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Sexual Health Information Seeking among Mongolian Adolescents

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Objective: Our study aims to ascertain the types of information sources that shape adolescents' knowledge about sexual and reproductive health in Mongolia. **Methods:** The present study, in accordance with the HBSC survey protocol, encompassed a sample of 312 students aged between 15 and 18 years in Ulaanbaatar and its metropolitan areas. Data collection occurred in a paper-based form. Besides descriptive statistics, logistic regression analyses were conducted. **Results:** The most prevalent sources of sexual health information were school health curricula (74.0%), friends (70.7%), and peers (65.6%), while less frequent sources included sexual partners (19.6%) and religious organizations (11.9%). Logistic regression analysis revealed that gender significantly influenced source preferences: females were more likely than males to seek information from parents, teachers, and health education curricula, while males were more likely to rely on sexual partners and friends. **Conclusion:** The findings indicated that the majority of participants received sexual health information through health education curricula, demonstrating the importance of these programs. Additionally, in light of the significant influence of peers and social media on adolescents, it is imperative to ensure they have access to reliable sexual health information through accessible sources and increased parental involvement to promote informed and responsible decision-making.

Keywords: Adolescent, Sexual health, Information seeking behavior, Health education; Mongolia

Introduction

Adolescence is a delicate developmental stage during which puberty occurs and these changes give rise to new behaviors and abilities that can facilitate or impede progress in areas such as family relationships, social interactions with peers, education, and health behaviors.[1] Providing accurate and comprehensive sexual health information is crucial for adolescents to make informed decisions about their sexual health later. Access to sexual and reproductive health education and counseling can take several forms from school-based interventions and peer-led interventions through mass media to programs of health services, religious or other youth centers, besides parent education.[2] Independently of being sexually active or not, adolescents have special needs of sexual health information to gain preparedness in knowledge about contraceptive use or sexually transmitted diseases and to prevent risky sexual activities,

early pregnancy or intimate partner violence.[3] However, the availability of sex education does not necessarily mean effective interventions: adults often underestimate the adolescents' sexual needs or the lack of their embarrassment or preparedness may lead to insufficient knowledge or misinformation.[4] There are various sources of sexual health information available to adolescents, including schools, healthcare providers, parents, and the internet.

Schools are an essential, and in many cases, the primary source of sexual health information for adolescents. As teenage sexual activity may have not only short but also long-term consequences, middle and high schools usually provide sex education programs with different levels of effectiveness.[5] Schools can provide comprehensive sex education programs that teach students about reproductive health, sexually transmitted infections (STIs), and contraception. As the WHO Report (2011) states, consistent with the process of adolescent development needs, researchers and advocates recommend that school-based sexuality and relationship education begin in elementary school as part of the social studies curriculum and incorporate more sophisticated messages about human rights, health, sexuality, and gender equality, as well as techniques such as role-play, situational analysis, and critical analysis.[6] Results from a meta-analysis including low- and middle-income countries demonstrate that school-based sex education is the most effective strategy for reducing HIV-related risk. In addition to possessing the knowledge about HIV infection, students who participated in a school-based intervention, were more self-efficacious to use condoms or refuse unwanted sex, or reported fewer sexual partners.[7] Likewise, adolescents who received thorough sex education were more likely to postpone sexual initiation and use contraception when they did start having sex, according to a study by the Guttmacher Institute.[8] Furthermore, in cooperation with parents and health care providers, trained educators can provide adolescents with comprehensive sex education that emphasizes the importance of safe sex practices and encourages healthy decision-making, and besides helps reduce the risk of adverse sexual health outcomes, promotes positive sexual health behaviors as well.[9,10] Healthcare providers have a significant role in providing sexual health education to adolescents as they may feel more comfortable discussing sensitive sexual health topics with a healthcare provider.[11] In addition, providers can give personalized information and guidance on contraception and STI prevention.[12]

Further, in order to effectively provide sexual health education and services to communities, adopting a culturally sensitive and responsive approach that recognizes and addresses the varying beliefs, values, and practices of those being served is essential.[13] Cultural and traditional norms significantly shape adolescent sexual health, influencing how young people learn about and engage in sexual behaviors, as well as how they seek and receive sexual health information and services. One example of a cultural factor that influences adolescents' sexual health is religion. Many religions have specific teachings and expectations regarding sexual behavior.[14] These teachings may be reinforced by religious leaders and communities, shaping adolescents' beliefs and behaviors related to sexual health. Although in several countries there is a religious resistance against compulsory sex education[15], in some places, sex education programs for youth may be available in mainline churches.[16] These programs can provide culturally appropriate faith-based information for religious youth without any contradictions with their religious studies.

