Int J Sch Health 2026; 13(4)

Published online 2026 October.

Original Article

Stakeholder Acceptance of Tele-Counseling for Adolescent Reproductive Health in Resource-Limited Iranian Schools

Shahla Nouri[1], MSc; Fatemeh Arang[1], MSc; Malihe Farid[2], MD, PhD; Fatemeh Najafi-Sharjabad[3], PhD; Mahnaz Akbari Kamrani[2*], PhD

[1]Student Research Committee, Medicine Faculty, Alborz University of Medical Sciences, Karaj, Iran
[2]Social Determinants of Health Research Center, Alborz University of Medical Sciences, Karaj, Iran
[3]Department of Health Education and Health Promotion, Bushehr University of Medical Sciences, Bushehr, Iran

Corresponding author:* Mahnaz Akbari Kamrani, PhD; Faculty of Medicine, Campus of Alborz University of Medical Sciences, Above University of Art, End of West Bouali Street, Nobovat Square, Postal code: 31499-69415, Karaj, Iran. **Tel: +98-26-34198000; **Email:** akbarikamrani21@gmail.com

Received: November 23, 2025; **Revised:** January 01, 2026; **Accepted:** January 30, 2026

Abstract

Background: Adolescence is a pivotal period for establishing lifelong reproductive health; nevertheless, in many underserved Iranian schools, limited access to youth-friendly counseling and persistent cultural barriers hinder open communication and service delivery. The present study investigated the stakeholders' acceptance of School-Based Tele–Reproductive Health Counseling (SBTRHC) with a focus on counseling priorities and perceived usability.

Method: A cross-sectional survey was conducted in 2022 in Garmdareh County, Alborz Province, Iran, involving 175 secondary-school stakeholders. Using a multistage sampling technique, two schools were randomly selected, followed by convenience recruitment of students and their mothers. Data collection included demographic characteristics, a stakeholder checklist of tele-counseling topics, and a validated acceptance scale. Group differences across acceptance domains were examined using the Kruskal–Wallis test in SPSS version 23.

Results: The mean age of the students was 15.1±1.6 years old. Counseling priorities varied among the groups. Students primarily emphasized high-risk behaviors (92.4%). Mothers highly prioritized life skills, physical activity, mental and social health, and substance use prevention (93.9%). Meanwhile, school staff rated most topics as highly important but assigned the lowest priority to sexually transmitted diseases (88.4%). Acceptance indicators were consistently high across all groups. Perceived usefulness was endorsed by 87.9% of students, 91.0% of mothers, and 93.0% of school staff; ease of use by 86.4%, 75.8%, and 88.4%; and trust by 80.3%, 84.8%, and 86.1%, respectively. Furthermore, a strong intention to use the service was reported across all groups. Although overall acceptance did not differ significantly (P=0.227), ease of use varied across groups (χ^2=7.681, P=0.021), with mothers reporting lower usability.

Conclusions: Stakeholders demonstrated strong acceptance of school-based tele-counseling, supporting its feasibility for adolescent reproductive health promotion. Variations in counseling priorities and usability highlight the importance of tailored implementation strategies.

Keywords: Adolescent, Reproductive Health, Telemedicine, School Health Services, Counseling, Iran

How to Cite: Nouri S, Arang F, Farid M, Najafi-Sharjabad F, Akbari Kamrani M. Stakeholder Acceptance of Tele-Counseling for Adolescent Reproductive Health in Resource-Limited Iranian Schools. Int J Sch Health. 2026;13(4):1-10. doi: 10.30476/intjsh.2026.109833.1603.

1. Introduction

Adolescence is a transformative developmental stage marked by rapid physical, psychological, and social changes that shape long-term health trajectories (1). According to reports by the World Health Organization and the United Nations, individuals aged 10–19 years comprise nearly one-sixth of the global population—approximately 1.3 billion adolescents worldwide (2, 3). This period is critical for establishing health-related behaviors; however, adolescent girls often remain underserved in reproductive health initiatives despite their future roles as mothers and key contributors to community well-being (4, 5).

