PREDISPOSING ADDICTION FACTOR TO GAME ONLINE: A SYSTEMATIC REVIEW

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ABSTRACT

Playing a complete online game can cause health problems such as decreased sleep quality, insomnia, cardiovascular problems, vision and coping with hands when psychosocial problems are caused such as stress, anxiety, recovery and increased levels of life satisfaction. A systematic review to determine the predisposing factors of online addiction games to be used as a reference in disputing efforts. ProQuest, ScienceDirect, Scopus, SAGE Publications and EBSCO host databases for 2015-2020 are based on established inclusion and exclusion criteria. Article identification using PRISMA guidelines obtained 14 articles that meet the requirements. The results of the 14 articles review obtained by biological online game predisposing factors, namely dysfunctional impulsive, male sex, appetite. Psychological aspects that describe physical and verbal abuse and intimidation, lack of attention, stress, anxiety, depression, low self-defence, self-esteem problems, low self-control, low self-efficacy, low life expectancy, motivation, emotional motivation and attention from the environment. While the sociocultural aspects are social support and control, the length of time and devices used to play online games, types of online games, social relations that are vulnerable, hyperactivity, dissociation, looking for fun, suitable daily activities, and active in the online gaming community. Predisposing factors can be protective and the risk of individuals using online game addiction based on the coping protection used.

Keywords: Predisposing Factors; Online Gaming; Addiction

INTRODUCTION

Online gaming is an electronic game that needs an internet connection when played to connect with other players.1 Online gaming causes players to collaborate with others to play and finish the mission according to the aim of the game.2 Players can also compare their scores they get to other players and challenge each other or collaborate to play the game.3 Online gaming was first presented in Indonesia on 2001 and develops quickly nowadays.4 On 2017, there are 54,68% of Indonesians who use internet, of which 54,13% play online games.5 Indonesia is one of the biggest online gaming market globally and the biggest in Southeast Asia.6 The income from gaming industry in Indonesia on 2017 is US$ 879,7 million, it is greater than Singapore, US$ 317,6 million, and Malaysia, US$ 586,6 million.6

Playing online games frequently can cause health problems particularly addiction.7 Clinical distress can also appear in teenagers who often play online games.8 Bullying often occurs among game players because of their inability to play as good as others which can make it harder for other players and leads to insults, intimidation, getting kicked out from the game,9 or having bad quality of sleep caused by decreased mental health status.10 Physical problems that often occur are insomnia, cardiovascular problems, vision problems, pain on the wrist, and hyperactive.11 Psychosocial problems such as stress, anxiety, indication of
depression, and low life satisfaction can also be experienced. Anxiety and depression increase the risk of suicide.

Online gaming already raises concerns about the impact or the outcomes, several cases about gaming addiction have been reported that violence and death can happen from banning the kids off the game. Harassment and violent at school were also reported on some cases in Korea caused by gaming addiction. There are 206 kids and teenagers who had been treated and diagnosed with gaming addiction at the psychiatric hospital in West Java since 2016.

Based on the issues stated, prevention is needed to avoid gaming addiction. Prevention can be done with identification of the predisposing factor of gaming addiction. Predisposing factor is risk factors and protective that affect the quality and quantity of resources to subdue the risk of addiction. The predisposing factor consists of psychological, biological, and socio-cultural factors. Thus, writers suggest that we need to discover specifically the predisposing factor of gaming addiction and identification of prevention towards gaming addiction can be done.

MATERIAL AND METHODS
Aim
The goal of this systematic review is to gain information about predisposing factors of gaming addiction. The predisposing factors consist of risk factors and protective factors.

Resources
We collected the articles from ProQuest, ScienceDirect, Scopus, SAGE Publication, and EBSCO host databases which were published on 2015-2020. The title and abstract keywords used for the search were: (“risk factor” or “predictor”) AND (“internet gaming disorder” or “online gaming addiction”).

Inclusion and Exclusion Criteria
The articles should meet these criteria: (1) written in English, (2) quantitative studies, (3) the subjects were teenagers or adults who frequently play online game, (4) subjects had or had not been diagnosed with internet gaming disorder (IGD). Articles would be excluded if: (1) explained about treatment of IGD, (2) systematic review studies.

