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The Effect of the Covid-19 Pandemic on Mental Health (Children, Adolescents, Young Adults) and Mental Health Service: Systematic Review

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Abstract

The impact of the COVID-19 pandemic on mental health in young age groups (children, adolescents, and young adults) has a higher prevalence than individuals at other stages of the lifecycle. The implementation of mental health services faces more barriers to professional care than in the pre-pandemic period. This study aims to identify the effect of sociodemographic and Public Health and Sosial Measures on the mental health of young age groups and mental health services during the COVID-19 pandemic. We conducted a mixed-methods-integrated approach to synthesize the findings and drew results using mixed-methods analysis. Literature finding was conducted in seven databases. The selection procedure followed the flow diagram of the Preferred Reporting Items for Systematic Review and Meta-Analyses. Inclusion criteria included all types of research that looked at the impact of COVID-19 on mental health and mental health services. There are 44 articles included, and the quality assessment shows that the study was evaluated as 80% and 100% quality criteria met. During the implementation of Public Health and Social Measures, the young age group experienced mental health problems, including stress, depression, anxiety, sleeping disorder, eating disorder, and post-traumatic stress disorder related to socioeconomic status, academic, and social factors. This systematic review proves that the COVID-19 pandemic affects the mental health of the young age group and mental health services.

INTRODUCTION

Coronavirus disease was first discovered in 2019 with Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) as the cause. The ill-ness is named Coronavirus Disease 2019 (COVID-19), previously known as "2019 novel corona-virus" or "2019-nCoV" (UNICEF, 2020). The World Health Organization (WHO) team arrived in Wuhan on January 14, 2021, to investigate the origin of the disease. The origin of the COVID-19 pandemic, which was originally believed to be transmitted from animals to humans, caused mild flu to other fatal diseases. Physical health is not the only problem that arises due to COVID-19, mental health must also be a concern. COVID-19 has spread to various countries and regions in the world, even WHO declared a Public Health Emergency of International Concern (PHEIC) status on January 30, 2020, and a pandemic on March 11, 2020. From December

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2019 to January 31, 2021, based on data reported to WHO, COVID-19 recorded more than 101.9 million confirmed cases and 2.2 million deaths in the world. In Indonesia, there have been more than 1 million confirmed cases and 29.7 thousand deaths since the first case detected on March 2, 2020. Mental health is a state of well-being that includes emotional, psychological, and social (CDC, 2018). Mental health during a pandemic includes parallel processes at two different levels for the concepts of insanity and outbreak or contagion. One of the processes is the reflection of the epidemiological process of the pandemic in the realm of psychology, reflecting thoughts, behaviour, and emotional responses. This is just as a physical disease has a pathogen, spreads via a vector, follows a mode of transmission, ferments during incubation, and explodes to defeat the host. The psychological aspects of outbreaks have a core of misinformation, ac-cepting uncertainty, growing in doubt as they incubate in the limbic system, and then, through media and communication vectors, exploding in the form of individual or mass panic, threatening to overwhelm coping resources of an individual or the whole community (Khan & Hure-mović, 2019). These coping resources include optimism, sense of mastery, self-esteem, and social support.

The COVID-19 pandemic presents social, emotional, and psychological challenges faced by every age group. Based on the results of the study, more stress is experienced by the young age group than adults (Kowal et al., 2020). In the young age group (children, adolescents, young adults), the prevalence of mental health disorders is highest compared to individuals at other stages of the lifecycle (adults and elderly) (Gulliver, 2010)yet tend not to seek help. This systematic review aims to summarise reported barriers and facilitators of help-seeking in young people using both qualitative research from surveys, focus groups, and interviews and quantitative data from published surveys. It extends previous reviews through its systematic research methodology and by the inclusion of published studies describing what young people themselves perceive are the barriers and facilitators to help-seeking for common mental health problems. Methods Twenty two published studies of perceived barriers or facilitators in adolescents or young adults were identified through searches of PubMed, PsycInfo, and the Cochrane database. A thematic analysis was undertaken on the results reported in the qualitative literature and quantitative literature. Results Fifteen qualitative and seven quantitative studies were identified. Young people perceived stigma and embarrassment, problems recognising symptoms poor mental health literacy. Decreased mental health including anxiety, mood, developmental symptoms, stress-related, and eating disorders among children, adolescents, and young adults during the pandemic (Gulliver, 2010) yet tend not to seek help. This systematic review aims to summarise reported barriers and facilitators of help-seeking in young people using both qualitative research from surveys, focus groups, and interviews and quantitative data from published surveys. It extends previous reviews through its systematic research methodology and by the inclusion of published studies describing what young people themselves perceive are the barriers and facilitators to help-seeking for common mental health problems. Methods Twenty two published studies of perceived barriers or facilitators in adolescents or young adults were identified through searches of PubMed, PsycInfo, and the Cochrane database. A thematic analysis was undertaken on the results reported in the qualitative literature and quantitative literature. Results Fifteen qualitative and seven quantitative studies were identified. Young people perceived stigma and embarrassment, problems recognising symptoms (poor mental health literacy. The impact of COVID-19 on mental health in young people goes beyond the disease. The trauma they face during their growth and development affects them throughout their lives (CDC, 2020).

COVID-19 transmission occurs through respiratory droplets so that Public Health and Social Measures (PHSM) is a solution to prevent the spread of person-to-person disease by separating people to prevent transmission. Public health measures during the COVID-19 pandemic are isolation, quarantine, social distancing, and community containment. Based on re-search conducted by several countries, shows that public health and social measures have an impact on mental health and mental health services. A study found that long-term isolation policies during a pandemic have complex effects on the mental health of young people (B. Chen et al., 2020). There has been a deterioration in mental health encompassing anxiety, mood symptoms, developmental, stressor-related, and eating disorders among children, adolescents, and young adults during the COVID-19 pandemic (Stavridou et al., 2020). Research by Octavius et al. has indicated that adolescents, who had experienced previous trauma with addition of social isolation or quarantine and loneliness, were more prone towards anxiety and depression during and even after the enforced isolation ends (Octavius et al., 2020).

Mental health services are defined as assessment, diagnosis, treatment, or counseling with professional intermediaries to assist individuals or groups in alleviating mental illness or emotional illness, symptoms, conditions, and disorders (BCM, 2019). However, the COVID-19 pandemic has disrupted or stopped mental health services in 93% of countries worldwide (WHO, 2020). This study aims to identify the effect of the COVID-19 pandemic on mental health (children, adolescents, young adults) and mental health services.

METHODS

Design

The present systematic review was conducted based on Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) without meta-analysis. An integrated mixed methods approach was applied for syn-thesis and accomplished by mixed methods analysis (Pearson et al., 2015; Sandelowski et al., 2006). The inclusion and exclusion criteria of this study were determined using the SPIDER. The research sample is the age groups according to CDC (CDC, 2020) which include children (<13 years), adolescents (13-17 years), young adults (18-24 years), and "age mixture" in terms of their age range including children, adolescents, and young adults with status as a student. The inclusion criterion includes any mental health impacts caused by the COVID-19 pandemic, and the impact of COVID-19 on mental health services. The types of research are qualitative, quantitative, and mixed methods studies. Exclusion criteria in the study included adults (>24 years old), pregnant female, Health-care workers' (HCWs), other workers, and having physical health problems.

