Covid-19: Implications for ascending suicide statistics among children

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ABSTRACT

Summary: Worldwide, suicide among children is a major preventable public health problem. Currently, Covid-19 pandemic and its isolating effects of lockdown have harmfully affected the lives of numerous children. Many of the children took their lives during this crisis due to the various stressors stemmed from it and its rates are alarmingly increasing. It is a serious preventable psychosocial issue. However, it is often neglected and underestimated. There are very few studies directed towards this issue. The current study focuses on the significance of escalating incidents of suicidal behaviours among children during this pandemic for an urgent intervention. Methods: A narrative literature review is used. **Findings**: It revealed that various psycho-social stressors, during the prolonged home confinement and school closure, such as increased family conflicts, parental disputes, domestic violence and abuse, neglect, academic difficulties due to lack of online facilities and other pressures etc. might have lead to the onset or aggravation of various mental health problems including the extreme suicidal thoughts and behaviours among children. Applications: It is found that various risks and protective factors at individual, family and society levels are crucial and determining factors of suicidal behaviours among children. Thus, a multilevel intervention is very much required and this study attempt to propose it. As the suicide rates among children during this pandemic is continued to arise, that should not be neglected. It should be taken very seriously and require imperative action by all stakeholders to prevent its irreversible impacts.

Keywords: Covid-19, pandemic, lockdown, children, suicide, suicidal behaviours

INTRODUCTION

Globally, Covid-19 pandemic and its isolating effects of lockdown have profoundly affected the life of children. It harmfully affected their mental health and many of the children took their lives alarmingly during this crisis due to the various stressors stemmed from it. It is a serious psychosocial issue. Suicide among children is already a public health problem and second leading cause of mortality among them. Many recent incidents of such increased suicidal behaviours among children during this pandemic have highlighted the significance of its severe setbacks again, if not addressed immediately. 1,4,8

Although response measures to combat the virus are imperative and effective, studies showed that the prolonged school closure,

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home confinement, movement restrictions might have harmful impact on numerous children and their mental health, as the incidents of domestic violence, neglect, child abuse and sexual exploitation are reportedly on the rise during this pandemic. ^{3,8,9} Moreover, unsupportive circumstances such as lack of online facilities to attend classes, poor interaction and communication between family members can also affect them adversely.3,10,11 And above all, it is further worsened by lack of easy accessibility of mental health services or support systems (helpline) to children which is also a crucial concern. 12

As the evidence indicate, such psycho-social stressors of current pandemic has significant physical and mental health effects on children,

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leading to the onset or aggravation of fear, loneliness, anxiety, depression, and other psychiatric disorders and they are prone to have extreme suicidal thoughts behaviors. 10,13,14 However, such psychological impacts of this pandemic on children and the rising mental health issues of them are often a neglected by families and society, leading to extreme consequences.^{1,8} Furthermore, suicidal behaviours among children are underreported and neglected with possible cause of death being classified as accident to protect the families from possible shame and taboo associated with it. 3,15,16 Therefore, it's urgent to safeguard the children and their wellbeing with prime importance without any delay to avoid such events to occur again in future. The future of society lies with children, thus it's the duty of the society and government to ensure their overall wellbeing. Notably, very few studies specifically examine the effect of this pandemic and lockdown on suicidality among children. Therefore, the present study envisages the negative psychological effects of COVID-19 children and the suicidal behaviour among them, calling for an immediate attention of everyone to intervene effectively.

MATERIALS AND METHOD

A narrative literature review of suicidality among children during Covid-19 pandemic has been done in PubMed, PsycINFO, Medline and Google scholar using the following terms "suicidality", "suicidal behaviour", "suicidal attempt", "self-harm", "suicide", "children", "epidemics", "adolescent", "pandemics", "Covid-19", "lockdown" and "school closure". Based on the literature found in the first few articles, the author further had a specific review on "mental disorders", "trauma", "depression", "anxiety", "warning sings", "risk factors", "protective factors" "suicide prevention" among children. Few articles were included from the reference of other reviewed articles. Specific reports on mounting case scenario related to 'heightened rate of suicidality among children during the current crisis' were reviewed from the official and popular newspapers or magazine articles and other reports, which is the background of this review paper to highlight the alarming psychosocial issue and call for urgent action. Specific data on mental health problems and suicidal behaviours among children during the previous pandemics (like SARS, MERS) were also included in this review. COVID-19 is still evolving and it affects the well being of everyone, especially the mental health of the children. There is scarcity of literature specifically on suicidal behaviours among children in the context of current pandemic. Suicide rate among children during this pandemic and lockdown is continued to arise, that should not be neglected.

RESULTS AND DISCUSSION

1. Suicide behaviour among children: Global and national scenario

Suicide is a major preventable public health problem globally,^{6,17} by which one person dies in every 40 seconds and close to 800,000 people die every year. 18 Worldwide, it is a second leading cause of death, accounts for an estimated six percent of all deaths among aged 10-24 years. 6,19,20 younger ones, Dreadfully, in India, a student ends his or her life in every hour and 28 such loss of life every day. ^{21–23} As per an official report the suicide rates in India are highest (40% of suicides) among the age group of 15-29 groups. 23 India has the largest population of children and adolescents in the world, which would shape future of India. 24,25 Therefore, this issue has to be taken very seriously and address it without any delay.

