Changes in youth mental health, psychological wellbeing, and substance use during the COVID-19 pandemic: A rapid review

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Running head: Youth mental health, substance use during COVID-19

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Abstract

Background: The focus of this review was to assess changes in youth mental health, psychological wellbeing, or substance use, as well as changes or disruptions to the delivery of mental health or substance use services for young people during the COVID-19 pandemic.

Method: We conducted a rapid review of the literature on our outcomes of interest among youth (age ≤ 25) in the context of the COVID-19 pandemic. Primary studies and systematic reviews on change were eligible for inclusion. Searches were conducted in PubMed and Embase in May 2021, and two reviewers screened studies for inclusion. We report results using a narrative synthesis.

Results: We included 156 primary publications. A variety of methods were used to assess change, including prospective assessment of longitudinal cohorts, retrospective recall by participants in cross-sectional and qualitative studies, and comparison of peri-pandemic data to pre-pandemic normative values. Publications regarding mental health ($n = 121$) and psychological wellbeing ($n = 26$) generally indicated poor outcomes during the pandemic period. Publications on substance use ($n = 41$) revealed overall declines or unchanged patterns of use, though certain groups reported increased or problematic use. Studies of service delivery ($n = 11$) indicated a generally positive reception for helplines and telehealth, although some youth experienced difficulties accessing mental health services.

Conclusions: The evidence indicates negative impacts of the COVID-19 pandemic on young people's mental health, although declines in alcohol and nicotine use were also found. Services will need to continue to adapt as the pandemic progresses, particularly to support disadvantaged youth who lack access to telehealth resources.

Key Practitioner Message:**What is known?**

- The COVID-19 pandemic has disrupted the lives of young people around the world. Life stressors may engender or exacerbate mental health or substance use problems among youth, particularly among vulnerable subgroups of youth.
- Despite plentiful reports regarding the prevalence of these issues during the pandemic, it was unclear if or how youth mental health, psychological wellbeing, and substance use had changed during this period.

What is new?

- The COVID-19 pandemic has negatively affected youth mental health in many settings. While some youth reduced their substance use during this period, other young people have increased their substance use frequency or quantity.
- Telehealth offerings are generally positively received, but require access to space and technology resources that disadvantaged youth may lack.

What is significant for clinical practice?

- Clinicians that work with youth should be aware of the negative mental health impacts during the pandemic period. Services will need to adapt their offerings to target particularly marginalized youth, who may have difficulty accessing telehealth technology.
- Further research is needed to address the use of illicit substances among youth during this period.

Keywords: youth; children; adolescents; mental health; substance use; COVID-19

Changes in youth mental health, psychological wellbeing, and substance use during the COVID-19 pandemic: A rapid review

Since the World Health Organization declared a health emergency in March 2020, the COVID-19 pandemic has destabilized life around the globe. The imposition of public health measures intended to protect populations against infection may additionally affect physical, mental, and emotional health as people endure extended 'stay-at-home' periods or expose themselves to infection risk outside the home. In many settings, schools and universities were not physically accessible during the pandemic; these 'lockdown' periods disrupted the daily routines, physical activities, social lives, and educational progress of many children and young people (Lee, 2020). Due to their sensitive psychosocial developmental stage, children and adolescents may be particularly vulnerable to the psychological distress resulting from these changes with the potential for long-term consequences (CDC, 2019; Magson et al., 2021; Racine et al., 2020). Indeed, children demonstrated symptoms of post-traumatic stress disorder (PTSD) in the wake of previous epidemics (Sprang & Silman, 2013), and initial evidence suggests that the COVID-19 pandemic has been a traumatic experience for young people (Conti et al., 2020; Ruff & Linville, 2021). As anxiety disorders and high levels of stress are associated with increased alcohol use among adults, alcohol use may become problematic for youth experiencing the disruption and social restriction characteristic of the pandemic period (Keyes et al., 2012; Paltell et al., 2020). The risk is further exacerbated by the lack some of the mechanisms of resilience and coping that develop with adulthood, thereby potentiating avoidant coping strategies such as substance use (Bartel et al., 2020; Dumas et al., 2020; Jones et al., 2021). These psychological challenges are particularly worrisome as youth mental health and substance use problems predict lifelong

mental and physical health outcomes (Caspi et al., 2006; Hemmingsson et al., 2008; Merline et al., 2004).

