

Article

Contribution of pornographic exposure and addiction to risky sexual behavior in adolescents

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Abstract

Background: The progress of information and technology contributes to the increasingly easier access to pornographic content. Adolescents as the highest Internet accessor become the most susceptible population to pornographic hazards, which has an impact on the deviant sexual behavior. This study aimed to identify the relationship of exposure history and pornography addiction to risky sexual behavior in adolescents.

Design and Methods: The data were collected online using a cross-sectional approach and involved 394 students selected by stratified random sampling. This study used early detection of pornography addiction instrument and Sexual Risk Survey (SRS).

Results: A significant relationship was found between risky sexual behavior in students and the age of the first-time exposure to pornography ($p=0.013$), pornographic materials accessed ($p=0.041$), and the reasons for watching pornography ($p=0.017$). The higher the degree of pornography addiction, the higher the risky sexual behavior in students ($p=0.000$; $r=0.241$).

Conclusions: A prevention and intervention program are necessary to address the pornography addiction problem as well as the development of various strategic plans in handling issues associated with risky sexual behavior in adolescence.

Introduction

Risky sexual behavior in adolescents continues to increase annually. Based on the Indonesian Demographic and Health Survey (IDHS) conducted on 9,971 girls and 12,612 boys in 2017, the majority of adolescents already had a date (80% female and 84% male) with nearly half of them performing deviant activities with their partners.¹ According to the results from the 2015 school-based health national survey in Indonesia, as many as 500 out of 9,512 Indonesian adolescents said that they had once engaged in sexual intercourse, which was committed for the first time at the age of 11 years or younger (0,78%).²

This risky sexual behavior in adolescents could result in various reproductive health issues such as un-expected pregnancy,

illegal abortion, and sexually transmitted diseases cases. Based on IDHS's data in 2017, un-expected pregnancy cases were reported twice in quantity in the 15–19 age group than those among adults. Abortion practice in adolescents remained high and had not decreased from the previous year, thus far.¹ Globally, 50% of the sexually transmitted disease cases were reported in the youth population.³ Meanwhile, in Indonesia, as much as 35.68% HIV cases were reported in the 15–24 age group, an increase of 14.86% from the previous year, which amounted to 8.664 people.⁴

Several factors influence the high number of risky sexual behavior cases in adolescents. Stanhope and Lancaster described those risk factors, among others, as biological, environmental, and lifestyle risks.⁵ Lifestyle risk closely pertained to the progress of technology and information, particularly in Internet use, which was currently dominated by the 15–19 age group.⁶ The existence of the Internet, apart from providing positive impacts, such as ease in searching for information as well as social connection and entertainment facilities, is also becoming a strategic means of spreading negative content, such as pornography.⁷ The results of pornography addiction screening test in SMP (Junior High School) and SMA (Senior High School) students in Jakarta and Banten showed that as much as 94.5% of students had previous exposure to pornography at degree 1, 3.7% exposed at degree 2, and 0.1% exposed at degree 3.⁸

Continuous pornography exposure might lead to addiction.⁹ Pornography even became a type of narcotics in the new millennium, the impact of which was more dangerous than that of addiction to drugs or NAPZA.¹⁰ Physically, pornography could damage five sections of the human brain, specifically the *Prefrontal Cortex* (PFC), responsible for the cognition center and behavior control, which only matures at the age of 20.¹¹ Psychologically, pornography might influence adolescents' view of their sexual behavior. The results of a study in Nigeria concluded that respondents who frequently accessed pornographic sites on the Internet had a higher *multiple sexual partner* experience than those who rarely accessed sexual content on the Internet.⁷ It was in line with a study in Indonesia which declared that adolescents exposed to pornography had risky sexual behavior 12.2 times higher than those who were not.¹²

