship outcomes and are a practical way to reach populations with barriers to in-person services. These findings support testing telehealth as a delivery mode for premarital-care education (McCrimmon, et al 2023).

Despite growing evidence for both premarital education and telehealth separately, relatively few studies have evaluated telehealth programs specifically designed to influence attitudes and perceptions toward premarital care among technical-school students a group frequently at risk of early marriage and often underserved by clinic-based programs. Investigating whether a telehealth intervention can favorably change students' attitudes and perceptions addresses an important gap: it examines acceptability and potential scalability of premarital services using digital delivery where in-person reach is limited. Based on prior positive effects of educational programs on technical students' attitudes and the established feasibility of digital sexual-health interventions, we hypothesize that a structured telehealth program will significantly improve technical school students' attitudes and perceived need for premarital care (Sedek et al., 2022).

Significance of the study:

Consanguinity rates among Egyptians over the past 40 years have been shown to range from 29% to 39%, according to studies. Include Premarital counseling can help identify and prevent conditions like hearing impairment, mental retardation, autosomal recessive osteoporosis, and blood illnesses like thalassemia. Additionally, premarital exposure to some viral diseases like the hepatitis B virus and rubella during pregnancy, which are simply prevented by prenuptial immunization, may cause physical or mental abnormalities in the unborn child. (Kabbash etal., 2019; Hanoon etal., 2021). Recently, the Republic Arab of Egypt (vision 2030) has focused on reproductive health and improving premarital care among those of reproductive age by enhancing perception toward premarital examination and counseling. So, this study was aimed to evaluate the effect of telehealth premarital program on technical school students' attitudes and perceptions regarding the need for premarital care.

Aim of the study

The current study was aimed to evaluate the effect of telehealth premarital program on technical school students' attitudes and perceptions regarding the need for premarital care.

Study hypothesis

Technical school students (both males and females) who participate in the telehealth educational sessions on premarital care and genetic counseling will exhibit significant more positive perceptions and attitude toward premarital care compared to their pre-intervention levels.

SUBJECT AND METHODS

A quasi-experimental intervention design with pre-, post-, and follow-up assessments was used to conduct this study in New Damietta City, which includes two technical schools the Military Technical Secondary School and Mobarak Cool Technical Secondary School—serving both male and female

students. A purposive sampling technique was used to include all unmarried third-year students who had not previously attended premarital counseling and agreed to participate.

The sample size was determined using the following equation:

$$\text{Sample size (n)} = \frac{Z^2}{\Delta^2} R (100 - R)$$

R = The rate of technical school students to general school students (Ezzat N, Gomaa W, 2022)

Z^2 = 95% confidence level = 1.96

Δ^2= confidence interval = 5.

$$\text{Sample size (n)} = \frac{1.96^2}{5^2} 55x (100 – 55) = 380 \text{ students } +10 (38) \%$$

A sample size of 380 was determined. The ultimate sample size was 418 pupils because the anticipated non-participating rate was 10% (38).

The total sample size is (418) it was divided into 2 groups (females and males) (209) for each group.

The prementioned adolescent (418 students) were randomly selected from total number (1200 students) from New Damietta City where was only two technical schools they are (Military Technical Secondary School & Mobark Cool Technical Secondary School) for both males and females students.

Data collecting instruments:

Tool I was a self-administered questionnaire that included: The demographic Features of the sample: Age, educational attainment, place of residence, occupation and familial relationships of the parents, personal and family history of hereditary diseases, and phone number were all included. After reviewing the literature, the researcher will design it.

Tool II: Perception of the studied female students regarding premarital screening and genetic counseling. Its goal was to assess how the students felt about genetic counseling and premarital screening. The researcher reviewed the literature and worked with specialists to build and construct this section. To prevent misunderstandings, it was created in Arabic.