COVID-19 pandemic and lockdown have worsened the mental health problems of children and lead to higher suicidal behaviours among them.^{3,26} It is exemplified by the recent incidents in Indian state of Kerala, that the suicidal tendency among children during lockdown are increasing, as an official report says, 66 children, below age of 18 years, ended their lives in four months since the lockdown began from March 25th 2020, due to various reasons reportedly such as parents scolding, over mobile phone use and failure to attend the online classes.²⁷ And another report says that about 140 children, below the age of 18 took their life in the last six months in Kerala.²⁸ Various risk factors that aggravated during this crisis have contributed to the rising suicidal behaviour, such as individual (genetic/ biological vulnerability, psychological), socio-cultural factors. 3,26,29 familial, and Conversely, it's a preventable danger and major psychosocial issue, if identified and addressed appropriately and proactively.

Research indicated that children by the age of eight years understand the concept of suicide and are able of carry it out.³⁰ Despite the consequences of their actions and their understanding about it, children consider death as an alternative to stop their emotional pain without fully grasping the inevitability of their actions. 19,31,32 Suicidal behaviour among children, as defined by Pfeffer, 'any self destructive behaviour that has intention to seriously damage oneself or cause death'. 33 The extent of suicidal thoughts among the children is vast, varying from occasional suicidal ideation to active suicidal attempts.²⁹ About 10-20 times such suicidal attempts (non-fatal suicidal behaviour) can happen before a completed suicide. 19 But regrettably suicidal behaviours among children is often likely to be undervalued due to taboo associated with it,17 which would further and its effective appropriate management. Thus, any suicidal behaviours among children need to be taken seriously and should take urgent action by all stakeholders to reduce the further irreversible impacts.

2. Covid-19 and lockdown blues on children and their suicidal behaviour

Worldwide, Covid-19 pandemic has impacted drastically on various spheres of life as well as the mental health of several individuals. 4,34 The preventive measures to compact this crisis like lockdowns has led to the complete nationwide closure of educational institutions in many parts of the world including in India. 35–37 It created tremendous levels of distress among the children affecting about 900 million of student population globally. 35,36,38 Indisputably, the subsequent psychosocial stressors and various mental health problems faced by children, which might have contributed to their heightened suicidal tendencies during this crisis, are highlighted below.

2.1. School closure and home confinement

To combat Covid-19 pandemic majority of the nations implemented school closures and home confinement. As per UNESCO, by April 8th, 2020 about 188 countries closed schools nationwide by which 90% of the student population were out of their regular mode of education. In India it still continues (as on 29th October 2020) from 25th of March 2020 onwards.

is a 'home' outside home with ample free space than merely an educational institution.9 School habits are crucial coping resources for children with mental health issues as well.³⁹ Thus it plays an important role in promoting overall wellbeing and scholastic their achievements. 9,39,41,42 Conversely, school closure prolonged and home confinement can not only have negative impacts on children's physical and mental health, 1,43 but also it can aggravate their risks, distress and even can end up in taking severe steps, including ending their lives. 39 It is because, as the evidence highlights, the prolonged school closure and confinements or such measures are associated with being in unsupportive or hostile home environment, exposure to various painful experiences, social disconnection with friends and teachers, reduced physical activities, more screen time, irregular sleep and diet patterns etc., can affect their well-being adversely leading to severe mental health problems. 1,8,9,13,43

2.2. Domestic and parental problems

School closures have led to home schoolings. Lack of appropriate facility to attend online classes created tremendous stress and pressure on many children as well as their families.^{8,36} Consequently, many parents have experienced heightened pressure to work from home to keep their jobs and businesses as well as to take care of their children's academics at home simultaneously while all the resources of the family have been restricted. Moreover, many of the parents lost their jobs, they experienced unmanageable debts and economic crisis subsequently leading to the scarcity of resources, poor affordability and accessibility of required gadgets (for instance TV, smartphone). 2,44,45 Taken together all these pressures and drain can result in tremendous emotional distress for all family members significantly affecting the parent-child relations, intra-familial interactions very badly and increase the risk of mental health problems among children, remarkably suicidal behaviours among children.^{2,9,13,45–48}

Family dynamics and interactions during the current crisis can adversely influence the mental health of children.⁴⁹ The hostile family atmosphere and prolonged home confinement may become important risk factor for intra-

familial violence during covid-19 impacting the mental health of some children. 1,8,13 The various other significant stressors such as pathological parenting, parental pressure, scolding of parents, frequent discord in the household, domestic violence (physical, emotional and sexual abuses) or neglect, substance abuse, lack of individual space at home, financial crisis at family, poor family support, overuse of internet and social media can be detrimental to the mental health of children during this period. 1,8,12,13,36,44,50,51 In addition, the prolonged periods of isolating effects and exposure to these stressors and disconnection from their friends and other support groups and stress relief mechanisms can aggravate the mental health issues of children. 13,51,52

Whereas, the family cohesion, affection, emotional support and time spent together at home can preserve the well-being of children. ^{9,13,45} Coping skills and vulnerabilities of children and their families are very crucial determining factors of their mental health during the crisis. ¹³