Previous research on traumatic or stressful events suggests that youth with pre-existing mental health or substance use problems may be particularly vulnerable to psychological stress and negative coping strategies during the pandemic (Zijlmans et al., 2021). For example, in the aftermath of the 9/11 World Trade Center terrorist attack, New York City high school students who reported prior trauma and PTSD were more likely to increase their cigarette smoking than were other students (Wu et al., 2006). These issues may be particularly relevant in the context of school closures (Lee, 2020), as school-based support services have been shown to improve youth clinical and academic outcomes for youth with mental health problems (Kang-Yi et al., 2018; Owens et al., 2008). Pandemic-related stress may also be exacerbated among marginalized youth populations (e.g., youth who are racialized, LGBTQ2S+, housing-insecure/homeless, or maltreated), who already experience higher rates of social stress (Valentine & Shipherd, 2018) and worse health outcomes (Jones et al., 2020), and lower rates of service utilization (Banks, 2021) compared to the general youth population. The pandemic context may engender additional barriers to care as services are physically inaccessible or insufficiently staffed (Bagley et al., 2021; Cohen & Bosk, 2020; Jones et al., 2020).

Much of the work on youth mental health, psychological wellbeing, and substance use during the pandemic has been focused on current mental health status rather than change relative to pre-pandemic outcomes (Al Omari et al., 2020; Turner et al., 2021; Zhou et al., 2020; Zijlmans et al., 2021). Accordingly, the findings may reflect longstanding issues rather than newly emergent ones. As the assessment of change over time is essential to understand

outcomes specific to the ongoing pandemic (Wade et al., 2020), studies of changes in mental health problems may be more useful than one-time assessments in order to understand and offset the negative impacts of this global phenomenon.

With these factors in mind, we conducted a rapid review of the impact of the COVID-19 pandemic on youth substance use and mental health, as well as the delivery of youth substance use and mental health services. Distinct from previous reviews (Imran et al., 2020; Jones et al., 2021; Nearchou et al., 2020; Nobari et al., 2021; Oliveira et al., 2020; Panda et al., 2021; Racine et al., 2020; Singh et al., 2020; Stavridou et al., 2020), we included only studies of change from pre- to peri-pandemic contexts, and also focused on youth substance use outcomes. Thus, the contribution of this review was the assessment of changes in youth mental health, psychological wellbeing, and substance use, as well as the changes or disruptions to the delivery of mental health or substance use services for young people.

METHOD

This review is registered with PROSPERO (registration no. CRD42021254675). We opted for the streamlined approach of a rapid review given the dynamic nature of the ongoing COVID-19 pandemic. The design of the review was informed by the Selecting Approaches for Rapid Reviews (STARR) tool (Pandor et al., 2019). Reporting is in accordance with Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement (Page et al., 2021) (see Appendix, Table 5).

Population of interest

“Youth” was defined as anyone under 25 years of age (WHO, 2011).

Outcomes

We extracted data on substance use, mental health outcomes, and service delivery in the context of the COVID-19 pandemic. ‘Mental health’ included mental disorders, for example, mood and anxiety disorders, as well as sub-clinical psychological distress and well-being. ‘Substance use’ was inclusive of any substance, including alcohol, nicotine, cannabis, prescribed medicines, and illicit drugs. Specific outcomes were:

1. Onset, improvement, or worsening of a mental disorder or psychological distress
2. Improvement or worsening of psychological wellbeing
3. Changes in prevalence or incidence of a mental disorder or psychological distress
4. Onset or changes in frequency or amount of substance use
5. Changes in substances used or in route of administration of substances
6. Changes in prevalence or incidence of substance use or substance use disorder

7. Changes in access to or disruption of mental health or substance use services for youth

Search strategy

Searches of peer-reviewed literature regarding youth mental health, substance use, and wellbeing in the context of the COVID-19 pandemic were undertaken in PubMed and Embase in May 2021, restricted to studies published in 2020 onwards. The search strategy was designed to facilitate rapid completion while ensuring a high level of retrieval of relevant studies. The search terms are listed in the appendix.