Various impacts of pornography and risky sexual behavior in

Significance for public health

The current generation of adolescence is the population with the highest internet access, which is at risk of being exposed to pornography more easily. Exposure to pornography can have a negative influence on adolescent development. Adolescents who are synonymous with trial and error behavior often practice what they see from pornographic content to fulfill their curiosity. It can lead adolescents to risky sexual behavior and increased reproductive health problems such as early pregnancy rates, illegal abortions, STIs, and HIV, currently dominated by adolescence. The impact of exposure to pornography will be a domino effect that will hamper development and increase the state's burden. This research can be a reference material for the public, educational institutions, and the government further to optimize pornography addiction programs and adolescent reproductive health.

adolescents could weaken the condition of this nation's next generation. Currently, the effort to prevent pornographic addiction screening was being developed by the government, but the implementation was still not performed comprehensively in Indonesia's territory. Accordingly, the aimed of this study did not only analyze the description of a historical first-time pornographic exposure and the levels of pornographic addiction but also examined the relationship between both variables and risky sexual behavior. Thus, apart from offering useful information for the government of the Karawang Regency in relation to the results of pornographic addiction screening, this study can also serve as a reference for various parties in handling risky sexual behavior issues in adolescents viewed from one of the causes, *i.e.*, pornography.

Design and Methods

This study applied an observational analytic study design with a *cross-sectional approach*. The sampling of data was made online on 394 Senior High School students of grades X and XI reaching the age of 14–19 years old from 5 schools in Karawang Regency via *stratified random sampling technique*. The stratification process was based on the proportion between students in grades X and XI of each school compared to the total number of samples required, then a simple random sampling was applied in each stratum in order to select a random sample of each schools. The study was carried out from June 01 until June 30, 2020.

Ethical approvals were obtained from the Ethics Committee of the Faculty of Nursing Universitas Indonesia with reference number SK-210/UN2.F12.D1.2.1/ETIK 2020. A written consent form was filled in by each one of the respondents and they were informed that all the information was confidential and would be used for research purposes only.

Questionnaire development and validation

The degree of pornographic exposure was measured using an instrument for early detection of pornography addiction adapted from the *Youth Pornography Addiction Screening Test Indonesia* (YPAST-Ina) developed by the Ministry of education and culture in 2017. It comprises two sections, namely, the historical first-time exposure (item 1-6) and the degree of pornographic addiction (item 7-26).⁸ The assessment of the instrument starts on items 7-26 with a likert scale of 0,1,2,3. The results of the recapitulation of scores were divided into several categories, namely not exposed (score 0), exposed to degree 1 (score 1-37), exposed to degree 2 (score 38-74), and exposed to degree 3 (75-111).

The risky sexual behavior in adolescents was measured by using the *Sexual Risk Survey* questionnaire,¹³ which has been modified to suit the context of adolescents in Indonesia; it now contains 19 standardized questions with *favorable* (items 1-8) and *non-favorable questions* (items 9-19).¹⁴ Every *favorable* item provides alternative answers on a likert scale of 1-strongly disagree, to 5-strongly agree. Measurement results using Cut of Point (Median = 65). A total score <65 indicates high-risk sexual behavior.

The results of validity and reliability tests on 30 students for both these questionnaires showed a good validity and reliability score. The degree of pornographic exposure had five invalid questionnaire items with Cronbach's alpha of 0.915. Meanwhile, the risky sexual behavior questionnaire had five invalid questionnaire items with Cronbach's alpha of 0.798. These invalid questionnaire items were then modified by the researchers.

Statistical analysis

The data obtain from the URL link of Google Survey Form were maintained in MS Excel and analysis was carried out using SPSS version 23. Univariate and bivariate analyses were used to examine the data. Univariate analysis was performed by applying frequency and percentage distribution. Meanwhile, the bivariate analysis applied the Chi-Square test to analyze the relationship between historical pornographic exposure and risky sexual behavior; it also used the Kendall's tau test to analyze the relationship between the degree of pornographic addiction and risky sexual behavior. The determined degree of reliability (CI) was 95%.

Results

The univariate analysis about the distribution of respondent's characteristic data shows that the majority of students are at the middle adolescent development stage (94.9%), female gender (72.6%) and there are in grades XI (62.9%). Of the total all students, as much as 78.7% already had a date, having a date for the first time at age 10-14 years (40.1%) and the frequency of dating the most, namely more than once (50.5%). More than half of the students (56.9%) had high-risk sexual behaviors with somewhat bad domain characteristics of knowledge, attitude, and activity, as shown in Table 1.