Insufficient attention to adolescent girls' sexual and reproductive health (SRH) is associated with numerous adverse outcomes, including limited family support, peer pressure, engagement in risky behaviors, and inadequate life skills (6). Globally, an estimated 21 million girls aged 15–19 years become pregnant each year, nearly half of which are unintended, and 55% result in unsafe abortions—substantially contributing to maternal morbidity and mortality (7, 8). Adolescents also represent a considerable proportion of new sexually transmitted infections (STIs), largely due to restricted access to accurate, confidential, and youth-friendly SRH information and services (9, 10).

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School-based health education has been widely recognized as a key strategy to address these challenges. Schools offer structured and trusted environments where adolescents can acquire essential knowledge and skills to navigate puberty, adopt healthy behaviors, and prevent future health risks (11-13). Evidence indicates that early and comprehensive education not only improves reproductive health outcomes but also enhances psychosocial well-being and resilience (14, 15). In settings like Iran—where cultural taboos and generational gaps often limit open communication between parents and daughters—schools represent a promising platform for delivering adolescent health education. Nevertheless, reproductive health topics remain largely absent from the national curriculum due to cultural and policy constraints (16).

In recent years, counseling—particularly tele-counseling—has emerged as a valuable complement to traditional school-based interventions. The COVID-19 pandemic accelerated the adoption of telehealth and highlighted its potential to provide confidential, accessible, and cost-effective support for adolescents (17-20). Previous studies showed that telehealth-based interventions can enhance condom-use self-efficacy, increase STI testing, and promote healthier reproductive behaviors among adolescents and young adults (21-23). However, the successful integration of tele-counseling into school settings depends on several factors, including technological infrastructure, digital literacy, cultural acceptance, and stakeholder engagement (24-26).

Despite growing global evidence, research in Iran remains limited regarding the feasibility and acceptability of incorporating tele-counseling into school-based reproductive health programs. Although telemedicine is increasingly recognized as feasible, its use in Iran is constrained by infrastructural and policy barriers (27). UNICEF has emphasized the importance of tele-counseling for adolescents and their families, particularly in contexts where face-to-face services are limited (28). These challenges are especially pronounced in underserved areas such as Garmdareh in Alborz Province, Iran, where access to private clinics and specialized health services is more restricted than in metropolitan regions. Therefore, the present study primarily aimed to investigate the feasibility and acceptability of integrating tele-counseling into school-based reproductive health programs for adolescent girls in Garmdareh, Alborz Province, Iran. Also, the study examined stakeholders' counseling priorities and perceived usability.

2. Method

2.1. Design

The present descriptive cross-sectional study was conducted in 2022 among lower and upper secondary girls' schools in Garmdareh County, Alborz Province, Iran.

2.2. Selection and Description of Participants

A total of 175 participants were enrolled, including 66 adolescent girls, 66 mothers, and 43 school staff members. The inclusion criteria were: literacy, fluency in Persian, and willingness to participate. Individuals who did not complete the questionnaire or withdrew during the study were excluded from the study.

2.3. Sample Size Determination

Following the approach described by Wood and colleagues (29), the sample size for students was calculated based on the estimated proportion of telehealth acceptance among adolescents. Using the single-population proportion formula with a 95% confidence level (Z=1.96), an expected prevalence of 78%, and a margin of error of 0.10, the required sample size was determined to be 66 students. For school staff, all teachers and administrators in the selected schools were invited to participate, resulting in a census sample of 43 individuals.

2.4. Data Collection and Measurements

2.4.1. Socio-Demographic and Health Background Questionnaire

This researcher-designed questionnaire captured information on students' age, nutritional status, residential setting, living arrangements, number of siblings, birth order, medical history, current medication use, age at menarche, and primary sources of reproductive health information. Additional data were collected on age, ethnicity, educational attainment, socioeconomic status, and occupational background of parents and school staff.

2.4.2. School-based Tele Reproductive Health Counseling Acceptance Questionnaire

Developed based on the Technology Acceptance Model (TAM), this instrument includes 25 items across nine domains: perceived usefulness (3 items), perceived ease of use (3 items), resistance to adoption (3 items), trust (3 items), technology-related anxiety (2 items), facilitating conditions (3 items), social influence (2 items), perceived risk (3 items), and behavioral intention to use (3 items) (26). Items are rated on a 5-point Likert scale (1=strongly disagree to 5=strongly agree), yielding a total score range of 25–125. According to Chan and co-workers (30), the distribution of Likert responses and the mean score for each subscale can predict the likelihood of adopting telehealth technologies. Participants scoring above 3 in the "intention to use" domain were classified as having a strong level of acceptance.