Scoring System for the perception:

Each question answer ranged from disagree (0), neutral (1), and agree (2) on the 3-likert scale used for the perception. The rate of scoring was between 0 and 2. The following is the overall perception score: More than 75% of the overall perception score is positive. Negative perception if the percentage score was below 50% and neutral perception if it was between 50 and 75%.

B - Content validity

The opinions of experts (a jury) were used to test the tools' content validity. Among them were five obstetrics and gynecology specialists from the faculty of medicine and nursing. Using an opinionnaire sheet, ensure sure the study instruments measure what they are designed to assess.

C - Reliability:

The instruments' internal consistency was evaluated using the Cronbach alpha coefficient, which produced a value of 0.893 for student perception. This implied that the instruments' internal consistency and dependability were excellent.

D - Pilot study:

10% of the study population, or about 42 students, participated in a pilot study to test the tools' applicability, the questions' clarity and simplicity, and the average time required to complete the sheets. The primary study sample did not include participants in the pilot research. The final version of the tools was developed by making the necessary adjustments based on the pilot study's findings. Lastly, confirm that the study's goal was accomplished by all of the tools taken together.

E - Field work:

The study was conducted through four phases: pretest, planning, implementation, and evaluation.

- Phase I (The pretest):

- Before starting up program design and planning, there was a meeting with the student by the researcher to introduce the aim of the study and determine the best electronic method to carry out the programme implementation and to added the students in groups via whats-up. And then carried out pretest using electronic tool (online surveys/questionnaires) to collect baseline data and to detect students' perception.

- Phase II (Program planning):

- The main aim of this program was to improve perception of the male and female technical students regarding premarital care using telehealth program.

- It was developed based on review of literature as well as detected needs based on pretest results.

- It was developed by researcher in the light of available researches and review of literature. It was written in simple Arabic language and covers the relevant theoretical aspects of premarital examination and counseling and reproductive health.

- Teaching Materials Developed: as handouts Booklet with illustrative pictures for reference.

- Phase III (Program implementation):

✓ The educational program carried out via appropriate online learning method (ZOOM) for the previous mentioned technical school students in New Damietta City and lasts for three months.

✓ The program was implemented for all students one day per week via on line sessions for continuous three weeks.

✓ Constructing the program contents was then followed by selecting the suitable teaching methods and the appropriate media.

- Each session lasted 1 to 1.5 hours, including time for discussion.

- The complete program spanned 14 hours, divided as follows:

  - 1-hour lectures
  - 30-minute break periods
  - Each session began with a review of previously covered content.
  - Theoretical content was divided into four sessions, spread over eight days.

- Phase IV (Evaluation):

- After program implementation, two tests were done by the electronic tools to evaluate the effect of the program:

  - The first post test: was done immediately by the end of the program (November 2023). Measured students' knowledge gain and perception changes.
  - Second Post-Test (Follow-Up Test): Conducted one month after program implementation. Evaluated the long-term retention of knowledge and impact of the educational intervention.

Ethical Consideration:

Ethical approval for conducting the study was obtained from the Ethics Committee of the Faculty of Nursing, Port Said University. Permission was then secured from the directors of the technical schools after explaining the aim and purpose of the study. Oral consent was obtained from all participating students, and the study objectives were clearly explained to each student to ensure they understood the importance of their voluntary participation. Data collection procedures were carefully planned to avoid disrupting the normal workflow within the schools. All collected information was treated with strict confidentiality and used solely for research purposes. Additionally, participants were informed of their full right to withdraw from the study at any time without facing any consequences.

(4) Statistical Design:

The computer program Epi-Info 6.04 was used for data entry. SPSS (version 20.0) statistics software packages were used for statistical analysis. At the coding and data entering stages, quality control was carried out. Descriptive statistics were used to display the data, with means and standard deviations for quantitative variables and frequencies and percentages for qualitative variables. When comparing quantitative continuous data between two groups, the student "t" test was employed. The chi-square test was used to compare qualitative variables. Additionally, Spearman correlation was employed, and $P < 0.05$ was chosen as the significant level for this investigation.

