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Review Article

COVID-19 and Psychopathologies in Children-A Single Session Intervention Plan to Promote Mental Health during Crises Management: A Systematic Review

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Abstract

Background: The world has experienced numerous natural and man-made disasters throughout history. Due to these unforeseen circumstances, children and adolescents have reported significant psychopathologies in response to traumatic experiences. We aimed to investigate the surge of internalizing and externalizing psychopathologies during COVID-19 and to assess the efficacy of single-session therapies used to treat mental health issues during this period.

Methods: Overall, 270 articles were retrieved across both phases of the study, with 250 articles identified in Phase I and 20 in Phase II. Following the PRISMA flowchart guidelines, approximately 30 studies were selected to meet the objective of Phase I, while 10 studies were chosen to address the objective of Phase II. The articles were retrieved from various databases, including PubMed, Google Scholar, Scopus, Ovid, CENTRAL, JSTOR, NCBI, and Science Direct. Only articles published between 2019 and 2022 were included in the study.

Results: The findings of first phase of study indicated a surge in internalizing psychopathologies (such as anxiety, depression, loneliness, and somatic problems) and externalizing psychopathologies (including conduct/oppositional disorders, sleep disturbances, suicidal ideation, ADHD, and substance abuse) over the past four years. Additionally, according to the findings of the second phase of the study, single-session therapies were found to be effective in mitigating symptoms of depression and anxiety.

Conclusion: The study's findings are discussed in the context of counseling adolescents, highlighting the importance of addressing mental health issues in this demographic.

Keywords: COVID-19; Single session interventions; Psychopathologies; Children

Introduction

The world has been exposed to many natural (tsunamis, earthquakes, floods, and viral diseases) and man-made (industrial crises and terrorism) disasters throughout history (1). During all natural or man-made disasters, populations have experienced substantial traumatic events. The most

recent disaster, COVID-19, is considered by some a natural disaster, while some critics argue it is man-made, and the debate is ongoing (2).

The virus originated in Wuhan, China, and has spread to 209 countries in Europe, Asia, Australia, and the Americas, including Pakistan (3). In the new millennium, the WHO implemented ancient quarantine rules to control the spread of infectious outbreaks. COVID-19 preventative tactics have profoundly impacted various aspects of life worldwide. Specifically, approximately 2.1 billion adolescents experienced significant losses in academic, social, and psychological functioning during quarantine due to prolonged trauma (4,5).

The unforeseen circumstances during COVID-19 led to numerous traumatic experiences. Specifically, the loss of family members, parental history, systematic cumulative harm, developmental harm, physical or emotional neglect, and maltreatment led to physical or psychological injury (6, 7). The most commonly reported issues among children included maltreatment, child abuse, fear, frustration, and aggression related to multiple victimizations (2, 6, 8,9).

Similarly, during COVID-19, children and adolescents reported substantial psychopathologies in response to traumatic experiences (10). Extensive research has found increased rates of anxiety, depression, PTSD, and conduct disorder among young children during quarantine (2, 9, 11, 12). Children were often engaged in destructive activities such as hitting siblings, breaking things, and disobedience (13). Additionally, the lack of physical activity led to significant psychological disturbances, such as feelings of isolation, loneliness, and identity issues (2, 3).

This raises the question of which internalizing and externalizing psychopathologies were most prevalent globally during COVID-19. This systematic review provides a comprehensive synthesis of existing data to highlight the nature of these psychopathologies. The study not only focuses on identifying the nature of internalizing and externalizing psychopathologies but also emphasizes the importance of effective intervention plans to mitigate these issues.

Recent data underscore the critical role of psychologists in addressing diverse psychopathological issues among school children (14). Extensive research illustrates the importance of mental health support during disaster situations for crisis management. Traditionally, psychologists provided a series of sessions to promote mental health among victims and survivors during natural disasters or pandemics. However, this approach was costly, time-consuming, and demanding and its quite difficult to provide psychological support to all victims and survivors during pandemics.