Search Strategy

Literature finding was conducted in seven databases, namely Scopus, PubMed, Science Direct, MEDLINE, CINAHL Complete, Ejournals, and Pro-Quest using search terms adapted to each database. Searches were refined according to the inclusion criteria using filtering to limit the results to articles written in English, studies conducted in humans aged 24 years or younger, and articles published from 2019 until 2021.

Screening and Data Extraction

References that emerged from the database searches were imported to the Mendeley application system. Screening of titles and abstracts was carried out on 12.426 articles. Studies that did not meet the inclusion criteria were excluded.

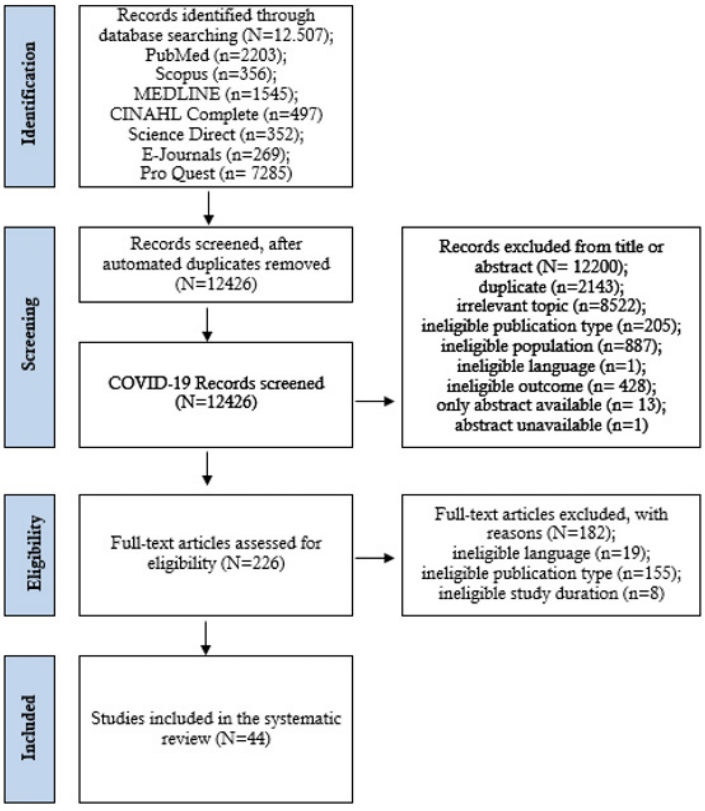

Figure 1. Preferred Reporting Items for Systematic Reviews and Meta-Analyses 2019 Flow Diagram

A total of 44 articles were deemed eligible for full-text review. Figure 1 show a PRIS-MA flowchart that illustrates the entire selection process. As can be seen in Figure 1, studies that were excluded for various reasons, articles that did not meet the inclusion criteria or met the exclusion criteria were classified as irrelevant.

We extracted the following information from included 44 full text available full text articles: (1). Study identification (author, country of study, year of publication); (2). Methodological characteristics (study design, data collection time, sample characteristics, sampling technique or data collection method); (3). Mental health outcomes (and related), and (4). Quality assessment.

Quality Assessment

Quality assessment was conducted (n=44) by using the Mixed Methods Appraisal Tool (MMAT) Version 2018 (Hong et al., 2018) from McGill University. The authors identified 44 articles related to the impact of the pandemic on mental health and mental health services. The overall quality assessment of 44 studies is 80-100% quality criteria met.

Analysis Plan and Data Synthesis

We collected and listed out the studies in a table. The information from included studies was added with references of the study. The tabulated information arranged the main findings from included studies. The table was divided into three age groups which are children, adolescents, and young adults. We conducted mixed methods analysis within the following categories: (1). Effect of socio-demographic variables on mental health; (2). Effect of Public Health and Social Measures on mental health; and (3). Effect of the COVID-19 pandemic on mental health service.

RESULTS AND DISCUSSION

Methodological Characteristics of the Studies

Among the countries where the 44 studies included in this systematic review were conducted, thirteen studies were conducted in China; four respectively in Bangladesh and the USA; three in Italy; two in Spanish; one in three countries (Indonesia, Taiwan, Thailand); one in six countries (Oman, Jordan, Saudi Arabia, Iraq, UAE, Egypt); and one respectively in South Africa, Australia, Belgium, Brazil, Egypt, India, Iraqi Kurdistan, Ireland, Malaysia, Morocco, Northwest Ethiopia, Pakistan, France, Saudi Arabia, Turkey, and the UK. The study applied a variety of study designs: 34 with a cross-sectional design, four with a qualitative study, three with mixed methods, one with a cross-sectional cohort, one with a mixed follow-up up study (cross-sectional cohort with a longi-tudinal component).

Due to restrictions during the COVID-19 pandemic, most of the data collection studies were conducted online (n=40), telephone in-terviews (n=2) (Gittings et al., 2021; Suhail et al., 2021) and two studies were conducted in di-rect contact with participants (Abdulah et al., 2021; Mekonen et al., 2021). Online data collec-tion was carried out by filling out questionnaires via e-mail, media platforms in the country such as WhatsApp, Facebook, LINE, Broadcast, Google Forms, Wenjuanxing, a digital platform of the Counseling and Consultation Service, on-line surveys through Qualtrics and Questionnaire Stars. Data collection was carried out from February 1 to November 30, 2020 (n=39), while five studies did not report the time of data col-lection.

The following are the sampling techniques that the 44 studies used: eight studies used convenience sampling; seven studies used snowball sampling; three studies used purposive sampling; three studies used volunteer sampling; two studies used random sampling; two studies used convenience and snowball sampling; stratified cluster random sampling, matched sampling, simple random sampling, opportunistic sampling (one respectively). Meanwhile, one study took participants through a platform (social media, community-oriented, online study participation) (Fitzpatrick et al., 2021), one study took students from K-12 public schools in Florida (McKune et al., 2021), one study took participants from 13 schools in Turkey (Kılınçel et al., 2021), one study with young people (15 to 24 years) from six countries (Oman, Jordan, Saudi Arabia, Iraq, UAE, Egypt) as participants (Al Omari et al., 2020). In addition, one study took participants from the members of the Accelerate Hub Teen Advisory Groups in the Eastern and Western Cape provinces of South Africa (Gittings et al., 2021), two study run nationally with students as participants from 82 universities in France (Wathelet et al., 2020) and 180 universities in China (Chi et al., 2020), one study with student participants from the Counseling and Consultation Service for Students in Italy (Giusti et al., 2020), one study with undergraduate students as participants in New Jersey (Kecojevic et al., 2020) and in Spain (Garvey et al., 2021), four studies with student participants from colleges and universities in Pakistan (Baloch et al., 2021; Salman et al., 2020), in China (Yu et al., 2021), in three countries (Indonesia, Taiwan, Thailand) (Pramukti et

al., 2020), and one study with medical students in Morocco as participants (Essangri et al., 2021).