Article Identification
PRISMA guidelines were followed to identify the articles using these steps: (1) identify the topics to be reviewed, (2) assign the questions for the research, (3) determine the keywords used for literature search adopting PICO methods, articles that met the criteria were listed manually (4) screened the similarity among selected articles from all databases, (5) articles with relevant titles and abstracts were selected, (6) filter the article according the inclusion and exclusion criteria, (7) decide the chosen articles to be analyzed. Figure 1 shows a summary of articles selection using PRISMA guidelines.

Article Selection
The search from all databases gathered 1482 articles, then the articles sorted by the similarity among all databases manually and gathered 472 articles. The evaluation of titles and abstracts gathered 32 articles. The articles identified according inclusion and exclusion lists. We identified 14 potential articles in this review. Table 1 provided a list of 14 articles which were chosen and analysed using tools Joanna Briggs Institute 2017. Samples were taken from gamers, students, teenagers, adults, and individual who has or has not been diagnosed with IGD. The studies were located on Asia and Europe to collect more diverse data characteristics.
RESULTS

Biological predisposing factors of gaming addiction are dysfunctional impulsivity, boys, and appetite. Psychological features are previous emotional neglect at young ages, previous physical or verbal harassment at young ages, previous bullying by gaming friends, stress, anxiety, depression, low self-control, low self-efficacy, poor tenacity, motivation to play, emotional intelligence, and affection from the surroundings. The sociocultural aspects are social control, duration of playing games, equipment to play games such as smartphone and computer, types of the game, hyperactive, sensational seeking, dissociation behavior, activities other than playing games, and active participation in gaming community.
Table 1. Predisposing factors of game online addiction

<table>
<thead>
<tr>
<th>No</th>
<th>Title</th>
<th>Author</th>
<th>Year</th>
<th>Design</th>
<th>Country</th>
<th>Subjects</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Adverse childhood experiences, dissociation, and anxious attachment style as risk factors of gaming disorder.</td>
<td>Piotr Grajewski dan Małgorzata Dragan</td>
<td>2020</td>
<td>A cross-sectional survey</td>
<td>Poland</td>
<td>1.288 gamer</td>
<td>Previous neglect and emotional harassment at young age, dissociation behavior, and anxiety can be the predictors of IGD</td>
</tr>
<tr>
<td>2</td>
<td>Prevalence and Interpersonal Correlates of Internet Gaming Disorders among Chinese Adolescents</td>
<td>Xue Yang, Xuewen Jiang, Phoenix Kit-han Mo, Yong Cai, Le Ma dan Joseph Tak-fai Lau</td>
<td>2020</td>
<td>A cross-sectional survey</td>
<td>China</td>
<td>2.666 teenagers</td>
<td>Previous psychological control by parents, verbal or physical harassment from parents or teachers, bullied by friends at school or online friends have correlation on incidence of IGD</td>
</tr>
<tr>
<td>3</td>
<td>The Predictive Value of Emotional Intelligence for Internet Gaming Disorder: A 1-Year Longitudinal Study</td>
<td>Della L. Dang, Meng Xuan Zhang, Karlas Kin-hei Leong dan Anise M. S. Wu</td>
<td>2019</td>
<td>A Longitudinal Study</td>
<td>China</td>
<td>282 students of Chinese university</td>
<td>The result stated that emotional intelligence can protect individual towards the tendency of getting IGD</td>
</tr>
<tr>
<td>4</td>
<td>A Comparison of Risk and Protective Factors for Excessive Internet Game Play between Koreans in Korea and Immigrant Koreans in the United States</td>
<td>Ji Sun Hong, Sun Mi Kim, Jae-Woo Jung, So Young Kim, Un-Sun Chung, dan Doug Hyun Han</td>
<td>2019</td>
<td>A cross-sectional survey</td>
<td>South Korea</td>
<td>94 teenagers and 133 Korean immigrants in USA</td>
<td>Having physical activities, extracurricular classes, reading books, and playing musical instruments are protecting factors in the occurrence of IGD</td>
</tr>
<tr>
<td>5</td>
<td>Associations among resilience, stress, depression, and internet gaming disorder in young adults</td>
<td>Ju-Yu Yen, Huang-Chi Lin, Wei-Po Chou, Tai-Ling Liu dan Chih-Hung Ko</td>
<td>2019</td>
<td>A cross-sectional survey</td>
<td>China</td>
<td>174 subjects, which 87 people diagnosed with IGD and 87 people without IGD</td>
<td>Individuals with poor tenacity are at risk of having IGD</td>
</tr>
<tr>
<td>6</td>
<td>Examining the factors contributing to adolescents’ online game addiction</td>
<td>Seyhan Bekir dan Eyüp Çelik</td>
<td>2019</td>
<td>A cross-sectional survey</td>
<td>Turkey</td>
<td>214 high school students</td>
<td>There is a positive and significant relation between IGD, sensation seeking behavior, and the urge of fulfilling psychological needs</td>
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Vol. 14 No 1 2020 DOI: http://dx.doi.org/10.33533/jpm.v14i1.1654