The original instrument demonstrated strong internal consistency, with Cronbach's alpha values ranging from 0.81 to 0.94 (26). The Persian version was previously translated and culturally adapted by Khademhosseini and colleagues (31), with established CVR and CVI values reported in their validation study. Because the target population in the present study included adolescent girls, content and face validity were reassessed for age appropriateness. A panel of 10 experts confirmed that all items met the acceptable CVR (≥0.49) and CVI (≥0.79) thresholds, and a pilot test with 10 adolescents supported item clarity. Internal consistency in the present study was acceptable, with Cronbach's alpha values of 0.781 for students, 0.745 for mothers, and 0.810 for school staff.

2.4.3. Stakeholder Perception Checklist on Health Counseling Topics

This researcher-designed checklist was developed to identify priority areas for school-based tele-counseling, with a focus on key domains of adolescent health. It consisted of 12 items adapted from the Adolescent Health Booklet for Non-Physicians (32), and was contextualized for the Iranian school environment to ensure cultural and educational relevance. The checklist covered puberty and physiology, healthy lifestyle behaviors, psychosocial well-being, risk prevention, and sexual and reproductive health. Responses were recorded in a dichotomous (yes/no) format.

2.5. Procedure

A multistage sampling technique was used. Two secondary schools in Garmdareh, Alborz Province, Iran were randomly selected. From each school, 33 female students and their mothers were recruited through convenience sampling technique to ensure representation across grade levels. All available teachers and school administrators in the selected schools were also invited to participate.

2.6. Data Analysis

Data were analyzed using SPSS version 23 (IBM Corp., Armonk, NY, USA). The distribution of quantitative variables was assessed using the Kolmogorov–Smirnov test, which indicated non-normality. Given the non-normal distribution of the data, and the comparison of more than two independent groups, the non-parametric Kruskal–Wallis test was applied to investigate group differences. Statistical significance was set at $P<0.05$.

3. Results

The mean age of the participating students was 15.1 years (SD=1.6; range: 12–18). Mothers' mean age was 42.2 years (SD=5.2; range: 30–57), and fathers' mean age was 46.5 years (SD=6.3; range: 35–68). Sociodemographic and health-related characteristics of students and their parents are summarized in Table 1.

The school staff included 43 participants with a mean age of 38.8 years (SD=9.2; range: 23–64). Detailed sociodemographic characteristics of the teachers and administrators are presented in Table 2.

Findings from the Stakeholder Perception Checklist on Tele-Health Counseling Topics revealed distinct patterns across groups. The students expressed the highest interest in counseling on high-risk behaviors (92.4%), while traffic accident prevention was the least preferred topic (66.7%). Among mothers, the most frequently endorsed topics were life skills, physical activity, mental health, social health, and substance use (alcohol and tobacco), with 93.9% indicating interest; similar to students, traffic accident prevention received the lowest priority (87.9%). School staff assigned the lowest level of importance to counseling on sexually transmitted diseases (88.4%), while rating the remaining topics as similarly important (Table 3).

Table 1: Sociodemographic and health characteristics of students (N=66)