The results of the univariate analysis in relation to the degree of pornographic exposure, the majority of students were exposed to pornography for the first time at the age of 12–15 years old (83.5%) with photography (23.6%) as the most materials seen and the social media as the media most frequently used (35.3%). Most of the students were exposed to pornography at home for the first time (43.1%) while being alone (49.2%), with "accidental" as the most mentioned reason (64.7%). Meanwhile, the degree of pornographic addiction in students is described as follows: 95.4% of students had previous exposure at degree 1, at degree 2 at 0.8%, and only 3.8% had no exposure to pornography.

Bivariate analysis between the historical first-time pornographic exposure and risky sexual behavior in Table 2 found a significant relationship between the historical first-time pornographic exposure covering age, material, and the reasons for seeing pornography and risky sexual behaviour.

Meanwhile, Table 3 shows the bivariate analysis between the degree of pornographic addiction and risky sexual behavior in students. Based on the results of the bivariate analysis in Table 3, the bivariate analysis between the degree of pornographic addiction and risky sexual behavior in students shows a significant relation-

Table 1. Distribution of sexual behavior data based on knowledge, attitude, and activity domains (N=394).

Risky Sexual Behavior Domain	Frequency (n)	Percentage (%)
Knowledge		
Good	184	46.7
Not good	210	53.3
Attitude		
Positive	163	41.4
Negative	231	58.6
Activity		
Not risky	135	34.3
Risky	259	65.7

ship of positive direction could be concluded to exist between the degree of pornographic addiction and risky sexual behavior in student, which meant that the higher the degree of pornographic exposure, the higher the risky sexual behavior in students.

Discussion

The growing pornographic issues became a serious problem requiring attention because the pornographic phenomenon is similar to an iceberg, which could actually damage the morale of the nation's next generation. Pornography is any media containing the elements of nudity and sexual activities that induce sexual desire.¹⁵ The progress of the digital world, particularly the Internet, also contributed to the increasingly easier access to pornographic contents by adolescents (15–24 years old) as the most populated users of the Internet in Indonesia.⁶

The description of those ages exposed to pornography for the first time showed that the majority of students were exposed to pornography at the age of 12–15 years old. This age group's exposure to pornography for the first time had a significant relationship with risky sexual behavior in students, in which the exposed age of <12 years old had more high-risk sexual behavior. The pornographic exposure at young ages did not only introduce children to sexual behavior but also enhance the behavior, which occurred due to the pleasure experienced when viewing as a sexual behavior.¹⁶ Continuous pornographic exposure could form an addictive effect that ends with an *act out phase* or practicing what is seen in pornographic content.⁹ This finding means that the earlier a student is exposed to pornography, the higher the possibility the student would display a risky sexual behavior. This finding is in line with a longitudinal study in Taiwan, which concluded that the younger an individual is exposed to sexually (pornography) contained media, the earlier the individuals would engage in sexual debut, unsafe sex, and have *multiple sexual partners*.¹⁷

Photographs became the form of pornographic materials mostly accessed for the first time by students. It was different from the results of a previous study, which found that video was the pornographic material mostly seen for the first time by students in DKI Jakarta and Banten.⁸ This condition was affected by the several pop ups or advertisements on the Internet taking the form of incident photographs or figures that suddenly show up, which trigger students' curiosity to seek further information on pornography.¹⁸ The results of the bivariate analysis showed that the students viewing pornographic material in the form of video for the first time had a higher risky sexual behavior. The video became an information transmission media, which involved psychic/mental activities, interactive learning, and involving many senses; therefore, it was nearly similar to a direct learning experience or an *enactive experience*.¹⁹ The strong effect of pornographic material in the form of videos potentially influences adolescents' perspective toward their

sexual behaviors. According to research, as many as 30% of students with a high-risk sexual behavior showed one of the characteristics such as funneling their sexual drive through pornographic videos/movies.²⁰

The reason for watching pornography could determine the extent of pornographic exposure's influence on the occurrence of addiction and deviant sexual behavior. In this study, although the

Table 2. Results of Chi-Square test analysis between the historical first-time pornographic exposure and risky sexual behavior in students (N=394).

