

## Related Factors of Internet Addiction on Adolescents During COVID-19 Pandemic: Systematic Literature Review

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### Abstract

The increase in youth internet use occurred during the COVID-19 pandemic. This study aims to examine internet use and the factors that cause internet addiction in adolescents during the COVID-19. This study uses the Preferred Reporting Items for Systematic Review and Meta-Analysis 2015 in conducting a systematic literature review using the Scopus, ScienceDirect, Pubmed, Emerald Insight databases. There were ten articles that met the inclusion criteria and passed the article quality assessment. The results of the study found that resilience, self efficacy, self esteem, gender, mental health, difficulty sleeping, fear of COVID-19, and loneliness are internal factors that influence internet addiction in adolescents. While the duration of internet use, limitations of social interaction, family roles including parental education, family harmony, control, and family function, socioeconomic level, online learning, social support, and social emotional adjustment are external factors that influence adolescents in developing Internet addiction. Future research can examine internet addiction prevention interventions by considering related factors found in this study.

**Keywords:** *Adolescents, Covid-19, Factors, Internet Addiction, Parents.*

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### Introduction

Coronavirus (COVID-19) Pandemic initially occurred in Wuhan, China, has spread nearly all over the world (Huang et al., 2020). COVID-19 pandemic has caused global mortality rate of 404,396 in June 2020 (Who, 2020). Indonesia is one of the countries affected by COVID-19 pandemic. COVID-19 outbreak first occurred in the beginning of March 2020 and infected 1,285 patients and caused 114 deaths in less than one month in Indonesia (Brahma, 2020). COVID-19 pandemic has caused psychological impacts on individuals (Asmundson & Taylor, 2020). There are behavioral changes during COVID-19 pandemic, such as disrupted social relationships, staying at home more often, wearing masks every where, and limited face-to-face social interactions.

Indonesian government had enforced Large-Scale Social Restrictions (PSBB, which implements limitations on many kinds of activities, including work from home, school from home, and even religious activities at home. This condition has triggered the increase in internet use especially among adolescents. Adolescents are considered as the most susceptible population to excessive internet use (Kuss et al., 2013). For them, internet is one of the most important factors to socialize and to spend their leisure time in daily life (Faltýnková et al., 2020). Adolescence is a developmental stage where an individual tries to express his/her identity, which can lead to emotional crisis and trigger interpersonal and social conflicts (Rakhmawati et al., 2021). During their development period, adolescents have not totally developed their critical thinking ability and have not been fully aware of limitations, thus they are more susceptible to internet addiction (Martins et al., 2020).

Internet use has been the primary need for adolescents' lives (Lissak, 2018). Internet use during COVID-19 pandemic has caused various implications on adolescents' lives. The increase in their screen time for internet use has negative impacts to their mental health if they spend more time in accessing social media and online game (Agarwal et al., 2021). Besides, adolescents have a tendency to depression, low self-esteem, low level of happiness, low life satisfaction, anxiety, chronic and acute stress, worrying the family, lost, unable to go to school due to lockdown, worse economic condition, and the increase on screen time for accessing social media and the internet (Guessoum et al., 2020; Agarwal et al., 2021). However, on the other hand, internet is also a source of information for them during COVID-19 pandemic (Chawla et al., 2021). All online learning requires internet connection. This is also related to their need to maintain social communication, do their homework, and attend online school (Duan et al., 2020; (Faltýnková et al., 2020, Lin, 2020).

Internet use has become a bigger part of adolescents' lives. It has become the necessity during this developing digital era. Excessive internet use among adolescents has occurred in the midst of COVID-19 outbreak (Dong et al., 2020). During COVID-19 pandemic, internet use duration among adolescents has increased compared to before the pandemic, which then increases the risk to internet addiction (Lin, 2020). This is supported by results of the research conducted by (Lin, 2020), which revealed that there is the prevalence of high internet addiction among junior high school students during COVID-19 pandemic. Based on the survey to 6,416 people regarding COVID-19,

the prevalence of terrible internet addiction has increased from 4,3% to 23% (Iqbal et al., 2020). The increasing internet use will lead to internet addiction (Kizilok & Özok, 2021).