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<table>
<thead>
<tr>
<th>No.</th>
<th>Title</th>
<th>Authors</th>
<th>Year</th>
<th>Country</th>
<th>Sample Size</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>A longitudinal study on psychosocial causes and consequences of Internet gaming disorder in adolescence</td>
<td>Lutz Wartberg, Levente Kriston, Matthias Zieglermeier, Tania Lincoln dan Rudolf Kammerl</td>
<td>2019</td>
<td>Germany</td>
<td>1095 families who have 12-14 years old teenagers</td>
<td>Boys, hyperactive behavior, lack of attention, and pride issues are risk factors of the development of IGD</td>
</tr>
<tr>
<td>8</td>
<td>Predicting the time spent playing computer and mobile games among medical undergraduate students using interpersonal relations and social cognitive theory: A cross-sectional survey in Chongqing, China</td>
<td>Li Chen, Ruiyi Liu, Huan Zeng, Xianglong Xu, Rui Zhu, Manoj Sharma dan Yong Zhao</td>
<td>2018</td>
<td>China</td>
<td>1557 medical university students</td>
<td>Self-control, self-efficacy, and low hopes are individual risk factors of IGD incidence</td>
</tr>
<tr>
<td>10</td>
<td>Predicting Internet Gaming Disorder symptoms in young adolescents: A one-year follow-up study.</td>
<td>Margot Peeters, Ina Koning dan Regina van den Eijnden</td>
<td>2018</td>
<td>Netherland</td>
<td>544 participants</td>
<td>Teenagers with attention issues and social vulnerability have higher risks of getting IGD</td>
</tr>
<tr>
<td>11</td>
<td>The interplay among stress, frustration tolerance, mindfulness, and social support in Internet gaming disorder symptoms among Chinese working adults</td>
<td>Shu Yu, Sijie Mao dan Anise M.S. Wu</td>
<td>2018</td>
<td>China</td>
<td>327 adults</td>
<td>Stress is one of the risk factors of IGD</td>
</tr>
<tr>
<td>12</td>
<td>Video gaming in a hyperconnected world: A cross-sectional study of heavy gaming, problematic gaming symptoms, and</td>
<td>Michelle Colder Carras, Antonius J. Van Rooij, Dike Van de Mheen, Rashelle</td>
<td>2017</td>
<td>Netherland</td>
<td>9733 teenagers</td>
<td>Tolerance towards frustration, affection, and social support are the inhibition factor of having IGD</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th></th>
<th>Online socializing in adolescents.\textsuperscript{28}</th>
<th>Musci, Qian-Li Xue dan Tamar Mend</th>
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<tbody>
<tr>
<td>13</td>
<td>Gaming device usage patterns predict internet gaming disorder: Comparison across different gaming device usage patterns.\textsuperscript{29}</td>
<td>Soo-Hyun Paik, Hyun Cho, Ji-Won Chun, Jo-Eun Jeong dan Dai-Jin Kim</td>
<td>2017</td>
<td>A cross-sectional survey</td>
</tr>
<tr>
<td>14</td>
<td>Internet gaming disorder, motives, game genres and psychopathology.\textsuperscript{30}</td>
<td>St_ephanie Laconi, Sophie Pires dan Henri Chabrol</td>
<td>2017</td>
<td>A cross-sectional survey</td>
</tr>
</tbody>
</table>
DISCUSSION

Biological predisposing factor of online gaming are dysfunctional impulsivity, boys, and appetite. Online gaming shows competitive gaming structure and attracts boys’ attention rather than girls\(^1,30\). Boys have mild aggressiveness with hostility as the dominant aspect.\(^31\) This condition is supported by the availability of violent games,\(^32\) such as FPS (first person shooter) and MMROPG (massively multiplayer online role play gaming) types, for instance PUBG (Player Unknown Battle Ground) or GTA (Grand Theft Auto).