Currently, single-session therapies are being used to support victims during natural disasters or pandemics, offering immediate psychological aid (15). Recent evidence-based studies have highlighted the need for single-session therapies in crisis management (16). Although the concept of single sessions is novel and not yet validated in all countries, it has been found effective in certain cultures. Therefore, we aimed to synthesize the nature of psychopathologies that emerged during COVID-19 and to identify the types of single-session therapies used to mitigate its adverse impacts.

Materials and Methods

The systematic review aimed to investigate the psychopathology of adolescents and examine existing effective intervention modalities. The current study has been divided into two parts. In the first part, the focus is on investigating the nature of internalizing and externalizing psychopathologies that emerged due to COVID-19. In the second phase, the focus is on examining the efficacy of single-session interventions to mitigate the adverse effects of COVID-19.

The Research Design and Formulation of the Research Question

The research questions are considered more logical when formulated using the PICO methodology. PICO is an acronym that stands for P (Population), I (Intervention/Issue), C (Comparison), and O (Outcome), developed by Health Evi-

dence (2013). The PICO format breaks down the research question into four components: P (adolescents), I (Natural Disaster Trauma), C (N/A), and O (Psychopathologies/Single-session therapies). The C (Comparison component) has not been included in the current study. Two research questions have been formulated using the PICO formula. These four components assisted in formulating the main research question for the current study, stated below (Table 1).

Table 1: The PICO Steps

PICO component	*The context of the current study*
P (Population)	Adolescents
I (Issue or intervention)	Psychological Interventions conducted for patients
C (Comparator used)	Experimental and Control group Comparison
O (Outcome of interest)	Efficacy of Single Session or reduction in symptoms

The current study comprised on two questions.

1. What kind of internalizing and externalizing psychopathologies emerged in adolescents during COVID-19?
2. What is the efficacy of single session interventions to mitigate the adverse effect of COVID-19?

Search Strategy and Selection of Keywords for Identifying Relevant Articles

The selection of Keywords was made through Boolean operators such as OR as well as AND along with the search phrases. Adolescents' exposure to natural disasters and trauma, internalizing and externalizing psychopathologies, nature of trauma and psychopathology during a pandemic, and psychopathology during quarantine. The incorrect keywords and search phrases misguide the direction of the study and have not been used. Electronic research was done on the following databases:

- PubMed,
- Google Scholar,
- Scopus,
- Ovid,
- CENTRAL,
- Jstore,
- NCBI and
- Science Direct

Inclusion and Exclusion Criteria

The above databases have been used following the below points

- Only psychological, health care and medical data basis that published peer-reviewed articles have been included in the current study.
- Only Relevant English language articles have been included in the current study that was published between 2019 and 2022.
- The empirical papers that study the natural disaster trauma and psychopathologies experienced by adolescents aged between12-18 yr of age have been including in the current study.

Data Extraction and Quality Assessment

The data extraction was carried out by two researchers (SR & DSRG) using a prepared checklist to extract study characteristics. The study quality was assessed using the 14-item National Institute for Health (NIH) checklist (National Institute for Health, 2021), which is applicable to both cross-sectional and cohort studies. The checklist items included a clear research question, population, inclusion and exclusion criteria, sample size justification, and outcome measure information.

The data was organized chronologically to provide a summary of each study and qualitatively synthesized into a narrative review for a comprehensive understanding of the study characteristics and findings. For the quality assessment of the second phase of the study, the NIH scale for intervention studies, which comprises 12 items, was used. These items are similar to those in the cross-sectional studies, with a few additional

items related to pre- and post-intervention outcomes.

Results

Documentation of the Search Results

For the documentation of search results, the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flow chart was used to ensure transparency and evaluate the relevance of the underlying variables, as well as to mitigate bias. The PRISMA flow chart assists in systematically showing the flow of data through different stages, including the number of initial articles, excluded articles, and final articles.

The current study had two phases, both of covered in Fig. 1.

The following data is showing the results of phase 1 of the study (Table 2).