Internet addiction can be described as pathological or problematic internet use, which means the excessive use of internet or compulsive that leads to distress or impairment (Xu et al., 2021). Internet addiction can also be described by exploring some diagnostic criteria. Some of which are when a person keeps on thinking about the internet, needs internet to reach satisfaction, is not able to limit the internet use, feels anxious, pessimistic, depressed, and frustrated when stop using internet, has problems with family, school, and the closest environment due to excessive internet use, experiences low quality of education and career, and uses the internet as an escape from troubles (such as helplessness, guilt, depression, and anxiety) (Young, 2004).

Internet addiction can affect adolescents' life styles both physically and mentally. Compulsive and addictive internet use significantly affects adolescents' psychological health (Sheoran, 2021). Adolescents with internet addiction tend to have difficulty in time management, suffer from anxiety, make enemies, and have disrupted relationships with people around them. A research by (Cerniglia et al., 2017) stated that internet addiction would lead to negative risk on adolescents' mental health, including obstructed adolescence identity development, personal image, and social relationships. Adolescents with internet addiction will lose their self-control, show anger, suffer from stressful symptoms, experience social withdrawal, and have family conflicts.

Meanwhile, based on the clinical context, internet addiction can cause disorders such as dysthymia, bipolar disorder, affective disorder, social anxiety, and severe depression (Cerniglia et al., 2017). Internet addiction can also lead to other addictions in the forms of behavior, such as smoking (Bisen & Despande, 2018). In the gender aspect, teenage boys have higher attachment with the internet compared to teenage girls (Jiang, 2014). It is in line with research by Cheung et al., (2018), which stated that teenage boys tend to spend more time browsing the internet, especially online game and porn. Regardless all the impacts of the internet addiction among adolescents, there are various matters underlying the problem.

There are, of course, several factors that have caused internet addiction among adolescents. Prior to COVID-19 pandemic, there were several main factors that caused internet addiction among them, such as psychological immaturity, pursuit of happiness, and peer influence that made them more susceptible to internet addiction (Aktepe et al., 2013). However, during COVID-19 pandemic, there were other factors that caused internet addiction among adolescents. Internet accessibility among adolescents during COVID-19 pandemic causes the risks of excessive internet use that lead to internet addiction (Siste et al., 2021). For example, lockdown and homeschooling during COVID-19 pandemic which significantly increase the internet use and simultaneously increase the risk of internet addiction (Cui & Chi, 2021). Adolescents who have disrupted relationships with their family or friends and who use the internet more than seven hours a day are also susceptible to internet addiction during COVID-19 pandemic (Kaya & Dalgic, 2021).

Meanwhile, the high rate depression symptoms, low level of mothers' education, low economic and academic level of family, are also the main factors that influence internet addiction among adolescents during COVID-19 pandemic (Bu et al., 2021). Internet addiction among adolescents whose parents are divorced and have bad relationships with the members of the family and friends have higher internet addiction scores (Kaya & Dalgic, 2021). The other factors are psychological pressure, loneliness, low self-esteem, emotional pressure, and the need to escape during COVID-19 pandemic (Fernandes et al., 2021).

In dealing with the internet addiction among adolescents during COVID-19 pandemic, it is more effective to prioritize our focus on the individual mental health (Cui & Chi, 2021b). It is important to provide adequate social supports to improve the resilience, and therefore to decrease the internet addiction among adolescents. A study conducted by (Zhang et al., 2019) stated that parenting style is also indirectly related to the internet addiction through conscientiousness or one type of personalities. In addition, teachers' support also moderates the relationships of family rejection and internet addiction. Specifically, positive association of family rejection with internet addiction is significant for those who have high supports from the teachers, but it is less significant if they have less support from the teachers. Therefore, intervention for prevention can be provided from the teachers and parents to prevent adolescents from internet addiction (Zhang et al., 2019).