Psychological predisposing aspects are low self-resilience.\(^21\) Low self-resilience can cause individuals prone of having psychological problems, such as anxiety, depression, low self-esteem, and suicidal thoughts.\(^33\) Those psychological problems can affect their emotional intelligence and coping ability. Individuals with good emotional intelligence have lower risk of getting game online addiction.\(^19,23\) Psychopathologic conditions (ADHD, anxiety, depression, and impulsivity) are the risk factors of online gaming addiction.\(^34\) An individual with low self-control is also at risk having online gaming addiction.\(^23-25\) Teenagers with attention problems and social vulnerability are also have the same risks.\(^24\) Previous harassment, physical or verbal violence, bullied by friends, and have dissociation attitude can be the predictor factors of online gaming addiction.\(^17,18\) Individual with previous neglect or emotional torture can lead to emotional dysregulation or inability to control emotion in daily life.\(^35\)

![Figure 2. Steps of online gaming addiction](image-url)
Sociocultural predisposing factors are individual with social problems or ability of socializing in real life. Teenagers who could not socializing in real life use games as their runaway to hide the problem. Online gaming provides feature to gain friends and interact with other players. This condition is prone to social mechanism. Games compensate the need of having interpersonal relation for individuals who have anti-social behavior. Individuals who withdraw themselves are also at risk getting online gaming addiction. This condition can increase the game screentime. The risk of getting addicted will be higher if the duration of playing games is longer.

Predisposing factors stated before are triggering the online gaming addiction when supported by the precipitating factor, which is playing the online games. This condition depends on the way an individual responding to the trigger. The responds can be cognitive, affective, physiology, behavior, and social aspects. From cognitive aspect, individual acknowledges the fun they get from playing games and notice the further effect on cognitive ability. Individual can think about their games during daily activities. Gamers have difficulty on self-assessment and surroundings, perseverence issues, and trouble in speaking words, sentences, or ideas.

There are also several affective responds caused by playing games. Frequent gaming can lead to anxiety, depression, or inability to control emotions. Individual can also experience anger, anxious, and lose interest on other activities than playing games. On social aspect, gamers play their game as a way of socializing with other gamers because they are not able to socialize in real life. They can also lose their relation with others because they choose to play games. This condition is affected by their inability to tolerate, control or decrease their screen time to play games.

Physiologically, online gaming can cause lower physiological function and lead to decrease sleep time and food intake. Insomnia, cardiovascular problems, eyesight problems, pain on the wrist, and hyperactive can also happen. It can also cause uncontrollable behavior when playing games to fulfill pleasure, as a form of getaway to connect with other gamers, reduce anxiety, sadness, or depression. Individual who is satisfied will not seek for sensation to fill their psychological needs. Person with low life-satisfaction tends to depend on games in fulfilling their satisfaction.

Those conditions increase the risk of having online gaming addiction if not supported by adequate coping sources. Coping sources which can be used are personal ability, social support, material assets, and personal beliefs, so an individual can avoid the addiction. Ability to inhibit the addiction is to limit the screen time and only play the game on spare time or for hobbies without neglecting other activities, such as school works, house or work duties. Individual with physical activity, extracurricular classes, habit of reading books or playing musical instruments can protect oneself from online gaming addiction. The ability to tolerate towards frustration or psychosocial problems can also protect from addiction. Individuals are expected to search information, identify problems, find alternatives, and implement actions towards risks of having online gaming addiction.

Always monitor and warn someone to limit their screen time on games are forms of social support. Their surroundings need to support other activities and act as social control towards their habit of playing games. Supervision and attention are needed for teenagers who play online games. The aim of supervision is to inhibit the action of playing games repeatedly. Material assets are stuff or anything that can be bought with money. Good financial condition can provide resources for coping towards stressors. Whereas personal belief
is the hope for individuals to overcome stressor with adaptive coping mechanisms. 9

Coping sources are affected by personal judgements towards stressor. The judgements then form coping mechanisms. Individuals with adequate coping sources will overcome stressor with the right way, which called constructive coping mechanisms, and create adaptive responds. On the contrary, when someone could not handle the stressor, called destructive coping mechanisms, maladaptive respond will occur. 9 These conditions are the predictor of which coping mechanisms will be used by individuals to manage their habit of playing online games.

CONCLUSION

Predisposing factors can be used to portray risks of having online gaming addiction and affected by behaviors when playing online games. Family support and supervision are needed to increase the usage of positive coping mechanisms towards the behavior of playing games.

Development of early detection instruments is necessary for determination of further action towards online gaming addiction preventions.

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