

Risk Factors of Internet Gaming Addiction in Adolescent: A Literature Review

Yodi Mardian *, Sutanto Priyo Hastono **

* Biostatistic and Population Studies Department Faculty of Public Health Universitas Indonesia, A Building 2nd Floor Kampus Baru UI Depok 16424, Indonesia

** Biostatistic and Population Studies Department Faculty of Public Health Universitas Indonesia, A Building 2nd Floor Kampus Baru UI Depok 16424, Indonesia

DOI: 10.29322/IJSRP.9.07.2019.p9117

<http://dx.doi.org/10.29322/IJSRP.9.07.2019.p9117>

Abstract- Internet gaming addiction has received attention as a public health problem. Several studies have shown that internet game addiction adversely affects adolescents, such as anxiety disorders, depression, social disorders, mind problems, somatic complaints, rule-breaking behavior, aggressive behavior, academic problems, drug use and causing poor family relationships. This literature review aims to collect the results of the latest research related to risk factors for internet game addiction in adolescents. The results of the review literature are expected to be input into public health promotion and prevention programs, especially those related to game addiction. Literature search was conducted in three databases: PubMed, Scopus and Proquest with keywords: *cause, risk factor, adolescent, teenager, juvenile, youth, "online game", "online gaming", "internet gaming", "internet game" and addiction*. Merging keywords using boolean operators AND and OR. 13 articles were found that met the inclusion criteria. From the review results, it was concluded that addiction to internet games in adolescents can be caused by internal factors and also influenced by family factors, school environment and peers. Therefore, to prevent adolescents from being addicted to internet games, the role of parents and teachers needs to be improved.

Index Terms- Internet gaming disorder, internet gaming addiction, video game addiction, risk factors, teenagers

I. INTRODUCTION

Internet gaming addiction has received widespread attention as a public health problem that needs to be watched out. After the American Psychiatric Association (APA) included Internet gaming disorder in the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) in 2013, the latest WHO also included game disorder as one of the criteria for mental illness in International Classification of 11th revised Diseases (ICD-11). However, unlike the DSM-5, the game disruption in the ICD-11 does not only refer to online games but also offline games [1].

Conceptually, addiction can be defined as primary, chronic, neurobiological development and its manifestations are influenced by genetic, psychosocial, and environmental factors, which are characterized by impaired control or compulsive involvement in certain behaviors even though the sufferer knows of the danger that can be caused [2]. While internet game addiction is the use of internet games repeatedly and continuously which can cause a significant impact on work and social functions [3].

Someone who experiences internet game addiction shows changes in the frontal lobes of the brain that control attention, executive function, and emotional processing, and these changes

are considered comparable to the brains of a heroin and cocaine addict [4].

Teenagers are an age group that is vulnerable to problematic internet use, including internet games [5]–[7], and adolescents who are more vulnerable to being addicted to internet games [8], [9]. Other studies also report that the age group of adolescents and young adults (16-30 years) is more at risk of game addiction than older age [10].

Internet gaming addictions in adolescents have a negative impact on anxiety disorders, depression, social disorders, thought problems, somatic complaints, rule-breaking behavior and aggressive behavior [11], academic problems [12]–[14], involved in consuming drugs and having poor family relationships [13]. Adolescents related to internet addiction and the use of problematic internet games have also reportedly attempted suicide attempts [7].

Although there are reports that show that excessive gaming is only temporary or is not a permanent condition [15], given the magnitude of the negative impact caused by internet gaming addiction, early prevention and identification among risky individuals still need to be done. Therefore, this literature review aiming to summarize the latest findings related to risk factors for internet game addiction in adolescents. The results of

the review literature are expected to be input into public health promotion and prevention programs, especially those related to game addiction.

II. METHOD

The literature search is carried out on three databases, namely: PubMed, Scopus and Proquest using keywords: cause, risk factor, adolescent, teenager, juvenile, youth, "online game", "online gaming", "internet gaming", "internet game" and addiction. Merging keywords using boolean operators AND and OR. The inclusion criteria chosen as the basis of the study are as follows: (1) written in English, (2) sample is adolescents (3) published as original articles but not in the form of reviews or case reports, (4) full text, (5) open access, (6) articles published from 2014 to 2019.

III. RESULT

Based on the search results with keywords that have been determined in three databases (PubMed, Scopus, and Proquest), it was found that 581 articles were then filtered to obtain 13 articles that were in accordance with the inclusion criteria. The search process and selection of articles used for this review literature can be seen from Figure 1.