In addition, another study by (Guo et al., 2021) stated that social support from the family, friends, and the closest people can mediate the negative correlation between internet addiction and the quality of life.

The increase of the internet use duration has implications that lead to terrible mental health. However, on the other hand, internet is also the main source for adolescents' learning process during COVID-19 pandemic. Provided with that situation, therefore, this research is important to conduct. Many other studies regarding internet addiction among adolescents have been conducted. However, a specific one that focuses on the internet use and the factors that cause the internet addiction among adolescents during COVID-19 pandemic is still hard to be found. Thus, this research aims to do systematic literature review to observe the internet use and the factors that cause the internet addiction among adolescents during COVID-19 pandemic situation.

## **Method**

### *Objectives*

The objective of the study is to identify the internet use and the related factors that cause internet addiction among adolescents during COVID-19 pandemic. On one hand, internet is the main source for adolescents during online learning. On the other hand, excessive internet use can lead to internet addiction that causes terrible mental health. According to this contrary fact, it is expected that future studies can explore more on actions that can be taken to solve the problems arising due to the contrary fact. This study used systematic literature study method compiled by referring to the guidelines from Preferred Reporting Items for Systematic Reviews and Meta-Analysis 2015 (PRISMA-P 2015) (Mother et al., 2016). PRISMA is the international guidelines that helps researchers to prepare research protocols by arranging all relevant proves suitable with the appropriateness criteria that have been determined to answer the research questions.

### *Searching Strategy and the Source of Data*

The searching strategy for collecting data in this study used six main electronic database sources; they were Scopus, Scimedirect, Pubmed, Emerald Insight, Proquest, and Springerlink. Data were collected from December 2021. Next, selected syntax to find the articles related to the objectives of the study was systemized by conjunctions AND and OR and used Boolean method. The keywords used in the database of Pubmed, Emerald Insight, Proquest, and Springerlink were ("related" OR "predicto\*" OR "associated facto\*") AND "internet addiction" AND ("adolescent\*" OR "teen\*" OR "youth") AND "covid". In the database of ScienceDirect, keywords used were ("related" OR "predictor" OR "associated factors") AND "internet addiction" AND ("adolescent" OR "teen" OR "youth") AND "covid", and in the Scopus, keywords used were ("related" OR "predicto\*" OR "associated facto\*") AND "internet addiction" AND ("adolescent\*" OR "teen\*" OR "youth").

#### *Inclusion Criteria*

Inclusion criteria applied in this study was: 1) articles/journals published in peer-review journals; 2) articles/journals written in English; 3) articles/journals discussing the internet use or internet addiction among adolescents during COVID-19 pandemic; 4) articles/journals used quantitative or qualitative study design; 5) articles/journals published between year 2020-2022; 6) no cultural boundaries used in finding the targeted articles.

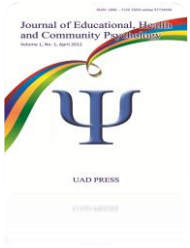
#### *Selection*

Selection in this study was first done by selecting all articles/journals with titles and abstracts related to the inclusion criteria. The titles and abstracts selected from the initial selection were then selected again based on the inclusion criteria.

#### *Methodological Quality Assessment*

After undergoing identification process by selecting the journals suitable with the inclusion criteria, all the researchers then continued the analysis to evaluate the quality of the articles. For the quantitative study, criteria to select correlational study was determined based on the guidelines from Cummings et al., (2010), meanwhile for the qualitative study, the screening was done by using criteria from Critical Skills Appraisal Programme (CASp). Methodological quality assessment was done by evaluating the research design, sampling techniques (articles or participants), measurement process or data collection, and analysis techniques (Germain & Cummings, 2010; Cummings et al., 2010).

#### *Data Extraction*



The data obtained from the articles including the names of the authors, years, journal titles, countries, objectives, theoretical framework or model, conceptualization, methodological approaches, samples or participants, reliability and validity reported, data analysis techniques, and results.