Parents' information strongly features a role in the daily lives of adolescents. Also, many interventions incorporate parents as a critical component of sexual socialization because they significantly impact adolescents' sex-related beliefs and actions.[17] Parental involvement in sex communication may also reflect the family's value system and social norms. However, as a qualitative study from Ghana states, parents' conversations are structured along gender lines and they more count on their children's exposure to other sources, including the media, peers, and school settings.[18] There are gender differences in the way young males and females seek out sex information. For instance, girls are more inclined to seek advice from their mothers, while boys prefer to turn to their peers or the media.[19-21] Depending of the quality of family functioning, communication about sex between parents and children may increase perceptions of condom use norms and attitudes toward condom use, which affect subsequent intentions to use condom and actual condoms use during the last intercourse.[22] Not only features of parent-child relationships, such as connectedness or supportiveness are influential on the effectiveness of sex communication with parents[10,19], but also the cultural context. For Mongolian parents, discussing sex education and sexuality with their children is always a closed and sensitive topic. They often avoid talking about these topics face-to-face with their children and try to hide them as much as possible.[23]

While communication on sex issues is often a taboo subject, young people are extraordinarily exposed to a huge amount of

sex-related information through mass media, including print media, digital media, broadcast media, and new media (social media on the internet); unfortunately some of them cannot be considered as accurate and useful without appropriate media literacy.[24] For youth, the internet has become a dominant source of sexual health information.[19] However, the reliability of online information can vary widely, and adolescents may encounter misinformation or biased information. Furthermore, social networking sites may also negatively affect adolescent sexual behavior through sexually suggestive messages, videos, pictures, adverts, and peer influence.[25] A study conducted by the Family, Children, and Youth Development Department found that 82 percent of Mongolian adolescents have already received sexually suggestive and inappropriate messages from users via email or Facebook and 43 percent of these adolescents have been exposed to sexually explicit content.[26] Additionally, one study emphasized that adolescents frequently use the internet to discuss sensitive sexual issues, including sexual health counseling and moral, emotional, and social issues related to sexuality, because of the anonymity provided by online communication.[27] In another study, it was found that one in three teenagers preferred online communication over face-to-face communication when discussing personal matters such as love, sex, and embarrassing experiences.[28,29]

Based on the literature review, we can conclude that it is crucial to get relevant knowledge about adolescents' information behavior, especially in relation to sexual health issues. Unfortunately, Mongolia's monitoring adolescents' sexual activities and their knowledge of sexual health and risk factors is only sporadic compared to their European or American peers. For example, knowledge of health issues, such as prevention of HIV has been well-documented, showing a decreasing trend after the year of 2010.[30] Earlier statistics also provide information on Mongolian adolescents' knowledge of modern contraceptive methods.[31] However, no previous studies have been carried out to explore Mongolian adolescents' information seeking related to sex issues thus far. Therefore, the aim of our study is to ascertain the types of information sources that may shape adolescents' knowledge about sexual and reproductive health in Mongolia. In addition, we also aim to detect the prevalence of their use and to assess the social and psychological factors that affect their information-seeking behavior.

Materials and Methods

Participants

The study was conducted in accordance with the methodological guidelines established by the Health Behaviors School-aged Children (HBSC) survey protocol[30], encompassing a sample of 312 secondary school students aged 15 to 18, who were selected through a cluster sampling method. This method is a sampling technique to divide the given population into clusters based on region. In our study, a three-step cluster sampling was applied. Mongolia is divided into 21 provinces, known as aimags, which are further subdivided into 330 districts called sums. The capital city, Ulaanbaatar, is administratively independent and holds provincial status. First, representatives were elected from each geographical region: Zavkhan Province from the western region, Dundgovi Province from the central region, and Bulgan Province from the Khangai region. Second, when selecting provinces, they were chosen based on population and infrastructure. Third, when selecting schools, they were selected based on the number of students and whether they were located in the provincial center or remote. A total of four secondary schools were selected to represent adolescents in Ulaanbaatar and Provinces. The inclusion criteria for this study have been meticulously delineated as follows: a) Participants must have been between the ages of 15 and 18 years at the time of data collection; b) Students must be enrolled at one of the four secondary schools selected for the study; c) Participants are eligible to participate if they have previously provided written informed consent from a parent or legal guardian; d) Participants must be present at school during the designated data collection period and able to partake in the survey. The following criteria were employed in order to determine exclusion from the study: a) Participants who did not meet the age requirement (i.e., those who were younger than 15 or older than 18 years) were excluded from the study. b) Participants who were not attending one of the four selected schools at the time of data collection were excluded from the study. c) Written informed consent from a parent or legal guardian was not provided by participants who were excluded from the study. d) Absence from school on the days of data collection or unavailability for participation due to health or personal reasons was also exclusion criteria.