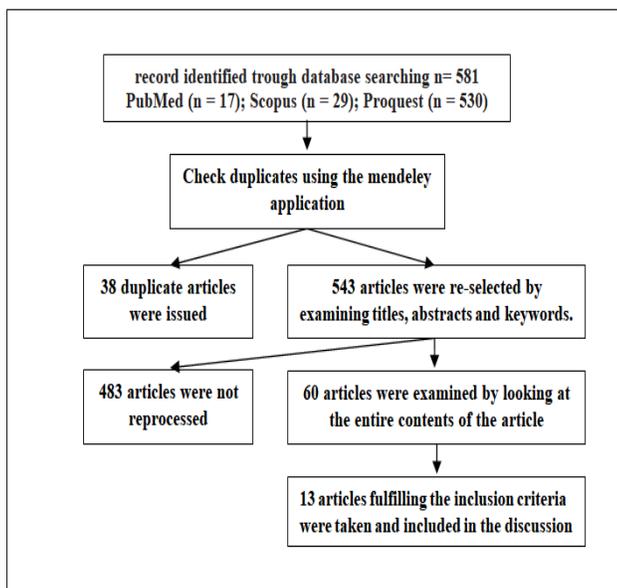


Figure 1. Search process and selection of articles

IV. DISCUSSION

Based on the results of a review of 13 articles that have been selected, there are several interrelated factors that can cause teenagers to become addicted to internet games. These factors are explained as follows:

Family Conflict

Conflicts that occur in the family can be a cause of adolescents falling prey to internet gaming addiction. This is evidenced from the results of research that shows that adolescents who have greater conflict that occur in families have a significant positive influence on internet game addiction in

adolescents [16], and reinforced by the results of other studies that also showed that significant gaming addiction was associated with those who had families that were not harmonious [17], [18].

Parental Control

Adolescents who have parents who are highly committed to work tend to be less concerned about their children's activities and hardly oversee the frequency of their children's play. Teenagers who have parents who are too busy working are found to be inclined to play games excessively [18].

Parenting

Internet gaming addiction can be influenced by family attitudes towards their child's game play behavior. A study found that adolescents who live in a family environment that is too free for adolescents to play online games either alone or with family members tend to become problem game players. The study also found that adolescents with problematic game behaviors started playing games from an age that was too young and had family members either parents or siblings who also liked to play games [18].

Youth Aggressiveness

Increasing aggressiveness of adolescents can be caused by conflicts that occur within the family which can then become predictors of internet game addiction. There is a significant indirect effect of family conflict on internet game addiction through adolescent aggressiveness. It was concluded that adolescents with higher levels of aggression due to family conflict were more likely to develop internet game addiction [16].

In addition, the aggressiveness of adolescents with internet game addiction is supported by the results of other studies, that externalizing symptoms are found to have a significant relationship with game addiction. The study found that both reactive aggression and proactive aggression had a significant influence on problematic games [19].

Attention Problems

A study involving 144 adolescents in United States found that attention problems can cause pathological games in adolescents. There are two reasons given to explain how the concentration of attention disorders can cause pathological games in adolescents, the first reason is that with associated impulse dysregulation can make teenagers more difficult to escape from video game play so that teens with attention deficit disorder problems can spend more when playing video games than those who don't. The second reason, generally adolescents with attention deficit disorder have lower academic values than normal adolescents, lack of satisfaction due to these academic achievements can lead to a compulsive nature of playing video games. [20].

Game type

The type of internet game chosen also affects the risk of game addiction in adolescents. The risk of gaming addiction is significantly higher in teens who prefer multi-player online games [17], [19], [21], [22] and shooting action games [21], [22]

Problematic game players have a strong desire to get an aggressive experience that allows them to shoot and kill freely. The virtual nature of internet games allows them to carry out violent and aggressive actions such as fighting, shooting, and killing with the support and appreciation of their playing friends [18].

Peer Victimization

Teens who experience victimization of peers are more at risk of experiencing addiction to internet games both directly and indirectly. The results of a longitudinal study for 2 (two) years involving 323 students in China showed that students who experienced peer victimization in grade 7 significantly experienced deviant peer affiliation in grade 8, then significantly had normative beliefs about aggression and internet game addiction in class 9. In addition, students who experienced peer victimization in 7th grade also had significant normative beliefs about aggression and addiction to internet games in 9th grade [23].