Pornography exposure history	Risky sexual behavior		P
	Low (%)	High (%)	
Age			0.013
<12 years old	29.2	70.8	
12–15 years old	45.9	54.1	
Materials			0.041
Painting	50	50	
Drawing	47.1	52.9	
Statue	0	100	
Photograph	36.3	63.4	
Video	31.5	68.5	
Comics	50	50	
Reading	51.9	48.1	
Games	54.5	45.5	
Never	56.3	43.8	
Reasons			0.017
Accidental	46.7	53.3	
Curious	29.6	70.4	
Persuasion	32.6	67.4	
By force	27.3	72.7	
Never	60.7	39.3	
Source/media			0.162
Printed media	48.4	51.6	
Internet sites	41.4	58.6	
Social media	41.0	59	
Electronic media	29.6	70.4	
Never	12.4	41.7	
Place			0.095
Home	47.1	52.9	
Warnet	35.7	64.3	
School	54.8	45.2	
Others	37.1	62.9	
Partner			0.400
Family member	33.3	66.7	
Peer fellow	40.8	59.2	
Adult people	30.8	69.2	
Alone	42.3	57.7	
Never	59.4	40.6	
Others	50.0	50.0	

Table 3. Results of Kendall's tau test analysis between the degree of pornographic addiction and risky sexual behavior in students (N=394).

Degree of pornographic addiction	Risky sexual behavior		Total (%)	P	r
	Low (%)	High (%)			
Not exposed	3.6	0.2	3.8	0.000	0.213
Degree 1	41.5	58.5	95.4		
Degree 2	0	0.8	0.8		

reason for viewing pornography was mostly accidental, the students who viewed pornography for the first time due to curiosity (deliberately) showed a higher proportion of risky sexual behavior. A change in the motive of watching pornography from accidental at first to becoming purposeful could happen due to continuous exposure. In addition, adolescent's internal factors, such as curiosity and an interest to view pornography, were also dominant factors which affected the habit of watching pornography in adolescents.²¹ The more frequent the pornography viewing, the higher the level of addiction, which was an indication of a riskier deviant sexual behavior.⁸

Social media became a media mostly used by students to access pornography, which relates to the increasingly more significant *accessibility*, *affordability*, *anonymity*, and *aggressiveness elements*.¹⁰ However, students who use electronic media to access pornographic media exhibit more high-risk sexual behavior. This condition is in line with a study conducted by Yutifa *et al.* in 2015, which concluded that the respondents who were exposed to pornography through electronic media had the potential to display a high-risk sexual behavior 3.06 times more than those unexposed to electronic media.²² Notwithstanding the above, the results of the bivariate test showed that no meaningful relationship existed between the source of pornographic media and risky sexual behavior in students. A study in the USA explained that the use of pornographic media was also affected by age, in which an older adolescent commonly accesses pornography through the Internet, whereas a younger adolescent gains access to pornography through traditional media such as printed or electronic media.²³

Home became the mostly mentioned location used by students to access pornography for the first time. It pertains to digital devices, which were used more at home, the lack of leisure time utilization while at home, and the higher element of freedom as well as secrecy without adequate supervision by parents.²¹ However, the results of the bivariate analysis showed that no significant difference existed in the proportion between students' sexual behavior and the locations of accessing pornography. Based on a cross-tabulation result, most of the students who accessed pornography at Warnets had high-risk sexual behavior. It was because Warnet (especially those with closed or semi-closed booths) became one of the places frequently used by adolescents to access pornography and to do activities, which led to free sex.²⁴

The majority of students admitted that they watched pornography alone. It differed from the results of a study conducted by Maisyaa and Masitoh in 2019, which found that more than half of students in Jakarta and Banten watched pornography together with their peers.⁸ Adolescents at the age of 15 years old would usually watch pornography together with their peers, while adolescents at the age of 18 years old or more would watch pornography with their partners.²⁵