Research Design

Data collection occurred in paper-based form. Prior to

participation, all students were provided with an abridged synopsis of the study's objectives and the voluntary nature of their involvement, assured of the anonymity and confidentiality of their responses. Questionnaires were administered during regular school hours in classroom settings under the supervision of trained researchers to maintain privacy and consistency. Classrooms were arranged to maintain adequate spacing between students, minimizing the risk of peer influence. Upon completion, the questionnaire was placed in an envelope and sealed to protect the confidentiality of each student's responses.

Measurements

We used the methodology from the Health Behavior in School-aged Children (HBSC) study.[32] Based on the HBSC research project, the research questionnaire included measurements of demographics, family socioeconomic status, ease of communication, social support, religiousness, and sources of sexual health information. The study considered demographic factors such as age, sex, and grade level. Participants were asked to evaluate their family's socioeconomic status by responding to the question, "How would you rate your family's socioeconomic situation?". Responses were provided on a 7-point Likert scale, ranging from "among the worst" to "highly among the best".

The ease of communication was measured using the Health Behaviour in School-aged Children (HBSC) survey.[32] The HBSC Ease of Communication was a brief questionnaire that included four main categories: father, mother, stepfather (or mother's boyfriend/ partner), and stepmother (or father's girlfriend/ partner). However, to provide a more comprehensive assessment, four additional categories were added: siblings, friends, teachers, and healthcare providers. Participants responded using a 5-point Likert scale, ranging from "very easy", "easy", "difficult", "very difficult" and "don't have or see this person".

As part of the measure of the source of sexual information, participants were asked two questions. The first question was, "How did you learn about sexual intercourse in your life?". The participants were provided with twelve response options from which to select. The second question focused on the sources they use to obtain sexual health information. Participants were asked, "Where do you usually look for information about sexual health and sexual intercourse?". The question included twelve categories: parents, siblings, friends, peers, sexual partners/ lovers, social media, broadcast media, print media, teachers, health curriculum, religious organizations, and community health workers. Participants provided their responses on a 5-point Likert scale, with options ranging from "never" to "always."

Evaluating the level of social support provided to participants, we employed the Multidimensional Scale of Perceived Social Support (MSPSS).[33] The questionnaire consists of three categories: family (consisting of 4 items, such as "My family really tries to help me"), friends (comprising of 3 items, such as "I can talk about my problems with my friends"), and significant others (including 3 items, such as "I have a special who is a real source of comfort to me"). Participants were presented with a 10-item questionnaire and asked to indicate their level of agreement with each statement on a 5-point Likert-type scale. Higher scores on the questionnaire indicate greater perceived social support. The reliability of the subscales was confirmed with the following Cronbach alphas: family support ($\alpha = 0.93$); friend support ($\alpha = 0.92$); and significant other support ($\alpha = 0.91$).

Finally, data were collected on participants' religious affiliation and the significance of their religious faith. First, their religious affiliation was determined using a 6-item response. Additionally, they were asked to rate the importance of their religious faith in guiding their day-to-day life on a 5-level Likert scale, ranging from "not important at all" to "extremely important".

Statistical Analysis

The statistical analyses were performed using SPSS for Windows, version 25.0, with a maximum significance level set at 5%. First, descriptive statistics were provided with frequencies of variables (%). Subsequently, binary logistic regression analyses were conducted separately for each independent variable, and odds ratios were calculated to evaluate their relationship with the dependent variables. The dependent variables were applied in a dichotomous format: the preference of each source of information about sexual health (never vs. rarely, sometimes, often, always); and the ease of communication about sexual health issues (easy, very easy vs. difficult, very difficult). We calculate logistic regression at the 95% probability level to determine the effect of each independent variable whether they may increase or decrease the odds of the dependent variables. An elevated likelihood refers to a positive association (OR > 1.00), while a lower likelihood (OR < 1.0) indicates a negative association. The statistical significance was based on two criteria: a maximum P-value (0.05), and 95% confidence intervals (CIs) do not include 1.00.

Ethical Statement

The research has obtained ethical approval from the Institutional Review Board (IRB) of the Doctoral School of Education at the University of Szeged on October 14, 2023 (Reference number: 18/2023). Participation in this study was both voluntary and conducted under conditions of anonymity. The principals of the selected schools were contacted to request permission to include students in the study. Additionally, with assistance from school staff such as the principal, teachers, and social workers, we reached out to the parents or legal guardians of the students beforehand. Written consent for participation in the study was then obtained from the students and their legal guardians or parents. Subsequently, the students were individually met to introduce the study and elucidate its possible contributions to health education. It was emphasized that data collection would be anonymous and that no personal information would be included in publications.