## **Result**

**Searching for Literatures**

Databases: Scopus, Science Direct, Pubmed, Emerald Insight, and Proquest

Searching limitations: the characteristics of the articles reviewed were articles published in peer-review journals, written in English, discussing the internet use or internet addiction among adolescents during COVID-19 pandemic, using quantitative or qualitative study design, published between year 2020-2022, and there is no cultural boundaries used in finding the targeted articles.

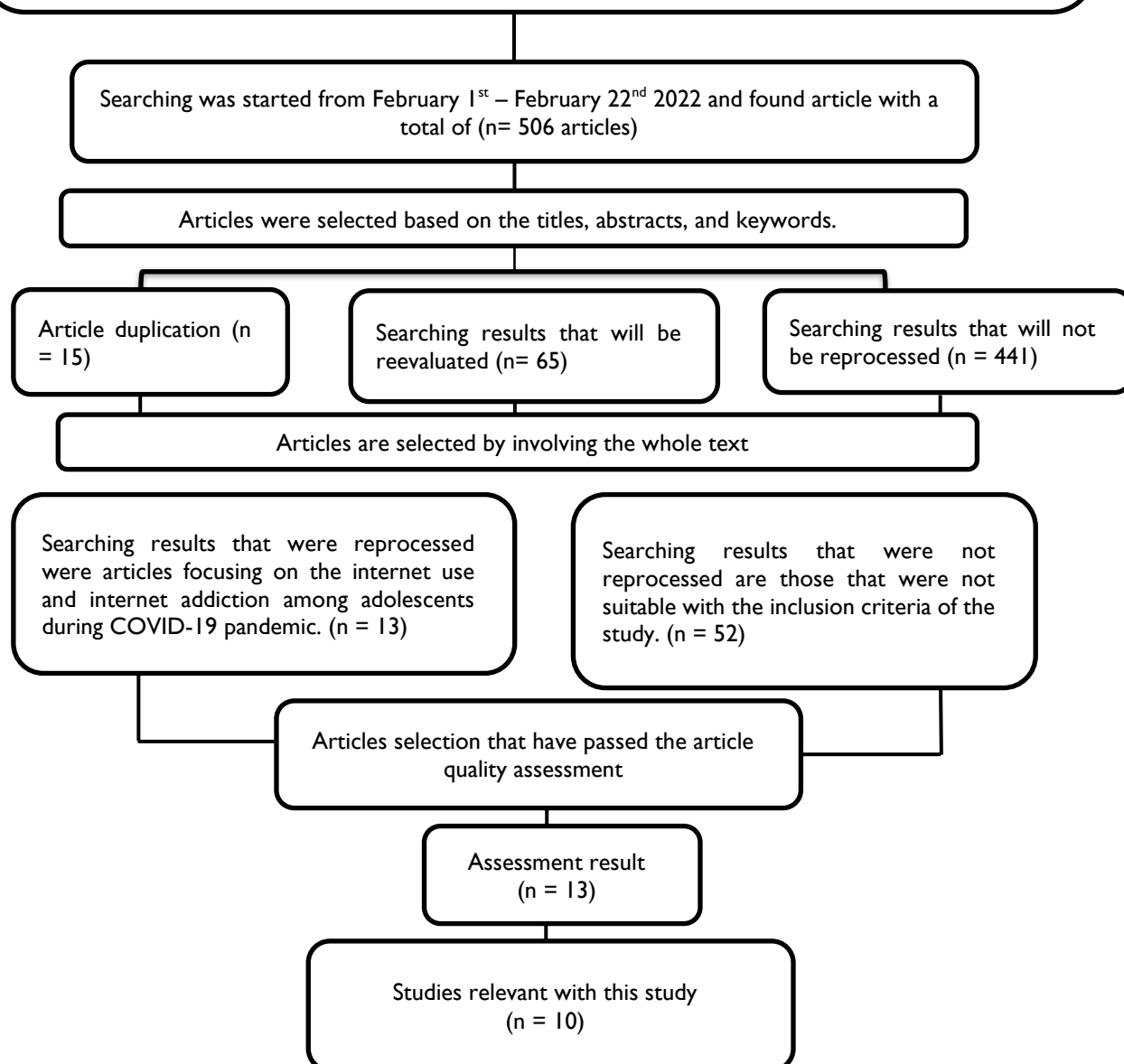


Figure 1. Step-by-step of Searching for Research Articles



Based on Figure 1, searching for articles was done from February 1<sup>st</sup>, 2022 until February 22<sup>nd</sup>, 2022 with six main databases: Scopus, ScienceDirect, Pubmed, Emerald Insight, Proquest, and Springerlink. After that, it was found 506 articles. And then, the articles were selected and 15 articles were found to have duplications. The next step was reviewing the titles, abstracts, and the keywords of each journal. The result found that there were 441 articles did not match the inclusion criteria due to several aspects such as the participants did not focus on adolescents, the topic did not focus on the internet use or internet addiction, the research designs were neither quantitative nor qualitative, the sampling was not done during COVID-19 pandemic, and the articles were not published in 2020-2022. Provided that the scope of the objectives of systematic literature review was during COVID-19 pandemic, therefore, the researchers selected the articles published in 2020-2022.

#### *Study Characteristics Review*

There were ten articles published in 2020-2022 included in this study. Three articles used in this study were published in 2020. Six articles were published in 2021. One article was published in 2022. The ten articles selected in this study were from Asia, two of which were from Turkey, four were from China, one was from Taiwan, one was from Indonesia, and two were from Iran. The age of the participants in this study was clearly stated in those ten studies, which were adolescents. All studies have passed the article quality assessment using quantitative research design.