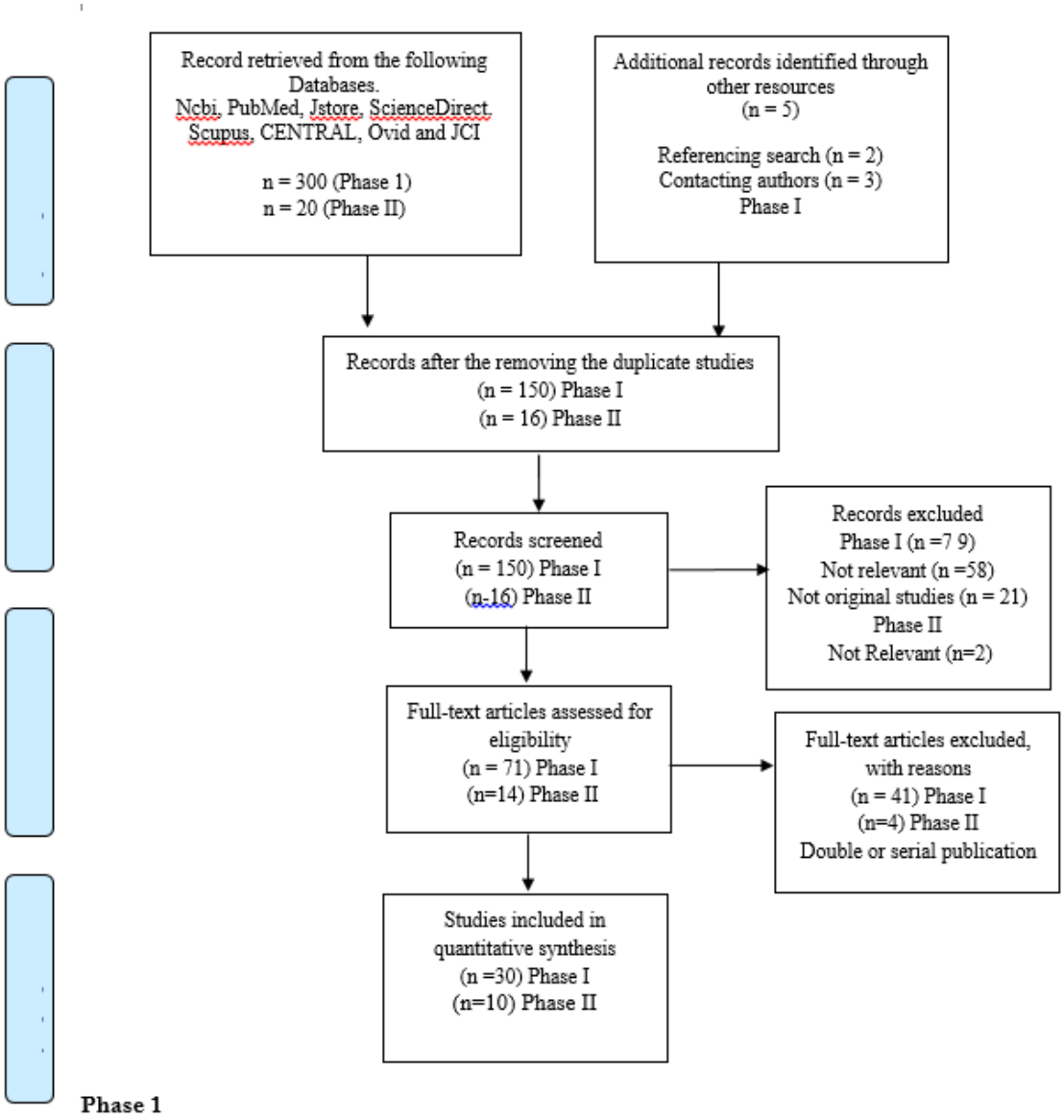

Fig. 1: PRISMA flow chart for the selection of the articles to be reviewed

Table 2: The Summary of the result phase 1

	Author	Population	Study Design	Results
1	Ciminio et al., 2022 (17)	Children (6-18 yr) and Mothers (Helsinki, Finland)	Cross-sectional	Aggression increased, depression decreased
2	Iannattone et al., 2021(30)	Children (6-18) and Mothers (Northern Italy)	Case control study	High stress
3	Liu et al., 2021 (18)	Adolescents (12-21) from California	Longitudinal data	Depression
4	Hu & Qian., 2021 (35)	10-16 adolescents UK	Cross-sectional survey	Emotional problem, conduct problem, Hyperactivity and interpersonal problems increased
5	Jolliff et al., 2021 (19)	13-17 adolescents US	Cross-sectional survey	Anxiety and depression
6	Zhu et al., 2021 (20)	10-17 yr adolescents Hong Kong	Longitudinal (9 months)	Higher suicidal ideation, depression, anxiety and loneliness
7	Wang et al., 2021 (21)	13-18 yr Chinese adolescents	Longitudinal study (Jan, 2019 Dec, 2020)	Poor sleep quality high Anxiety and depression
8	Walters., 2021 (37)	10-16 Northeastern Pennsylvania	Cross –sectional survey and longitudinal	An increase depression, Cognitive impulsivity, bullying victimization
9	Von Soest et al., 2022 (41)	13-18 adolescent of Norway	Cross-section Survey	High level of depressive symptoms, Cannabis and alcohol
10	Bélanger et ., 2021 (22)	7,653 Canadian adolescents 14.1 Mean age	Cross-sectional Survey	Depression and anxiety increased
11	Daniunaite et al., 2021 (36)	331 adolescents 12-16 Lithuania	Longitudinal study	Hyperactivity/attention deficit, prosocial behavior, psychosocial problems
12	De France et al., 2022 (23)	1184 adolescents mean age 13.8 Canada	Longitudinal study of four waves	Significant higher depression and anxiety
13	Kim et al., 2022 (31)	Entire Korean Children 0-19	Cross-sectional survey	Autism, ADHD, PTSD, Hypochondria, anxiety disorder, anorexia nervosa, aphagia and depressive, primary insomnia, schizophrenia, bipolar disorder
14	Xu et al., 2021 (27)	7769 school children from 8-18 yr Sichuan, Jiangsu, Henan, Yunnan, and Chongqing provinces of China	Cross-sectional survey	severe PTSD symptoms
15	Sayed et al., 2021 (28)	537 Children and Adolescents from Arabia Mean age 12	Cross-sectional survey	Minimal, mild and potential symptom were found after the pandemic
