

KNOWLEDGE AND ATTITUDES TOWARD REPRODUCTIVE HEALTH ARE ASSOCIATED WITH CYBERSEX ACTIVITIES AMONG ADOLESCENTS

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Article Information

Received:
July 01, 2026

Revised:
July 09, 2026

Accepted:
July 20, 2026

Abstract

Cybersex is a form of sexually related behaviour conducted through the internet and has become increasingly prevalent among adolescents due to widespread access to digital technology. Adolescents' knowledge and attitudes regarding reproductive health may influence their engagement in cybersex activities. This study aimed to examine the association between reproductive health knowledge and attitudes and cybersex activities among adolescents. An analytical observational study with a cross-sectional design was conducted among 110 adolescents aged 17–19 years at SMK Pawyatan Daha 1 Kediri. Participants were selected using simple random sampling. Data were collected using a structured questionnaire assessing the frequency and types of cybersex activities, reproductive health knowledge, and attitudes towards reproductive health issues, including contraceptive use and sexually transmitted infections. Data were analysed using Spearman's rank correlation test. Spearman's correlation analysis demonstrated a significant association between cybersex activities and reproductive health knowledge ($p < 0.001$; $r = 0.579$), as well as between cybersex activities and reproductive health attitudes ($p < 0.001$; $r = 0.582$). The correlation coefficient indicated that attitudes toward reproductive health showed a slightly stronger association with cybersex activities than knowledge. Reproductive health knowledge and attitudes were significantly associated with cybersex activities among adolescents. Strengthening reproductive health education and promoting positive attitudes may help adolescents make healthier decisions regarding online sexual behaviour.

Keywords: *Adolescents, Attitudes, Cybersex, Knowledge, Reproductive health*

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1. Introduction

Cybersex refers to sexual activities conducted through online platforms. It encompasses various forms of sexually explicit communication mediated by digital technologies, including text messaging, video calls, and interactive communication through online platforms. Cybersex may involve two or

more individuals engaging in online interactions for sexual purposes. These activities include sexting, video sex, online sexual games, webcam sex, sharing sexually explicit images, and other forms of virtual sexual activity [1]. Other terms used interchangeably with cybersex include internet sex, computer sex, cybering, and netsex. According to

[2], cybersex is a form of behaviour driven by sexual motivation that is facilitated through internet-based applications, in which two or more individuals interact online in ways that generate sexual arousal.

According to the Indonesian Internet Service Providers Association (APJII), internet penetration among adolescents aged 13–18 years reached 99.16% in 2021–2022. The second-highest rate was observed among individuals aged 19–34 years (98.64%), followed by those aged 35–54 years (87.30%). Data from Statistics Indonesia (BPS) for East Java Province in 2022 showed that internet users comprised 12.43% of those aged 5–12 years, 6.19% of those aged 13–15 years, 6.98% of those aged 16–18 years, 14.18% of those aged 19–24 years, and 48.29% of those aged 25 years and above. Internet penetration reached 62.43% among children aged 5–12 years, whereas the corresponding proportion among adults aged 55 years and older was 51.73%. Furthermore, 21% of adolescents reported intentionally searching for pornographic content. Among these adolescents, 57% accessed such content through YouTube, 19% through Instagram and other online platforms such as Line and Google, and 5% through Facebook.

Previous studies have reported several adverse consequences of cybersex, including prostitution, cybercrime, child abuse, and pornography. Frequent exposure to sexually explicit online content may increase users' sexual urges and reduce their ability to control sexual impulses, potentially leading to risky sexual behaviours such as unprotected sexual intercourse and increasing the risk of HIV/AIDS and other sexually transmitted infections (STIs) [2]. Moreover, increasing exposure to pornography among adolescents has become a major public health concern because it may contribute to the early initiation of sexual activity. Previous research also found that cybersex was

associated with premarital sexual behaviour among adolescents, resulting in sexually transmitted infections, adolescent pregnancy, school dropout, adverse social consequences, pregnancy- and childbirth-related complications, and unsafe abortion. Because adolescents' reproductive organs are still developing, they are also more vulnerable to physical injury during sexual intercourse [3]. Supporting these findings, data from the Women's Empowerment and Child Protection Office of Konawe Regency showed that, by 2023, there had been 26 reported cases of rape or sexual abuse, six of which involved cybersex [4].

Knowledge and attitudes have been identified as important factors influencing cybersex behaviour. Inadequate knowledge, combined with exposure to inaccurate information from pornographic videos, pornographic websites, and other inappropriate media sources, may distort adolescents' understanding and perceptions of sexuality. Consequently, many adolescents perceive sexual intercourse as a means of expressing love and may therefore engage in premarital sexual relationships with their partners before marriage [5]. Reproductive health attitudes among unmarried adolescents reflect how they perceive, understand, and respond to issues related to sexuality and reproductive health. These attitudes encompass beliefs, values, behaviours, and perceptions regarding sexual and reproductive health. Limited reproductive health knowledge and inappropriate attitudes may increase adolescents' vulnerability to cybersex and its associated adverse consequences, including risky sexual behaviour. Therefore, this study aimed to examine the association between cybersex activities and adolescents' reproductive health knowledge and attitudes among students at SMK Pawyatan Daha 1 Kediri. This study was conducted as an initial effort to determine whether adolescents' knowledge and attitudes towards reproductive health are associated with engagement in cybersex

activities, which may have substantial implications for adolescent reproductive health and development.