2.3. Traumatic experiences

Disasters, including the current pandemic and related experience of quarantine periods, isolation, social disconnection, having a relative or contact with Covid-19 positive person, as well as the fear of uncertainty concerning the ongoing pandemic might have heightened risk of confusion, anxiety, depression and post traumatic stress disorder (PTSD) especially among children. 1,9,13,53,54 The intricate interplay of ongoing pandemic and multiple psychosocial stressors such as obstructive and intimidating family atmosphere, death of dear ones, substance abuse, exposure of domestic violence and abuses, neglect, exploitation and change of lifestyle modifications (online academic pressures, lack of appropriate facility to attend online classes etc.), can have traumatic and enduring detrimental effects on several pattern children of in a vicious cycle. 1,9,10,36,53,55,56 Moreover, they continue to experience the insecurity physically and emotionally as the condition evolves.⁸

2.4. Academic difficulties

Home schooling due to closure of schools created academic related apprehensions,

difficulties and pressure for many students as well as their parents, generating a traumatic experience for many children.³⁹ Children from economically disadvantaged families could not have easy affordability and accessibility to modern technologies and they could not ensure education of their children digitally during this school closure which created 'educational disparities' and widened 'learning gaps' as well as 'literacy skills' affecting millions of children. 8-10,57-59 Remarkably, this caused tremendous pressure and stress on children and their families, making many children to take extreme steps. 8,39 This worrying trend is the reflection of many other co-existing stressors and issues as well.

Notably, several children are experiencing emotional suffering due to these various academic related difficulties and psychosocial stressors such as feeling of insecurity and frustration about the prolonged school closure, lack of contact (in-person) with friends and teachers, fear and anxiety about attending online classes and inadequate facilities (like lack of secure home, necessary books, place for homework, television, smartphones, good internet connection, other learning equipments, outdoor leisure activities etc.), unfavourable home conditions for study, study related pressure, over use of social media, lack of emotional and financial supports, domestic problems and parental scolding. high individual and parental expectations, indulgence into high-risk behaviours including substance abuse and alcohol, relationship failures etc., are being the major contributory factors during this pandemic. 8-10,36,39,57-60 These adverse atmosphere and inadequate facilities have heightened many of their vulnerabilities, leading to increased incidents of suicidal behaviours among children.^{8,39,60,61} This danger should not be neglected and underestimated.

2.5. Impact on mental health

Certainly, covid-19 pandemic has engendered several risk factors for mental health issues among children other than the physical health issues, but it is neglected. ^{2,3,8,39} Periods of previous epidemics (crisis) are reportedly correlated with increased rates of suicides, depression, anxiety and other neuropsychiatric conditions among the vulnerable population. ^{56,62–66} Evidence indicate that the

current crisis also accumulated significant suffering leading to the development or exacerbation of various mental problems including the increased incidents of suicidal behaviours among children. 3,14,67-69 Current pandemic has also worsened the preexisting mental health problems of many children as they were further isolated in their rooms and disconnected to various supportive resources like school routines, friends and teachers. 9,10,39 Moreover, it also restricted mental health services, including child care and protection services, affecting many children disproportionately as well as worsening their mental health condition. 2,3,53

Early childhood is recognized to be a crucial period for one's emotional development basis but on the other hand the childhood trauma has been found to have detrimental effects and heightened risk for mental illness, substance evolving abuse. personality problems, relationship and academic issues among children in their later life. 70–73 Accordingly, the current crisis and lockdown period create a significant and dysfunctional psychological impacts on children with transitory as well as enduring effects.⁷⁴ Particularly, social media can be a supportive factor in helping children to maintain social connectedness during lockdown. However, it is also associated with harmful effects on them, as the time spent in social media is linked with levels of depression, anxiety, insomnia and distress.¹³ Pandemic and related sensational news on media including social media also plays a big role influencing the mental health of children adversely, as they are extra-sensitive to the emotional stress and traumatic incidents. 10

Therefore, importantly the various isolating lockdown related issues, as discussed so far, such as extended home confinement, school closure and academic difficulties, cancellation of school events (festivals, sports, workshops, art celebrations etc), social disconnection, disrupted daily routines, increased screen time, lower family income, poor social support, family conflicts, violence and other various traumatic experiences and pressures are prone to breed mental health problems like frustration, distress, impatience, fear, anxiety, depression, insomnia, extreme suicidal thoughts and behaviours and other neuropsychiatric problems among many children. 1,3,4,9,12,39,50,55,56,75–77 The ascending rates of suicidal behaviours among children are the terrific impact of Covid-19 on their mental health. 1,39,77

2.6. Escalating suicidal behaviours

Covid-19 pandemic and lockdown created chaos in the lives of numerous children, exerting several adverse impact and forcing them out of their soothe zones to emotional catastrophe due to acute and chronic distress. 13,34,78 Alarmingly, such emotional turmoil and distress during this pandemic have detrimentally risen and heightened the rate of suicide among children. 68,77,79,80 The previous epidemics and periods of crisis (e.g., SARS and MERS-Cov outbreaks including economic crisis) also have witnessed increased rates of suicidal behaviors. 46,48,56,64 Evidence has demonstrated a strong correlation between stressful adverse life events, family environments, traumatic adverse experiences and suicidal behaviours among children. 13,81-86 The higher risk of being exposed to family conflict, violence (physical, emotional and sexual), neglect, victimization and the economic crisis at home caused by this crisis lead to increased suicidal rates among children.^{3,8,76,83} The following case scenarios (official reports) are few instances, which witnessed in the state of India, Kerala, during lockdown reveal the tragic preventable loss of life of children.