16	Bhushan et al., 2022 (29)	412 children and adolescents age 9-20 (India)	Cross-sectional survey	68.9% experienced PTSD and 39.8% PTG
17	Thakur et al., 2022 (32)	369 adolescents of southeast with the mean age 15.4	Longitudinal studies	Prepandemic depression and anxiety and lonliness
18	Zijlman et al., 2022 (33)	8-18 yr adolescents of Netherland	Cross-sectional	Increase in mental and psychological problem
19	Renzi et al., 2022 (34)	8-12 yr old children (Rome)	Cross-sectional	Somatic and externalizing symptomatology increased
20	Hafstad et al., 2022 (24)	12-16 yr old adolescents Norwegian	Longitudinal	mental and somatic problems
21	Llorca-Bofí et al., 2022 (38)	431,183 participants with the age range of Less than 18 yr Spain	Secondary research	Suicidal attempt and depression
22	Kirič et al., 2022 (59)	1966 children and adolescents from 0-19 age	Retrospective observational analysis	Suicidal ideation and suicidal attempts increased
23	Ibeziaket al., 2022 (25)	4-18 yr old children	Longitudinal (2yr)	Surge in depression, anxiety, conduct, trauma related stress, eating, autism, substance abuse, suicidal attempt, suicidal ideation and neurodevelopment disorder
24	Hou et al., 2022 (35)	16 yr and below age from China	Cross sectional	Increase in depression, anxiety, suicidal ideation and PTSD
25	Charpignon et al., 2022 (39)	10-19 yr old adolescents Georgia, Indiana, New Jersey, Oklahoma, and Virginia	Secondary research	Increase in suicide attempt
26	Suren et al., 2022 (44)	6-16 yr children and adolescents Norwegian	Secondary research	Increase in eating disorder
27	Spettigue et al., 2021 (45)	48 youth mean age 14.6 (Canada)	Cohort Study	High rate of ED was observed
28	Bull et al., 2022 (40)	11-18	Sequential Mix method study	Higher scores of conduct disorder
29	Cho et al., 2021 (42)	2120 adolescents form 12-17 California	Prospective Cohort	Emotional disorder increased the substance abuse ration
30	Layman et al., 2022 (43)	14-18 yr old adolescents		Cannabis and alcohol increased

According to the evidence-based studies mentioned above, adolescents have been found to be victims of both internalizing and externalizing psychopathologies. The details of these psychopathologies are listed below.