The study was conducted among the age group of children, adolescents, young adults, and students in the health and non-health fields. Studies conducted on individuals under 19 years old, with their parents or caregivers as informants. The sample size varied significantly from 10 to 1.199.320 participants. Regarding sex, 33 of 44 studies reported having more female than male participants in their study sample, nine studies reported more male participants than female, one study reported the same number of male participants as female (Gittings et al., 2021), and one study reported all participants were female (Zhou et al., 2020).

In terms of the measures employed by the studies, 40 out of 44 studies used psychometric tools that have been previously standardized and/or established for their psychometric properties. Of the 40 studies, only 24 studies reported reliability coefficients (Cronbach's alpha), namely: α= 0.538 to α= 0.96. One study was analyzed using a qualitative content analysis method on children's drawings (Abdulah et al., 2021), two studies used the Interpretative Phenomenological Analysis (Suhail et al., 2021; O'Sullivan et al., 2021), and one study was analyzed by thematic analysis (Gittings et al., 2021).

Quality appraisal revealed that most studies were evaluated as 80% quality criteria met (n= 17) and 100% quality criteria met (n= 27). In these 17 articles, confounders were not con-sidered in the analysis.

Effect of Socio-Demographic Variables on Mental Health

Sociodemographic factors are related to mental health. These factors cover low socioeconomic status, financial insecurity, a large num-ber of children or family members in the house-hold, the status of children in the family, having children who are under 5 years old, living with family or other people, living in rural areas, living in areas with risk and high prevalence of COVID-19, young age (≤ 22 years), gender, education level, the field of study, associated with stress, ESD, depression, anxiety, sleep disorders, OCD, and PTSD.

Selected articles report socio-demographic factors related to children's mental health include gender (n=2), number of children and family members living at home (n=2), age of parents or caregivers (n=1), education level of parents or caregivers (n=2), socioeconomic status (SES) (n=2), level of study (n=2), level of re-strictions on COVID-19 in the area of residence (n=1), risk of COVID-19 in the area of residence (n=1), and living in urban or rural areas (n=1).

Mental health problems experienced by children during the pandemic related to socio-demographic factors, such as depression (n=2), anxiety (n=2), OCD (n=1), psychological dis-tress (n=1), and sleeping disorder (n=1). Two studies did not describe specific mental health problems (Fitzpatrick et al., 2021; W. Li et al., 2021). High level of depression in children is associated with females and living condition in urban areas. In addition, a high level of anxiety in children is associated with females, the number of family members at home, the young age and educational level of the parents or care-givers, the low level of study, and living condition in urban areas. Meanwhile, OCD or obsessive-compulsive disorder in children is associated with females and lower level of study. Sleeping disorder in children, on the other hand, is associated with living condition in urban areas. Psychological distress in children is associated with low or moderate socioeconomic status and living in a high-risk area for COVID-19. Children's mental health problems are also associated with the number of children in the household and living condition in regions with lenient COVID-19 restrictions.

Sociodemographic factors related to adolescent's mental health include gender (n=5), child status (n=1), level of study (n=7), risk of COVID-19 in the area of residence (n=2), number of confirmed cases in the area of residence (n=1), number of children in the household (n=1), level of restrictions on COVID-19 in the area of residence (n=1), economic status (n=1), income (n=1), age (n=2), family size (n=1), rur-al or urban (n=2), and having children under 5 years old (n=1).

Mental health problems experienced by adolescents during the pandemic are related to socio-demographic factors, such as stress (n=2), depression (n=8), anxiety (n=7), OCD (n=1), psychological distress (n=1), and sleeping disorder (n=1). Two studies did not describe specific mental health problems (Fitzpatrick et al., 2021; W. Li et al., 2021). Stress in adolescents is associated with females, whereas high level of depression in adolescents is related to females, only child status, higher level of study, senior secondary school, low income, age (15-18 years old and ≤ 22 years old), and living condition in urban areas. Low level of depression is associated with living in a province with 1000-9999 confirmed cases, male, having no children under 5 years old, and living condition in rural areas. High level of anxie-

ty in adolescents, on the other hand, is associated with females, only child status, higher or lower level of study, living condition in highly epidemic areas, senior secondary school, low income, and living condition in urban areas. Lower anxiety levels are associated with living in a province with confirmed cases more than 100, family size less than or equal with 4, male, and living condition in rural areas. OCD or obsessive-compulsive disorder in adolescents is associated with females and lower study levels. Psychological distress in adolescents is associated with low or moderate economic status, higher study levels, and living in a high-risk area for COVID-19. Sleeping disorder in adolescents is associated with living condition in urban areas. Mental health problems are also associated with living condition in regions with lenient COVID-19 restrictions.

Sociodemographic factors related to mental health of young adults include level of study (n=9), gender (n=14), age (n=7), subjec-tive social status (n=1), prevalence rate of CO-VID-19 in area of residence (n=1), living in an area with high infection rates (n=1), presence of a garden at home (n=1), field of health studies (yes or no) (n=3), living alone or with family (n=4), study at university or college (n=1), con-firmed or suspected cases in community (n=1), rural or urban (n=3), income (n=1), family size (n=1), have children (n=2), quality of residence (n=1), and foreign or domestic students (n=1).

Mental health problems experienced by young adults during the pandemic were related to socio-demographic factors, such as stress (n=8), depression (n=11), anxiety (n=15), PTSD (n=2), low well-being (n =1), insomnia (n=1), distress (n=2), and suicidal thoughts (n=1). High level of stress in young adults are associated with females and non-binary, the third-year medical students, 18-21 years old (>22 years is a protective factor against stress), living condition in urban areas, living with family or alone, second or third-year or fourth or fifth year students, low quality of housing, and living in an area with high infection rates.

High levels of depression in young adults are associated with females and non-binary, third-year medical student, living in an area with a high prevalence of COVID-19, living with family or alone, higher study rate, having confirmed or suspected cases in the community, non-healthcare fields of study, living condition in urban areas, low income, age (≤ 22 years old), secondary level education, living in an area with a high infection rate, and a first-year student. Females are also a protective factor against depression.

High levels of anxiety in young adults are correlated to females and non-binary, undergraduate students, low subjective social status, age (21-23 years old), living in an area with a high prevalence of COVID-19, living in a house without a garden, higher level of study (second year or higher), having a confirmed or suspected case in the community, living condition in urban areas, low income, age (≤ 22 years), family size less than or equal with 4, secondary level education, living alone, not a student of health and medicine, living in an area with high infection rates, and low quality of housing.

Lower levels of depression and anxiety were associated with being male and living condition in rural areas. Low level of depression was found in those who do not have children under 5 years old. PTSD in young adults is associated with older age, master's students compared to undergraduate students. Low well-be-ing in young adults is related to females, low subjective social status, and age (21-23 and <20 years old). Insomnia in young adults is associated with third-year medical students and females. Distress in young adults is associated with third-year medical students, females and non-binary, living with family, low quality of residence, living in an area with high infection rates, foreign students, and first-year students. Meanwhile, suicidal thoughts in young adults were associated with females and non-binary, not living with family, low quality of residence, and freshman.

Effect of Public Health and Social Measures on Mental Health

In each country, the implementation of Public Health and Social Measures during the COVID-19 pandemic is carried out to prevent the spread of person-to-person disease by separating people to prevent transmission. Of the 44 studies, 29 studies are related to lockdown or confinement, seven studies to quarantine, 11 studies to school closures or online learning, and five studies to the implementation of social distancing. During the implementation of Public Health and Social Measures, young age groups experienced mental health problems.