Suicidal tendency among school children has significantly ascended during this Covid-19 Pandemic and lockdown period.^{3,27} It is to be noted that during lockdown period from March 25th to July first week, as State Crime Records Bureau (SCRB) figures, 66 children died by suicide in Kerala. 87,88 Another report says that about 173 children, aged 10-18 years, died by suicide from the beginning of lockdown (March to October), in Kerala. 89 An educationally gifted 15 years old girl (who had been awarded for her academic brilliance), in class 10th also took her life during this lockdown, as she had no access to online classes due to lack of smartphone and functioning TV at her home. 90 Because of lockdown her father could not go for work as he was a daily wager, consequently the family was in severe financial crisis. 90 A 10-year old girl who killed herself as she stated in her final note that 'her father was distancing from her and did not love her',91 is also a significant incident.

As per the national reports one student commits suicide in every hour and about 28 such suicides happen every day in India ²³ and it might be even increased during this which is underreported pandemic neglected from other corners of world. Regrettably the rates of suicide deaths and suicidal attempts among children continue to rise globally. 92 Identical reports from other parts of the world have also shown a significant increase in the deaths of children due to suicide during the lockdown period than the pre-lockdown period, emphasizing a 9.3%-33% rise in the figure of children presenting with self-harm behaviours as well. 93,94 However, it is not the (official) figure alone but the fact of alarming mental health concerns of our younger buds and their cry for help and support. This trend of increased instances, even yearly,²³ of suicidality among children is extremely serious psychosocial issue but preventable with adequate and timely intervention. Thus, this issue should not be ignored and must address it with immediate additional efforts to diminish and prevent. In order to intervene efficiently and effectively the various risks and protective factors of suicidal behaviours in children to be outlined.

3. Risk and protective factors of suicidality among children

Indeed, covid-19 has overwhelmingly affected the life of children. There are several mental health risks and threats associated with this pandemic and succeeding restrictions on children.² Often mental health issues of children are being neglected while combating with this virus. ⁷⁶ As discussed earlier, the rates of suicidal behaviours (death and attempts) among children and adolescents are rising significantly which are related to the manifold bio-psycho-socio-cultural risk factors that aggravated during this pandemic lockdown period. 1,3,13,68,77,95 Moreove and Moreover, as studies highlight childhood and adolescence are developmental period associated with increased risk for both onset and intensification suicidal ideation of and behaviors. 83,96,97 In this context, it is alarming to intervene urgently now more than ever.

During and post Covid-19 era, the basic knowledge and acquaintance with warning signs, risks and protective factors are very crucial in helping the child with suicidal tendency and framing appropriate interventions.83 Identification of risks and protective factors play a vital role, as all the suicides are preventable. Most of the suicides have been preceded by verbal or behavioural warning signs but few occur without warnings. 98 Thus, it is very crucial to understand the warning signs to help children timely and appropriately. The warning signs of suicide include, suicidal thinking, talking about suicide or death, writing suicidal notes, talking about hopelessness and lack of purpose in life, being a burden to others, worthlessness, socially withdrawn, lack of interest in desired activities, risk taking behaviours (increased substance abuse), disrupted eating and sleeping patterns, feelings of guilt, anxiety or agitation, rash or violent behaviour. 49,98,99

Suicidal behaviours are complex.⁹⁸ It cannot usually be explained by single factor or stressor,98 rather a combination of multiple interrelated contributing factors that act cumulatively to increase a child's vulnerability to suicidal behaviour such as biological, personal, psychological, social, cultural and factors. 19,26,75,83,98,100 environmental Simultaneously, the presence of risk factors do not necessarily lead to suicidal behaviour.98 Understanding the causal pathways is very important in planning for a range of options to prevent it. There are several pandemic related mental health risks for children and adolescents.² Accordingly, the base of any effective and efficient response in suicide prevention among children is the identification of suicide risk and protective factors and having good insight about it, that are relevant to the context and its mitigation. 98,19,101

Risk factors are that circumstances that tend to raise the likelihood of suicidal behaviors or hinder the access to resources and protective factors are conditions that reduce the impact of those risk factors or strengthen resources to against risk factors. 19,98,102 framework of risk and protective factors can provide us a useful understanding of the key factors that play a vital role in the suicidal behaviours among children which better guide for its prevention. 19 The author believe in the 'socio-ecological model' of framework to explain the encompassing risk and protective factors at multiple levels such as individual, family (relationship) and community, in the context of Covid-19 pandemic and related issues on escalating suicidal behaviour among children. 98,103 In this framework, a wide range of risk and protective factors have been identified and the significant ones are illustrated in **Table-1** from the literature.

Research have shown that previous suicide attempt is the single most important risk factor for suicide among children and there are many such attempts before completed a suicide. 39,76,95,98 Studies highlight that stressful life events, mental health conditions and family environments are major other risk factors for suicidal behaviour among children. 13,81-83,96,97 The higher risk of being exposed to neglect, physical, emotional and sexual abuse, and violence at home caused by this crisis lead to increased suicidal rates among children. 26,39,76,83 Moreover loneliness, poor social and economic support, and social isolations are well recognized correlates of suicidal behaviors among them. 15,85,104

Notably, apart from various psychosocial stressors the presence of psychiatric disorders definitely increases the risk of suicide among children. 76,83 Depression is a risk factor strongly linked to suicidality in children, but not all children who have depression develop suicidal ideation or behaviors. 105,106 Various personality traits (temperament and character) like impulsivity, perfectionism, interpersonal dependency etc have also been recognized as predisposing factors for suicidality among children. 83,107,108 Whereas, parental engagement, responsive and supportive family, healthy social relationships, having intimate friends, sense of impulse control, and help seeking behaviour were recognized to be very crucial and decisive protective factors against suicidal tendency among children. 14,75,83,97,109,110 As suicidality among children is an escalating concern during this pandemic an urgent comprehensive and collaborative approach of suicide prevention response is needed to protect children against suicidal behaviors and build their resilience.