RESULTS

The distribution of the study sample's sociodemographic characteristics shows that the majority of the sample (95.2%) were between the ages of 16 and 18, and the majority of them (70.6%) were female. In terms of place of residence, 59.8% of the sample under study lived in a rural location. Slightly more than two thirds (67.2%) of the sample under study reported no degree of kinship between parents, and the same percentage reported no engagement. However, somewhat less than two thirds (63.4%) of those who said they had a degree of kinship said otherwise, whereas 70.1% of those who said they had an engagement

The distribution of the medical history of the study sample is shown in **Table 1**. The table reveals that 53.8% of the studied sample is suffering from anemia. Regarding their surgical history, 80.4% of the studied sample have no previous surgical history. Finally, more than half of the studied sample (54.8%) have no family members suffering from specific illnesses.

Distribution of the menstrual data history for the female of the study sample is shown in **table (2).** The table reveals that 55.9% of the studied sample their first menstruation at 10- less than 14 years old, with majority of them (92.2%) have symptoms before or with the onset of menstruation, those symptoms were psychological and physical as reported by more than two thirds of the studied sample (67.3%). when they feel those symptoms more than half of the studied sample (57.0%) take analgesics.

Figure 1. explain comparison of the student perception level of premarital counseling and testing. The figure illustrates that there were marked improvement in all items related to student perception level of premarital counseling and testing as the positive level were (86.8% and 86.4% prospectively) throughout the post and follow up study phase than pre intervention

Table 2. Distribution of the menstrual data history for the females in the study sample (n=295)

	n	%
What was your age when you had your first menstrual cycle?		
< 10	25	8.5
10 - < 14	165	55.9
14 or More	105	35.6
Do you have symptoms before or with the onset of your menstrual cycle?		
Yes	272	92.2
No	23	7.8
If yes, what are the symptoms? (n=272)		
Psychological symptoms only	9	3.3
Physical symptoms only	80	29.4
Psychological and physical symptoms	183	67.3
If you feel these symptoms, do you take any medications to overcome them? (n=272)		
None	113	41.5
Sedatives and hypnotics	4	1.5
Analgesics	155	57.0

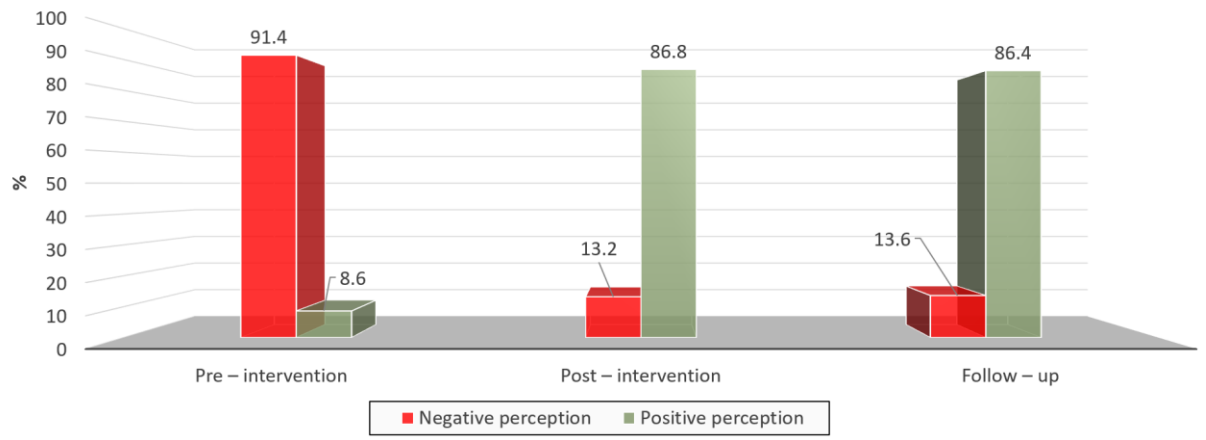

Figure 2. Comparison of the Students' perceptions level of premarital counseling and testing