Variable	No. (%)	Variable	No. (%)
Mother's Education		**Ethnicity**	
Less than High School	16 (24.2)	Lor	9 (13.6)
High School Diploma	39 (59.1)	Kurd	11 (16.7)
Associate's or Bachelor's Degree	10 (15.2)	Turk	21 (31.8)
		Fars	19 (28.8)
Graduate Degree or Higher	1 (1.5)	Arab	1 (1.5)
		Others	5 (7.6)
Father's Education		**Number of Children in the Family**	
Less than High School	18 (27.3)	1	7 (10.6)
High School Diploma	35 (53.0)	2	35 (53.0)
Associate's or Bachelor's Degree	11 (16.7)	3	19 (28.8)
Graduate Degree or Higher	2 (3.0)	4	5 (7.6)
Mother's Employment Status		**Birth Order**	
Employed	6 (9.1)	1	41 (62.1)
		2	13 (19.7)
Homemaker	60 (90.9)	3	9 (13.6)
		4	3 (4.5)
Father's Employment Status		**Nutritional Status**	
Self-employed	40 (60.6)	Optimal	51 (77.3)
Employed	16 (24.2)	Fair	14 (21.2)
Manual Worker	5 (7.6)	Poor	1 (1.5)
Other	5 (7.6)		
Living Arrangement		**History of Illness**	
Living with both Parents	60 (90.9)	Yes	1 (1.5)
Living with Mother Only	5 (7.6)	No	65 (98.5)
Living with Others	1 (1.5)		
Housing Status		**Source of RHI***	
Owned	41 (62.1)	Parents	50 (75.8)
		Friends	1 (1.5)
Rented	25 (37.9)	School/Teacher	2 (3.0)
		Internet	13 (19.7)
Household Income Level		**Age at Menarche**	
		Not yet Occurred	7 (10.6)
Low	6 (9.1)	9 years old	1 (1.5)
Moderate	40 (60.6)	10 years old	4 (6.1)
High	17 (25.8)	11 years old	11 (16.7)
Very High	3 (4.5)	12 years old	18 (27.3)
History of Disease		13 years old	18 (27.3)
Yes	1 (1.5)	14 years old	6 (9.1)
No	65 (98.5)	15 years old	1 (1.5)

*RHI: Reproductive Health Information

The study participants demonstrated broadly positive attitudes toward School-Based Tele–Reproductive Health Counseling (SBTRHC). Perceived usefulness was endorsed by 87.9% of students, 91.0% of mothers, and 93.0% of school staff. Perceived ease of use was supported by 86.4% of students, 75.8% of mothers, and 88.4% of school staff. Trust in the system was also substantial, with agreement rates of 80.3%, 84.8%, and 86.1%, respectively.

Intention to use SBTRHC services was high across all groups. A total of 89.4% of students, 83.4% of mothers, and 83.8% of school staff agreed with the statement, *"If given access, I intend to use SBTRHC services."* Similarly, 87.9% of students, 89.4% of mothers, and 81.4% of school staff indicated willingness to use the services whenever needed. More than four-fifths of the participants in each group reported that they would recommend SBTRHC to peers or close contacts.

Table 2: Sociodemographic characteristics of school staff (N=43)

Variable	No. (%)	Variable	No. (%)
Education Level		**Household Income Level**	
Bachelor's Degree	28 (65.1)	Low	12 (27.9)
Graduate Degree or Higher	15 (34.9)	Moderate	28 (65.1)
		High	3 (7.0)
Job Title at School		**Ethnicity**	
Principal	2 (4.7)	Lor	2 (4.7)
Assistant Principal	5 (11.6)	Kurd	8 (18.6)
Teacher	36 (83.7)	Turk	13 (30.2)
Marital Status		Fars	17 (39.5)
Single	10 (23.3)	Arab	1 (2.3)
Married	33 (76.7)	Other	2 (4.7)
Housing Status		**Number of Children in the Family**	
		0	18 (41.9)
Owned	30 (69.8)	1	17 (39.5)
Rented	13 (30.2)	2	7 (16.3)
		3	1 (2.3)

Table 3: Frequency distribution of stakeholders' perceptions of telehealth counseling topics

Variable	Stakeholder		
Counseling Items	**Students(N=66) N. (%)**	**Mothers(N=66) N. (%)**	**School staff(N=43) N. (%)**
Puberty and its Physiology	60 (90.9)	61 (92.4)	41 (95.3)
Hygiene during Puberty	60 (90.9)	61 (92.4)	41 (95.3)
Nutrition during Puberty	60 (90.9)	61 (92.4)	41 (95.3)
Physical activity during Adolescence	49 (74.2)	62 (93.9)	41 (95.3)
Mental Health	59 (89.4)	62 (93.9)	41 (95.3)
Social Health	48 (72.7)	62 (93.9)	41 (95.3)
Harms of Tobacco, Alcohol, and Drug Use	57 (86.4)	62 (93.9)	41 (95.3)
Traffic Accident Prevention	44 (66.7)	58 (87.9)	41 (95.3)
High-risk Behaviors	61 (92.4)	61 (92.4)	41 (95.3)
Sexually Transmitted Diseases	58 (87.9)	59 (89.4)	38 (88.4)
Life Skills	56 (84.8)	62 (93.9)	41 (95.3)
Oral and Dental Health	57 (86.4)	61 (92.4)	41 (95.3)

