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ISSN 2033-8894

Vol. 11 No. 1, March 2022

INTERNATIONAL JOURNAL OF
**PUBLIC HEALTH
SCIENCE**

www.ijphs.com

UJPHS Vol. 11 No. 1, March 2022



International Journal of
Public Health Science

ijphs

International Journal of
Public Health Science

Aims and scope

International Journal of Public Health Science (IJPHS) p-ISSN: 2252-8806, e-ISSN: 2620-4126 is an interdisciplinary journal that publishes material on all aspects of public health science. This journal is published by **Intelektual Pustaka Media Utama (IPMU)** *in collaboration with* **Institute of Advanced Engineering and Science (IAES)**. The IJPHS provides the ideal platform for the discussion of more sophisticated public health research and practice for authors and readers worldwide. The priorities are originality and excellence. The journal welcomes high-impact articles on emerging public health science that covers (but not limited) to epidemiology, biostatistics, nutrition, family health, infectious diseases, health services research, gerontology, child health, adolescent health, behavioral medicine, rural health, chronic diseases, health promotion, evaluation and intervention, public health policy and management, health economics, occupational health and environmental health.

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Effects of social media exposure on adolescent sexual attitudes and behavior: A systematic review

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Article Info

Article history:

Received Jan 8, 2021

Revised Mar 2, 2021

Accepted Mar 11, 2021

Keywords:

Adolescence

Sexual attitudes and behaviors

Social media exposure

ABSTRACT

Aside from the role of family and peer groups, social media is also one of the major agents of sexual socialization in adolescents. Since it is relatively easy to connect to the internet these days, these people now have a wider access to pornographic content that could trigger them to engage in risky sexual behaviors. This review aimed to provide an analysis of the influence of social media exposure on adolescent's sexual attitudes and behavior as well as describe limitations of the studies being reviewed. This study was based on several electronic databases namely Google Scholar, Science Direct, Proquest Health and Medical Complete, Proquest Science and Psychology Journals, and PubMed, from 2011 to 2018, which revealed a total of 1351 research articles, with only 21 articles meeting the inclusion criteria and reviews. The result showed higher percentage of studies under reviewed mention the effect of social media exposure are related to sexual attitudes, behaviors, initiation and risks, as well as parental monitoring, academic achievement and gender. Conclusively, it is recommended to educate adolescents about the negative risks of social media exposure on sexual attitudes and behavior, as well as the importance of the role of parental monitoring of restrictions on sexualized media access.

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1. INTRODUCTION

Adolescence is a stage of human development that causes significant changes in the physical and psychological wellbeing of every male or female individual in society. Risky behaviors such as smoking, substance abuse, alcohol use and illicit sexual interactions carried out by adolescents may have a life-long effect on their entire health and social status [1]-[5]. Since there is a rapid increase in the number of internet users, there is a possibility that these adolescents might engage in online events that could increase the likelihood of them involving themselves in sexual relations with the opposite sex [6]-[9].

However, media and internet access allow adolescents to obtain information about their sexuality and that of the people around them. In addition, the internet can also be used by them to find out various informational content about a wide range of topics and subjects that they may or may not be interested in. They open internet sites that offer pornography because they are driven by their curiosity to know certain

things about the sexuality of the opposite sex, or because of coincidental factors that may cause them to open these sites [10]-[12]. The male adolescents have been known to open more pornography sites as compared to their female counterparts [13],[14]. Furthermore, websites containing these kind of content attracts their attention because the majority of the media offer videos and images that increases their interest and need to try out what they have seen in the real world [15]-[17].

They also make use of television to get information about sexual behaviors, which may cause them to take part in various sexual activities [18], [19]. Moreover, adolescents also use online communication to explore their sexual desires, where the habits of these individuals can have a negative impact on their sexual activities and health such as unprotected sex with casual partner [20], [21]. Hence, the role of parents becomes very important when trying to limit adolescents' access to the internet or television media [22], [23]. This paper is required to review journals related to the influence of social media exposure on the sexual attitudes and behavior of adolescents since the increase usage of social media as a means of teen sexualization nowadays. Moreover, it also aims to provide useful suggestions for future studies, since this paper explore more previous studies' limitation.

2. RESEARCH METHOD

2.1. Search strategy

Several electronic databases were searched for relevant publications, including; Google Scholar, Science Direct, Proquest Health and Medical Complete, Proquest Science and Psychology Journals, and PubMed, from 2010 - 2018. Various combination of keywords were used in the database search, namely "media," "pornography," "sexual content," "social media," "sexual explicit material," "adolescence," "teenage," "youth," "young adult," "quantitative study."