4. Suicide prevention among children during and after Covid-19 era

Suicide prevention among children during and after the Covid-19 era is a vital and urgent but difficult issue. The rates of suicidal behaviour (death and attempts) among children are rising alarmingly during this crisis era. ¹⁰ As discussed earlier the extraordinary and

detrimental nature of current pandemic has aggravated the manifold risk factors that have impact on the mental health of the children due to the various traumatic experiences. 1,13,68,74,77,92,95 This psychological impact of pandemic on children is very crucial but ignored serious problem.3 Thus, this danger should not be underestimated or neglected. In the light of high suicidal rates among children during this crisis significance of suicide prevention imperative.²⁹

Children are often vulnerable and they require special considerations for their mental health support despite the lockdown and school closure. 13 Thus, knowledge on 'how to intervene to prevent suicide' or 'what to do following a suicidal behaviour' is very critical to help children. Knowledge of risk factors especially depression, anxiety, other mental illness, suicidal warning signs, victimization, humiliation etc. can help in identification of children who are at higher risk.¹⁶ Moreover, the basic knowledge and familiarity with how to intervene with children who are at risk is very significant not only for health care professionals but also for the public including parents, teachers, student population and other key personnel at different sectors to identify and link them to appropriate services and support. 29,75

Often, children who contemplate on suicide express the warning signs. Parents, teachers and friends are the key persons to pick up these signs and get them helped. Hence, empowering everyone especially the significant ones of children with knowledge of correct interventions are very much required before children engage with consequences. 111 irreversible significantly parents and teachers play a vital role in the overall child development. Parentchild attachment has intense effects on cognitive, social and emotional functioning of children and the secure attachment is often associated with less involvement in high risk behaviors, enhanced social and coping skill, and lesser mental health problems among them. 26,101 If the attachment is insecure it is associated with poor mental and physical health and wellbeing. 101

Hence, parenting skills become decisive while handling children at risk especially during this home confinement period.⁹ But deplorably, parental denial that 'my child has no such problems' is also noted to one of the major hindrance towards identification and getting them helped, thus, it has to be addressed to bring out attitudinal and belief changes in the society,^{22,98} which is a crucial step towards suicide prevention among children. In this regard, suicide prevention strategies among children to be effective and efficient plans and targets should focus on the attachment styles of children as well as risk and protective factors (see table-1) that are crucial in building resilience and competencies in self-help and social skills.

The detection and understanding of risk factors are very crucial in framing appropriate and innovative evidence based interventions immediately to reverse and reduce increased suicidal behaviour among children and adolescents ensuring mental health promotion crisis. 29,92,96,98 As this suicidal behaviour is a result of complex interplay of multiple factors, no single approach alone can impact, but such efforts must comprehensive and integrative of multiple factors.98 Thus. importantly, suicide prevention among children is need of the hour and it requires organization and collaboration of diverse stakeholders at multilevel sectors of society both public and private including education, health, labour, business, politics and the media. 17, 98

Research indicate that delivery of mental health services are inadequate including treatment of suicidal attempts. 16 Therefore, it is essential to bridge the gap to improve the effective mental health services and to ensure holistic care - physical, emotional and mental well being of children.⁷⁵ It is accepted that mental health services can be enhanced through collaborative networks of mental professionals, parents, teachers, researchers, volunteers and other stakeholders, under the leadership of governmental and nongovernmental organizations. 52,95 Networking and knowledge about available support systems in the community are very crucial.¹⁷ Further, barriers to essential health care services including mental health for children and adolescents during and after the Covid-19 must be demolished and handled with expertise.9

Coping abilities and vulnerabilities of children at their individual, familial and social level are factors that determinant of their mental health crisis. 13 psychosocial during Various interventions and strategies are designed and found effective and helpful especially the multilevel and integrated interventions at the individual, family and community (school) based, including the strategies to screen, identify, refer, treat and support children at risk and get them access to mental health care and simultaneously to reduce stigma and improve the help seeking behaviour among children. 31,98,112 Therefore, as evidence suggests, multilevel - individual, family and community level interventions are proposed and summarized in **table-2** to prevent suicidal behaviour among children during Covid-19. All interventions should be tailored to the needs and concerns of children, depending on the degree of suicide risk.

Evidence based interventions for suicide prevention outlined as universal, selective or indicated framework, which can effectively be re-structured to the alarming rates of suicidal behaviour among children during Covid-19 crisis. 14,98,113,114 Universal strategies designed to maximize health and minimize suicidal risk of children by removing barriers to care and escalating access to help such as social support and altering physical environment. 98,113,114 Selective prevention strategies to target the children based on characteristics such as age, educational status, family history, who currently do not express suicidal behaviors but elevated level of biopsychosocial and economic risks including survivors. 14,98,116,118,119 Covid-19 Indicated prevention strategies for children who have risk or condition that keep them at very high risk for suicidal behaviour, for instances, prior suicidal attempts, children with significant emotional distress and warning signs. 98,113,114 Medical treatment is also very essential when indicated.¹⁰ Identifying the medical and psychiatric requirements of the children at suicidal risk and working closely with families and health care professionals through effective communication, continuity and follow-up services are very essential in the specialized and indicated suicide prevention among children. 10,14,98,111 They need special attention and individualized care and support.