Internalizing Psychopathologies

Depression

According to seven studies, adolescents and children (ages 6-21) experience significant depression (17-26). Four of these studies were longitudinal, and five were cross-sectional. Assessment tools used included the Child Behavior Checklist (CBCL) for emotional and behavioural problems, the Center for Epidemiological Studies Depression Scale (CES-D), the Patient Health Questionnaire (PHQ-9), the 10-item Centre for Epidemiologic Studies Depression Inventory (CES-D), The Children's Depression Inventory (CDI), the Hopkins Children's Somatic Symptom Inventory (HCSSI), and the Retrospective Review Chart (RRC). The studies were conducted in Helsinki, California (US), Hong Kong, Canada, China, and Norway.

Anxiety

Existing data from around four studies indicate that anxiety levels were significantly higher in children (ages 8-14 yr) during and after the pandemic (19-26). Three studies were cross-sectional and five were longitudinal.

Assessment tools used included the PHQ-9, the State-Trait Anxiety Inventory (STAI), measures of Suicidal Ideation (SI), the Pittsburgh Sleep Quality Index (PSQI) for poor sleep, the Generalised Anxiety Disorder Scale (GAD-7), the RRC, the Hopkins Symptom Checklist-10 (HSCL-10), the Children's Somatic Symptom Inventory (CSSI), Self-Reported Loneliness measures, the Multi-Dimensional Anxiety Scale for Children, and the Emotional Dysregulation Scale. The studies were conducted in Helsinki, California (US), Hong Kong, Canada, China, and Norway.

Post-Traumatic Stress Disorder (PTSD)

Massive research has shown that symptoms of PTSD in children and adolescents (ages 8-20) became prevalent a few weeks after the onset of the pandemic (18, 25-31). Tools used for assessing post-traumatic symptoms included the Event Scale Questionnaire, Los Angeles's Scale, CDI, Medical Databases, RRC, and PHQ-9. Five studies were cross-sectional, one was case-control, and three were longitudinal. The studies were conducted in China, Arabia, California (US), India, Korea, Italy, and China.

Loneliness

The symptoms of loneliness were found to be higher after the pandemic, with age ranges between 8-17 (20, 24, 32). Six studies were cross-sectional, and only one was longitudinal. Tools used to measure loneliness included the UCLA self-report scales and CBCL. All included studies were longitudinal. The studies were conducted in Hong Kong, Southeast Asia, and Norway.

Somatic Problems

Somatic symptoms were reported to be higher in children (ages 8-18) after the pandemic (24, 33, 34) in the Netherlands, Rome, and Norway. All studies were longitudinal. Tools used included the Duct Patient-Reported Outcomes, CBCL, and CSSI. Two studies were cross-sectional, and one was longitudinal.

Externalizing Psychopathologies

Conduct disorder, ADHD, interpersonal issues, and suicidal attempts were found to be more prevalent in children and adolescents during COVID-19. Additionally, poor sleep, impulsivity, and substance use (cannabis and alcohol) increased.

ADHD

Recent data from three studies reported a surge in ADHD symptoms among children and adolescents (ages 10-19) in China, Lithuania, and Korea (31, 35-37). All studies were cross-sectional. As-

sessment tools included Medical Data Basis and the Strengths and Difficulties Questionnaire.

Suicidal Attempts/Ideation

Social attempts and ideation among children and adolescents (ages 10-17) increased during COVID-19 in Hong Kong, China, Spain, and Virginia. Two studies were secondary, one was longitudinal, and one was cross-sectional (20, 26, 38, 39). Assessment tools included the Suicidal Ideation Scale, Digital Databases, two items on Suicidal Ideation, and the Department of Public Health.