During confinement or lockdown, children experienced stress (n=2), depression (n=4), anxiety (n=4), OCD (n=1), and sleeping disorder (n=1). Adolescents experienced stress (n=4), depression (n=7), anxiety (n=7), eating disorder (n=1), OCD (n=1), and sleeping disorder (n=1). Young adults experienced stress (n=10), depression (n=12), anxiety (n=17), PTSD (n=1) eating disorder (n=1), somatization (n=1), and intru-

sion, avoidance, hyperarousal symptoms (n=1). Finally, young adults during the pandemic had suicidal thoughts (n=1) and reported bodily symptoms (n=1), such as pain, body sensation in the hands (physical condition could not be diagnosed); have body complaints, such as: bloating and unexplained stiffness.

During quarantine, adolescents experienced anxiety (n=1); young adults experienced symptoms of stress (n=2), anxiety (n=3), depression (n=6), insomnia (n=1), suicidal thoughts (n=1) and distress or event-specific distress (n= 3). During social distancing, children experi-enced anxiety (n=1); adolescents experienced depression (n=1), anxiety (n=1); and young adults experienced stress (n=1), anxiety (n=1), depression (n=1). During online learning or school closure, children and adolescents experienced psychological distress (n=1); and young adults experienced stress (n=1), anxiety (n=2), and depression (n=1).

Effect of the COVID-19 Pandemic on Mental Health Service

Based on the research that has been conducted, four of 44 studies describe the need for mental health services during the COVID-19 pandemic in children (Fitzpatrick et al., 2021), adolescents (Fitzpatrick et al., 2021; Dewa et al., 2021), and young adults (Gittings et al., 2021; Wathelet et al., 2020; Dewa et al., 2021). One study examined mental health service issues before and during the lockdown, as well as the need for mental health support after lockdown (Dewa et al., 2021).

DISCUSSION

Socioeconomic Status and Mental Health

Low socioeconomic status is associated with increased mental health problems (W. Li et al., 2021). Students with middle and low economic status (poor, living in disadvantaged areas, low family income, parents with a low ed-ucation level) are vulnerable to mental health problems during the COVID-19 pandemic (W. Li et al., 2021; Qin et al., 2021; Sayeed et al., 2020). Children whose guardians have a higher education level (postgraduate or university graduates) have lower levels of anxiety than those whose guardians only have primary school education (de Avila et al., 2020).

Families with poor economic conditions may face greater financial hardship during the COVID-19 pandemic. During the pandemic, an online learning system was put in place. As a result, students, who come from less developed areas and have poor economic status, may have limited resources to access online learning, which in turn can have an impact on mental health status due to feeling left behind in academic. This is supported by a study in Pakistan which indicates that difficulties and disabilities, unavailability of laptops, unreliable internet connections, assignments, and exams; not only caused stress and anxiety related to academics and careers, but also worsen their mental health (Baloch et al., 2021).

Financial insecurity due to a decrease, loss of fixed income, reduced wages or working hours, prolonged unemployment, delays in providing benefits, unavailability of education costs, unfulfilled basic needs which is a negative impact of confinement, are stressors that contribute to increased levels of stress (Khan et al., 2020), event-specific distress (Khan et al., 2020), depression (Gittings et al., 2021; McKune et al., 2021; Wathelet et al., 2020; Kecojevic et al., 2020; Khan et al., 2020; Islam et al., 2020), anxiety (Gittings et al., 2021; McKune et al., 2021; Garvey et al., 2021; Khan et al., 2020; Islam et al., 2020; Sundarasen et al., 2020), OCD-related symptoms (McKune et al., 2021), and PTSD (Li et al., 2021). Higher monthly in-come was identified as a protective factor against depressive symptoms (Yu et al., 2021). Financial problems in quarantine situations cause psychological effects even after quarantine (Khan et al., 2020). The unavoidable financial loss, especially the inability to work due to acts of isolation or the loss of a loved one who has become the breadwinner, leaves the family in an unstable condition and a negative emotional experience.

Residence and Mental Health

Levels of stress, depression, anxiety, and sleep disturbances are higher in children whose families live in urban areas compared to children in rural areas (Mekonen et al., 2021; Sayeed et al., 2020; Yeasmin et al., 2020). Perhaps the reason behind this scenario is the complete enforcement of lockdowns in urban areas and children being forced to stay at home. They might have felt lonely during the stay-at-home rules as they were unable to play and pressured by their parents, relatives, and friends. Psychological distress is higher for those living in areas of high risk for COVID-19 (Wathelet et al., 2020; Qin et al., 2021) and highly epidemic areas (Chen et al., 2020). Students residing in or from Wuhan, are at higher risk of social impacts such as an excessive collection of personal information and alienation of family relatives. Also, harassment and humiliation from strangers (Li et al., 2021).

Living in a province with a large number

of confirmed cases is associated with a lower risk of anxiety (>100 cases) and depression (>1000 cases) (Chen et al., 2021). The possible reason is that provinces with more confirmed COVID-19 cases usually have more strict quarantine measures as well as mental health preventive measures and education to improving knowledge about COVID-19 and enhance their confidence in battling the COVID-19 outbreak.

Different results were found in a study in Morocco that indicates that living in a location with a high prevalence of COVID-19, being a high-risk factor for anxiety and depression (Essangri et al., 2021) and having a confirmed or suspected case in the community are associated with an increased risk of anxiety and depression (Ma et al., 2020). A study in China reported that the number of confirmed cases (>300 cases) detected in the participant's province of residence at the time of the survey was positively associated with depressive symptoms (Y. Yu et al., 2021). The possible reason is concern about themselves and their family or friends being infected and negative information about the number of people infected which can increase their psychological stress.

Age, Study Level, Field of Study and Mental Health

Age 22 years old compared to >22 years old, iis more at risk of experiencing stress (Abdulghani et al., 2020), depression (Salman et al., 2020; Sayeed et al., 2020), and anxiety (Sayeed et al., 2020), especially those aged 17-18 years (Sundarasen et al., 2020). Research shows that adolescents are at increased risk of psycho-logical distress than children (Qin et al., 2021). Age >22 years old is a protective factor against stress (Sayeed et al., 2020). Children whose guardians were young with the lowest level of education among the participants, had higher levels of anxiety than those whose guardians were older and more educated (de Avila et al., 2020). Lower levels of study are more at risk for anxiety (Dodd et al., 2021), OCD, and both (McKune et al., 2021). Secondary level education than graduate level is at risk of suffering from anxiety and depression (Sayeed et al., 2020). The possible reason is the higher level of knowledge of COVID-19 among university students. Undergraduate students may have missed important socialization opportunities from orientation to create social connections that contributed to the higher prevalence of future anxiety.

Higher level of study associated with an increased risk of anxiety (Wathelet et al., 2020; Kecojevic et al., 2020; Ma et al., 2020; Liu et al., 2021), depression (Yu et al., 2021), both (Chen et al., 2020; Chen et al., 2021), stress (Wathelet et al., 2020), and PTSD (Li et al., 2021). Depression is significantly related to age, level of study and both (Zhou et al., 2020). High school students have a higher risk of depression than junior high school students (Zhou et al., 2020). Adolescents with depression in high school, especially those in third grade are more prone to developing comorbid anxiety and depression (Liu et al., 2021). Regarding mental health problems at higher levels of study, a possible reason is that high school students may have faced enormous academic stress while preparing for college entrance exams.