Results

Sample Characteristics

The study involved 312 students, consisting of 106 boys (34.0%) and 206 girls (66.0%). The age distribution of the participants was as follows: 14.7% were 15 years old, 18.6% were 16 years old, 33.3% were 17 years old, and 33.3% were 18 years old. Regarding grade distribution, the breakdown was as follows: 9th grade-14.7%, 10th grade-17.6%, 11th grade-34.3%, and 12th grade-33.3%. Half of the students reported having no religious affiliation, while Buddhism and Mongolian shamanism were the most frequently mentioned religions. Sample characteristics can be seen in Table 1.

Table 1. Sociodemographic and psychological characteristics of the sample

	N (%)	Mean±SD
Socio-demographic		
Age (years)		16.85±1.04
Sex		
Male	106 (34.0%)	
Female	206 (66.0%)	
Socio-cultural		
Religiousness		
Not important	155 (49.8%)	
Somewhat or more	156 (50.2%)	
Socio-economic		
SES self-assessment		
Worse/same	133 (42.6%)	
Better	179 (57.4%)	
Psychological		
Social Support_family		14.36±4.75
Social support_friends		13.94±4.70

Descriptive Statistics for the Sources of Sexual Health Information

Figure 1 shows the sources from which students acquire sexual health information. The most commonly reported sources were health curricula (74.0%), friends (70.7%), and peers (65.6%). Social media (65.0%) and broadcast media (58.5%) also ranked highly among the sources. In contrast, less commonly mentioned sources were healthcare professionals (43.4%), sexual partners (19.6%), and religious organizations (11.9%).

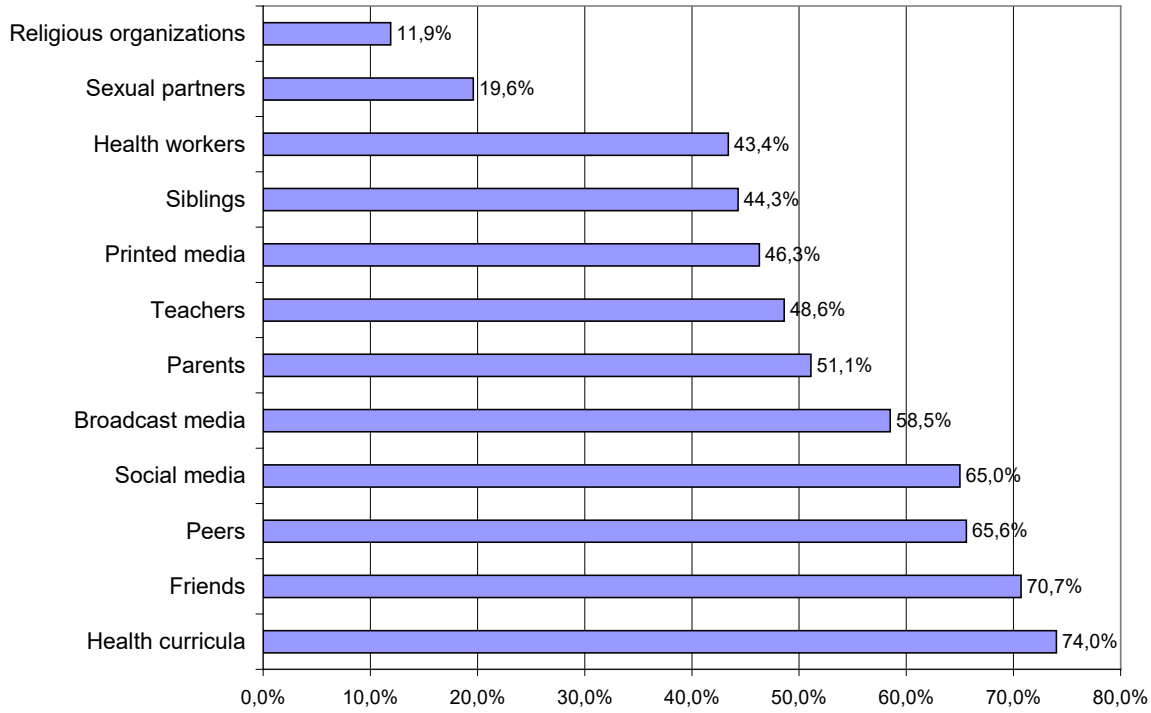

Figure 1. Sources for sexual health information usage (%)