Conduct Problems

The literature indicates that COVID-19 exacerbated conduct problems in children and adolescents (ages 4-18) in the UK and Tunisia. The studies were cross-sectional, sequential mixed-method, and longitudinal in nature (25, 35, 40).

Sleep Disturbances

Insomnia was prevalent among children (3, 31, 13). The studies employed longitudinal, cross-sectional, and qualitative designs. Tools used included the Strengths and Difficulties Questionnaire, retrospective studies, and online semi-structured interviews. The studies included children from under one year to 19 yr old and were conducted in China, Korea, and Pakistan.

Substance Abuse

A surge in substance abuse was observed among adolescents (25, 41-43). Assessment tools included psycho-social functioning measures, retrospective studies, the past 30 d subscale, and substance abuse scales. One study was cross-sectional, one was longitudinal, and one was prospective. The studies included children and adolescents aged 4-18 and were conducted in California and Norway.

Eating Disorders

A few studies reported an increase in eating problems among children (25, 44, 45). Longitudinal, sequential mixed-method research, and cohort designs were used. Assessment tools included retrospective studies and Norwegian registers. The studies included children and adolescents aged 4-18 and were conducted in Canada and Norway.

Second Phase

The second phase of the study is showing the results for research question 2 (Table 3).

Single-Session Intervention for Depression

Most single-session interventions (SSI) aimed to alleviate symptoms of depression. One study highlighted a self-guided single-session intervention that focused on a growth mindset and behavioural activation to reduce depressive symptoms (46). This SSI involved reading and writing activities related to growth mindset, gratitude, and value affirmation (47, 48). Shamir-based interventions incorporated elements of a growth mindset, cognitive behavioural therapy (CBT) for problem-solving, and cognitive restructuring to design the single-session approaches (49-51).

Single-Session Intervention for Anxiety (Phobias)

The data also indicates that single-session therapies were employed to address anxiety issues. These interventions included Shamir-based techniques for fostering a growth mindset and CBT for problem-solving and cognitive restructuring. A three-step single-session CBT approach involved psycho-education, coping skills, and behavioural activation. Value-based interventions were found to be effective in reducing anxiety symptoms, incorporating activities related to growth mindset, gratitude, and value affirmation (48, 49). The interventions also included psycho-education, coping skills, behavioural activation (15), and CBT (50-52).

Table 3: The summary of single session therapies

	Author	Population	Method	Results
1	Schleider et al., 2022 (46)	2,452 US Adolescents 13-16 age	Randomized control trail Two self-guided single sessions interventions One teaching growth mindset of personality Second Teaching behavioral activation (mood)	Decreased three moths Depression and hopelessness compared to control group
2	Osborn et al., 2022 (48)	103 Kenya Adolescents 13-18 yr	Randomized control trial Reading and writing activities about growth mindset, gratitude and value affirmation.	Reduction in depression compared to control group
3	Wasli et al., 2022 (50)	926 Kenyan adolescents	Randomized control trial Shmiri digital focuses on gratitude, growth mindset and values) Digital CBT focuses on behavioural activation, cognitive restructuring and problem solving)	Reduction in depression, anxiety and improvement in subjective well-being compared to control group
4	Venturo-Cornerly et al., 2022 (49)	895 adolescents Mean age 16 (Kenya)	Mixed effect model controlling (Valu based intervention and growth mindset)	Values intervention better elevated the symptom of anxiety Values and growth mind set produce better results in the reduction of anxiety in sub-clinical population
5	Lee, & Simpson (2020) (15)	A 10 yr old American Indian child	Psycho-education Coping skills Behavior activation	Effective in treating anxiety
6	Wrightet al., 2022 (54)	286 7-16 yr old children with phobia (UK)	Cognitive behavior therapy	effective for the treatment of phobia
7	Westware et al., 2022 (55)	52 families age range (6-17 yr) Tasmania, Australia	Single session therapy and termed hereafter	Effective for promoting confidence and satisfaction
8	Mulligan et al., 2022 (58)	Families 8-17 yr old children (Toronto)	Strength and Resilience	Self-efficacy increased and anxiety increased in children
9	Schleider et al., 2019 (51)	12-15 yr old 96 Adolescents (US)	Growth Mindset Intervention (3-6 and 9 month follow up)	Steeper anxiety and depressive symptoms declined
10	Schleider, & Weisz, (2018) (52)	96 adolescents (12-15) (US)	Growth mindset of personality (30-minute computer guided)	improvement in depression, anxiety symptom sevrity

Subjective Well-being/Hope and Satisfaction

Over the past three years, only one study developed a single-session intervention aimed at enhancing well-being, hope, self-confidence, and satisfaction (53).