As the rate of suicidal behaviour among children has shown significant rise, there is an urgent need for 24x7 crisis response hotline services (suicide prevention lifelines) to avail mental health services and resources such as coping skills and self-help skills to all children without any barriers.^{5,10} It is evident that better tele-consultation services have good effect on children with mental health issues and vulnerable families during the previous epidemics in health education and lowering anxiety levels and other mental health concerns including suicidal behaviour. 76,116-118 Accordingly, similar models of alternative online services (via phone, internet and other modalities) can also effectively be tailored to connect with children who are at high risk, which will be helpful in the current situation. 116-118 Moreover, guaranteeing the stability of mental health services is very critical for children who are risk or already under care for these concerns can be effectively benefited from tele-consultations.¹³

Evidencing this there is an urgent need for crisis hotlines easily available to all without any barriers to ensure the wellbeing of children in all aspects. Government of Kerala has taken initiative for a tele-consultation facility for children facing stress cautioning parents against hurting their instance, sentiments (for 'Ottakkalla oppamundu'- you are not alone we are with you, 'CHIRI'- a tele-counselling initiative etc.).⁸⁸ Apart from this it is vital to amalgamate health education information intended towards recognizing warning signs of depression, anxiety, distress and suicidal behaviors through communication sectors such as caller tunes, simple messages and pop-up advertisements to spread awareness on mental health wellbeing and display helpline numbers seek immediate tele-counselling services, to seek mental health services in nearest health facility, importance of sharing feelings and emotions with family, friends, teachers and colleagues to protect their wellbeing. 49 Along with this, measures need to be taken by governments to ensure that media including social media and websites disseminate only essential and accurate information encourage precautionary and preventive measures than stimulating anxiety and fear regarding Covid-19 pandemic and responses.

All the interventions during and after Covid-19 crisis to address suicidal behaviour among children, ultimately aim to bring out overall wellbeing of all children which underpin the elements of self acceptance, meaning in life. autonomy, healthy relationship with others, environmental mastery and growth. 52,119,120 In this concern more research studies are very much needed to focus on mental health impacts and wellbeing of children during and after this current pandemic. It is essential that prevention of suicidal behaviour should be a national health priority during and after this crisis era with the development of new, evidence based interventions especially among children.

CONCLUSION

The extraordinary nature of this Covid-19 pandemic and lockdown have detrimental impact on the mental health of children. The alarming rates of increased suicidal behaviors (death and attempts) among children during this crisis are indicating it. The isolating effects of lockdown, home confinement, school closure, social disconnection, domestic issues (unsupportive and hostile environment, violence and conflicts) and parental practices (scolding and neglect), financial crisis in family, inaccessibility to virtual learning facilities and many other psychosocial stressors harmfully affected state of mind of several children. The prolonged periods of exposure to these various stressors as well as the social disconnection are major contributory factors to this psychosocial issue of increased tendency among Regrettably, these issues are often ignored and underestimated. However, suicidal behaviours among children are preventable with timely and effective response from the multiple stakeholders. An understanding of multilevel framework of various risks and protective factors would help to intervene effectively with children in the context of this pandemic. Understanding of adaptive abilities and vulnerabilities at individual, family community are vital during the crisis for the intervention. It is the need of the hour to urgently respond to this serious psychosocial issue with a collective effort of all stakeholders. Parents, teachers, friends, government and other non-governmental organizations have a crucial role in it.

Moreover, family dynamics, social connectedness and accessibility of resources including digital learning facilities as well as helpline services (tele-consultations) are very critical. It is essential to introduce and strengthen suicide prevention strategies among children as part of national health policy. More research studies are required specifically to understand various factors that affect the wellbeing of children to prevent such incidents in future. Remember, the future of society lies with the children thus it is the duty of our society and government to ensure the overall wellbeing of children without delay.

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ANNEXURE

Table - 1: Risk and protective factors of suicidal behaviors among children during the crisis