Cybersex behaviour is also influenced by external factors, including religion, family environment, peers, and the wider community. Consequently, inadequate reproductive health knowledge and inappropriate attitudes may further increase adolescents' vulnerability to cybersex and, subsequently, risky sexual behaviour. Preliminary data collected in 2023 among Grade XII students at SMK Pawyatan Daha 1 Kediri identified 18 adolescents with moderate cybersex addiction and 15 with high cybersex addiction. Regarding reproductive health knowledge, 11 students demonstrated moderate knowledge, 17 had poor knowledge, and eight had good knowledge. In terms of attitudes, nine students demonstrated very positive attitudes, nine had positive attitudes, six had moderate attitudes, and 12 had poor attitudes towards reproductive health. Based on these findings, this study was undertaken to examine the association between cybersex activities and adolescents' reproductive health knowledge and attitudes among students at SMK Pawyatan Daha 1 Kediri.

2. Method

This quantitative study employed an analytical observational design with a cross-sectional approach. The study population comprised 1,108 Grade XII students enrolled at SMK Pawyatan Daha 1 Kediri. A total of 110 adolescents aged 17–19 years were selected using simple random sampling. Participants were eligible if they were active Grade XII students at SMK Pawyatan Daha 1 Kediri, aged 17–19 years, lived with their parents or family, and provided informed consent to participate. Students who were absent during data collection, submitted incomplete questionnaires, or lived in a prostitution area were excluded from the study.

Data were collected over a three-month period from February to April

2024 at SMK Pawyatan Daha 1 Kediri. Three structured questionnaires were used. Cybersex behaviour was assessed using the Internet Sex Screening Test (ISST), with scores categorised as 0–3 (normal/mild), 4–6 (moderate), and ≥ 7 (severe/high cybersex addiction). Additional questionnaires measured adolescents' knowledge and attitudes regarding reproductive health. Data were analysed using Spearman's rank correlation test to examine the associations between cybersex activities, reproductive health knowledge, and reproductive health attitudes.

3. Results and Discussion

Based on the research conducted at SMK Pawyatan Daha 1 Kediri, the respondent characteristics were as follows.

Table 1. Participant Characteristics

Participant Characteristics	N = 110	%
Age		
17 year	53	48.18
18 year	48	43.64
19 year	9	8.18
Sex		
Male	56	50.91
Female	54	49.09
Living arrangement		
Living with parents	94	85.45
Living with relatives (non-parents)	14	12.73
Boarding house/rented accommodation/dormitory	2	1.82

As shown in Table 1, most respondents were 17 years old (53/110; 48.18%). Slightly more than half were male (56/110; 50.91%), and the majority lived with their parents (94/110; 85.45%).

Adolescents aged 17–20 years undergo substantial physical, emotional, and social development. During this developmental stage, they are more susceptible to external influences while actively exploring their identity. Brain

maturation continues into early adulthood, and reward-seeking behaviours are influenced by dopaminergic neurotransmission, which may increase adolescents' tendency to seek pleasurable experiences. Curiosity about sexuality, hormonal changes, and peer influence are recognised as important factors shaping adolescent behaviour [6].

The predominance of male participants is noteworthy because male adolescents are reported to be approximately four times more likely than females to watch pornography. Exposure to sexual content through television, films, magazines, music videos, and internet-based media may reinforce attitudes that support premarital sexual behaviour. Pornography consumption has also been identified as one of the strongest predictors of premarital sexual behaviour among male adolescents [2].

Most participants lived with their parents, suggesting that parental supervision and family support remain important during adolescence. Parents who provide reproductive health education help adolescents understand sexuality as a normal aspect of development while encouraging responsible sexual behaviour. Adequate reproductive health education within the family may improve adolescents' knowledge and enable them to distinguish healthy from risky sexual behaviours [7].

In the present study, most participants were male adolescents aged 17–18 years, a developmental stage characterised by identity exploration and heightened curiosity regarding sexuality. Easy access to internet-based sexual content, hormonal changes, peer influence, and limited comprehensive sexuality education may encourage adolescents to seek information from unreliable sources, including pornographic websites. Although most participants lived with their parents, parental co-residence alone may not be sufficient to prevent adolescents'

exposure to cybersex-related activities. Overall, the present findings are consistent with the existing literature.