Logistic Regression Analysis for the Sources of Sexual Health Information

Tables 2 and 3 examined the role of socio-demographic, socio-cultural, socioeconomic and psychological factors influence in the preference for various sources of sexual health information. The sources of information were not significantly affected by age (P<0.05). However, the role of sex was notable. Females were significantly more likely than males to prefer the following sources of information: parents (OR=2.36, 95% CI:1.46-3.83, Wald χ2=12.15, P<0.001), teachers (OR=2.02, 95% CI:1.25-3.26, Wald χ2=8.15, P<0.01), and health workers (OR=1.89, 95% CI:1.16-3.08, Wald χ2=6.47, P<0.05). In contrast, males were more likely to rely on sexual partners as a source of information (OR=0.44, 95% CI:0.25-0.78, Wald χ2=7.84, P<0.01). Participants who viewed religion to be "somewhat important or more" were significantly more likely to depend on religious organizations (OR=2.25, 95% CI:1.13-4.50, Wald χ2=5.28, P<0.05) and sexual partners (OR=1.76, 95% CI:1.01-3.10, Wald χ2=3.82, P<0.05) for information regarding sexual health.

In addition, participants who rated their self-reported socioeconomic status (SES) as "better" than the average, were more likely to prefer health workers for information related sexual health (OR=1.57, 95% CI:1.01-2.48, Wald χ2=3.67, P<0.05). However, other findings were not statistically significant. Social support, on the other hand, was proven to be a crucial factor in determining the sources from which individuals seek sexual health information. A higher level of family support is significantly associated with a preference for obtaining information from parents (OR=1.10, 95% CI:1.04-1.15, Wald χ2=13.06, P<0.001), social media (OR=1.05, 95% CI:1.01-1.11, Wald χ2=4.24, P<0.05), and health curricula (OR=1.06, 95% CI:1.01-1.12, Wald χ2=5.27, P<0.05). Similarly, greater support from friends was linked to a stronger reliance on friends themselves

(OR=1.07, 95% CI:1.02-1.13, Wald $\chi 2$=6.72, P<0.01) and peers (OR=1.06, 95% CI:1.01-1.11, Wald $\chi 2$=4.59, P<0.05). In addition, friend support was also a predictor of the preference of health curricula (OR=1.07, 95% CI:1.02-1.13, Wald $\chi 2$=6.57, P<0.01). On the other hand, strong social support both from friends (OR=0.92, 95% CI:0.86-0.98, Wald $\chi 2$=5.60, P<0.05) and the family (OR=0.92, 95% CI:0.85-0.98, Wald $\chi 2$=6.60, P<0.05) had a negative association with seeking information from religious organizations. This suggests that individuals who have a robust network of family and friends are less likely to turn to religious institutions for guidance on sexual health.

Table 2: Bivariate logistic regression analysis of the preference of each source of sexual health information (OR: odds ratio) I

Frequency (n)	Parents	Friends	Siblings	Social media	Broadcast media	Printed media
Predictors	[b]OR (95% cCI)	[b]OR (95% cCI)	bOR (95% cCI)	[b]OR (95% cCI)	[b]OR (95% cCI)	[b]OR (95% cCI)
Socio-demographic						
Age (years)	0.88 (0.71–1.09)	0.95 (0.75–1.20)	0.90 (0.73–1.12)	1.05 (0.84–1.31)	0.93 (0.75–1.16)	1.11 (0.90–1.38)
Sex						
aMale	1.00	1.00	1.00	1.00	1.00	1.00
Female	2.36 (1.46–3.83)***	1.34 (0.80–2.23)	1.39 (0.86–2.24)	1.47 (1.16–3.08)	1.55 (0.96–2.49)	1.31 (0.81–2.10)
Socio-cultural						
Religiousness						
aNot important	1.00	1.00	1.00	1.00	1.00	1.00
Somewhat or more	1.37 (0.86–2.18	0.69 (0.42–1.14)	0.97 (0.61–1.54)	088 (0.55–1.43)	0.96 (0.60–1.53)	1.07 (0.67–1.70)
Socio-economic						
SES self-assessment						
aWorse/same	1.00	1.00	1.00	1.00	1.00	1.00
Better	1.41 (0.90–2.21)	1.24 (0.76–2.02)	1.03 (0.66–1.63)	0.78 (0.48–1.25)	0.91 (0.58–1.44)	1.24 (0.79–1.96)
Psychological						
Social Support_family	1.10 (1.04-1.15)***	1.04 (0.99–1.10)	1.02 (0.97–1.07)	1.05 (1.01–1.11)*	1.02 (0.97–1.07)	1.03 (0.98–1.08)
Social support_friends	1.04 (0.99–1.09)	1.07 (1.02–1.13)**	1.03 (0.99–1.09)	1.05 (0.99–1.10)	1.03 (0.98–1.08)	1.02 (0.97–1.07)