2.2. Selection criteria

The inclusion criterias used were (i) The research article is a complete text and has passed through peer-reviewed processes, (ii) The research population are adolescents or young adults, (iii) Topics were based on research on the effect of social media exposure on adolescent sexual attitudes and behaviors, (iv) Quantitative studies. The articles that were excluded from the selection were review articles.

2.3. Data extraction

The studies obtained from several electronic databases revealed 1351 research articles. After removing duplicates, 985 articles were retained and were also reviewed based on the fulltext of the article. Finally, 21 articles met the inclusion criterias and they were reviewed according to the author, year of publication, study design, population, sample size, kind of media exposure, the effects as well as study outcomes. The preferred reporting items for systematic reviews methodology (PRISMA) was applied, and below is the PRISMA flow chart of this current study as shown in Figure 1 [24].

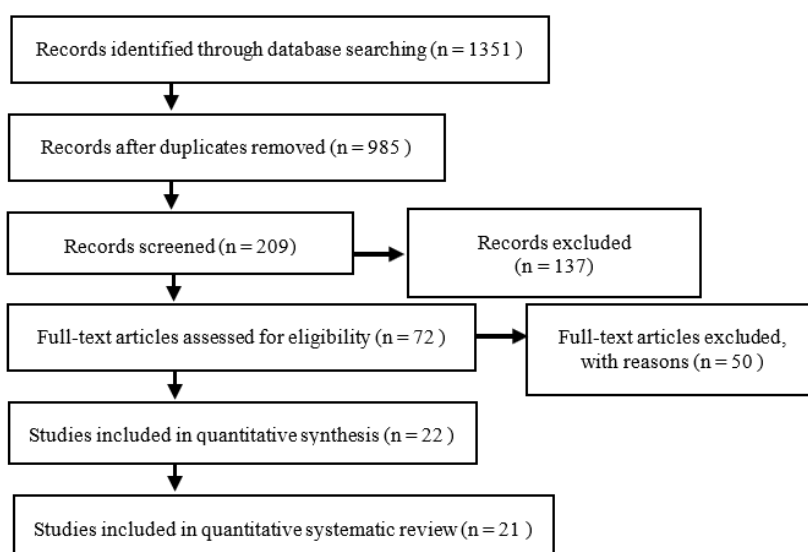


Figure 1. PRISMA Flow diagram: Identified studies reviewing the effect of social media exposure on the adolescent's sexual attitudes and behavior

3. RESULTS AND DISCUSSION

The 21 articles reviewed which met the inclusion criteria were published in 2011 with the most recent paper being published in 2018. From the studies analysed, three research projects were conducted in Sweden, five were carried out in Belgium, four were done at Dutch and the other papers were carried out in China, India, Europe, United States, Croatia, Spain and Hispanic. Furthermore, nine projects had a cross-sectional design, two had a two-wave design, three projects had a three-wave design, one study had a four-wave design, and the other projects used survey methods for both online and room-based classes. In terms of the type of pornographic media used by adolescents, seven projects used sexual explicit media (SEM), four projects used television, three projects used sexual explicit web, three projects used social networking sites (Facebook profiles), two projects used sexting and one project made use of magazines. Other reviewed studies are summarized in Table 1.