The selected articles have elaborated the factors related to internet addiction among adolescents during COVID-19 pandemic, and there were four articles mentioning the internet use duration (Dong et al., 2020b; Harsej et al., 2021; Ozturk & Ayaz-Alkaya, 2021; Siste, Hanafi, et al., 2021), four articles mentioning social interaction limitations (Dong et al., 2020b; Hu et al., 2021; Ozturk & Ayaz-Alkaya, 2021; Saralioğlu et al., 2022), four articles mentioning the role of family including family harmony, control, and family function (Chen et al., 2020; Harsej et al., 2021; Ozturk & Ayaz-Alkaya, 2021; Saralioğlu et al., 2022), four articles mentioning gender (Chen et al., 2020; Harsej et al., 2021; Ozturk & Ayaz-Alkaya, 2021; Yi & Li, 2021a), four articles mentioning mental health (Chen et al., 2020; Cui & Chi, 2021a; Dong et al., 2020c; Yi & Li, 2021b), three articles mentioning low socioeconomic status (Harsej et al., 2021; Ozturk & Ayaz-Alkaya, 2021; Saralioğlu et al., 2022), two articles mentioning fear of COVID-19 (Dong et al., 2020b; Hu et al., 2021), and other factors, such as sleeping difficulty,

online learning, social supports, loneliness, resilience, self-efficacy, self-esteem, and socio-emotional adaptation mentioned in (Chen et al., 2020; Cui & Chi, 2021a; Ozturk & Ayaz-Alkaya, 2021; Sarıalioğlu et al., 2022; Siste, Hanafi, et al., 2021; Ghadampour et al., 2020).

#### *The Prevalence of Internet Use among Adolescents during COVID-19 Pandemic Situation*

The increase of internet use among adolescents during COVID-19 pandemic absolutely increases the risk to internet addiction. One article revealed that most of adolescents spent at least 3 hours or more in a day to access the internet (Ozturk & Ayaz-Alkaya, 2021). This was because during COVID-19 pandemic, there was a change in adolescents' education learning process, where schools had to conduct online learning instead of face-to-face learning. Another article revealed that during the pandemic, 51.4% adolescents used the internet for 6 hours or more, and 82.2% used the internet for doing their homework during COVID-19 pandemic (Sarıalioğlu et al., 2022).