Risk Factors	Protective Factors		
	Individual Factors		
• Prior suicidal attempts or exposure to suicide 15,19,31,76,82,83,121	• Life satisfaction, positive self-esteem and self worth worth 15,31,121,122		
 Temperamental (personality) characteristics such as high impulsivity, aggressive behaviour (emotional dysregulation)^{19,32,83} 	• Optimistic view of self and future as well as sense of purpose ^{9,15,31,121}		
• Feelings of defeat, humiliation, pervasive loneliness or isolation, distress, frustration, uncertainty, helplessness and hopelessness 9,44,82,121	 Adaptive coping and problem solving skills including conflict resolution ^{9,15,31,121,122} 		
• Negative self-concept, dissatisfaction with one's own body and poor self esteem ^{15,76,83,121,122}	 Ability to communicate their needs, feelings and thoughts to others ^{26,31,121} 		
• Change from regular or familiar surroundings (schools, friends, or peers or neighborhood) ^{9,10,26,31,83,123}	• Temperamentally (personality) well adjusted characteristics with good social skills ^{26,31,121}		
• Poor problem solving and coping skills 9,15,83,123,124	• Emotional regulation and being assertive 9,76,121,122		
• Psychiatric disorders (untreated depression, anxiety, and other mental illness) ^{15,19,76,82,83,123}	• Help seeking behaviour ^{9,121,122}		
• Learning difficulties and related stress ^{10,26,44,83,123}	• Openness to others persons' experiences, solutions and to new knowledge ^{9,31,122}		
 Perfectionism and social sensitivity ^{15,19,44} 	• Positive life experiences and being creative 9,83,121,122		
• Conflict over sexual identity ^{9,76,83}	• Realistic expectations and focus on academic achievements ^{26,31,80}		
• Unsatisfactory relationships and family environment 16,44,83,123,124	• Positive school and extracurricular experiences ^{9,26,31,121}		
• Excessive exposure to modern technologies (smartphone, internet, social media, news etc) ^{9,10,44}			
• Adverse life events 15,19,82,83,121,123			
Family	Factors		
Dysfunctional family (poor communication, lack of cohesion and frequent interpersonal conflicts - parental, parent-child and siblings with ongoing highly emotionally charged arguments) 9.15,19,26,45,82,123	Healthy family patterns (good communication, cohesion and reinforcements) ^{9,26,31,122}		
• Family adversity including discord, rejection, separation, divorce or death of parents or loved ones 7,9,19,44,45,76,83,123	• Safe, secure and warmth home environment ^{9,15,31,121}		
Parenting psychopathology (negative emotional environment- including neglect or numb to the emotions of child, punishment and exploitation) ^{16,44,76,83}	Responsive and supportive parenting practices 9,31,121,122		
Poor academic atmosphere at home including lack of accessibility to facilities to attend academic classes online (smartphone, television, computer, internet, suitable places etc) ^{7,31,83,121}	No family history of suicide, substance abuse and other mental illness ^{9,31,124}		
• Frequent experience or witness to domestic violence or abuse (emotional, physical and sexual) 16,26,31,44,45,76	• Positive and healthy relationships with family, teachers, peers and others 9,26,31,121		
• Intense academic problems or pressures including online classes 10,16,26,80,83,121	• Good support system (family, relatives) ^{26,31,122}		
Poor care, supports and understanding from parents and siblings ^{7,15,19,44,80,82,121}	Sound family socioeconomic status and family connectedness ^{9,15,26,31,121}		
• Family history of suicidal behaviour, substance abuse, depression and other mental illness 15,16,19,45,76,82,121,123			
Humiliation, harassment or being bullied by family members or peers ^{26,83,121}			
• Unrealistic expectations (high or low) from parents and significant others 9,44,76,123			
• Economic crisis, poor education and underemployment in the family ^{9,15,16,44,83}			

Community Factors		
 Prolonged school closure, home confinement, lack of outdoor leisure activities and disruption in sleeping habits and lifestyle of children 9,10,44 	• Accessibility and availability of 24x7 effective medical and mental health services (including teleconsultations and crisis helplines) 9,76,121	
• Pervasive social isolation, uncertainty, and poor community connectedness ^{16,19,32,44}	• Efficient risk identification, referral and linkage services 31,98,122,125	
Stigma associated with help-seeking and psychiatric illness including suicidal behaviours ^{9,26,32,83}	Parent-teacher-peer connectedness ^{9,31,122}	
• Inadequate information and misinformation (including social media) ^{9,31,44,76}	Healthy social connectedness (relationships) and community networking ^{26,121,122}	
 Pervasive lack of communication and participation in social activities ^{9,15,83} 	 Availability and accessibility to re-adaptation activities and lifestyle changes ^{9,31,76,125} 	
 Poor psycho-social support from friends, classmates or peers 15,16,44 	• Improved mental health literacy, increased help seeking behaviors and diminished stigma ^{9,26,122,125}	
• Lack of easy availability and accessibility of mental health services including online services 9,83,121	• Cultural and religious beliefs and involvement in spiritual activities 31,122,125	
• Relationship problems or conflicts including love affairs 16,44,76,83	• Disaster management task force at every local level community to ensure psychosocial supports and crisis protocols ^{26,121,125}	
• 'Copycat' phenomenon and Contagion-imitation – exposure to inspiring models 19,26,32	• Effective and efficient utilization of curricular and extracurricular activities for the development of resilience, creativity, skills and competencies ^{9,26,31}	
• Availability of lethal means - sensational media reporting and narration of means & methods of suicide ^{9,16,19,32,76,82}	 Barrier free education facilities and easy resource mobilization ^{26,76,121,122} 	

Table 2 Proposed multilevel interventions to prevent suicidal behaviors among children during crisis

Individual level	
ildren to cope with stress: recognize normal emotional reactions to crisis, involve	th
al analysis and information from adjoble courses system assist contacts lim	-:+

- Help chil hem in discussion and social exchange, seek information from reliable sources, sustain social contacts, limit exposure to the media (including social media) and avoid substance abuse and smoking^{1,2,13,31,126,128}
- Measures to address (including medical treatment) the stress, fears, anxiety, depression and loneliness among children 1,9,10,13,29,31,115,121,126
- Prompt and ensure basic hygiene, healthy food intake maintaining daily routine, regular physical exercise, adequate sleep apart from scheduled syllabus 1,2,9,31,126
- Encourage children to 'ask for help' whenever needed 1,2,9,31,115,121,126
- Empowerment of skills in emotional regulation, assertiveness, problem solving, conflict resolution and handling disputes $^{1,2,10,29,126-128}$
- Promote strategies to develop self esteem, self respect, self confidence and competence to face challenges effectively^{1,2,29,31,126}
- Coaching children that difficulties, problems and mistakes are opportunities to learn new skills 1,9,10,29,31,39,126
- Engage children in creative activities (for instance drawing, playing, writing etc), 1,2,9,13,121,126,127
- Emphasize strength based activities to build 'value and purpose of life', resilience, sense of control and to develop 'sense of belongingness' 1,2,9,31,115,126