Inclusion criteria

We included all of the empirical studies on our target outcomes, regardless of methodology. Studies had to be focused on (1) a youth population and (2) associations between any aspect of the COVID-19 pandemic and the specified outcomes. Primary publications and systematic reviews were included. Publications regarding mental health, psychological wellbeing, or substance use during the pandemic without any comparison to a pre-pandemic time point (whether assessed prospectively or cross-sectionally) were excluded.

Population studies with participants older than 25 were included if (1) age-disaggregated results for our age range of interest were reported or (2) the majority of the sample was younger than 25, as indicated by the mean and standard deviation of participants' ages (e.g., in a sample of undergraduate students). Publications that only included youth with a specific health condition were excluded, unless the condition was a mental health problem.

Study selection

Study selection and screening were completed using the Covidence platform. Each citation was reviewed independently by two reviewers, with disagreements over inclusion and exclusion resolved through team discussion to reach a consensus. Reference lists of the included studies were checked for additional studies for inclusion.

Risk of bias assessment

As a rapid review, we excluded a formal risk of bias assessment (Pandor et al., 2019). However, as part of the data extraction, we recorded several aspects of the study design (e.g., prospective or retrospective assessment of change) and study population (e.g., representativeness of the study sample) that may provide an indication of risk of bias.

Data extraction and synthesis

Data were extracted into a Microsoft Excel spreadsheet to record:

- Study bibliographic details: authors, year of publication, country of publication
- Study design: qualitative, quantitative, or mixed methods; the method of assessing change since the pandemic; recruitment method; prospective or retrospective recruitment
- Study population: age range and average age of participants (child/adolescent/youth); generalizability of sample
- Study outcomes of interest and findings relating to youth substance use, mental health, wellbeing, and/or service delivery during the pandemic.

To maximize efficiency, the data from each study was extracted once with verification by another team member. Given the broad scope of this review and the heterogeneity of included publications, we used a narrative synthesis approach, with results organized by substances or symptoms measured.

RESULTS

Overview of included studies

We identified 4,793 publications for screening – 4,790 from the web searches, and three additional publications through hand searching of reference lists. After screening and full-text review, 156 publications were included, all of which involved primary research (Figure 1; see Appendix, Tables 1-4).

Figure 1: Study flow diagram

Youth mental health during COVID-19

One hundred and twenty-one publications reporting on youth mental health during the COVID-19 pandemic were found (see Appendix, Table 1). Of these, 53 involved retrospective change (36 cross-sectional studies, 17 qualitative studies), 36 prospective change, and 32 included comparisons of peri-pandemic outcomes to pre-pandemic normative data. A variety of methods were used to assess changes in mental health, including measurements of pre-existing prospective cohorts, comparison to population norms, and participant self-reports. Most of the studies ($n = 112$, 93%) were conducted in high-income countries, including Europe ($n = 49$), North America ($n = 39$), East Asia ($n = 14$), Southwest Asia [i.e., Israel ($n = 2$) and Saudi Arabia ($n = 1$)], and Australia ($n = 7$). Nine publications were conducted in lower-income countries, namely Bangladesh, India, Iraq, South Africa, Turkey, and Uganda. The participant groups varied widely, including age ranges, which included young children aged 2-5 (as reported on by their parents), school-aged children, adolescents, college and university students, and young adults. Thirty-one of the 121 publications (24%) were conducted among student populations, whereas the other studies included clinical groups, online survey respondents, and general population surveys.