Another article mentioned that 19.3% Indonesian adolescents have suffered from internet addiction during COVID-19 pandemic, mainly caused by the long duration of internet use (Siste et al., 2021). The excessive internet use duration can cause addictive behavior. Social media and online game have higher impact on adolescents to cause the risk to internet addiction. Meanwhile, another article explained that 33.37% adolescents were classified as internet addicts because they spent more time in using the internet during COVID-19 pandemic (Dong et al., 2020b). Another article also mentioned that the internet use during the pandemic is increasing, the longer the internet use duration is, the higher the risk to internet addiction will be (Harsej et al., 2021).

#### *Internal Factors*

Some articles included in this study have elaborated that there were some internal factors affecting internet addiction among adolescents during COVID-19 pandemic. Based on all of the articles included in this study, there are seven internal factors affecting adolescents to increase internet addiction; such as resilience, self-efficacy, self-esteem, gender, mental health, sleeping difficulty, fear of COVID-19, and loneliness. Resilience was the mediator of social support and internet addiction among adolescents. The resilient adolescents had more capability of dealing with their fear of COVID-19 so they could minimize internet addiction. Highly resilient adolescents were able to build a defense

against negative feelings on the pandemic, to have positive emotion, and to lessen the risk to internet addiction. Other internal factors found were self-efficacy. Adolescents who had high self-efficacy would be very confident on their own ability to influence their lives especially during COVID-19 pandemic. Adolescents with low self-efficacy would have the risk factor to increase internet addiction. Meanwhile, another article showed the adolescents who had lower self-esteem would have the tendency to be addicted to the internet.

Gender was also the internal factor that caused internet addiction among adolescents. This was evidenced by four articles revealing that teenage boys showed more tendency to internet addiction compared to teenage girls. Gender difference in the problematic internet use can be explained by the different personality models between boys and girls and the purpose of using the internet. The next factor was mental health. There were four articles that mentioned that adolescents with PTSD symptoms, stressful, and depressed would tend to have internet addiction during COVID-19 pandemic. Adolescents thought that using the internet could be entertaining and accessible, through which they could release their emotions and stress. Adolescents who suffered from sleeping difficulty during COVID-19 pandemic were also mentioned as one of the factors that caused internet addiction. In two articles, it was stated that the fear of COVID-19 was also one of the factors of the internet addiction among adolescents too. The next factor was loneliness, the higher the loneliness was, the higher the risk to internet addiction, where 67.4% adolescents used the internet to relieve the loneliness during COVID-19 pandemic.

#### *External Factors*

Some articles included in this study have also explained that there were external factors that caused internet addiction among adolescents during COVID-19 pandemic. The factors were internet use duration, social interaction limitations, the role of family including parents' level of education, family harmony, family control and function, low socioeconomic status, online learning classes, social supports, and socio-emotional adaptation. Four articles in this study have elaborated that the duration of using gadget was one of the factors related to internet addiction among adolescents during COVID-19 pandemic. The longer they access the internet, the higher the risk to internet addiction would be. Four articles stated that social interaction limitations during the pandemic was also one of the factors related to internet addiction. During the pandemic, there was a social interaction change from face-

to-face into online interaction. Therefore, they could not meet their social needs for direct interaction, they choose to spend their time surfing the internet.

Four articles stated that family was one of the factors related to internet addiction among adolescents. Internet addiction among adolescents happened because parents could not spare adequate time for them. Internet addiction occurred to students with unhealthy family function. This finding indicates that family has a significant educational role that determines where children grow up and develop their skills. The more harmonious the family is, the less possibility of internet addiction to occur. On the other hand, worse situation within the family will make the children dive into the cyberspace to get emotional support and attachment. Lack of parental control also caused adolescents to develop internet addiction. Poor family function caused adolescents' excessive internet use. The other three articles stated that low economic status was also one of the factors related to internet addiction. Adolescents who came from middle to low economic status had 3-4 times higher risk to internet addiction.