Table 1. Details of the individual projects in this review

| Author (s)/ year | Study design | Study population | Sample size | Type of social media exposure | Effect of social media exposure | Study outcomes |
|------------------------------------|-----------------------|--|---|---|---|---|
| Svedin, Akerman and Priebe/ 2011 | Cross sectional | Swedish 3rd year high school students (males) | Frequent users group=200 Reference group=1661 | Internet Cable- or satellite-TV | Sexual attitudes and behavior Sexual initiation | Pornography has inspired teenagers to try what they have seen (p<0.001). Regular users registered sexual debut more frequently before their age 15 years old (p<0.001) |
| Vandenbosch and Eggermont/ 2012a | Two-wave panel study | Belgium adolescents age 12-16 years old | 639 students (373 boys and 266 girls) | Sexually explicit websites | Sexual initiation | Adolescents in the early pubertal stage (6%) were less likely than adolescents in the advanced pubertal stage to have initiated sexual intercourse (13.7%) (p<0.001). |
| Vandenbosch and Eggermont/ 2012b | A quantitative survey | Belgium adolescents | 1,026 respondents (boys mean age=16.41, girls mean age=16.23) | Television | Sexual socialization Gender | The higher the level of television viewing, the more boys adopted a sexual leisure mentality (p<0.05) and agreed with assumptions regarding the sexual desires of males (p<0.01). |
| Lou <i>et al.</i> / 2012 | Cross sectional | Adolescents and young adults from Hanoi, Shanghai and Taipei | 16,554 unmarried respondents (male and female) | Mass media (the internet and traditional media), pornographic video, Western/ Asian movies/ videos. | Sexual knowledge, attitudes and behaviors | Half of respondents reported learning about sex from the internet in three cities (45%-84%); the highest percentage was in Taipei. In Taipei, sex-related comprehension and sex-related conduct ratings were the largest. |
| Stulhofer, Busko and Schmidt/ 2012 | Online questionnaire | Croatian students | 544 respondents (male and female) | Internet-based pornography | Recreational sex Relationship intimacy | The mean age of sexual debut was 17.5 (SD=2.11). Most participants mentioned being in a relationship at the moment (69.3%). |
| Vandenbosch and Eggermont/ 2013 | A quantitative survey | Belgium adolescent boys | 911 adolescent boys | Sexualizing media | Body Surveillance | The mean level of significance attached to attributes based on competence was significantly higher than attributes based on appearance p<0.001. |
| Kumar <i>et al.</i> / 2013 | Cross sectional study | Indian students class IX–XII. | 586 adolescent boys and girls. | Television Internet | Sexual contact Academic achievement | There was a strong positive correlation between sexual interaction and average academic score and unsupervised use of the internet among boys. |

| | | | | | | |
|-----------------------------------|---------------------------------------|--|--|--|---|--|
| Vandenbosch and Eggermont/ 2014 | A three-wave panel study | Flanders' (the Dutch-speaking part of Belgium) adolescents | 1041 students (589 boys and 452 girls) | Television | Self-objectification Gendered sexual roles | The model showed that the recognition of gendered sexual roles at wave 3 was not predicted by viewing sexualized sitcoms at wave 1 ($p > 0.05$). |
| Ybarra and Mitchell/ 2014 | Cross sectional study (Online survey) | United States's adolescents | 3715 youth | Sexting | Sexual risk behavior | Compared to 13% of males who did not, 51% of male teenagers who did sexting had vaginal sex. |
| Livingstone and Gorzig/ 2014 | Cross sectional | European children and adolescent aged 9-16 years. | 18,709 boys and girls | Sexting | Sexual risk and harm | Older age, higher psychological problems, greater thrill seeking and greater risky online and offline activity are the key predictors of the likelihood of seeing or receiving sexual messages online. |
| Mattebo <i>et al.</i> / 2014 | A population-based classroom survey | Sweden high school students | 477 boys and 400 girls | Pornography media | Sexual abuse | A greater proportion of girls (15%) have witnessed sexual harassment than boys (6%). |
| Ouytsel, Ponnet and Walrave/ 2014 | Cross sectional survey | Belgium secondary school students | 131 boys and 198 girls | Pornography and music videos | Sexting behavior | Sexting habits were closely correlated with the consumption of pornography; for age, gender, school track and internet usage while regulating. |
| Doornwaard. <i>et al.</i> / 2014 | Survey | Dutch adolescents | 104 of adolescents' Facebook profiles | Facebook profiles | Sexual identity | Sexual displayers were more likely boys and more sexually interested. |
| van Oosten, Peter and Boot/ 2015 | A two-wave panel study | Dutch adolescents | 1,636 participants in wave 1 and 1586 participants in wave 2 | Social network sites | Sexual attitudes and behavior | Six months later, exposure to attractive online self-presentations of others expected improvements in the experience of teenagers with oral sex and intercourse, but did not affect their sexual attitudes. |
| Vandenbosch and Eggermont/ 2015 | A three-wave panel study | Belgium students | 1,504 students in wave 1 1,426 students in wave 2 1,433 students in wave 3 | Magazines | Sexual behaviors Self-objectification | The reading of pornographic magazines was connected to the internalization of the values of beauty and the appreciation of appearance over competence (wave 1). For intimate contact, no significant connection was noted. |
| Doorwaard. <i>et al.</i> / 2015 | A four-wave longitudinal study | Dutch adolescents | 1,132 adolescents (52.7 % boys) | SEIM (Sexually Explicit Internet Material) | Sexual attitudes and behavior | Girls showed a similar trend of increases in sexual conduct experience, but their use of SEIM was consistently low and their endorsement of permissive sexual attitudes decreased over the study span of 18 months. |
| Sarabia and Estevez/ 2016 | An exploratory and descriptive study | Spain adolescents | 100 of adolescent Facebook profiles | Facebook profiles | Sexualized behaviors through social networks | For these types of behaviors, the findings showed gender disparities, and sexualized behaviors were reinforced by vulnerability factors. |