Depression or mood disorder symptoms ($n = 57$). The majority of the publications (79%) indicated that depression or depressive symptoms worsened during the pandemic. Of the 20 longitudinal studies, 16 included reports of increased depressive symptoms during the pandemic (Bignardi et al., 2020; Breaux et al., 2021; Buckner et al., 2021; C. Y. Chen et al., 2021; X. Chen et al., 2021; Elmer et al., 2020; Evans et al., 2021; Giuntella et al., 2021; Hawes, Szenczy, Klein, et al., 2021; Hawes, Szenczy, Olino, et al., 2021; Huckins et al., 2020; Hussong et

al., 2021; Y. Li et al., 2021; Magson et al., 2021; Yang et al., 2021; Zhang et al., 2020), two of no significant change (Janssen et al., 2020; Teng et al., 2021), and two of fewer depressive symptoms (Li et al., 2020; Xiang et al., 2020). Participants in a qualitative study described feeling hopeless and that life was meaningless during the pandemic, as well as losing sleep and interest in activities (Suhail et al., 2020).

Anxiety or anxiety disorder symptoms (n = 57). The majority of the publications (76%) indicated heightened anxiety during the pandemic. Among the 21 longitudinal studies, 16 reported higher levels of anxiety (Breux et al., 2021; C. Y. Chen et al., 2021; X. Chen et al., 2021; Conti et al., 2020; Elmer et al., 2020; Evans et al., 2021; Hawes, Szenczy, Klein, et al., 2021; Hawes, Szenczy, Olino, et al., 2021; Huckins et al., 2020; Knowles & Olatunji, 2021; S. H. Li et al., 2021; Magson et al., 2021; Manjareeka & Pathak, 2020; Teng et al., 2021), two indicated no significant change (Buckner et al., 2021; Zhang et al., 2020), and three reported significant decreases in anxiety scores during the lockdown (Bignardi et al., 2020; Li et al., 2020; Schwartz-Lifshitz et al., 2021). In a qualitative study, participants discussed anxiety about the social isolation and monotony of lockdown, as well as of their uncertain academic and social futures (Gittings et al., 2021).

Stress or distress (n = 32). Similar to the findings regarding depression and anxiety, 23 of the included publications (72%) indicated higher levels of stress or psychological stress among youth during the pandemic. Among the nine longitudinal studies on these problems, six indicated higher levels of (dis)stress (Baliyan et al., 2021; Breux et al., 2021; Elmer et al., 2020; Gray et al., 2020; Magson et al., 2021; Savage et al., 2020), two indicated no significant changes (Copeland et al., 2021; Munasinghe et al., 2020), and one indicated a decrease in “acute stress” (but increases in depression and anxiety symptoms as reported above) (Y. Li et al., 2021).

Externalizing behaviors (n = 24). Overall, 16 publications (67%) indicated increases in externalizing behavior, six indicated no significant changes (25%), and two indicated reductions (8%). Of the eight longitudinal studies, two indicated an overall worsening of symptoms (Copeland et al., 2021; Hussong et al., 2021), two indicated no overall change (Bailey et al., 2021; Ezpeleta et al., 2020), and two indicated improvements in externalizing behavior (Achterberg et al., 2021; Penner et al., 2021). A longitudinal study of adolescents with and without diagnoses of Attention Deficit Hyperactivity Disorder (ADHD) in the United States indicated significant increases in inattention but no change in hyperactivity (Breaux et al., 2021). Additionally, a study of Italian children and adolescents with ADHD indicated different trends for youth with mild- or moderate-severity ADHD, whose symptoms generally improved during the pandemic, compared to those with high-severity ADHD, who demonstrated increases in most problematic behaviors (Melegari et al., 2021).