Teenagers who experience victimization such as bullying, physical, verbal, or relational aggression or get threats from their peers will lose their social position among their peers and feel isolated so that teens who experience victimization may play internet games to meet their psychological needs that can cause dependency excessive [23].

In addition, normative beliefs about aggression can also strengthen potential pathways that explain how victimization has an indirect effect on internet game addiction. Adolescents who experience peer victimization become addicted to internet games can be mediated by deviant peer affiliations, namely associating with friends who are involved in deviant behaviors such as stealing, fighting, and using alcohol, as a result these teenagers tend to have normative beliefs about aggression and in turn become teens who are at risk of becoming addicted to internet games [23].

Gaming Duration

Teenagers who play internet games for longer periods of time can develop problematic game behaviors compared to those who play games for less time [24]. Teens who experience clinical cases of internet game addiction can spend 5 times more hours playing games per week than comparison cases that don't have problems [22].

The amount of time that adolescents spend playing online games is significantly influenced by the motive for playing online games higher than non-problematic game players [24]. In addition, the amount of time spent by teens to play games can be influenced by the amount of time playing their peers' games [25].

Access to Game Devices

One factor that causes teenagers to become addicted to internet games is the ease of access to gaming devices. One study found that the majority (96%) of adolescent clinical cases of game addiction had a personal computer (PC) or game console in their room [22]. The presence of computer devices at home is found to be associated with longer game play times [25].

The ease of access to this gaming device will cause teens to have more opportunities to play games, so they can spend

more time playing games. The longer the teenager spends time playing internet games, the greater the likelihood that the teenager will become addicted to the game [24].

In addition, other studies have found that teens who live in cities spend more time playing internet games. These results are related to the ease and better support for access to gaming devices obtained by teenagers in urban areas compared to teenagers living in rural areas. [25].

A study in Hong Kong also found that teenagers who live in areas that have many internet cafes, have many opportunities to play games and also become more easily influenced by marketing strategies carried out by internet cafe owners, so that they can increase the motivation, frequency and duration of teenagers to playing games. The ease of access to internet cafes or internet cafes is considered to be a factor in increasing the interest of teenagers to play games [18].

Maladaptive Cognition

Maladaptive cognition related to games causes teenagers to feel smarter and smarter because they play games, and become obsessed with achieving higher status or rankings in games, so they will be able to spend more time playing games (Wong & Lam, 2016). In line with these results, other findings also found that maladaptive cognitions related to games such as overestimating gifts and game identity, feeling excessive dependence on games to meet self-esteem needs, and making games as a method of gaining social acceptance had a linear positive relationship with symptoms of game addiction in teenagers. Teenagers who are addicted to the game will be more motivated to fulfill their psychological needs and to forget the problems that occur in real life through the world of virtual games [24].

Adolescents who have maladaptive cognitive related games tend to have preoccupations with unfinished goals in the game being played, so plan ahead to complete the game. In addition, teens also feel more in control when playing games [22]. Maladaptive cognition related to games causes teenagers to experience game addiction not only in the form of positive expectations of confidence, but also negative expectations of the game's beliefs such as the belief that someone will not be able to overcome the problems they face without playing games [22].

Academic and School Environment

Smaller commitment to schools was found to have a significant negative influence on internet game addiction. With the results of the findings it was concluded that greater commitment to schools could be a factor that could prevent adolescents from becoming addicted to internet games [16].

One study found that game addiction was significantly more likely to occur in those who had poor academic performance [17]. With poor academic results, teenagers will feel failed and feel inferior, so they have the possibility to escape to internet games, and risk being addicted to internet games [18], while students who have better academic progress in school and positive attitudes toward school will spend less time playing video games [25].

Academic demands on schools can also determine the possibility of teenagers to experience addiction to internet games. Students who are educated in schools that have lower academic

demands tend to have a higher likelihood of becoming internet game addicts more than students who are educated in schools with higher academic demands and have denser activities [21].

Shyness

Having excessive shame is found to be the cause of adolescents experiencing game addiction, even teenagers who have excessive shame are predicted to have a 1.6 times higher chance of experiencing game addiction than adolescents who do not have excessive shame [19].

Game as a Coping Strategy

When adolescents are unable to solve various problems such as anger and frustration, anxiety and depression experienced in real life, teens choose to play games to eliminate the negative influence of the problem [18]. Increased anxiety associated with symptoms of mental illness can also cause adolescents to make video games as coping mechanisms [26], and using internet games as a coping mechanism was found to have a positive relationship with symptoms of internet game addiction [26].