| | | | | | | |
|-------------------------------------|---|-------------------------------|--|---|--|--|
| Donevan and Mattebo/ 2017 | A cross sectional | Swedish adolescents boys | 371 boys | Pornography consumption | Sexual behaviors Sexual preoccupation | In a broader spectrum of sexual behaviors, regular participants were more likely to have participated. |
| Romo <i>et al.</i> / 2017 | A cross sectional study | Hispanic adolescents | 333 adolescents boys and girls | Social media use | Sexual risk Parental monitoring | There were equal levels of oral, vaginal and anal sexual activity recorded by male and female participants. 48.4 percent of participants reported full parental access to social networking site profiles. |
| Martyniuk and Stulhofer/ 2018 | Online survey and class room-based survey | Croatian high school students | Online survey n=372 Class room-based survey n=753 | Pornography use | Sexual permissiveness | Participants reported relatively low levels of permissiveness, but primarily teenage men used extensive pornography. |
| Daneback, Sevcikova and Jezek/ 2018 | A three-wave longitudinal study | Czech adolescents | 1,134 girls from 55 schools | Online sexual materials (images and videos) | Desensitization to sexual content | In terms of being less disturbed by the sexual stuff, respondents were desensitized. |

According to research, after watching pornography, male adolescents felt the need to try out what they had seen in real life, with the mean sexual age debut of the respondents at 17.5 years [25], [26]. Moreover, the study of Vandenbosch and Eggermont found out that the internalization of non-appearing ideals can be predicted by viewing sexualizing television [18]. A study of Croatia adolescents also discovered that in two cities, Zagreb and Rijeka, 22.9% and 27% of male adolescents' respectively, use pornography on a daily basis. Also, in Zagreb, there was a significant increase between sexual permissiveness and the use of pornography, but in Rijeka, a significant difference was only found in the initial and final scores of its use [27].

3.1. Sexual behaviors

Lou studied the media's contribution to the sexual knowledge, attitude and behavior of adolescents in three Asian cities and found that 45-84% of them learned about sexuality from the internet [10]. Furthermore, the study of pornography on sexual behavior in adolescents was also conducted by Mattebo and Tyden, where all male (96%) and female (54%) respondents used in the research had seen various media content containing pornography, and 15% of the females had experienced sexual abuse as compared to the male respondents [28]. In addition to viewing media content containing pornography, teens also use social networks to send and view Facebook profiles that contain various provocative images and videos. The study of Doornwaard also discovered that male adolescents were more likely to become sexual adventurers than their female counterparts [28]. Moreover, Sarabia also believed that social networking sites used by them to send and receive selfies in order to communicate with each other, can indeed promote sexualized behaviors, which is in line with the study results of van Oosten [29], [30]. Sexting behaviors are also profound among adolescents, since they are used to using digital technology through their smart phones [31], [32].

3.2. Sexual initiation

Study about pubertal status and sexual initiation in adolescents found out that at the advanced pubertal stage, these individuals will be four times more likely to initiate sexual activity than when they are in the early stages of puberty. In addition, teens who often view sexually explicit websites are five times more likely to initiate sexual activity than non-users [33], [34]. However, Matkovic concluded that there is a lack of significant relationship between sexually explicit material use and sexual debut on Croatian adolescents [35].

3.3. Sexual risks

Study about sexting believed that sexting had an impact that did not always provide a pleasant experience for adolescents. The risk of sexting increases significantly with age by at least 50% every year. The high desire to carry out sexting is related to the high desire to accept sexting messages twice per scale point. Online and offline activities are also associated with the 50% increase in their desire to receive sexual messages per single texting activity [36]. Indeed, Ybarra found that 51% of male participants who sent or

showed sexual images had sexual intercourse as compared to 13% of men who had never done sexting [37]. Yet, sexting behaviors stimulate sexual risks such as sexual coercion and unprotected vaginal and/ or oral sex [38], [39].

3.4. Parental monitoring

A study from Romo showed that 48.4% of female participants reported that their parents could access Facebook profiles because they became their friends or followers on Facebook. Another 54.6% of the participants also claimed that their parents always discussed the importance of the privacy settings of their Facebook profile. This result is inversely proportional to the results of the research carried out on the male participants. Romo's study also found no relationship between parental supervision of sexual media use by adolescents [40]. These study's result incongruent with Landry's finding related to parents' supervision where parent did a great portion as protective factor in decreasing adolescent sexual risks [41], [42].