In the group of young adults, first-year college students are associated with an increased risk of suicidal thoughts, severe depression, and severe distress (Wathelet et al., 2020). Increased stress and anxiety occur in students in the second or third year and fourth or fifth year (Wathelet et al., 2020). Students with a higher level of study have concerns about the impact of the pandemic on their post-graduation plans and their economy. Anxiety about graduation is related to anxiety (Liu et al., 2021). Research in Wuhan shows that master's students have a higher risk of PTSD compared to undergraduate students (Li et al., 2021). Older age was found to have a significantly higher likelihood of reporting symptoms of PTSD and depression (Chi et al., 2020). A possible reason is that master's students are involved in more research activities and they have a higher risk of contracting COVID-19 in Wuhan.

Regarding the field of study, being a medical student is associated with depression (Ghazawy et al., 2020) and severe stress (Abdul-ghani et al., 2020). The third-year (preclinical level of enrolment) has a significant prevalence of severe stress (Abdulghani et al., 2020) and is a risk factor for depression, insomnia, and psychological distress (Essangri et al., 2021). The third medical year which is the transition from pre-clinical to clinical year leads to significant changes in terms of learning needs and teaching patterns, thus having a significant impact on the well-being of medical students.

Non-health department students, compared to medical students, have a higher risk of suffering from depression (Mekonen et al., 2021) and anxiety (Sundarasen et al., 2020). The possible reason is that health students can get better information about pandemic compared to students of other fields of study.

Gender and Mental Health

Female is at high risk for depressive symp-

toms (Al Omari et al., 2020; Wathelet et al., 2020; Salman et al., 2020; Essangri et al., 2021; Zhou et al., 2020; Chen et al., 2020; Chen et al., 2021; Liu et al., 2021; Ghazawy et al., 2020), anxiety (Al Omari et al., 2020; Wathelet et al., 2020; Baloch et al., 2021; Salman et al., 2020; Essangri et al., 2021; Chen et al., 2020; Chen et al., 2021; Liu et al., 2021; Ghazawy et al., 2020; Villani et al., 2021), OCD, or all three (McKune et al., 2021), stress (Al Omari et al., 2020; Wathelet et al., 2020; Ghazawy et al., 2020), insomnia and severe distress (Essangri et al., 2021). The following research in Bangladesh shows that females have a greater risk of experiencing anxiety and depression compared to males (Sayeed et al., 2020). The study reported that higher levels of anxiety (Baloch et al., 2021; Sayeed et al., 2020; de Avila et al., 2020; Sundarasen et al., 2020; García-González et al., 2021) and stress (Kecojevic et al., 2020; Garvey et al., 2021; Sayeed et al., 2020; Abdulghani et al., 2020) were indicated by females than males. However, studies have shown that there is a higher increase in anxiety levels in male students after four weeks of confinement (García-González et al., 2021) and females are identified as a protective factor against depressive symptoms (Yu et al., 2021). Thus, gender differences in psychological problems need to be studied further based on different cultural backgrounds.

Restrictions related to the COVID-19 pandemic have an impact on the mental health of children, adolescents, and young adults. The implementation of social distancing, stay-at-home, and social distancing to reduce the spread of COVID-19's impact towards mental health, especially towards the young age group. Research has shown that public health restrictions have adverse implications for the mental health of children and adolescents (O'Sullivan et al., 2021). Higher levels of stress, depression, and anxiety due to social isolation and increased maladaptive behaviour. This condition is exacerbated in children and adolescents with developmental disorders (O'Sullivan et al., 2021), and even stress can lead to greater mental health problems (Liu et al., 2020).

Family Size, Social Relationships, and Mental Health

Symptoms of depression and anxiety were higher in those living with families (Islam et al., 2020). The results are similar to studies in young adults in Northwest Ethiopia that indicates that living with family increases the risk of stress and depression (Mekonen et al., 2021).

Mental health symptoms are related to the number of children in the household (Fitzpatrick et al., 2021). The status of an only child is a risk factor for depression and anxiety symptoms (Chen et al., 2020). Having only one child can make parents behave protectively towards them during the pandemic which cause depression and anxiety in adolescents.

Having a family size ≤ 4 has a greater risk of experiencing symptoms of depression and anxiety than adolescents and young adults with a family size > 4 (Sayeed et al., 2020). Having a sibling or more people at home can be a protective factor for mental health, reducing feelings of loneliness and being more supportive of each other while staying at home so they don't feel isolated. Different results are shown by research in Brazil, the more people who stay at home, the higher the level of anxiety in children (de Avila et al., 2020). This may be because sibling disputes, limited time for oneself and having to share the attention of parents can make them feel frustrated (Fitzpatrick et al., 2021). Research has shown that levels of depression, anxiety, and sleeping disorders were higher in children who often fight (Yeasmin et al., 2020). Other possible reason is that children from more economically disadvantaged families have diffi-culty in meeting the needs of families with large family sizes and experience family conflict. Parental emotional distress and couple conflict were associated with harsh parenting and child problem behaviour which relates to significant increases in anxiety-depression (Neppl et al., 2016; East et al., 2020).

The health of relatives is associated with a higher risk of suicide, distress, stress, anxiety, or depression (Wathelet et al., 2020). Adolescents who have relatives infected with COVID-19 are at risk for depression and anxiety (Kılın-çel et al., 2021; Chen et al., 2020). Research also proves that young adults who have relatives or acquaintances who are suspected, infected with COVID-19, or isolated are more at risk of experiencing depression (Mekonen et al., 2021; Chi et al., 2020), anxiety (Chi et al., 2020; Sal-man et al., 2020), stress, all three (Ma et al., 2020; Ghazawy et al., 2020), or PTSD (Chi et al., 2020; Li et al., 2021). Perhaps knowing that someone close to you has been quarantined might give a sense of vulnerability to infection, which has been supported by research. The risk of being infected with COVID-19 is a risk factor for symptoms of stress, depression, and anxiety in adolescents and young adults (Hou et al., 2021; Al Omari et al., 2020). Contact with peo-ple who are at risk of becoming infected with COVID-19 is a risk factor for depression (Y. Yu et al., 2021) and anxie-

ty (Giusti et al., 2020). Contact with confirmed cases of COVID-19 is associated with anxiety symptoms (Al Omari et al., 2020; Sayeed et al., 2020) and higher stress levels (Sayeed et al., 2020) in adolescents and young adults. Contact with confirmed cases of COVID-19 or suspected cases is also associated with higher stress levels in adolescents and young adults (Mekonen et al., 2021; Sayeed et al., 2020).

Students with family members who died due to COVID-19 significantly predicted PTSD symptoms (Li et al., 2021). Students who lost family members due to the COVID-19 pandemic especially experienced deep sadness. Funerals and death memorials that are not carried out in a way as before the pandemic can cause feelings of trauma and psychological effects. The death of relatives due to COVID-19 is associated with an increase of anxiety levels in college stu-dents (Garvey et al., 2021).