In this study, more than one-third of students watched pornography together with adults, and 69.2% of them had high-risk sexual behavior. One of the external factors which drove adolescents to watch pornographic materials was an environmental influence.²¹ This finding pertained to the growth and development process of an adolescent at the self-searching phase, learning life from the surrounding environment, and frequently imitating those actions of adults. This result was contradictory to the results of a study by Dewi in 2012, which concluded that the peers' influence was potentially 2.99 times higher, increasing the occurrence of risky sexual behavior in adolescents.¹² Such difference confirmed the results of the bivariate analysis, which showed that no meaningful relationship existed between the partner of watching pornography and risky sexual behavior in students.

An illustration of pornographic addiction degree showed that

the majority of students had previous exposure to pornography at degree 1 (95.4%), 0.8% of students were exposed to pornography at degree 2, and only 3.8% of students were not exposed to pornography. Students were indicated as having been exposed to degree 1 if they earlier saw/accessed a pornographic content either by purpose or accidentally. Students who were exposed to degree 2 showed a characteristic of seeing/accessing pornographic content several times and wanted to repeat it. In the meantime, students who were exposed to degree 3 meant that they earlier suffered a pornographic addiction with an increasingly stronger intensity, and such degree of pornographic exposure had disturbed their activities and caused a *craving effect*.⁸ The higher the level of pornographic exposure, the higher the risk of suffering an addiction.

The pornographic addiction process occurred at several phases, *i.e.*, 1) introduction to pornographic phase either by purpose or accidentally; 2) *addiction* phase or addicted to seeing pornographic materials; 3) *escalation phase*, *i.e.*, the emergence of a feeling of dissatisfaction toward any pornographic materials already seen and thus starting to search for a higher level of pornography; 4) *desensitization phase*, *i.e.*, the feeling of boredom toward any pornographic materials and the loss of sensitivity on any pornographic content and sexual violence seen; 5) *act out phase*, *i.e.*, seeking for sexual satisfaction in the real world by practicing what was seen in the pornographic contents.⁹

The bivariate analysis between the degree of pornographic addiction and risky sexual behavior concluded that the higher the degree of pornographic addiction, the higher the risky sexual behavior in students. Pornography could change the adolescent's views regarding sexual activities.¹⁵ Based on the results of a survey conducted on 1,765 SMP and SMA students in Jakarta in 2017, 76.1% of students felt that something was wrong with their mind for having watched pornography. In addition, the masturbation activity in students who consumed pornography also increased in line with the increased frequency of watching pornography.²⁶

The above results of the survey were confirmed by a study, which concluded that the frequency of pornographic exposure often related to sexual dissatisfaction, a higher preference for sexual intercourses, and the increased frequency of masturbation.²⁷ Another study also stated that adolescents exposed to pornography tended to be more active sexually at an early age, had more *multiple partners*, faced an increased risk of free and risky sex, and consumed alcohol or NAPZA.²⁸ In conclusions, the majority of students had previous exposure to pornography, and more than half of students exhibited high-risk sexual behaviors. The results of the bivariate test analysis showed a significant relationship between the historical first-time pornographic exposure covering age, material, and the reason for accessing pornography and risky sexual behavior. In addition, the higher the degree of pornographic addiction, the higher the risky sexual behavior in students. The results obtained from this study can serve as additional information for the community nursing service to develop various promotive, preventive, curative, and rehabilitative efforts that correspond to the adolescents' conditions. The health and educational services are advised to improve the effectiveness of PKPR, *Peer counselor*, GenRe, and healthy school-based pornographic addiction screening programs. In addition, various limitations in the study especially in sample selection (majority of the respondents were from female and middle adolescent), instrumentation, and variables studied are expected to serve as inputs for the next studies to review further the influence of pornographic exposure degree to various aspects of adolescent's health and on *evidence-based practice* that can be conducted to overcome pornographic addiction problem as well as risky sexual behavior in adolescence.