Family level

- Educate family that it is normal that children seek more attachment and demands on parents during the crisis and the need for improving parenting skills 1,2,9,13,29,39,126
- Friendly interaction and communication between parents and children (safe and supportive ambiance) to comfort their pandemic related fears, mental and physical health issues^{2,9,13,29,31,121}
- Talk openly and directly with child and express concerns, respect, support and love 9,31,39,121,126
- Encourage help seeking behaviour^{1,9,13,29,126}
- Maintain quality time and positive emotional atmosphere at home with children 1,2,31,115,121
- Active listening and understanding of children as well as take their concerns seriously to develop trust and faith in them so that they recognize and share their feelings and emotions such as fear and sadness^{1,9,31,121,126,127}
- Provide reassurance and accurate information and stress reducing activities for children 9,10,13,126
- Revive and encourage to stay connected and maintain healthy relationships (secure and trustful) by

telephones, videos etc. 1,2,13,29,31

- Educate with risk factors and warning signs of suicidal behaviour among children 1,2,10,29,31,115,126
- Family members to take all suicidal threat or attempts seriously^{1,2,9,13,126}
- Ensure constant supervision and close monitoring of their behaviour and activities 1,9,13,29,115
- Never leave them alone 1,9,31
- Remove means for suicidal behaviour through stable supervision ^{2,9,10,13,31,126}
- Supervised and monitored use of technologies to impede any sort of exploitation and abuses ^{2,9,13,31,49,115,126}
- Structure and involve children in household routines and family activities suitably to develop their self-sufficiency skills and self-discipline skills^{1,2,31,126}
- Address domestic violence, conflicts and ensure parents are not quarreling before the children ^{2,13,31,121,126,126}
- Ensure safety and security of children at any cost^{2,10,13,29,126}
- Keep children close to their parents and family (if safe) and avoid separating children, if separated, ensure the proper alternative care plans and regular monitoring 1,2,9,10,31,115
- Availing effective intervention for mental, physical and substance use disorders of family members 1,29,126,128

Community level

- Execute flexible and re-styling academic schedules to reduce the effects of prolonged school closure among children ^{2,10,13,29,39,126}
- Ensure no burden of academic pressure on children, parents and teachers with prime deliberation 1,2,9,10,115
- Ensure accessibility of internet services and audio-visual gadgets to all children without any discrimination (economic, remote areas etc) to avail online teaching 1,2,9,31
- Provide student enrichment programmes and life-skill training programmes as part of syllabus^{2,9,31,126,127}
- Ensure teachers to have regular contact with their all students and families to identify and provide needed supports^{2,9,13,29,126}
- Strengthen parent-teacher associations for constant vigilance and supports 1,2,9,115,121,126
- Effective use of social media for disseminating correct information and creating awareness campaigns against domestic violence and conflicts during the pandemic^{2,9,13,31,126}
- Community sensitization and stigma reduction on mental health issues during this crisis using media (especially social medias) as powerful means for a quick reach to large population and to ensure help seeking ^{2,9,13,29,39}
- Strengthen adequate services (including tele-mental health and crisis hotline services) to families to deal with conflicts, substance abuse and other mental and physical health concerns^{2,9,10,29,121,126}
- Integration of mental health services into primary care services to minimize the adverse psychological effects of Covid-19 pandemic ^{2,9,10,29,98,115}
- Suicide specific education for family, friends, and concerned individuals to ensure close monitoring of children who are at high risk 9,29,31,121,126
- Gatekeeper training (multi-sectorial) in community, utilizing modern virtual technologies to ensure continues community based support system to screen, identity, refer, treat and care children at risk using the evidence based methods 1,1,2,29,31,126
- Educate and involve children in the suicide prevention and mental health promotion activities (Eg. 'CHIRI' in Kerala) ^{2,31,87,94,121,126}
- Strengthen supervised 'peer support groups' among students to communicate their concerns^{1,2,31,126,128}
- Establish suicide prevention networks and easy referral services^{2,13,29,121,126}
- Efficient social security measures to prevent child exploitation, abuse and any sort of violence against children including constant surveillance^{2,9,31,126}
- Strengthen measures to provide child protection, support and care services more efficiently and abruptly for children who are victimized/exploited during this pandemic 1,2,29,98,115
- Ensure 24x7 accessible crisis/suicide prevention helpline services to children ^{29,31,39,121}
- Avail facilities for highly individualized and specialized interventions for children engaged in suicidal behaviour or survivors of abuse or violence^{2,9,13,29,121,126,127}
- Ensuring media is stick on to the guidelines for suicide related reports or news^{1,2,9,31}
- Limiting exposure of children to violence in the visual media ^{2,9,13,121,126}
- Provide financial supports for families who are economically disadvantaged due to the current pandemic including loans^{1,2,9,13,29,126}
- Initiate more research projects on the mental health impact of Covid-19 on children 1,2,9,10,29