Self-harm or suicide (n = 14). Publications from the United States, China, Australia, and Greece indicated increases in suicidal ideation during the pandemic (Batchelor et al., 2021; Hill et al., 2021; Kaparounaki et al., 2020; Raviv et al., 2021; Son et al., 2020; Zhang et al., 2020). In Japan, no significant change in the suicide rate among youth was noted during the first wave of the pandemic (Isumi et al., 2020), but the monthly suicide rate among people younger than 20 increased by 49% during the second wave (Tanaka & Okamoto, 2021). In contrast, a study of youth detained by the criminal legal system in Australia indicated a four-fold reduction in self-harming incidents during the pandemic compared to the same period in 2019 (Kasinathan et al., 2021).

Youth wellbeing and resilience during COVID-19

Twenty-six publications were focused on youth wellbeing, life satisfaction, quality of life, resilience, and/or coping strategies during the COVID-19 pandemic (see Appendix, Table 2). Of these, 12 were assessments of retrospective change (five cross-sectional studies, seven qualitative studies), eight of prospective change, and six of comparisons of peri-pandemic outcomes to pre-pandemic normative data. All of the studies were conducted in high-income countries, with 14 from Europe, nine from North America, two from Australia and one from South Korea. Samples generally included adolescents aged 13-18 years, although publications also included school-age children, college or university students, and vulnerable subgroups such as youth in foster care (Vallejo-Slocher et al., 2020) or sexual minority adolescents (Nelson et al., 2020; O'Brien et al., 2021).

Wellbeing, life satisfaction, or quality of life (n = 20). Of seven longitudinal studies of youth wellbeing or life satisfaction, six indicated a significant worsening during the pandemic period (Ehrler et al., 2021; Evans et al., 2021; Gray et al., 2020; Magson et al., 2021; Mastorci et al., 2021; Savage et al., 2020). Eight of 10 cross-sectional studies also indicated lower levels of wellbeing or life satisfaction during the pandemic, while two indicated no significant changes. In a qualitative study, young people in the UK attributed their feelings of frustration, anger, and disappointment to the constant change, uncertainty, and lack of control associated with the pandemic context (Scott et al., 2021).

Resilience and coping strategies (n = 7). Youth resilience and coping strategies during the pandemic were often reported in qualitative publications in which resilience and some positive

coping strategies were noted among adolescents despite experiencing more negative than positive psychological impacts of school closure, adolescents demonstrated (Banks, 2021; Branquinho et al., 2020). The positive coping strategies included staying connected to others and maintaining positivity (Waselewski et al., 2020), as well as exercising, going outdoors, and engaging in creative pursuits (O'Brien et al., 2021). In a longitudinal study in the United States, youth who engaged in problem-focused coping experienced fewer mental health symptoms during the pandemic (Hussong et al., 2021).

Youth substance use during COVID-19

Forty-one publications included reports on youth substance use during the COVID-19 pandemic (see Appendix, Table 3). Of these, 26 assessed retrospective change (23 cross-sectional studies, three qualitative studies), seven measured prospective change, and eight involved comparisons between peri-pandemic outcomes and pre-pandemic normative data. Most of the studies ($n = 39$, 95%) were conducted in high-income countries, generally in North America ($n = 23$) and Europe ($n = 13$), as well as one in each of Australia, Hong Kong, and Saudi Arabia. Only two publications were from lower-income countries, namely Pakistan and Uganda. The participants were adolescents and young adults, generally ranging in age from 13 to 24. Study populations varied, with 17 of the 41 publications (41%) sampling secondary or higher education students; a few studies targeted the recruitment of people who use alcohol (Callinan et al., 2020) or other substances (Bonar, Chapman, et al., 2021), or focused on marginalized youth subgroups, such as unhoused (Tucker et al., 2020) or sexual and gender minority young adults (Cerezo et al., 2021).

