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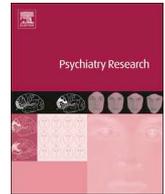
Letter to the Editor

Child and adolescent mental illness during COVID-19: A rapid review

1. Introduction

Prior to the novel coronavirus (COVID-19) pandemic, the international prevalence of child and adolescent mental illness, across all mental disorders, was 13.4% (Polanczyk et al., 2015). As a result of COVID-19, children and adolescents have experienced unprecedented interruptions to their daily lives and it is anticipated that these disruptions may be precipitants of mental illness, including anxiety, depression, and/or stress related symptoms (Lee, 2020). In order for governments and policy makers to plan, and allocate resources for child and adolescents mental illness, a rapid review of the research is recommended (Tricco et al., 2017). The aim of the current study was to conduct a rapid review of child and adolescent anxiety, depression, and traumatic stress experienced during the COVID-19 pandemic. Risk and protective factors for child and adolescent mental illness were also examined.

The review was registered with PROSPERO [CRD42020184903] and followed PRISMA guidelines. Searches were conducted in PsycINFO, Cochrane Central Register of Controlled Trials (CENTRAL), EMBASE, and MEDLINE up to May 26th, 2020 by a health sciences librarian. PsycArXiv, a repository of unpublished pre-prints, was also searched using the key terms "COVID-19″ and "mental health". The initial search yielded 3405 non-duplicate abstracts, which were reviewed for study inclusion.

Study inclusion criteria were as follows: (1) empirical study; (2) written in English; (3) data collected during COVID-19; (4) sample < 18 years of age; and (5) data on the prevalence of mental illness symptoms and/or factors associated with mental illness symptoms were available. Reliability between coders on 20% of titles/abstracts ranged from .78 to .96 %. In total, 175 full text articles were reviewed and six met full inclusion criteria (See Supplementary Material 1). A description of study characteristics can be found in Table 1. Consistent with recommendations for rapid reviews (Garritty et al., 2020; Tricco et al., 2017), narrative results were extracted by a primary coder and 20% checked by a secondary coder. Reliability between coders was 100%.

Three studies from China provided child and/or adolescent reports of depression, anxiety, and psychological stress during COVID-19 (Liu et al., 2020; Xie et al., 2020; Zhou et al., 2020). One study from China (n = 2330) found that 22.6% of children reported any depressive symptoms on the Children's Depression Inventory-Short Form and 18.9% of children reported anxiety symptoms on the Screen for Child Anxiety Related Emotional Disorders (Xie et al., 2020). A second large-scale study (n = 8079) conducted in China of 12–18 year old youth found that the prevalence of depressive and anxiety symptoms was 43.7% and 37.4%, respectively (Zhou et al., 2020). A third study reported on the incidence of somatic symptoms, such as bodily aches and pains or difficulties breathing, with only 2.4% of children endorsing concerns (Liu et al., 2020).

Two studies, one from China, one from USA, provided parent reports of child and adolescents mental illness symptoms (Jiao et al., 2020; Rosen et al., 2020). The first study (n = 320) reported on common DSM-5 symptoms including clinginess (37%), inattention (33%), irritability (32%), worry (28%), and obsessive requests for updates (27%). Other symptoms included fear of death of a relative (22%), sleep disorders (22%), poor appetite (18%), fatigue (17%), nightmares (14%), and discomfort/agitation (13%) (Jiao et al., 2020). A second survey conducted in the United States (n = 137) found that 40.1% of parents reported observing signs of distress in their children, 6.3% reported being unsure, and 30.9% reported no signs of distress (Rosen et al., 2020).