** P < 0.05; ** P < 0.01; *** P < 0.001*
The odds ratios characterizing the relationship between each independent variable and the dependent variable are derived from logistic regression analyses performed separately
[a]reference category
[b]OR: odds ratio
[c]CI: confidence interval

Descriptive Statistics for the Ease of Communication About Sexual Health Issues

Figure 2 shows how easily participants communicate about sexual health. Friends are the most common discussion partners, with 68.5% of respondents engaging in conversations with them. This is followed by siblings at 48.7% and health workers at 48.4%. When it comes to parental sources, mothers are consulted more frequently than fathers, with 47.8% versus 24.6%. Teachers also contribute to these discussions, but their influence is less pronounced, with only 27.2% of respondents indicating they talk to them about sexual health.

Table 3: Bivariate logistic regression analysis of the preference of each source of sexual health information (OR: odds ratio) II

	Teachers	Health curricula	Health workers	Peers	Sexual partners	Religious organization
Predictors	[b]OR (95% cCI)	[b]OR (95% cCI)	bOR (95% cCI)	[b]OR (95% cCI)	[b]OR (95% cCI)	[b]OR (95% cCI)
Socio-demographic						
Age (years)	0.81 (0.66–1.01)	0.91 (0.71–1.16)	0.97 (0.78–1.20)	0.84 (0.67–1.05)	1.25 (0.94–1.65)	0.86 (0.45–1.92)
Sex						
aMale	1.00	1.00	1.00	1.00	1.00	1.00
Female	2.36 (1.46–3.83)***	1.34 (0.80–2.23)	1.39 (0.86–2.24)	1.47 (1.16–3.08)	1.55 (0.96–2.49)	1.31 (0.81–2.10)
Socio-cultural						
Religiousness						
aNot important	1.00	1.00	1.00	1.00	1.00	1.00
Somewhat or more	1.16 (0.73–1.84)	0.85 (0.50–1.43)	0.97 (0.61–1.55)	0.95 (0.59–1.55)	1.76 (1.01–3.10)*	2.25 (1.13–4.50)*
Socio-economic						
SES self-assessment						
aWorse/same	1.00	1.00	1.00	1.00	1.00	1.00
Better	1.31 (0.83–2.05)	0.91 (0.54–1.52)	1.57 (1.01–2.48)*	1.16 (0.72–1.86)	0.91 (0.52–1.60)	1.87 (0.89–3.93)
Psychological						
Social Support_family	1.01 (0.97–1.06)	1.06 (1.01–1.12)*	1.05 (1.01–1.10)*	1.04 (0.99–1.09)	0.98 (0.82–1.04)	0.92 (0.85–0.98)**
Social support_friends	1.00 (0.96–1.05)	1.07 (1.02–1.13)**	1.04 (0.99–1.09)	1.06 (1.01–1.11)*	0.98 (0.93–1.04)	0.92 (0.86–0.98)*

** P < 0.05; ** P < 0.01; *** P < 0.001*
The odds ratios characterizing the relationship between each independent variable and the dependent variable are derived from logistic regression analyses performed separately
[a]*reference category*
[b]*OR: odds ratio*
[c]*CI: confidence interval.*