3.4. Academic achievement

It is undeniable that when adolescents engaged in early sexual activity, the achievement of academic values will be affected [43], [44]. Kumar reported that there were no significant differences in test scores between female adolescents who had contact with sexual activities and those who had never engaged in any form of sexual relations. This result is inversely proportional when seen in the male participants. Consequently, it was also observed that the male counterparts who have had sexual activity, had test scores ranging from 51-70%, while scores above 90% were obtained in male adolescents who had never had any sexual interactions with the opposite sex. In terms of the relationship between academic achievement and preoccupations related to sexual activities, there was no significant relationship observed in the study [45].

3.5. Gender

Another study by Vandebosch showed that, if there is an increase in the rate at which male adolescents view television media, there would also be a concurrent increase in their tendency to develop recreational sexual attitudes. This hypothesis ultimately agrees with the stereotypical views associated with male sexual needs. However, these results found a relationship that was not too significant between their desire to see television and the various stereotypic views surrounding their sexual needs, as well as the absence of a relationship between maternal attachment and male sexuality stereotypes [46].

3.6. Limitation

In relation to the projects' limitations, this review include research designs, number of respondents, lost or inconsequential data, types of pornographic media and possible cultural factors that influenced its results from the papers reviewed. Some studies used a cross sectional design which made it very difficult to ascertain causality. Others used two-wave, three-wave and four-wave design panels with a six months time interval, which allowed for incompatibility in data analysis [18], [30], [33], [47]-[49]. In addition, some projects used both online and offline surveys which resulted in inconsistent data due to the possibility of dishonesty of respondents when answering questionnaires [46], [50]. In terms of the number of participants used in the longitudinal projects, some of them did not explain the reasons for participant drop-outs in each existing wave. The inequality of the number of participants in the project using longitudinal approaches and the unclear follow-up of participants who dropped out allowed inconsistent data to occur, which created a statistical bias.

Furthermore, several studies being reviewed also had various means of accessing pornographic media. Seven of them used the term pornography to refer to images and videos that contained sexual content. Four, used television media as a platform that provides pornographic content. Three, made use of various websites as a method of providing pornography online, while sexting and magazines were used by other projects simultaneously. In addition, four researches used the facebook profiles of the participants as the main source of pornography, during the entire survey. Other sections of the user's account were not accessible because of the limitations of the privacy settings set by the participants. Moreover, differences in definitions regarding sexually explicit materials makes it very difficult to understand the concept of pornographic media.

Regarding cultural factors, some projects were carried out in locations that held liberal or secular principles about pornography, where exposure to these kind of content is fairly free. This indirectly affected the response of teen participants, which consequently limited the results of the study to a particular location. Moreover, research conducted in locations that still adhere to gender stereotypes also produced data that affected statistical significance.

Using cross-sectional designs, this project was unable to determine the causality between the different research variables. Therefore, further studies that are related to media and social networking sites

containing pornographic content are expected to use longitudinal designs, a controlled time lag, and a designated number of male and female respondents. This will allow such study to be able to avoid any and all statistical bias. Moreover, a qualitative research will further explore youth experiences regarding the use of pornography and sexual behavior [36], [51].

In terms of the definition of sexualized media, research must clearly define or state the different media variables used, such that the data obtained can be valid and used as a baseline in the near future. In case the research location still holds traditional views related to pornography, an accurate sexual education must be carried out so as to avoid any negative impact of sexualized media on adolescent behaviors [10]. Subsequently, research must also consider the validity of data statistically, especially if it relates to a location that already has gender stereotypes associated with their sexual needs.

4. CONCLUSION

Conclusively, given the prevailing increase in the number of adolescents who use smart phones, systematic reviews related to the role of pornographic media and social networking sites on the sexual activity and behavior of adolescents need to be conducted. This will consequently provide relevant information on why they feel the need to access sexual content via various media. These sexual contents can either have a positive or negative effect on these adolescents by either improving the knowledge they have on the sexuality of the opposite sex or leading them to risky or bad sexual behaviors respectively. Hence, the limitations of previous projects should be used as a reference to examine further studies such that the implications of future researches can be generalized.

ACKNOWLEDGEMENTS

Authors would like to express our gratitude to the Dean of the Faculty of Public Health and Chair of the Public Health Doctoral Program at Universitas Airlangga-Surabaya Indonesia and the Dean of the Faculty of Medicine, University of Brawijaya-Malang Indonesia for the implementation of this study

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