During home confinement, children experience social isolation due to losing friendships with other children both at school and out-side of school. Being unable to carry out normal activities during the pandemic makes them feel lonely, sad, and depressed (Abdulah et al., 2021; O'Sullivan et al., 2021). Lack of access to friends and family is associated with anxiety in children (O'Sullivan et al., 2021). Separation anxiety is a negative impact of the pandemic, children experience dependence on caregivers, frustration at not getting full attention, and independence problems in daily tasks (Fitzpatrick et al., 2021). An increase in maladaptive behaviour in children is a decrease in attachment security and "clinginess" towards their parents (O'Sulli-van et al., 2021). Children who practice social distancing without their parents have a higher level of anxiety than children with both parents at home (de Avila et al., 2020).

Young adults reported at least one suici-dal thoughts, distress, stress, anxiety (Sundarasen et al., 2020), or depression especially those who do not live with their families or friends (Wathelet et al., 2020) and those who experience a decline in the quality of social relations during quarantine (Wathelet et al., 2020). In line with these results, living with other people is associated with lower severity of depressive symptoms (De Man et al., 2021) and a lower risk of depression (Y. Yu et al., 2021). Social interactions prevent depression tendencies due to boredom or loneliness, or the presence of social support when a person is going through personal problems or academic stress.

Conflict with family members is one of the factors that cause stress in young adults (Giusti et al., 2020). The level of student anxiety is related to family relationships. Having good interpersonal relationships with family members helps reduce anxiety levels (Garvey et al., 2021). Not having easy access to the internet that causes a lack of interaction with family is related to anxiety (Giusti et al., 2020). Problems with friends and partners experienced by young adults are due to being unable to meet so the relationships deteriorate with impaired mental health (Suhail et al., 2021).

Symptoms of depression in college students are related to social isolation and loneliness (Suhail et al., 2021). The lack of mobilization is caused by the lockdown and the loneliness brings more stress than the fear caused by COVID-19 (Suhail et al., 2021). High levels of loneliness and low distress tolerance are associated with high levels of depression, anxiety, and PTSD (Liu et al., 2020). An increased incidence of anxiety is associated with suffering from not being able to attend university, being away from friends, and not being able to physically see a partner (Sundarasen et al., 2020; Villani et al., 2021).

Research in young adults has shown that individuals with low social support are more at risk than individuals with high social support for having symptoms of depression (Hou et al., 2021), and/or anxiety (Ma et al., 2020). Lack of psychological support from fami-ly, community, and university increases the risk of stress (Baloch et al., 2021), anxiety (Baloch et al., 2021), and depression (Ghazawy et al., 2020). This is corroborated by a US study that found that social support from family was associated with lower rates of depression and PTSD symptoms, whereas support from a partner or friend was not associated with any mental health outcomes (Liu et al., 2020). Lack of needed support is related to suicidal thoughts in Indonesian students (Pramukti et al., 2020).

Research proves that perceived social support is a protective factor against depressive symptoms (Yu et al., 2021). However, receiving more support than needed is associated with higher levels of anxiety (Pramukti et al., 2020). Support can prevent individuals from having suicidal thoughts or grief, but it can lead to increased anxiety from sharing COVID-19 information repeatedly on smaller social networks. Friends and significant others who are facing the same problems during the pandemic, may not be able to provide emotional support in their capacity. However, families can support them by providing love and belonging, offering emotional and material support, and remaining actively

involved with young adults.

Young adults may feel more stressed during the COVID-19 epidemic, not only because of the vulnerability and perceived severity associated with it but also the way they are treated by others. Lockdown situations make young adults receive mistreatment (Suhail et al., 2021). Perceived stigma is associated with the severity of depressive symptoms in students in Belgium (De Man et al., 2021). Perceived discrimination does not have a direct impact on depression. Through mental stress due to COVID-19, the risk of depression in young adults in China increase (Y. Yu et al., 2021).

Academic and Mental Health

Academic stress is a risk factor (Yu et al., 2021) and is associated with a high increase in depressive symptoms (De Man et al., 2021). Academic stress is caused by school pressure from home or online study, due to an increase in academic workload for children (O'Sullivan et al., 2021) and young adults (Gittings et al., 2021; M. Yu et al., 2021; Sundarasen et al., 2020; De Man et al., 2021), courses become less clear, worries about academic performance as well as depression due to changes in teaching methods (De Man et al., 2021). A higher amount of homework than previously was associated with anxiety in adolescents with depression (Liu et al., 2021). Besides education problems, having household responsibilities and taking care of relatives during the lockdown are related to the stress and anxiety levels of students (Baloch et al., 2021; Sundarasen et al., 2020). This could be due to the lack of support from family members during the lockdown.

Participating in distance learning or online studies is associated with a higher risk of depression (Zhou et al., 2020), depressive symptoms and anxiety (Chen et al., 2020) in adolescents in China; anxiety (Abdulghani et al., 2020; Sundarasen et al., 2020), stress, and both in college students (Baloch et al., 2021). Lower risk of depression is associated with participating in distance learning and learning duration of 4-8 hours per day (Chen et al., 2021). Study duration >8 hours per day is associated with anx-iety (Liu et al., 2021).

Institutional dissatisfaction is associated with a higher increase in depressive symptoms. Institutional dissatisfaction such as a decrease in the quality of education and university staff cannot be found to share concerns about COVID-19 (De Man et al., 2021). Anxiety about entering a higher level of study is associated with an increased risk of anxiety (O'Sullivan et al., 2021), depression, and both in adolescents (Chen et al., 2021). Difficulty in adjusting to online learning, inability to focus, a sense of being left behind academically, lack of interaction with teachers and peers, and disrupted learning environment are factors that cause stress (Giusti et al., 2020), depression (Islam et al., 2020), anxiety (Gittings et al., 2021; Islam et al., 2020), somatization, all four (Kecojevic et al., 2020), and PTSD symptoms (Li et al., 2021) in young adults. Anxiety in secondary school students is related to concerns about when schools will reopen, the possibility of missing years and not being able to catch up (Gittings et al., 2021).

Young adults show a sense of uncertainty, losing their sense of purpose which mostly revolves around their academic performance, graduation and professional life due to COVID-19 and lockdown (Gittings et al., 2021; Suhail et al., 2021; Sundarasen et al., 2020). A possible explanation for this result is that not being able to learn during a pandemic raises concerns about an uncertain and difficult future. Whereas, education paves the way for the people to have a promising future and to receive ample opportunities along the way (Al-Shuaibi, 2014). The lack of education provides children with basically no way to help themselves escape poverty and dooms them to a life of hardship (Neill, 2014).

Adolescents experience stress and anxiety about the future and worries about failure in school (Fitzpatrick et al., 2021). During a pandemic, home is an environment that is easily disturbed because all family members are isolated together. Lack of interaction with teachers and peers means less social support that students need. They may have experienced depression due to missing out on all the events they were looking forward to, such as the year-end graduation ceremony during a pandemic (O'Sullivan et al., 2021).