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References

1. National Population and Family Planning Board (BKKBN), Statistics Indonesia (BPS), Ministry of Health Republic of Indonesia, ICF. Indonesia demographic and health survey 2017. Jakarta: BKKBN, BPS, Kemenkes RI, ICF. 2018. Available from: <https://dhsprogram.com/pubs/pdf/FR342/FR342.pdf>
2. Ministry of Health Research, Development Agency. [Perilaku berisiko kesehatan pada pelajar SMP dan SMA di Indonesia (Public Health Efforts. Health risk behavior among junior high and high school students in Indonesia)].[in Indonesian]. Jakarta: Ministry of Health Research and Development Agency, Republic of Indonesia. Available from: http://www.who.int/ncds/surveillance/gshs/GSHS_2015_Indonesia_Report_Bahasa.pdf?ua=1
3. World Health Organization. Sexually transmitted infections (STIs). Geneva: World Health Organization. 2019. Available from: [https://www.who.int/news-room/fact-sheets/detail/sexually-transmitted-infections-\(stis\)](https://www.who.int/news-room/fact-sheets/detail/sexually-transmitted-infections-(stis))
4. Center for Data and Information of the Ministry of Health, Republic of Indonesia. [Infodatin situasi umum HIV/AIDS dan tes HIV (Infodatin HIV/AIDS general situation and HIV testing. Jakarta: Center for Data and Information of the Indonesian Ministry of Health)].[in Indonesian]. Jakarta: Center for Data and Information of the Ministry of Health. 2018. Available from: <https://pusdatin.kemkes.go.id/article/view/19042200004/situasi-umum-hiv-aids-dan-tes-hiv.html>
5. Stanhope M, Lancaster J. Public health nursing: population-centered health care in the community. Elsevier; 2016.
6. Indonesian Internet Service Providers Association. [Laporan survei penetrasi & profil perilaku pengguna internet Indonesia 2018 (Penetration survey report & behavior profile of Indonesian internet users 2018)].[in Indonesian]. Jakarta: Indonesian Internet Service Providers Association. 2019. Available from: <https://apjii.or.id/survei2018s>
7. Asekun-Olarinmoye OS, Asekun-Olarinmoye EO, Adebimpe WO, Omisore AG. Effect of mass media and internet on sexual behavior of undergraduates in Osogbo Metropolis, Southwestern Nigeria. *Adolesc Health Med Ther* 2014;5:15-23.
8. Maisya IB, Masitoh S. [Derajat keterpaparan konten pornografi pada siswa SMP dan SMA di DKI Jakarta dan Banten Indonesia (Degree of exposure to pornographic content in junior high and high school students in DKI Jakarta and Banten Indonesia)].[Article in Indonesian]. *Jurnal Kesehatan Reproduksi* 2019;10:117-26.
9. Astuti R. [Skrining tingkat adiksi pornografi pornografi siswa SMP dan SMA tahun 2017 (Screening for junior high and high school students' pornography addiction levels in 2017)].[Article in Indonesian]. *Jurnal Penelitian Kebijakan Pendidikan* 2018;11:83-98.
10. Kastlemen MB. The drug of new millennium: the brain science behind internet pornography use. Powerthink Publishing; 2007.
11. Reichelt AC. Adolescent maturational transitions in the prefrontal cortex and dopamine signaling as a risk factor for the development of obesity and high fat/high sugar diet induced cognitive deficits. *Front Behav Neurosci* 2016;10:189.
12. Dewi AP. [Hubungan karakteristik remaja, peran teman sebaya dan paparan pornografi dengan perilaku seksual remaja di Kelurahan Pasir Gunung Selatan Depok (The relationship between adolescent characteristics, peer roles and exposure to pornography with adolescent sexual behavior in Pasir Gunung Selatan Village, Depok)].[Thesis in Indonesian]. Depok: Universitas Indonesia; 2012.
13. Turchik JA, Garske JP. Measurement of sexual risk taking among college students. *Arch Sex Behav* 2009;38:936-48.
14. Simak VF. [Hubungan antara kecerdasan spiritual dengan perilaku seksual berisiko pada remaja di SMP Kelurahan Curug Kecamatan Cimanggis Depok (The relationship between spiritual intelligence and risky sexual behavior in adolescents in SMP, Curug Village, Cimanggis Depo District)].[Thesis in Indonesian]. Depok: Universitas Indonesia; 2015.