Alcohol (n = 24). Fifteen publications (63%) reported declines in alcohol use during the pandemic period, including consumption prevalence (Bourion-Bedes et al., 2021; Evans et al., 2021; Ryerson et al., 2021; Tavoracci et al., 2021; Thorisdottir et al., 2021), frequency (Bonar, Parks, et al., 2021; Szajnoga et al., 2020), and quantity (Jaffe et al., 2021; Mohler-Kuo et al., 2021; Niedzwiedz et al., 2021; Steffen et al., 2021; White et al., 2020), as well as lower average scores on the Alcohol Use Disorders Identification Test (AUDIT) (Callinan et al., 2020). Six studies (25%) found increases in alcohol consumption (Charles et al., 2021; Coakley et al., 2021; Sharma et al., 2020; Znazen et al., 2021), including increased Emergency Department admissions for alcohol intoxication among youth in Italy (Grigoletto et al., 2020), and qualitative findings that social media drinking games normalized alcohol consumption during lockdown among university students in California, USA (Cerezo et al., 2021). A study of Canadian high school students found different behavioral changes for overall alcohol use compared to binge drinking during the lockdown period. Students who consumed alcohol reported drinking more frequently, but the overall prevalence of alcohol use remained unchanged. In contrast, binge drinking was less prevalent during the lockdown, but the students who continued to binge drink continued to do so at the same rate (Dumas et al., 2020). Three additional publications (13%) indicated no changes in alcohol consumption measures (Bonar, Parks, et al., 2021; Chaffee et al., 2021; Husky et al., 2020).

Nicotine (n = 17). Fourteen publications (82%) revealed either overall declines (Dumas et al., 2020; Gaiha et al., 2020; Kreslake et al., 2021; Niedzwiedz et al., 2021; Sharma et al., 2020; Sokolovsky et al., 2021; Tavoracci et al., 2021; Thorisdottir et al., 2021; Tucker et al., 2020) or no change in the prevalence and frequency of nicotine consumption among youth during the

pandemic period (Bonar, Chapman, et al., 2021; Bourion-Bedes et al., 2021; Chaffee et al., 2021; Hopkins & Al-Hamdani, 2020; Matovu et al., 2021). Nearly half of American young adults participating in a longitudinal study reported reducing their e-cigarette use during the pandemic, although about a quarter of the respondents reported increasing their use (Kreslake et al., 2021). The overall prevalence of tobacco smoking was found to increase in only two publications (12%), both of which involved university students (Ahmed et al., 2020; Znazen et al., 2021). The pattern of overall decline or stability held true for all nicotine consumption products, including e-cigarettes and vapes.

Cannabis (n = 10). Three publications indicated overall declines (Palamar et al., 2021; Tavoracci et al., 2021; Tucker et al., 2020) and two indicated no significant overall change (Chaffee et al., 2021; Liébana-Presa et al., 2020) in the prevalence or frequency of cannabis consumption among youth during the pandemic period, with only one study indicating increased cannabis consumption frequency among the majority of its participants (Bonar, Chapman, et al., 2021). However, the findings were mixed within studies with roughly equal proportions of young adults in the Midwestern US reported increasing and decreasing their cannabis consumption during the pandemic (Sharma et al., 2020). Similarly, in a study of Canadian high school students the prevalence of cannabis use decreased during the pandemic period; although the youth who continued to use cannabis reported doing so more frequently (Dumas et al., 2020).

Other drugs or “substance use” unspecified (n = 9). Seven publications were focused on changes in “substance use” across substances. While university students in the southeastern United States reported no significant changes to their use of substances other than alcohol (Charles et al., 2021), increases in both the number of substances used and the frequency of use were

found in a longitudinal study of high school students in the United States (Cho et al., 2021). In qualitative studies in both the United States and Portugal, adolescents reported using alcohol or “other drugs” as a form of escapism during lockdown (Branquinho et al., 2020; O'Brien et al., 2021).

Only two publications specifically were focused on substances other than alcohol, nicotine, and cannabis. Partygoers in New York City tended to reduce their use of cocaine, ecstasy, and LSD during COVID-related social distancing (Palamar et al., 2021). In contrast, in the state of Ohio, overdose deaths among people aged 24 years and younger in May 2020 were 2.06 times the May 2018-2019 mean (42 vs 20 deaths) (Currie et al., 2021). Most of these overdoses involved opioids, the use of which was not reported in the other publications.