Table 4 presents the median and interquartile range (IQR) for the nine conceptual domains of SBTRHC acceptance across students, mothers, and school staff. The Kruskal–Wallis test showed no statistically significant differences in overall acceptance among the three groups (χ^2=2.968, P=0.227). At the domain level, most comparisons were non-significant, with the exception of perceived ease of use (χ^2=7.681, P=0.021), where students and school staff reported higher usability scores than mothers.

4. Discussion

The present study investigated the stakeholders' acceptance of School-Based Tele–Reproductive Health Counseling (SBTRHC) and explored counseling priorities among students, mothers, and school staff. Overall acceptance was high across all groups, with strong agreement regarding perceived usefulness, trust, and intention to use the service. These findings indicated that tele-counseling is viewed as a feasible and relevant strategy for addressing adolescent reproductive health needs in resource-limited school settings. Several factors may account for this positive reception. The widespread normalization of digital communication following the COVID-19 pandemic likely increased familiarity and comfort with remote health services. Tele-counseling may also help mitigate cultural barriers and confidentiality concerns that often discourage adolescents from seeking reproductive health information. Additionally, the school-based structure of SBTRHC may enhance perceptions of legitimacy and trust among parents and school staff.

Table 4: Comparison of stakeholders' acceptance of School-Based Tele–Reproductive Health Counseling (SBTRHC)

Domains	Students N=66	Mothers N=66	School staff N=43	Kruskal–Wallis Test Results
	Median(IQR)	Median(IQR)	Median(IQR)	
Perceived Usefulness	6.0 (3.0)	6.0 (1.25)	5.0 (3.0)	Chi-Square=3.568 P=0.166
Perceived Ease of Use	6.0 (2.25)	6.0 (2.25)	6.0 (2.0)	Chi-Square=7.681↑ P=0.021↑
Resistance to Use	12.0 (5.0)	11.5 (4.25)	11.0 (6.0)	Chi-Square=0.038 P=0.981
Trust	7.0 (2.25)	6.0 (3.0)	6.0 (1.0)	Chi-Square=1.903 P=0.386
Technology Anxiety	8.0 (1.0)	8.0 (0.0)	8.0 (0.0)	Chi-Square=4.461 P=0.107
Facilitating Conditions	6.0 (0.0)	6.0 (1.0)	6.0 (1.0)	Chi-Square=2.378 P=0.304
Social Influence	4.0 (2.0)	4.0 (2.0)	4.0 (2.0)	Chi-Square=1.670 P=0.434
Perceived Risk	12.0 (1.25)	12.0 (0.0)	12.0 (1.0)	Chi-Square=2.542 P=0.281
Intention to Use	6.0 (1.0)	6.0 (0.5)	6.0 (1.0)	Chi-Square=2.968 P=0.344
Total	66.0 (8.25)	66.0 (7.0)	64.0 (7.0)	Chi-Square=2.968 P=0.227

IQR: Interquartile Range

The high levels of acceptance observed in this study align with global evidence showing that telehealth interventions are generally well-received when they address clear health needs, and are integrated into supportive institutional environments (33). Trust emerged as a particularly influential determinant of acceptance. More than four-fifths of participants expressed confidence in SBTRHC, consistent with international findings that confirm trust, perceived reliability, and confidentiality to be central to telehealth adoption (34). Recent research further emphasize that privacy protections and system credibility strongly shape willingness to engage with digital health platforms (35).