Table3. Association between the socio-demographic characteristics of the study sample and Students perceptions level of premarital counseling and testing

	Negative attitude (n=57)		Positive attitude (n=361)		Chi – Square Fisher's exact test	
	n	%	n	%	X^2	P
Age (Years)						
15	5	8.8	15	4.2		
16 – 18	52	91.2	346	95.8	2.303	0.129
Gender						
Male	22	38.6	101	28.0		
Female	35	61.4	260	72.0	2.673	0.102
Residence						
Urban	14	24.6	154	42.7		
Rural	43	75.4	207	57.3	6.708	0.010*
Degree of kinship between parents						
Yes	11	19.3	125	34.6		
No	46	80.7	236	65.4	5.269	0.022*
Are you engaged?						

Yes	26	45.6	111	30.7		
No	31	54.4	250	69.3	4.938	0.026*
Father's age (Years)						
< 40	9	15.8	45	12.5		
41 – 45	14	24.6	112	31.0		
46 – 50	13	22.8	115	31.9		
> 50	21	36.8	89	24.7	5.199	0.158
Father's education						
Illiterate	42	73.7	13	3.6		
Basic	14	24.6	103	28.5		
Preparatory	1	1.8	102	28.3		
Secondary	0	0.0	101	28.0		
University or Higher	0	0.0	42	11.6	220.644	<0.001**
Father's occupation						
Not working	5	8.8	34	9.4		
Free worker	31	54.4	228	63.2		
Government employee	14	24.6	58	16.1		
Worker	0	0.0	14	3.9		
Private employee	7	12.3	27	7.5	6.302	0.178
Mother's age (Years)						
< 40	20	35.1	149	41.3		
41 – 45	26	45.6	177	49.0		
46 – 50	4	7.0	23	6.4		
> 50	7	12.3	12	3.3	9.304	0.026*
Mother's education						
Illiterate	27	47.4	26	7.2		
Basic	18	31.6	40	11.1		

Preparatory	12	21.1	89	24.7		
Secondary	0	0.0	146	40.4		
University or Higher	0	0.0	60	16.6	110.335	<0.001**
Mother's occupation						
Employee	14	24.6	53	14.7		
Housewife	43	75.4	308	85.3	3.570	0.059
Income						
Not enough	18	31.6	102	28.3		
Enough	39	68.4	259	71.7	0.266	0.606
Number of family members						
3 – 4 Members	13	22.8	125	34.6		
5 – 6 Members	44	77.2	224	62.0		
7 Members	0	0.0	12	3.3	5.738	0.057
Number of rooms						
2 – 3 Rooms	46	80.7	266	73.7		
4 – 5 Rooms	11	19.3	95	26.3	1.281	0.258

DISCUSSION

In order to identify any inherited or communicable disorders, Premarital Care (PMC) entails a consultation that includes a history, medical examination, and laboratory testing for staff members getting ready for marriage. One important and essential part of preventative medicine is counseling before to marriage. Pre-marriage counseling and testing (PMC) is still not widely used in Egypt (Altaany et al., 2021).

Consanguinity rates among Egyptians over the past 40 years have been shown to range from 29% to 39%, according to studies. Include Premarital counseling can help identify and prevent conditions like hearing impairment, mental retardation, autosomal recessive osteoporosis, and blood illnesses like thalassemia. Additionally, premarital exposure to some viral diseases like the hepatitis B virus and rubella during pregnancy, which are simply prevented by prenuptial immunization, may cause physical or mental abnormalities in the unborn child. (Hanoon et al., 2021). Thus this study aimed to evaluate the impact of a telehealth educational program on the knowledge and perception of premarital counseling and testing among technical school students in New Damietta City.

The findings from the current study highlight key socio-demographic factors, medical history, and levels of awareness regarding premarital care among young individuals. When comparing these results with those of other studies, some patterns emerge that underscore the importance of socio-cultural and educational factors in shaping perceptions and attitudes toward premarital care.