Changes in mood and behaviour during the pandemic are associated with symptoms of stress (Fitzpatrick et al., 2021) and anxiety (O' Sullivan et al., 2021) in children. Problems with children related to academics (not wanting to do or procrastinating school work, refusing to go to school); misbehaviour (rage, disobedience); and social isolation (loss of friends, lack of social skills, loneliness) (Fitzpatrick et al., 2021). Students who were found to refuse to accept the current COVID-19 situation had mild and severe stress levels. Research on medical students shows a tendency towards regular class lectures rather than online sessions because online learning materials are insufficient, difficult to understand,

and unable to manage time (Abdulghani et al., 2020). Increased stress levels in college students are associated with difficulties in obtaining medicines and cleaning supplies (Kecoje-vic et al., 2020).

Lifestyle and Mental Health

Lifestyle changes during the pandemic cause acute stress in young adults (Liu et al., 2020). Research has shown that drastic routine changes in children and adolescents with autism spectrum disorders cause anxiety. Anxiety in children has manifested concerning attachment difficulties (O'Sullivan et al., 2021). Maintaining personal development, such as routines and habits that make them feel good, helps reduce anxiety levels (Garvey et al., 2021). Higher levels of anxious attachment and lower levels of resilience are associated with a higher likelihood of reporting PTSD symptoms, depression, and anxiety in young adults (Chi et al., 2020). Students in China show that avoidant attachment is associated with a greater likelihood of developing anxiety symptoms (Chi et al., 2020).

An unhealthy lifestyle, such as sleep disturbances, physical activity <1 hour per day, is associated with an increased risk of mental health problems (Li et al., 2021). Poor sleep patterns exacerbate severe levels of anxiety (Garvey et al., 2021). Sleep problems are a risk factor for depressive symptoms in college students (Yu et al., 2021) who tend to feel tired, lack energy, irritability, anxiety, and other bad emotions, which may be associated with more serious de-pressive symptoms. Sleep duration of <6 hours per day is associated with a higher risk of depression (Zhou et al., 2020) and anxiety (Liu et al., 2021). In another study, sleep duration of 6–8 hours per day and >8 hours per day was associated with a lower risk of depression and anxiety (Chen et al., 2021; Ghazawy et al., 2020).

Lifestyle changes to build immunity. This lifestyle involves physical activity, healthy eating, and the inclusion of dietary supplements are associated with reduced stress levels (Suhail et al., 2021). Students with a sedentary lifestyle compared to students who do physical exercise have a higher risk of experiencing stress, depression (Mekonen et al., 2021), and anxiety (Qin et al., 2021). Doing physical activity reduces anxiety (Qin et al., 2021; Villani et al., 2021). Based on research by J. Zhou et al., duration of physical exercise <30 minutes per day is associated with a higher risk of depression (Zhou et al., 2020), anxiety, or both (Qin et al., 2021). Research confirms these results, exercise duration of 30–60 minutes per day and 60 minutes per day is associated with a lower risk of depression and anxiety (Chen et al., 2021). The duration of physical activity in the study by Mekonen et al. was at least 20 minutes per day (Mekonen et al., 2021). Exercise is an effort to prevent disease and promote well-being. There is evidence that exercise is beneficial for mental health; reduces anxiety, depression, and negative mood; improves self-esteem and cognitive function (Calla-ghan, 2004).

Screen Time, Information about COVID-19, and Mental Health

Students who had more sources of information about COVID-19 had a lower risk of experiencing psychological distress (depression, anxiety, or both) than those with fewer sources of information (Qin et al., 2021). Often the unknown is scary, so students who have many sources of information related to COVID-19 can use knowledge to reduce psychological distress.

Media exposure of 2 hours per day is associated with an increased risk of mental health problems in children (W. Li et al., 2021). Watching the news about COVID-19 is associated with anxiety in children (O'Sullivan et al., 2021) and adolescents, with TV as a source of information (Kılınçel et al., 2021). Receiving more information from the internet, medical staff, and family are associated with higher levels of anxiety (Pramukti et al., 2020). Stress, depression, and anxiety are related to the number of hours spent on the internet during the COVID-19 pandemic in adolescents and young adults (Ryan & Wilson, 2008). Young adults have at least one symptom of a mental health problem (suicidal thoughts, distress, stress, anxiety, depression, event-specific distress, or soma-tization) especially those who spend a lot of time looking for information (>1 hour per day) and the low quality of information received related to COVID-19 (Wathelet et al., 2020; Keco-jevic et al., 2020; Khan et al., 2020; Ma et al., 2020; Ghazawy et al., 2020). Previous research shows that the more internet-based COVID-19 information is collected, the higher the impact on an individual's level of anxiety. This is a phenomenon known as "cyberchondria" and is associated with symptoms of health anxiety (Ryan & Wilson, 2008; Mathes et al., 2018; Muse et al., 2012).

There is a danger from self-diagnosis websites, causing further anxiety associated with a false or correct diagnosis of a serious and/or life-threatening condition. The diagnosis is given in the absence of a healthcare professional who can provide context, reflect on possible different

diagnoses, or apply the steps necessary to make a definitive diagnosis. Some people even try to self-medicate themselves by buying over-the-counter or prescription drugs from internet phar-macies which provide false assurances, leading to delays in seeking professional help and diag-nosis (Ryan & Wilson, 2008).

Excessive exposure to COVID-19 news on social media and mass media can cause a person to feel fearful when witnessing many confirmed cases and deaths. If the information received does not come from a reliable source, it leads to negative behaviour changes and potentially lead them to take greater risks.

Primary Caregiver, Parents' Attitude, Parent's and Child's Mental Health

Non-primary caregiver parents, poor parental mental health, and harsh parenting are associated with an increased risk of children's mental health problems (W. Li et al., 2021). Depression, anxiety, and sleeping disorder in children and adolescents are related to mental health and parents' attitudes toward children (threatening punishment, calling stupid, yelling and hitting during home quarantine) (Yeasmin et al., 2020). Levels of depression, anxiety, and sleeping disorder were found to be higher in children and adolescents with parents who did not take action to keep their children busy with activities and remained busy during the quarantine period at home (Yeasmin et al., 2020).

Parental practices that are protective of COVID-19 are associated with children and adolescents at higher risk of developing depressive symptoms (McKune et al., 2021). Stress in adolescents is related to stress in parents (Mensi et al., 2021). When parents experience an increase in cumulative stress levels, their behaviour becomes rigid and violent, which has an impact on the mental health of the child. The impact parents feel about COVID-19 is closely related to their increased parenting pressure, and this parental stress increases the risk of abusive parenting (Chen et al., 2020).

Individual Health Status and Mental Health

Anxiety symptoms and stress levels in adolescents and young adults are significantly higher in individuals with one or more COVID-19 symptoms (Sayeed et al., 2020). These results are supported by research by Wathelet et al., young adults had at least one mental health problem (suicidal thoughts, distress, stress, anxiety, or depression) in those with symptoms con-sistent with COVID-19 (Wathelet et al., 2020).

Increased levels of stress are associated with COVID-19 symptoms such as dry cough, fatigue, fever, and difficulty breathing. Increased levels of depression are associated with COVID-19 symptoms such as fatigue and difficulty to breathe. Meanwhile, increased levels of anxiety are associated with COVID-19 symptoms such as dry cough, fatigue, fever, sore throat, difficulty breathing (Khan et al., 2020).