The next factor was online learning classes. Due to COVID-19, there had been some changes in the scope of education, where schools could not provide face-to-face learning classes. Therefore, adolescents spend more time on the internet. Another article mentioned that social support also played an important role for adolescents in the tendency to internet addiction. The more social supports they get, the less possibility for them to get addicted to the internet. Social supports will give them benefits in regulating their emotions in order to improve their strategy in dealing with various problems during COVID-19 pandemic. The last external factor was socio-emotional adaptation. Internet addiction has caused the decrease of socio-emotional adaptation. Adolescents who have high social adaptation can control their emotion and use problem-oriented coping style to deal with environment-driven stress, therefore they are seldom attracted to excessive use of the internet.

## **Discussion**

This systematic review identified 10 articles explaining about internet use and the factors causing internet addiction among adolescents during COVID-19 pandemic. Literatures revealed that there was an increase of internet use among adolescents during COVID-19 pandemic. On one hand,

internet was the primary need for adolescents to attend online classes during the pandemic. However, on the other hand, excessive use of the internet can cause the risk to internet addiction. Therefore, the researchers concluded that internet use among adolescents is indeed the primary need for them during COVID-19 pandemic for online learning classes. As long as it is used appropriately, it will give benefits for adolescents both academically and socially. However, if it is misused, considering the various internal and external factors, it can cause internet addiction toward adolescents. The side effects of this addiction are physical and mental illness, and social problem among adolescents (Mirzaei, 2021).

This systematic review found that there were two main factors that caused internet addiction among adolescents during COVID-19 pandemic, which were internal and external factors. Internal factors found in this systematic review were resilience, self-efficacy, self-esteem, gender, mental health, sleeping difficulty, fear of COVID-19, and loneliness. The lower their resilience was, the higher their risk to suffer from internet addiction. Improving their resilience, emotional regulation, and problem solving ability can be effective ways to minimize the internet addiction behavior (Zhou et al., 2017). During COVID-19 pandemic, if they often watched and read information related to COVID-19, observed the total cases and deaths caused by COVID-19 on the internet, they may experience depression and anxiety affecting their mental health. However, if they have good resilience in coping with the problems related with COVID-19, they will not be addicted to internet (Bagheri Sheykhangafshe et al., 2021).

Besides resilience, self-efficacy was also internet addiction predictor among adolescents during COVID-19 pandemic. Adolescents who cannot control internet use and use it impulsively have the risk to develop cyberbullying behavior, in which they express their negative emotion and opinion towards other people. This is affected by their self-efficacy in solving problems related with COVID-19 (Amalia Zulfa et al., 2020). Consistently, low self-esteem can also predict internet addiction (Fernandes et al., 2021). Meanwhile, individual with high self-esteem will not easily suffer from internet addiction (Stefani & Tiatri, 2021).

Changes occurred during COVID-19 pandemic, such as quarantines, school culture, family time, and parents' level of education are associated with the high level of internet use among teenage boys (Kamasak et al., 2022). This, of course, will influence their mental health. The level of anxiety and depression this time are not only highlighted on the need to cope with emotional pressure for children and adolescents (Duan et al., 2020). The high internet use is associated with anxiety. An Individual who spend more time on the internet to find information about COVID-19 can increase their anxiety (Khodabakhsh et al., 2021). Although internet becomes a threat toward mental health, video games is proven to be able to minimize depression and anxiety, improve creativity, skills, and cognitive skills for children. It can happen if adolescents can use the internet appropriately in normal duration and usage (Limone & Toto, 2021). However, there were 62.2% admitted that their duration of accessing the internet has increased significantly during the pandemic. There were 84% reported that the level of stress they felt was higher and 62% of them used the internet until they became addicted (Gupta et al., 2020). The more they are exposed to pandemic information, the more psychological and behavioral problems occur among adolescents. In addition to that, COVID-19 is directly related to internet addiction and PTSD symptoms. Internet addiction is found to be the mediator between COVID-19 exposures and PTSD symptoms (Hu et al., 2021).