Sense Of Coherence

Sense of coherence affects the amount of time teenagers spend playing games. Younger boys (13-15 years) with weak and moderate sense of coherence were more likely to play action games or war games for 5 hours or more per day compared to boys who had a higher sense of coherence. The possibility to play action games and war games for five hours or more per day is also found in younger girls and with a weak sense of coherence [27].

A sense of coherence has more influence on the time spent playing games in male adolescents compared to adolescent girls. From comparisons between groups of boys and groups of women with the same age range (13-15 years) at a level of weak coherence it is known that men have a higher probability of playing action games or war games for 5 hours or more per day. And the same results were found in the same age group and moderate levels of coherence.

V. CONCLUSIONS

Internet gaming addiction in adolescents is not only caused by internal factors such as aggression, excessive shame, impaired concentration, lack of sense of coherence, maladaptive cognition associated with games and excessive motivation to play games, but is influenced by the family environment, school environment and peers.

In addition, excessive play time and continuous causes teens at risk of experiencing addiction to internet games. The amount of time spent by teenagers to play internet games is caused by the many opportunities for playing games, which are caused by the support of playing games and because of the lack of attention from those around them.

Stopping or completely prohibiting teenagers from playing internet games may not be the right solution, because internet games have become part of today's technological advances. But supervision of children and restrictions on playing time can be a better solution. In addition, efforts need to be made to improve the relationship between parents and children and provide a

variety of other positive activities that can reduce the time teenagers play games.

Some studies only link the risk of game addiction to the duration of child play in one day, but we did not find a study that measured how many months or how many years a teenager who is at risk can become addicted to games when playing internet games consistently every day. Therefore we propose that further research can be conducted on this subject.

REFERENCES

- [1] WHO, "ICD-11 for mortality and morbidity statistics," Retrieved June, vol. 22, p. 2018, 2018.
- [2] P. M. Miller, *Principles of Addiction : Comprehensive Addictive Behaviors and Disorders*. San Diego, United States: Elsevier Science & Technology, 2013.
- [3] S. F. Dziegielewski, *DSM-IV-TR in Action : DSM-5 e-Chapter Update*. New York, United States: John Wiley & Sons, Incorporated, 2013.
- [4] L. W. Reichenberg, *DSM-5 Essentials : The Savvy Clinician's Guide to the Changes in Criteria*. New York, United States: John Wiley & Sons, Incorporated, 2013.
- [5] S. Mihara *et al.*, "Internet use and problematic Internet use among adolescents in Japan: A nationwide representative survey," *Addict. Behav. Reports*, vol. 4, pp. 58–64, 2016.
- [6] E. J. Pedrero-Pérez *et al.*, "Information and Communications Technologies (ICT): Problematic use of Internet, video games, mobile phones, instant messaging and social networks using MULTICAGE-TIC," vol. 30, no. 1, pp. 19–32, 2018.
- [7] W. Rikkers, D. Lawrence, J. Hafekost, and S. R. Zubrick, "Internet use and electronic gaming by children and adolescents with emotional and behavioural problems in Australia - Results from the second Child and Adolescent Survey of Mental Health and Wellbeing," *BMC Public Health*, vol. 16, no. 1, pp. 1–16, 2016.
- [8] T. Durkee *et al.*, "Prevalence of pathological internet use among adolescents in Europe: Demographic and social factors," *Addiction*, vol. 107, no. 12, pp. 2210–2222, 2012.
- [9] R. Festl, M. Scharkow, and T. Quandt, "Problematic computer game use among adolescents, younger and older adults," *Addiction*, vol. 108, no. 3, pp. 592–599, 2013.
- [10] C. T. Wittek *et al.*, "Prevalence and Predictors of Video Game Addiction: A Study Based on a National