The majority of single-session interventions were designed to address anxiety and depression. However, no single-session interventions were identified in the literature for managing other mental health issues. The studies were conducted

in various locations, including the US, the UK, Toronto, Tasmania, and Kenya.

Discussion

The current study aimed to investigate the nature of internalizing and externalizing psychopathologies in adolescents that emerged following the COVID-19 outbreak (3). Additionally, the study sought to evaluate the efficacy of single-session therapies designed to mitigate these psychopathologies during the pandemic. According to the diverse data available, traumatic experiences during COVID-19 led to both internalizing and externalizing psychopathologies (18, 25-31).

The study's findings synthesized the impact of COVID-19 on mental health, focusing on the nature of internalizing disorders such as anxiety, depression, loneliness, somatic complaints, and stress (18- 31). Moreover, children and adolescents exhibited increased rates of psychiatric disorders, including autism, depression, anxiety, and ADHD (54). While internalizing problems were common before the pandemic, there was a marked increase in these issues during COVID-19.

Regarding externalizing problems, ADHD, suicidal ideation/attempts, conduct disorders, substance abuse, and eating disorders were reported to be more prevalent among children and adolescents (20, 26, 31, 35, 36, 38, 39, 55, 56). Poor sleep was a common issue observed in children and adolescents during the pandemic (57). The studies were conducted in various locations, including Helsinki, California, the US, Hong Kong, India, Tunisia, Canada, China, Norway, Lithuania, and Korea, with only one study conducted in Pakistan. The actual prevalence of mental health issues in adolescents may be higher than reported, including unreported cases. The findings provided a valuable insight about the common mental health problems emerges during pandemics. It will help to design program for preparation to deal with future pandemics.

The second phase of the study focused on assessing the effectiveness of existing single-session interventions in improving outcomes for internalizing and externalizing psychopathologies during COVID-19. In response to the pandemic, psychologists concentrated on developing single-session interventions to reduce depressive symptoms among adolescents. Consequently, most SSI approaches targeted depression (46, 47, 48, 49, 50, 51).

A few studies recommended single-session therapies for treating anxiety (48, 49, 15) and cognitive behavioural therapy (CBT) (50-52). Only one study in the past three years developed a single-session intervention aimed at enhancing well-being, hope, self-confidence, and satisfaction (53). No single-session therapies were identified for addressing mental health issues in the Pakistani cultural context.

Limitations and Future Directions

Several gaps identified through systematic reviews provide guidance for future research. Future directions include:

1. Most single-session interventions (SSIs) have been developed to address depression and anxiety. There is a need to create SSIs for treating PTSD, conduct disorders, and substance abuse disorders.
2. Current single-session therapies focus on a growth mindset, behavioral activation, and strength-based interventions. There is a need to develop single-session and e-single-session therapies based on trauma models, such as Acceptance and Commitment Therapy.
3. Studies have been conducted in various locations, including the US, the UK, Toronto, Tasmania, and Kenya. However, no single-session intervention has been designed and validated in Muslim countries like Pakistan and Malaysia. Future single-session interventions should consider religious and cultural perspectives.

Conclusion

The natural disaster of COVID-19 had numerous adverse impacts. In response, governments

should implement transformative changes in psychotherapy. Promoting digital single-session interventions is crucial due to geographical limitations during quarantine. Unfortunately, in developing or underdeveloped countries, the role of psychologists and psychotherapies has often been neglected. Thus, increasing awareness at the community and media levels in these countries is essential.

Journalism Ethics considerations

Ethical issues (Including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc.) have been completely observed by the authors.

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Conflict of interest

The authors declare that there is no conflict of interests.

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