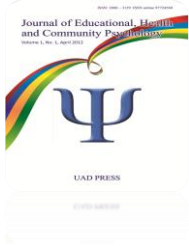
During the lockdown, there were many adolescents experienced confusion about the changes of activities and the patterns of life. Internet addiction among adolescents who were isolated at homes would increase the risk to feel sleepy in the afternoon (Hu et al., 2021). This can affect the brain function and disturb sleep quality (Limone & Toto, 2021). Therefore, self-control is important. Adolescents who have good sleep quality usually apply coping strategy to reach better life quality and welfare (Syeha et al., 2021). Moreover, many adolescents were afraid of getting infected by COVID-19. Therefore, the higher their fear of COVID-19 is, the higher the risk for them to suffer internet addiction. This was because they were exposed to information related the death rate every day that finally lead to fear of COVID-19. Therefore, they diverted the fear of COVID-19 by accessing the internet excessively at home (Moniri et al., 2022). Loneliness is also one of the factors that caused internet addiction among adolescents during COVID-19 pandemic (Fernandes et al., 2021). Changes in social interaction were the cause of their loneliness which can lead to higher level of internet addiction (Küçükakal & Sahrañç, 2022).

Meanwhile, other external factors found were internet use duration, social interaction limitation, the role of family including level of parents' education, family harmony, family control and function, low socioeconomic status, online learning classes, social supports, and socio-emotional adaptation. COVID-19 has significant psychosocial impacts on adolescents (Duan et al., 2020b). Besides, the increase of internet addiction among adolescents was also caused by financial difficulty, isolation, and mental health problems such as depression, anxiety, and stress (Masaeli & Farhadi, 2021). The pandemic has demanded many significant changes and adjustments in adolescents' lives. So, it was inevitably that adolescents spend more time accessing the internet when they are alone (David & Warriar, 2021).

The majority of adolescents are very enthusiastic about using the internet especially during the lockdown. They consider the internet can meet their need to socialize and to spend their leisure time. However, this will influence them physically, psychosocially, and culturally (Kaya et al., 2022). The social interaction limitations during the pandemic are proven to cause the increase in internet addiction among adolescents (Gupta et al., 2020). Therefore, family is actually the closest institution to adolescents in coping with COVID-19 situation. Family illustrates significant changes on adolescents' temper and characters compared to the period before the pandemic (Kamasak et al., 2022). Adolescents who live and spend more time with their family members will have lower risk to excessive internet use (Hassan et al., 2020). Family support can significantly decrease the risk to addiction (Kaya et al., 2022). Besides family support, social support is also a predictor of internet addiction among adolescents during the pandemic. Social support gives strength to adolescents in dealing with the pandemic situation. The lower social support they obtain, the higher the level of internet addiction among adolescents during the pandemic (Jang et al., 2022).

## **Conclusion**

Internet is a medium that has become the primary need for adolescents during COVID-19 pandemic. The changes of learning models from face-to-face to online classes have caused adolescents always attach to the internet. On one hand, internet provides positive impacts if it used appropriately, such as for online school activities. However, there are many adolescents who do not use internet wisely that leads to internet addiction. Some of the factors that have caused internet addiction among



adolescents during the pandemic were divided into internal and external factors. This systematic literature review has found seven internal factors that caused adolescents develop internet addiction, such as resilience, self-efficacy, self-esteem, gender, mental health, sleeping difficulty, fear of COVID-19, and loneliness. Meanwhile, the external factors are internet use duration, social interaction limitations, the role of family including level of parents' education, family harmony, family control and function, low socioeconomic status, online learning classes, social support, and socio-emotional adaptation. This systematic literature review was conducted only within context of Asia. Future studies are expected to be able to analyze the correlations between internet addictions with the risk factors causing the addiction among adolescents. Furthermore, preventive intervention regarding internet addiction among adolescents during COVID-19 pandemic according to the risk factors found in this study is also needed.

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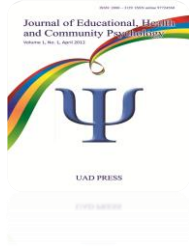
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