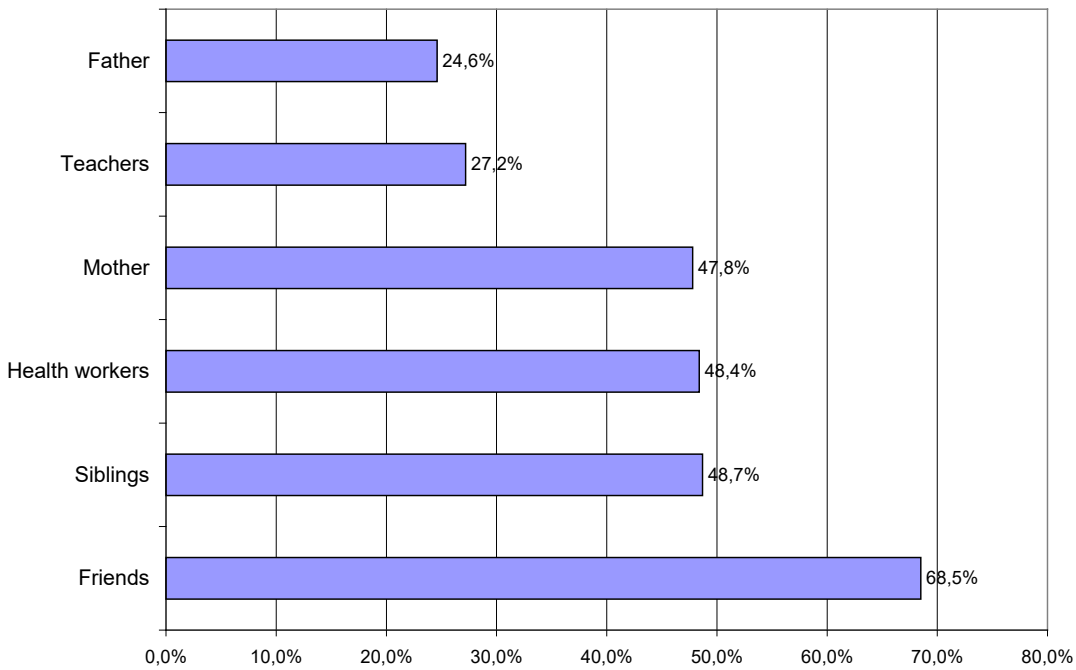

Figure 2. Ease of communication about sexual health issues (%)

Logistic Regression Analysis for the Ease of Communication About Sexual Health Issues

Table 4 presents findings from a bivariate logistic regression analysis examining predictors of communication about sexual health with various individuals, including fathers, mothers, siblings, friends, teachers, and health workers. The results indicated that being a female was associated with a lower likelihood of discussing sexual health with fathers (OR=0.58, 95% CI:0.33-0.99, Wald $\chi 2=3.78$, $P<0.05$). The likelihood of talking with a health care worker showed a decreasing tendency with growing age (OR=0.77, 95% CI:0.61-0.96, Wald $\chi 2=5.14$, $P<0.05$). No significant associations were found for communication with mothers, siblings, friends, or teachers ($P>0.05$). Familial social support showed no significant relationship either, but social support from friends was positively associated with communication about sexual health topics among friends (OR=1.09, 95% CI: 1.03-1.15, Wald $\chi 2=8.89$, $P<0.01$).

Discussion

The World Health Organization (WHO) defines sexual health as a condition of physical, emotional, mental, and social well-being concerning sexuality rather than just the absence of disease, malfunction, or infirmity.[34] Numerous elements, such as the familial environment, peer pressure, media exposure, cultural and religious views, and accessibility to sexual health information and services, might affect adolescents' sexual health behavior,[1,2]

The findings of our study illuminate the variability of sexual health information-seeking behaviors among adolescents in Mongolia. Furthermore, the results underscore the pivotal role of formal health education curriculum[4-7], social relationships[20,18], and cultural factors[14,23] in shaping how adolescents acquire knowledge about sexual and reproductive health. Previous research emphasized the crucial role of health curricula in shaping adolescents' sexual health knowledge.[4,6,7] Our study corroborated this finding, with 74% of the participants reporting it as a primary source of information. Barriuso-Ortega, Fernández-Hawrylak and Heras-Sevilla4 conducted a meta-analysis showing that health curricula that incorporate participatory methods and contextualized content have been shown to yield stronger outcomes in behavior change and knowledge retention outcomes. In addition, Weed and Ericksen[5], et al. demonstrated that curriculum-based sex education programs are most efficacious when they are comprehensive, age-appropriate, and reinforce the development of healthy decision-making skills.

At the same time, friends and social media emerged as commonly used sources of sexual health information among this sample of Mongolian adolescents, cited by 70.7% and 65.0% of participants, respectively. Moreover, the pronounced reliance on friends underscores the persistent impact of peer networks, particularly among male adolescents, who demonstrate a propensity to seek informal, experience-based information from their social circles.[19,20] Also, the information-seeking behavior of adolescents shows a shift towards social networks and digital platforms, driven by their accessibility and the appeal of anonymity.[27,28] Nevertheless, this trend raises substantial concerns: Mongolian adolescents have been extensively exposed to sexually explicit or misleading content online. According to recent studies, 82% of adolescents report receipt of inappropriate messages via platforms such as Facebook.[23] These findings underscore the importance of enhancing formal health education in schools, promoting peer-based learning, and incorporating media literacy into sexual and reproductive health education. These strategies may assist adolescents with critically evaluating the reliability and quality of information they receive from social sources.[24] For example, knowledge of sexually transmitted infections is particular important, showing relatively high prevalence in developing countries, which can be prevented by appropriate decisions related to sexual activities.[35]

Further, we found several socio-demographic and psychological factors that might significantly affect adolescents' information-seeking behaviors concerning sexual health. First, our study showed evident gender differences in information-seeking behaviors among adolescents, with female participants demonstrating a greater reliance on parents, teachers, and social media, while male participants tended to seek information from sexual partners and friends. These results are aligned with previous research indicating that girls rely more on formal, family-based sources, while boys prefer informal and peer-based sources.[19-21]