In terms of medical history, this present study found that 53.8% of the participants were suffering from anemia, a common issue among adolescents, particularly in females. This result is consistent with previous studies showing the high incidence of anemia among teenagers, especially girls, in underdeveloped nations. For example, over the past 20 years, the regional frequency of teenage anemia in Africa was estimated to be 45%, and in nations with poor resources, anemia has increased by around a third (Le Dain et al., 2021).

The Cameroon Demographic and Health Survey (2018) found that 71.4% of teenagers between the ages of 12 and 17 had anemia, with 21.5% having mild anemia, 48.0% having moderate anemia, and 1.9% having severe anemia. (Demographic and Health Survey, 2018). These results highlight the urgent need for focused interventions to treat anemia in teenagers in order to enhance their general health and wellbeing, which may have an impact on their readiness for relationships. While anemia does not directly relate to premarital care, the health of young individuals is a critical component of premarital education, as it may influence fertility, pregnancy, and family planning decisions.

For female participants, the present study showed that 55.9% had their first menstruation at an age younger than 14 years, with a significant proportion reporting psychological and physical symptoms during menstruation. Early menarche (defined as onset before age 12) was linked to higher probabilities of dysmenorrhea (painful menstruation) and shorter cycle lengths, according to a recent study by Harley et al. (2024) studying menstrual cycle features among teenagers in the United States. This suggests that individuals experiencing menarche at a younger age may be more susceptible to both physical and psychological symptoms during menstruation and suggested that menstrual health education is vital in the context of premarital care.

Additionally, cross-sectional study by Mammo et al., (2022) conducted among high school students in Wolaita Zone, Southern Ethiopia, found that 67.6% of participants experienced menarche between the ages of 13 and 14, with a mean age of 13.39 years. The prevalence of primary dysmenorrhea in this group was 94.5%, with 68.3% reporting pain starting a few days before menstrual flow, and in almost half of the students (49.5%), the pain lasted within one day of menstrual flow. this highlights a potential need for integrated reproductive health education within premarital care programs, addressing both physical and psychological health issues that may arise during the transition to adulthood.

Changing premarital care misconceptions among our students tends to be a crucial aspect in lowering potential risks later in life. Positive attitudes regarding these concerns motivate us to participate in such programs and emphasize how many people use their services. extensively, In terms of female students' attitudes (perceptions) regarding premarital counseling, the current study found significant improvements in all items pertaining to the students' perception level of premarital counseling and testing, with positive levels at 86.8% and 86.4%, respectively, throughout the post and follow-up study phases compared to pre-intervention, with statistically significant differences. Premarital counseling had a good impact on female students' attitudes and knowledge, according to the study's findings.

This outcome is consistent with a study by Osman et al. (2021) that looked at university students' awareness and attitudes regarding premarital counseling and examination. The study found that most of the students had insufficient knowledge about reproductive health issues prior to intervention, including checking the health status of both couples, detecting genetic and hereditary diseases, producing healthy offspring, reducing the spread of STDs and infectious diseases, and preserving marriage.

Additionally, this outcome was consistent with a study conducted by Mahmoud et al. (2021), which revealed that prior to the program's implementation, over half of the students surveyed said they were unaware of sexually transmitted diseases, strategies for delaying pregnancy in early marriage, and genetically transmitted diseases. According to the study, these services were rare in contemporary

civilizations and developing nations due to the lack of knowledge about premarital counseling and testing.

Surveyed the overall attitudes of female students toward premarital counseling before and after the intervention. According to the findings of the Emam et al. (2024) study, over half of the female students had a negative overall attitude about premarital counseling prior to the intervention, but the majority of them had a good overall opinion following the intervention.