Delivery of youth substance use or mental health services during COVID-19

Eleven publications were focused on service use or delivery for youth during the COVID-19 pandemic, including five on change retrospectively (three cross-sectional and two qualitative studies) and six on a comparison of service use data the pandemic to pre-pandemic norms (see Appendix, Table 4). All 11 publications were conducted in high-income countries, including the United States (n = 6), Australia (n = 2), and one each from Canada, France, and Hong Kong. The participants in these studies were often those seeking or receiving services, including primary mental health care (Nicholas et al., 2021), emergency psychiatric services (Ferrando et al., 2021; Leeb et al., 2020), and smoking cessation support (Ho et al., 2020). Many studies were focused on youth with pre-existing mental health conditions (Hawke et al., 2020; Ligus et al., 2021), such as ADHD (Becker et al., 2020; Bobo et al., 2020), and were generally conducted among

adolescent or young adult populations, though two included younger children (Batchelor et al., 2021; Bobo et al., 2020).

Substance use service demand and access. Two publications were on substance use services. A study of youth accessing a smoking cessation phone line in Hong Kong indicated an increase in call volume during the pandemic, with 43% of callers agreeing that the pandemic had motivated their intention to quit, and 83% reporting a change in their smoking habits during the pandemic (Ho et al., 2020). In a cross-sectional study of Canadian youth, 5% of the sample reported needing substance use services but not receiving them during the pandemic period (Hawke et al., 2020).

Mental health service access. Some youth reported difficulty maintaining access to mental health counseling or supportive therapies (Becker et al., 2020; Ligus et al., 2021). However, for clinical services that were able to transition, telehealth was generally positively received by youth and their caregivers despite difficulties with internet connectivity and other technical issues (Bobo et al., 2020; Nicholas et al., 2021). These technological barriers to access are more likely to affect disadvantaged youth, as was reported by Black adolescents in North Carolina (Banks, 2021).

Mental health service demand. Demand for mental healthcare showed mixed effects of the pandemic. In Melbourne, Australia, overall use of primary mental health services decreased, but among those who accessed services, rates of attendance increased (Nicholas et al., 2021). Additionally, the Australian Kids Helpline received more online contacts than in previous years, many of which were related to mental health concerns (Batchelor et al., 2021). In the United States, overall volume of children's mental health-related emergency department visits

decreased (Ferrando et al., 2021; Leeb et al., 2020), but the proportion of emergency department visits for mental health-related concerns increased beginning in late-March to October 2020 relative to the same period in 2019 (Leeb et al., 2020).

DISCUSSION

We systematically reviewed the literature to understand changes in youth mental health, psychological wellbeing, and substance use during the COVID-19 pandemic. In contrast to previous pandemic-era reviews, this is the first review to be specifically focused on changes in these outcomes during the pandemic. The body of evidence included in this review indicates the potential for serious mental health problems among youth during the pandemic. However, findings varied both within and between mental health problem categories. While most longitudinal studies of depression symptoms, anxiety symptoms, and stress indicated increases during the pandemic, no change and even decreases in these issues were also noted. Increases in suicidal ideation and attempts in various countries were reported. However, in one of the few studies of a marginalized youth subgroup, a significant reduction in self-harming incidents during the pandemic was reported (Kasinathan et al., 2021). In most cases, youth reported decreased wellbeing and life satisfaction during the pandemic, although some studies found no significant changes. Some of these declines may have been buffered by youth resilience and the employment of positive coping strategies.

The findings regarding substance use were mixed. The impact of the pandemic on substance use has likely been moderated by a variety of factors, including changes to the social context in which people normally use substances. In-person social interaction has been dramatically reduced in many settings; for college and university student groups, a reduction in peer interaction tended to reduce alcohol use (White et al., 2020). However, social isolation may also serve to increase the use of other substances. In a longitudinal study in Canada, the

youth who were self-isolating used more cannabis during the lockdown than did those who continued to socialize in person (Bartel et al., 2020).