Students infected with COVID-19 had a higher prevalence of intrusion, avoidance, and hyperarousal symptoms than students who were not infected. Infected students have a much higher prevalence of PTSD intrusion and symptoms (Li et al., 2021). A person, who catches the virus at the start of a pandemic, faces depletion of medical care resources, an uncertain prognosis after a long illness, fear of infecting others, and unwanted stigmatization and exclusion. All these factors can act as triggers for PTSD symptoms for those who are infected.

In addition to reporting symptoms of anxiety and depression, they complained about disturbed sleep patterns, body aches and pains, and sensations in the hands, while no physical condition could be diagnosed during the COVID-19 pandemic (Suhail et al., 2021). Students with chronic illnesses have a higher chance of experiencing stress, anxiety, and depression compared to healthy students (Ghazawy et al., 2020). The impossibility of using hospital services due to delays in medical visits is related to anxiety (Giusti et al., 2020). Worrying about going to a health facility for fear of contracting COVID-19 is related to anxiety (Gittings et al., 2021).

Adolescents with symptoms of PTSD and acute stress disorder related to COVID-19 show the highest levels of stress, whereas those with psychiatric or psychological conditions experienced higher stress with fewer symptoms (Mensi et al., 2021). For young adults with pre-vious mental health problems or history of psychiatric follow-up, they have at least one mental health problem, such as anxiety and/or depression (Ma et al., 2020), or both, stress, distress, and suicidal thoughts (Wathelet et al., 2020). Anxiety is higher in adolescents with depression (Liu et al., 2021) and adolescents previously referred for psychiatric treatment (Kılınçel et al., 2021). Adolescents and young adults with mental health diagnoses, eating disorder symptoms, or control of eating and exercise are reported to have been exacerbated by the lockdown. Adolescents and young adults without a mental health diagnosis also report experiencing signs of depression, including feeling lonely, hopeless, and being in a bad mood

(Dewa et al., 2021).

Perceptions of the Pandemic, Autonomy and Length of Confinement, and Mental Health

Students' perceptions of risk of infection and opportunities to control the epidemic are associated with depression (Y. Yu et al., 2021). Risk factors increase mental stress due to CO-VID-19, which will increase the risk of depression (Y. Yu et al., 2021). High levels of worry and fear related to COVID-19 were predictors of levels of stress (O'Sullivan et al., 2021), depression (Zhou et al., 2020), and anxiety (O'Sullivan et al., 2021) in adolescents; stress (Liu et al., 2020), depression (Yu et al., 2021), anxiety (Git-tings et al., 2021; Garvey et al., 2021; Suhail et al., 2021; Villani et al., 2021), as well as somatization (Kecojevic et al., 2020) in young adults. Fear of infection during confinement is associated with anxiety in children (Abdulah et al., 2021).

Fear of the possibility of being asymptomatic and unwittingly infecting others increases the risk of anxiety in students (Suhail et al., 2021; Mekonen et al., 2021). Fear of being in-fected with COVID-19 is significantly associated with anxiety and even specific distress (Khan et al., 2020) and depressive in young adults (De Man et al., 2021; Hou et al., 2021). An increase in the incidence of anxiety in college students is associated with fears about pandemic confine-ment (Suhail et al., 2021) and an increase in positive cases and deaths (Villani et al., 2021).

Levels of stress, depression, and anxiety in adolescents and young adults were significantly higher in individuals who perceived that the pandemic caused life events to be disrupted and had a negative impact on mental health, economy, and education (Garvey et al., 2021) and did not believe the healthcare system would last as long as pandemic (Sayeed et al., 2020).

The lack of autonomy related to the CO-VID-19 lockdown is a contributing factor to stress in young adults (Giusti et al., 2020). An increase in the level of anxiety is related to the length of confinement. Quarantining for 14 days is a risk factor for depression (Al Omari et al., 2020) and anxiety (Sayeed et al., 2020) in adolescents and young adults. After four weeks, the greatest improvement occurred in those who did not leave during the confinement (García-Gon-zález et al., 2021). This is in line with research in Spain which indicates that students experience anxiety after being strictly confined in one to two months. Students feel that it is difficult to carry out their tasks such as work, daily activities, and social relations (Garvey et al., 2021).

The Practice of Preventive Measures and Mental Health

Students who do not properly practice COVID-19 precautions are at higher risk of experiencing stress than those who do (Mekonen et al., 2021). Following preventive measures, such as washing hands frequently, wearing masks, and social distancing, is associated with reduced levels of stress and fear of contracting the virus (Suhail et al., 2021). Always wearing a mask is a protective factor against depression and anxiety (Qin et al., 2021). Students who rarely wear masks are at higher risk of psycho-logical distress than those who always wear masks (Qin et al., 2021). Students who frequently wear masks may feel less likely to catch CO-VID-19 and reduce levels of worry and anxiety. The underlying reason is that preventive measures are the key to reducing COVID-19 morbidity and mortality. Implementing COVID-19 prevention measures such as wearing masks, washing hands, and proper physical dis-tancing can reduce the risk of someone contracting or being infected with COVID-19. So, a person is not easily stressed and experiences anxiety because of the fear of being infected with the COVID-19 virus.

Mental Health Services Problems and Needs Before, During, and After the Pandemic

The needs of children and adolescents during the pandemic related to mental health services include counselor, psychologist, and emotional guidance. Adolescents' need for mental health services during a pandemic is higher than that of children (Fitzpatrick et al., 2021). Young adults with at least one mental health problem (suicidal thoughts, distress, stress, anxiety, or depression) visit a professional for mental health reasons and apply for university health services (Wathelet et al., 2020). Young adults with severe psychological distress need and request psychosocial support services (Gittings et al., 2021).

Pre-lockdown mental health services have substantial problems which include disor-ganization, inability to cope with the high rate of youth's need for mental health support, long waiting lists, financial investment, issues about mental health policy and funding, and the absence of compassion and understanding from the doctors involved (Dewa et al., 2021). During lockdown, there is a lack of access and proper mental health support. Pre-existing mental health support has a direct impact on the lack of support during the lockdown. Tokenistic support and communicati-

on via telephone are only done to ensure that someone does not hurt himself (Dewa et al., 2021).

There is a need for school-based mental health services, digital and non-digital mental health services, and education about mental health in general (Dewa et al., 2021). Mental health nurses in schools have an important role to play in stigmatizing mental health so that people feel they can ask for help.

Strengths and Limitations

This study uses a systematic review method that presents the evidence on COVID-19's impact of various research designs in young age groups (children, adolescents, young adults) about the effects of socio-demographic variables; effect of Public Health and Social Measures on mental health during the COVID-19 pandemic; and mental health services problems and needs (before, during, after the pandemic). The study also describes preventive measures to reduce the risk of COVID-19 and mental health problems.

This systematic review has several limitations, such as only studies in English were included in this systematic review. Then, some studies that met the inclusion criteria were not included in this study. Most of the studies were cross-sectional, so the temporal relationship between outcome and exposure could not be determined because they were both examined at the same time.

CONCLUSION

This study showed that the COVID-19 pandemic had a broad impact on the mental health of young age groups (children, adolescents, young adults) and the mental health service. It is indicated that anxiety, stress, and de-pression increased as lockdown was enforced. During the pandemic, unpreparedness to face the increasing need for mental health services, especially for children, needs to be a concern.

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