Table 2. Distribution of cybersex, reproductive health knowledge, reproductive health attitudes, and Spearman correlation analysis

Variable	Mean±SD Median ;Min-Max	N = 110	%	P value *	Correlation coefficient (r)
Cybersex					
Mild	4,42	38	34,55		
Moderate	±2,36	30	27,27		
Severe	5;1-7	42	38,18		
Knowledge					
Excellent	45,8	23	20,9	0,000	.-
Good	±17,3	24	21,81		579
Fair	45;20-	30	27,27		
Poor	75	33	30,02		
Attitude				0,000	.-582
Excellent	43,4	43	39,09		
Good	±17,3;	9	8,18		
Fair	44;20-	12	10,91		
Poor	75	46	41,82		

*Uji Spearman

As presented in Table 2, severe cybersex addiction was the most common category, affecting 42 respondents (38.18%). The mean cybersex score was 4.42 ± 2.36 , with a median of 5 and a range of 1–7. Because the standard deviation was lower than the mean, the data showed no substantial dispersion.

Regarding reproductive health knowledge, poor knowledge was the most frequent category, accounting for 33 respondents (30.02%). The mean knowledge score was 45.8 ± 17.3 , with a median of 45 and scores ranging from 20 to 75. The relatively smaller standard deviation compared with the mean indicates acceptable data variability.

These findings are consistent with evidence suggesting that adolescents' knowledge of reproductive health plays an important role in shaping health-related behaviours [8]. Adolescents with limited knowledge may not fully understand the risks and consequences of

online sexual behaviour, including exposure to sexually explicit content, disclosure of personal information, and vulnerability to sexual exploitation. In addition, improving reproductive health knowledge through educational interventions has been shown to be effective. An intervention study demonstrated significant improvements in adolescents' reproductive health knowledge following both Android-based educational applications and conventional lectures, with the Android-based intervention producing greater improvements ($p < 0.05$) [9]. Likewise, inadequate knowledge has been associated with limited communication about sexuality with trusted adults. As a result, adolescents may seek information from internet sources, which can increase the likelihood of engaging in unsafe online sexual behaviours, including cybersex [10].

For reproductive health attitudes, poor attitudes were also the most common category (46 respondents; 41.82%). The mean attitude score was 43.4 ± 17.3 , with a median of 44 and a score range of 20–75. Spearman's rank correlation analysis demonstrated a statistically significant association between cybersex activities and reproductive health knowledge ($p < 0.001$; $r = -0.579$), as well as between cybersex activities and reproductive health attitudes ($p < 0.001$; $r = -0.582$). These findings indicate that both knowledge and attitudes were significantly associated with cybersex behaviour among adolescents, with reproductive health attitudes showing a slightly stronger correlation than knowledge.

These findings are supported by previous studies demonstrating that cybersex behaviour is influenced by multiple individual and environmental factors. Adolescents with limited reproductive health knowledge are more likely to engage in cybersex due to curiosity, experimentation, peer influence, exposure to pornographic advertisements, sexually explicit

conversations, unrestricted internet access, and exposure to adult films [11]. Likewise, limited parental understanding of internet use may reduce supervision of adolescents' online activities, thereby increasing the likelihood of cybersex behaviour. Peer influence also plays an important role. A previous study reported a significant positive association between peer pressure and cybersex behaviour among adolescents, indicating that greater peer pressure was associated with higher levels of cybersex behaviour [12].

In the present study, reproductive health attitudes demonstrated a slightly stronger correlation with cybersex behaviour than reproductive health knowledge. Although knowledge provides adolescents with an understanding of the risks and consequences of cybersex, attitudes, emotional needs, and social norms may have a more direct influence on behavioural decision-making. Adolescents with limited reproductive health knowledge are also more likely to develop inappropriate attitudes towards sexual behaviour, which may increase their vulnerability to engaging in cybersex [13].

Adolescent reproductive health remains an important public health issue because inadequate knowledge and inappropriate attitudes may contribute to risky sexual behaviours, including premarital sexual activity. Such behaviours increase the risk of unintended pregnancy, school dropout, emotional distress, and adverse maternal and child health outcomes, including pregnancy complications and stunting. Therefore, parental supervision of internet use and comprehensive sexuality education provided by both families and schools are essential to reduce adolescents' exposure to inappropriate online sexual content and promote healthy sexual decision-making [14].

The present findings are consistent with previous evidence showing a significant association between reproductive health knowledge and premarital sexual attitudes among

adolescents ($p < 0.05$), indicating that lower levels of reproductive health knowledge are associated with less favourable sexual attitudes [15]. Furthermore, unrestricted access to pornographic materials may shape adolescents' attitudes and behaviours by encouraging imitation of sexually explicit content.

4. Conclusion

There was a significant association between cybersex activities and reproductive health knowledge ($p < 0.001$), as well as between cybersex activities and reproductive health attitudes ($p < 0.001$), among adolescents at SMK Pawyatan Daha 1 Kediri. Reproductive health attitudes demonstrated the strongest association with cybersex behaviour ($r = -0.582$), followed by reproductive health knowledge ($r = -0.579$). The negative correlation indicates that poorer reproductive health attitudes were associated with higher levels of cybersex activities, whereas more positive attitudes were associated with lower levels of cybersex behaviour.

5. Acknowledgements

The authors would like to express their sincere gratitude to all individuals and institutions who participated in and contributed to this study. Their support and cooperation were invaluable to the successful completion of this research.

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