15. Zacharias J. Pornography: a public health issues: a review of the literature and recommendations. Ontario: House of Commons Canada. 2017. Available from: <https://www.ourcommons.ca/Content/Committee/421/HESA/Brief/BR8786201/br-external/ZachariasJanet-e.pdf>
16. Dillard R, Maguire-Jack K, Showalter K, et al. Abuse disclosures of youth with problem sexualized behaviors and trauma symptomology. *Child Abuse Neglect* 2019;88:201-11.
17. Lin WH, Liu CH, Yi CC. Exposure to sexually explicit media in early adolescence is related to risky sexual behavior in emerging adulthood. *PLoS One* 2020;15:e0230242.
18. Putri MW. Hubungan antara perhatian siswa terhadap iklan pop-up konten pornografi di internet dengan minat untuk mencari informasi lebih dalam tentang pornografi dari sumber lain (survey terhadap siswa 3 SMP Dharma Karya) (The relationship between students' attention to pornographic pop-up advertisements on the internet with their interest in seeking deeper information about pornography from other sources (survey of students of 3 SMP Dharma Karya)). [Thesis in Indonesian]. Jakarta: Universitas Pembangunan Nasional "Veteran" Jakarta; 2016.
19. Simarmata J. [Elemen-elemen multimedia untuk pembelajaran (Multimedia elements for learning)]. [Book in Indonesian]. Jakarta: Yayasan Kita Menulis; 2020.
20. Santosa H, Yusuf S, Ilfiandra I. [KRR sebagai program pengembangan perilaku seksual sehat remaja pada revolusi industri 4.0. (KRR as a youth healthy sexual behavior development program in the 4.0 industrial revolution)]. [Article in Indonesian]. *Indonesian Journal of Educational Counseling* 2019;3:233-42.
21. Novita E. [Faktor-faktor yang mempengaruhi kebiasaan menonton film porno pada remaja (Factors that influence the habit of watching pornographic films in adolescents)]. [Article in Indonesian]. *Anthropos: Jurnal Antropologi Sosial dan Budaya* 2018;4:31-44.
22. Yutifa H, Dewi PA, Misrawati. [Hubungan paparan pornografi melalui media elektronik terhadap perilaku seksual remaja (The relationship between exposure to pornography through electronic media on teenage sexual behavior)]. [Article in Indonesian]. *Jurnal Online Mahasiswa* 2016;2:1141-8.
23. Ybarra ML, Mitchell KJ. Exposure to internet pornography among children and adolescents: a national survey. *Cyberpsychol Behav* 2005;8:473-86.
24. Priyanty S. [Dampak pornografi dan seks bebas terhadap prestasi akademik (The impact of pornography and free sex on academic achievement)]. [in Indonesian]. Jakarta: Balitbang Law and Human Rights. 2016. Available from: <https://www.balitbangham.go.id/detailpost/dampak-pornografi-dan-seks-bebas-terhadap-prestasi-akademik>
25. Wallmyr G, Welin C. Young people, pornography, and sexuality: sources and attitudes. *J Sch Nurs* 2006;22:290-5.
26. Mardhatillah A. Youth pornography exposure: addiction screening test and treatment recommendation. *Int J Sci Res Publ* 2017;7:10-4.
27. Miller DJ, McBain KA, Li WW, Raggat PTF. Pornography, preference for porn-like sex, masturbation, and men's sexual and relation satisfaction. *Pers Relationship* 2019;26:93-113.
28. Harkness EL, Mullan B, Blanszczyński A. Association between pornography use and sexual risk behaviors in adult consumers: a systematic review. *Cyberpsychol Behav* 2015;18:59-71.