- Representative Sample of Gamers,” *Int. J. Ment. Health Addict.*, vol. 14, no. 5, pp. 672–686, 2016.
- [11] E. Pappa, “Online Gaming Behavior And Psychosocial Well-Being in Greek Adolescents,” *Eur. J. Soc. Behav. Sci.*, vol. 15, no. 1, pp. 1988–1998, 2015.
- [12] F. Rehbein, S. Kliem, D. Baier, T. Moble, and N. M. Petry, “Prevalence of internet gaming disorder in German adolescents: Diagnostic contribution of the nine DSM-5 criteria in a state-wide representative sample,” *Addiction*, vol. 110, no. 5, pp. 842–851, 2015.
- [13] R. Muñoz-Miralles *et al.*, “The problematic use of Information and Communication Technologies (ICT) in adolescents by the cross sectional JOITIC study,” *BMC Pediatr.*, vol. 16, no. 1, p. 140, 2016.
- [14] M. Sahin, Y. Y. Gumus, and S. Dincel, “Game addiction and academic achievement,” *Educ. Psychol.*, vol. 36, no. 9, pp. 1540–1550, 2016.
- [15] T. Rothmund, C. Klimmt, and M. Gollwitzer, “Low temporal stability of excessive video game use in German adolescents,” *J. Media Psychol. Theor. Methods, Appl.*, vol. 30, no. 2, pp. 53–65, 2018.
- [16] J. Yuh, “Aggression, Social Environment, And Internet Gaming Addiction Among Korean Adolescents,” *Soc. Behav. Pers.*, vol. 46, no. 1, pp. 127–138, 2018.
- [17] C.-W. C.-W. C.-W. Wang *et al.*, “Prevalence and correlates of video and internet gaming addiction among Hong Kong adolescents: A pilot study,” *Sci. World J.*, vol. 2014, p. 874648, 2014.
- [18] I. L. K. Wong and M. P. S. Lam, “Gaming behavior and addiction among Hong Kong adolescents,” *Asian J. Gambl. Issues Public Heal.*, vol. 6, no. 1, pp. 1–16, Jul. 2016.
- [19] C. Lau, S. L. Stewart, C. Sarmiento, D. H. Saklofske, and P. F. Tremblay, “Who Is at Risk for Problematic Video Gaming? Risk Factors in Problematic Video Gaming in Clinically Referred Canadian Children and Adolescents,” *Multimodal Technol. Interact.*, vol. 2, no. 2, Jun. 2018.
- [20] C. J. Ferguson and T. A. Ceranoglu, “Attention Problems and Pathological Gaming: Resolving the ‘Chicken and Egg’ in a Prospective Analysis,” *Psychiatr. Q.*, vol. 85, no. 1, pp. 103–110, Mar. 2014.
- [21] J. Spilková *et al.*, “Predictors of excessive use of social media and excessive online gaming in Czech teenagers,” *J. Behav. Addict.*, vol. 6, no. 4, pp. 611–619, Dec. 2017.
- [22] D. L. King and P. H. Delfabbro, “The Cognitive Psychopathology of Internet Gaming Disorder in Adolescence,” *J. Abnorm. Child Psychol.*, vol. 44, no. 8, pp. 1635–1645, Nov. 2016.
- [23] P. Su, C. Yu, W. Zhang, S. Liu, Y. Xu, and S. Zhen, “Predicting Chinese Adolescent Internet Gaming Addiction From Peer Context and Normative Beliefs About Aggression: A 2-Year Longitudinal Study,” *Front. Psychol.*, vol. 9, p. 1143, 2018.
- [24] A. Khan and R. Muqtadir, “Motives of Problematic and Nonproblematic Online Gaming among Adolescents and Young Adults,” *Pakistan J. Psychol. Res.*, vol. 31, no. 1, pp. 119–138, 2016.
- [25] A. Amialchuk and A. Kotalik, “Do Your School Mates Influence How Long You Game? Evidence from the U.S.,” *PLoS One*, vol. 11, no. 8, Aug. 2016.
- [26] C. N. Plante, D. A. Gentile, C. L. Groves, A. Modlin, and J. Blanco-Herrera, “Video games as coping mechanisms in the etiology of video game addiction,” *Psychol. Pop. Media Cult.*, May 2018.
- [27] R. Ustinavičienė, L. Škėmienė, D. Lukšienė, R. Radišauskas, G. Kalinienė, and P. Vasilavičius, “Association Between Computer Game Type, Playing Time And Sense Of Coherence In Lithuanian Adolescents,” *Cent. Eur. J. Public Health*, vol. 26, no. 3, pp. 209–214, Sep. 2018.

AUTHORS

- First Author** – Yodi Mardian, Biostatistic and Population Studies Department Faculty of Public Health Universitas Indonesia, A Building 2nd Floor Kampus Baru UI Depok 16424, Indonesia
- Second Author** – Sutanto Priyo Hastono, Biostatistic and Population Studies Department Faculty of Public Health Universitas Indonesia, A Building 2nd Floor Kampus Baru UI Depok 16424, Indonesia