Substance use and mental health problems may be exacerbated for youth who are already vulnerable due to social inequities (Jones et al., 2020; Usher et al., 2020). In the United States, racial/ethnic and sexual minorities reported experiencing disproportionately worse mental health outcomes and elevated suicidal ideation during the pandemic (Czeisler et al., 2020; Czeisler et al., 2021). The pandemic has made internet connectivity essential not only for youth social connection, but also to access information and health services, many of which have transitioned to telehealth models. A mostly positive reception for telehealth was noted, and at least one youth helpline service reported an increase in the use of its web-based services (Batchelor et al., 2021). However, telehealth and digital service access requires a reliable internet connection and the appropriate devices and spaces to facilitate a virtual appointment (Bagley et al., 2021; Walker et al., 2021). Services may also consider lower thresholds for in-person communication for vulnerable youth for whom telehealth access is limited (Jones et al., 2020). Ultimately, government action is necessary to expand telecommunications networks and increase spending on health services in order to support social connections and telehealth access for vulnerable youth.

Monitoring risk among marginalized youth

The COVID-19 pandemic has disproportionately affected marginalized peoples (Blake et al., 2021), yet many of these populations remained ‘invisible’ in our findings. Our initial interest was in reviewing publications regarding Indigenous youth. This interest was stymied, however, when searches resulted in only two relevant publications, neither of which included primary

research (Jones et al., 2020; Walker et al., 2021). Similarly, the use of substances other than alcohol, nicotine, and cannabis were assessed in very few publications. When other substances were included, the proportion of participants reporting use was generally too small to analyze meaningfully. Nonetheless, opioid-related overdose deaths in the state of Ohio doubled in May 2020 as compared to previous years (Currie et al., 2021). This disconnect speaks to the necessity of research focused on vulnerable subpopulations of youth, including Indigenous youth and youth who use illicit drugs. Longitudinal research that follows members of these groups would be particularly useful in order to note changes in drug use risk before risk becomes fatality.

Limitations

Limitations of the literature

The sudden onset of the COVID-19 pandemic necessitated the rapid production of research to assess and address outcomes, yielding a body of work that is often retrospective and lacking clear pre-pandemic comparators. Change during the pandemic context is difficult to assess with studies of prevalence collected at a single time point. Some researchers attempted to address this issue by comparing measurements collected during the pandemic period to pre-pandemic norms, but sometimes these norms referred to populations that were distinctly different from their participant sample, limiting the utility of the comparison. However, longitudinal cohorts were able to provide valuable information regarding mental health, psychological wellbeing, and substance use changes during the pandemic period (e.g., Thorisdottir et al., 2021).

In some population studies, the findings for young people could not be separated from the larger adult population. Additionally, we noted a lack of longitudinal studies on substance use among youth, and a lack of data regarding marginalized youth subpopulations.

Limitations of the review

One limitation of the review was that we did not conduct an assessment of study quality. As we extracted data on study design, we highlighted that many of the studies were based on relatively weak designs that limit the robustness of conclusions regarding change in our outcomes of interest. A second potential limitation was that we excluded publications in languages other than English or French. However, in meta-epidemiological study of clinical reviews, (Nussbaumer-Streit et al., 2020) found that the exclusion of non-English publications tends not to effect overall review conclusions, suggesting that this could be an acceptable strategy for rapid reviews.

Conclusion

In this rapid review, we highlight serious negative impacts of the COVID-19 pandemic on young people's mental health and psychological wellbeing in many settings. Findings regarding substance use were more mixed and largely limited to legal substances, warranting continued research. Further research is also necessary to elucidate pandemic impacts on vulnerable subpopulations of youth, including youth who use illicit drugs and Indigenous youth. Services will need to continue to adapt and innovate in order to support youth wellbeing in the context of a health crisis.

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