According to the Said & Gomaa (2022) study, there was a notable improvement in every aspect of students' attitudes following the implementation of a counseling program, with highly statistically significant differences between pre and post intervention in every attitude item, with the exception of the authorized person carrying out the religious marriage should have the right to accept conducting marriage contracts only if future couples engaged in PMS and PMS violates personal privacy.

The results of this study were consistent with those of Ebid et al. (2021), who found that, in contrast to the majority of them after counseling, less than two thirds of the sample had a good attitude toward consanguineous marriage and pre-marital therapy. According to research by Osei Tutu et al. (2020), the majority of the study sample had a negative attitude prior to the implementation of the education program, and there was improvement following the program.

Educational interventions have been shown to positively influence adolescents' knowledge and attitudes toward premarital counseling. Providing accessible and relevant information empowers young individuals to make informed decisions regarding their reproductive health

In conclusion, this study provides compelling evidence for the effectiveness of educational interventions in improving young adults' perceptions of premarital counseling and testing. The findings are consistent with other research that highlights the significance of focusing premarital health education on young people, especially females and those living in remote locations.

CONCLUSION

Based on the current study's findings, it can be said that the findings of this study indicate that the implementation of a telehealth educational program significantly improved the perception of technical school students in New Damietta City regarding premarital counseling and testing. Prior to the intervention, students exhibited limited awareness of the importance of premarital screening, the appropriate timing for counseling, and the medical examinations required. However, post-intervention and follow-up assessments demonstrated a marked increase in knowledge levels and positive perceptions toward premarital counseling and testing. These results highlight the effectiveness of telehealth as an accessible and scalable method for delivering health education, particularly among adolescent populations.

RECOMMENDATIONS

Based on the study findings, several recommendations are proposed for implementation. Educational institutions should integrate telehealth-based programs into school curricula to strengthen students' knowledge and awareness regarding premarital counseling and testing. Health authorities are encouraged to expand the use of telehealth as an accessible and effective tool for delivering premarital health education to wider populations. Collaborative community awareness campaigns involving schools, healthcare providers, and local organizations are essential to highlight the importance and benefits of premarital counseling and screening. Continuous follow-up and evaluation mechanisms should be established to assess long-term knowledge retention and measure the sustained impact of telehealth interventions on students' attitudes. Policymakers should support national strategies that incorporate premarital counseling education through digital learning platforms, ensuring equitable

access, especially for underserved groups. Furthermore, additional research is recommended to examine the effectiveness of telehealth educational programs across various age groups and geographical settings to ensure broader applicability and generalizability.

LIMITATIONS

This study has several limitations that should be considered when interpreting the findings. First, the use of a quasi-experimental one-group pre–post design without a control group limits the ability to attribute changes in attitudes and perceptions solely to the telehealth intervention. Second, the study relied on self-reported data, which may be subject to response bias and social desirability bias. Third, the sample was drawn from two technical secondary schools in one city, which may limit the generalizability of the findings to other regions or educational settings. Additionally, the study assessed outcomes immediately after the intervention, and therefore, the long-term sustainability of attitude and perception changes could not be determined. Finally, access to technology and internet connectivity may have influenced students' engagement with the telehealth program.

IMPLICATIONS

The findings of this study highlight the potential of telehealth-based educational programs as an effective strategy for improving adolescents' attitudes and perceptions regarding premarital care. Integrating telehealth interventions into school health education programs can enhance accessibility to reproductive health information, particularly for technical school students who may have limited exposure to traditional health education services. The results support the role of school nurses, community health nurses, and health educators in utilizing digital platforms to deliver premarital counseling and screening awareness. Additionally, policymakers and educational authorities may consider incorporating telehealth education into national adolescent and premarital health promotion initiatives. The study also provides a foundation for future research to evaluate long-term outcomes and to compare telehealth interventions with traditional face-to-face educational approaches.