The only significant difference across stakeholder groups was *in perceived ease of use,* with mothers reporting lower usability compared with students and school staff. This pattern mirrors findings from low- and middle-income countries, where digital literacy and perceived technological complexity remain barriers to adoption, particularly among older or less technologically experienced users (36). In the Iranian context, cultural sensitivities and varying levels of digital literacy among caregivers may further contribute to these differences. These findings underscore the need for caregiver-oriented training, simplified interfaces, and culturally adapted platforms to ensure equitable access.

An important contribution of our study is the analysis of counseling topic priorities. Students expressed the greatest interest in counseling on high-risk behaviors, reflecting their developmental vulnerabilities and exposure to risk-taking. Mothers prioritized life skills, physical activity, mental health, and social health, consistent with parental emphasis on holistic well-being and prevention. The school staff rated most topics as equally important, though sexually transmitted diseases received the lowest endorsement—possibly due to cultural sensitivities or perceived appropriateness within the school environment. These discrepancies echo previous research documenting misalignments between adolescent and parental perspectives on reproductive health priorities (37). Global evidence-based guidelines similarly highlight that effective school-based SRH programs must balance adolescent needs with parental expectations to maximize impact (38).

The strong intention to use SBTRHC services across all groups is consistent with post-pandemic research showing increased behavioral intention toward telemedicine globally (39, 40). This suggests that the pandemic may have accelerated the normalization of remote health services, even in sensitive domains such as reproductive health.

Collectively, the findings indicated that

successful implementation of school-based tele-counseling requires strategies that build trust through transparent and reliable service delivery, address usability challenges through caregiver-focused training and intuitive platforms, and tailor counseling content to align adolescent priorities with parental concerns. Schools, as trusted community institutions, offer a promising foundation for integrating such interventions.

4.1. Limitations

The present study had certain limitations. The cross-sectional design of the study precludes causal inference, and reliance on self-reported data may introduce recall or social desirability bias. Additionally, the sample was drawn from a single geographic area, which may limit the generalizability of the findings.

5. Conclusions

Our study demonstrated that School-Based Tele–Reproductive Health Counseling (SBTRHC) is broadly acceptable to key stakeholders in resource-limited school settings, suggesting its potential as a feasible and culturally adaptable approach to supporting adolescent reproductive health. Several factors may contribute to this high level of acceptance. The normalization of digital communication in the post-pandemic era has likely increased comfort with remote health services. Tele-counseling may also help address long-standing barriers in adolescent reproductive health—such as confidentiality concerns, cultural sensitivities, and limited access to youth-friendly services—by providing a more private and accessible platform. Furthermore, the school-based structure of SBTRHC may enhance perceptions of legitimacy and trust among parents and school staff, supporting its integration into existing educational and health systems. Future research should employ longitudinal designs with larger and more diverse populations to better assess long-term acceptance and behavioral outcomes.

Acknowledgment

This article was extracted from the MSc thesis of Ms. Shahla Nouri at Midwifery Department, Alborz University of Medical Sciences, Karaj, Iran. The authors thank Alborz University of Medical Sciences for its financial and institutional support and appreciate the cooperation of the participating students, mothers, school staff, and school administrators.

Declaration of AI

No AI-assisted tool was used in preparing this manuscript.

Authors' Contribution

Shahla Nouri: Contribution to the conception and design of the work; reviewing the work critically for important intellectual content. Fatemeh Arang: Interpretation of data for the work; drafting the work and reviewing it critically for important intellectual content. Malihe Farid: Analysis and interpretation of data; reviewing the work critically for important intellectual content. Fateme Najafi Sharjabad: Contribution to the conception of the work; reviewing the work critically for important intellectual content. Mahnaz Akbari Kamrani: Contribution to the conception and supervision of the work; reviewing the work critically for important intellectual content. All authors have read and approved the final manuscript and agree to be accountable for all aspects of the work, including questions related to the accuracy or integrity of any part of the work.

Ethical Approval

The Ethics Committee of Alborz University of Medical Sciences approved the present study with the code of IR.ABZUMS.REC.1401.113. Also, written informed consent was obtained from all participants. For adolescent participants, parental or legal guardian consent was also secured.

Conflict of interests: None declared.

Funding

This study was supported by Alborz University of Medical Sciences, Karaj, Iran as part of a Master's thesis project (Grant No.4850-82)

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