With regards to risk factors for mental illness, findings for age were mixed with two studies (Xie et al., 2020; Zhou et al., 2020) indicating higher mental illness symptoms in older children, one study showing mixed results (Jiao et al., 2020), and a third showing no effect of age or grade on child mental illness outcomes (Liu et al., 2020). For child sex, two studies (Oosterhoff et al., 2020; Zhou et al., 2020) showed that being female was a risk factor for higher rates of depressive and anxiety symptoms, while one study (Xie et al., 2020) found that sex did not predict anxiety and depressive symptoms. One study showed that financial strain predicted higher anxiety and depressive symptoms (Rosen et al., 2020). Two studies confirmed that mental illness symptoms were higher in children residing in highly infected areas (Jiao et al., 2020; Xie et al., 2020). One study in China found that the proportion of depressive and anxiety symptoms in cities were lower than those in rural areas (Zhou et al., 2020). Two studies reported evidence that fear of infection and perceived life threat were associated with worse mental health outcomes (Liu et al., 2020; Xie et al., 2020). One study found that parents with higher distress and anxiety reported observing distress in their children (Rosen et al., 2020)

With regards to protective factors, one study from China (Zhou et al., 2020) demonstrated that awareness of COVID-19 was protective against depressive and anxiety symptoms. One study (Jiao et al., 2020) reported that media entertainment, reading, and physical exercise ere helpful in reducing child mental distress related to COVID-19.

To date, there are a strikingly small number of published studies examining the prevalence of mental illness in children and adolescents during COVID-19. However, among the existing literature, findings do point to an increase in depressive and anxiety symptoms in children and adolescents. Methodological limitations include a lack of pre-COVID-19 comparative baseline data, failing to identify the number of children and youth meeting clinically-elevated symptom distress, and a lack of longitudinal research to determine if symptom distress is maintained over time. Research on risk and protective factors for child/adolescent mental illness is sparse and mixed.

In conclusion, findings from this review indicate that there are large gaps in the literature on the mental health consequences for children and youth during COVID-19, and that additional and more targeted

Table 1
Study characteristics.

Study	Country	Time Data Collected	Participants	Type of study	Publication Status	Mental Health Outcomes	Mental Health Measures
(Jiao et al., 2020)	China	February 2020	320 children and adolescent (168 girls, 142 boys) aged 3–18 years.	Cross-sectional	Published	Discomfort and agitation, nightmares, fatigue, poor appetite, sleeping disorders, fear for the health of relatives, obsessive request for updates, worry, irritability, inattention, clinginess	Questionnaire was completed online by parents and incorporated DSM-5 criteria.
(Liu et al., 2020)	China	February and March 2020	209 primary school students (116 girls, 93 boys).	Cross-sectional	Published	Somatic symptoms, anxiety, depression	Somatic self-rating scale
(Oosterhoff et al., 2020)	USA	March 29–30, 2020	657 adolescents (13–18 years, M = 16.35, SD=1.13), 75.3% female, 77% white.	Cross-sectional	Unpublished (preprint)	Anxiety, depression	Patient-Reported Outcomes Measurement Information System (PROMIS): anxiety and depression scales
(Rosen et al., 2020)	USA	March 15–17, 2020	303 parents of which 45% had children under the age of 10 years. Mean age 43 years, 68.2% of respondents were female.	Cross-sectional	Unpublished (preprint)	Distress	Researcher created question about observation of child distress.
(Xie et al., 2020)	China	February 28-March 5, 2020	2330 students in grade 2–6, 56.7% male.	Cross-sectional	Published	Anxiety, depression	Children's Depression-Inventory-Short Form, Screen for Child Anxiety Related Emotional Disorders
(Zhou et al., 2020)	China	March 8-March 15, 2020	Online survey of 8079 participants age 12–18 years.	Cross-sectional	Published	Anxiety, depression	PHQ-9, GAD-7

2

research on child mental health is needed. Studies across geographical locations with strong methodology and detailed reporting are needed, as are estimates of pre- to post- COVID-19 mental health using cohort studies.

Author contributions

Conceptualization: NR, SM, BM, DK; Data Curation: NR, SM, RE, JC; Formal analysis: NR, RE; Funding acquisition: SM; Writing-original draft: NR, SM, RE, JC, DK, BM; Writing-review/editing: NR, SM, RE, JC, DK, BM.

NR, JC, RE carried out the data extraction. NR, SM, JC, and RE wrote the first draft of the review with input from DK and BM. All authors reviewed the manuscript with content expertise and critical feedback.

Declaration of Competing Interest

The authors have no conflict of interest to declare.

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Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.psychres.2020.113307.

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