In terms of social factors, a salient finding of our study was that perceived social support predicted an informational advantage. This is consistent with earlier research highlighting the pivotal role of supportive relationships in shaping

Table 4: Bivariate logistic regression analysis of the ease of communication about sexual health issues (OR: odds ratio)

Frequency (n)	Parents	Friends	Siblings	Social media	Broadcast media	Printed media
Predictors	[b]OR (95% cCI)	[b]OR (95% cCI)	bOR (95% cCI)	[b]OR (95% cCI)	[b]OR (95% cCI)	[b]OR (95% cCI)
Socio-demographic						
Age (years)	0.97 (0.75–1.26)	0.91 (0.73–1.13)	0.90 (0.71–1.13)	1.02 (0.80–1.30)	1.11 (0.86–1.43)	0.77 (0.61–0.96)*
Sex						
aMale	1.00	1.00	1.00	1.00	1.00	1.00
Female	0.58 (0.33–0.99)*	1.43 (0.88–2.33)	0.90 (0.55–1.47)	1.06 (0.62–1.79)	0.62 (0.36–1.08)	0.70 (0.43–1.15)
Socio-cultural						
Religiousness						
aNot important	1.00	1.00	1.00	1.00	1.00	1.00
Somewhat or more	1.25 (0.71–2.18)	0.91 (0.57–1.46)	1.12 (0.68–1.82)	0.76 (0.45–1.27)	1.15 (0.66–1.98)	0.98 (0.60–1.60)
Socio-economic						
SES self-assessment						
aWorse/same	1.00	1.00	1.00	1.00	1.00	1.00
Better	1.61 (0.90–2.85)	1.27 (0.80–2.01)	1.16 (0.72–1.86)	0.87 (0.53–1.45)	1.13 (0.66–1.93)	1.39 (0.86–2.23)
Psychological						
Social Support_family	0.96 (0.91–1.02)	1.03 (0.99–1.08)	1.03 (0.98–1.08)	1.02 (0.96–1.07)	0.96 (0.91–1.02)	1.04 (0.99–1.09)
Social support_friends	0.98 (0.92–1.03)	1.01 (0.96–1.06)	1.02 (0.97–1.07)	1.09 (1.03–1.15)**	0.96 (0.91–1. 10)	1.01 (0.96–1.06)

** P < 0.05; ** P < 0.01; *** P < 0.001*
The odds ratios characterizing the relationship between each independent variable and the dependent variable are derived from logistic regression analyses performed separately
[a]reference category
[b]OR: odds ratio
[c]CI: confidence interval

adolescents' health communication styles.[9,22] For instance, family support was associated with access to parents and even social media, while friend support predicted reliance on peers and friends. We found that socioeconomic status and religion had a limited but significant effect on adolescents. Those who regarded religion as important were more likely to seek information from religious institutions and sexual partners, which highlights the influence of cultural and moral systems on the process of sexuality education.[13,14,23] Additionally, adolescents with higher self-reported socioeconomic status were more likely to approach healthcare providers.

In summary, our study indicates that there is an urgent need to implement multifaceted measures to support the sexual health of Mongolian adolescents. In addition, it is essential to focus on increasing the reach and efficacy of school-based education while also facilitating parental and peer involvement and ensuring access to accurate and reliable information resources. Most importantly, culturally sensitive programs that demonstrate respect for religious and traditional values must be developed to bridge the gap between formal sexual and reproductive health education and public acceptance. Despite the strength of our study to detect information on Mongolian adolescents' information seeking behavior, there are several limitations we should note here. First, our participants were only urban adolescents as these schools were easier to access; in the future we also need to survey rural adolescents as well. Our study's limitation is that we did not evaluate the strengths and weaknesses, accessibility, or reliability of each information source. Additionally, we did not explore factors such as adolescents' satisfaction with and trust in these sources. Consequently, future research should take a closer look at the reliability, accessibility, satisfaction, and trustworthiness of the information sources used by adolescents. While the included

variables did not cover whether the subjects indeed felt the need of seeking sexual information, future research should also add variables on this issue.

We can conclude that mapping adolescents' information seeking behavior is very useful to further development of health education curricula since these programs seem the primary resources for them to receive reliable sexual health information. Our findings highlight important relationships of adolescents' information seeking behavior with several social and psychological variables which clarify the role of these resources in their future decisions.

Conflict of Interest

The authors state no conflict of interest.

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Authors Contribution

Bayarjargal Uuganbayar: conceptualization, validation, methodology, formal analysis, investigation, writing—original draft preparation, visualization

Bettina F. Piko: conceptualization, formal analysis, visualization, writing—review and editing, supervision.

Both authors have read and agreed to the published version of the manuscript.

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