REFERENCES

1. Altaany, Z., Khabour, O. F., Alzoubi, K. H., Alkaraki, A. K., & Al-Taani, G. (2021). The perception of premarital genetic screening within young Jordanian individuals. Public Health Genomics, 24 (3 4), 182-188. https:// doi. org/ 10. 1159/000517162.
2. Demographic and Health Survey. Demographic and health survey in Cameroon edition 2018. 2018. http://cdnss.minsante.cm/sites/default/files/eds18.pdf. Accessed 2 Sep 2023.
3. Ebid, N. S., Soliman, S., Abo-Shabana, K., & Metwaly, S., (2021). Influence of Premarital Counseling Regarding Consanguineous Marriage on Knowledge and Attitude among University Students. Egyptian Journal of Health Care, 12(1), 576-586.
4. Hanoon, B. D., SA, S. A. K., & Khalaf, I. A (2021): Premarital screening program in Al Nuaman Teaching Hospital. Iraqi JMS.; 19 (2): 147151. http://10.22578/IJMS.19.2.3.
5. Harley KG, Watson A, Robertson S, Vitzthum VJ, Shea A. Menstrual cycle characteristics of U.S. adolescents according to gynecologic age and age at menarche. J Pediatr Adolesc Gynecol. 2024;37(4):419-425. https://doi.org/10.1016/j.jpag.2024.03.005
6. Kabbash, I. A., Attalla, A. O., & Atlam, S. A. E. (2019). Perception of importance of premarital counseling among medical students at Tanta University, Egypt. Egyptian Journal of Community Medicine, 37(2), 3439. https:// dx. doi. org/ 10. 21608/ ejcm. 2019. 30917.
7. Le Dain AS, Sagalova V, Sodjinou R, Tou EH, Ntambi J, Vollmer S, Zagre NM. Levels and trends of adolescent girls' undernutrition and anemia in West and Central Africa from 1998 to 2017. J Glob Health. 2021;11:13006. https://doi.org/10.7189/jogh.11.13006.
8. Mammo M, Alemayehu M, Ambaw G. Prevalence of Primary Dysmenorrhea, Its Intensity and Associated Factors Among Female Students at High Schools of Wolaita Zone, Southern

Ethiopia: Cross-Sectional Study Design. Int J Womens Health. 2022;14:1569-1577https://doi.org/10.2147/IJWH.S384275

9. McCrimmon, J., Widman, L., Javidi, H., Brasileiro, J., & Hurst, J. (2023). *Evaluation of a brief online sexual health program for adolescents: A randomized controlled trial. Health Promotion Practice, 25*(4), 689–697. https://doi.org/10.1177/15248399231162379
10. Osei-Tutu, A., Oti-Boadi, M., Akosua Affram, A., Dzokoto, V. A., Asante, P. Y., Agyei, F., & Kenin, A. (2020). Premarital counseling practices among Christian and Muslim lay counselors in Ghana. Journal of Pastoral Care & Counseling, 74(3), 203–211. https://doi.org/10.1177/1542305020916721
11. Osman, H. T., Baraia, Z. A. A., & Abdelati, I. H. (2021). Awareness and attitude of university students regarding premarital counseling and examination. Trends in Nursing and Health Care Journal ,
12. Said, N. E., & Gomaa, W. (2022). Effect of counselling-based program on technical nursing students' perception regarding reproductive health. Egyptian Journal of Health Care, 13(2), 1906-1922.
13. Sedek, H. I. M., rehim Emam, E. A. E., & Abd Elrahim, A. H. (2022). Effect of Educational Program for Premarital Counseling among technical school students. Minia Scientific Nursing Journal, 12(1), 87 98. http://doi.org10.21608/MSNJ.2022.159578. 1034 .
14. World Health Organization. (2018). Premarital testing and counselling: National guideline (Sultanate of Oman). Department of Woman and Child Health, Directorate General of Primary Health Care, Ministry of Health, Oman. https://platform.who.int/docs/default-source/mca-documents/policy-documents/guideline/OMN-CH-50-08-GUIDELINE-2018-eng-Premarital-Testing-Counselling-National-Guideline.pdf