Anxiety in hospitalised families: lessons from the early phase of the COVID-19 pandemic

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Abstract

Introduction: In the early phase of the coronavirus disease 2019 (COVID-19) pandemic, children with COVID-19 in Singapore required hospital isolation. We aimed to explore the psychological experiences of children and their caregivers isolated in a tertiary university hospital due to COVID-19.

Methods: A prospective mixed-methods design was used to evaluate the psychological status of hospitalised family units with one or more children aged <18 years who had severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection. Patient medical records were reviewed for demographic and clinical information. Parents and children ≥7 years of age underwent a psychologist-administered telephone-based interview. Self-reported, age-appropriate instruments, Short Mood and Feelings Questionnaire, and Screen for Adult/Child Anxiety-Related Disorders, were used to assess anxiety and depression, respectively. Participants were also interviewed qualitatively.

Results: Fifteen family units were hospitalised between March 2020 and May 2020. Of these, 13 (73%) family units were recruited. The median age of the children and median hospitalisation duration were 57 months and 21 days, respectively. Median number of COVID-19 polymerase chain reaction swabs performed for each child was eight. All children had asymptomatic to mild SARS-CoV-2 disease. The criteria indicative of anxiety disorder were met by 40% of adults and 80% of children, while the criteria indicative of separation anxiety were met by 60% of parents and 100% of children. One child met the criteria indicative of depression. Uncertainty, separation, prolonged hospitalisation and frequent swabs caused significant reported anxiety.

Conclusions: Families, especially children, had heightened anxiety while in hospital isolation. Therefore, home-based recovery from COVID-19 and psychological support for children and their families, with focus on early recognition of anxiety disorders, are recommended. We support review of paediatric isolation policy as the pandemic evolves.

Keywords: Caregiver, children, COVID-19, hospitalisation, psychological experiences

INTRODUCTION

During the coronavirus disease-2019 (COVID-19) pandemic in Singapore, some children were infected with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). Although they generally had milder disease than adults,[1] their isolation remained key as part of a national holistic effort to fight the pandemic. In the initial phase of the pandemic, all confirmed cases in Singapore required admission to appropriate tiered facilities for medical care and isolation until nasopharyngeal viral clearance was achieved (two consecutive negative nasopharyngeal swabs 24 h apart). While adults were admitted to either hospital or designated community facilities depending on their risk for severe disease, young children with COVID-19 were isolated in two public hospitals with paediatric facilities at the initial phase of the pandemic.

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Concerted efforts were made to admit infected children together with their caregivers as a family unit. In our centre, concordant family units comprising COVID-19-positive dyads (adult and child) or triads (adult and two children) were allowed to share a room. To facilitate this, interhospital transfers of positive caregivers to the same unit as their child were arranged on a case-by-case basis. Discordant family units had been strongly discouraged from sharing a room, to reduce further exposure and subsequent infection of the negative child or adult.

Quarantine and isolation of adults has been described in previous outbreaks such as severe acute respiratory syndrome (SARS), Middle East respiratory syndrome (MERS) and Ebola. It is largely viewed as unpleasant, with several psychological side effects of anxiety, anger and depression lasting months and even years beyond the resolution of the outbreak.[2] During the SARS outbreak, the balancing of infection control needs with family-centred care of infected children was recognised as a major challenge. In Toronto, Koller *et al.* described the emotional challenges of nursing staff, infected children and their caregivers who had been separated from them during hospitalisation. Adolescents quarantined during a pandemic were also overall more likely to have posttraumatic stress disorder than their adult counterparts.[3]

This study aimed to explore the psychological experiences of children and their caregivers isolated during the early phase of the COVID-19 pandemic in a hospital in Singapore. We hypothesised that hospitalisation of children and their families with COVID-19 has led to significant anxiety.

METHODS

Hospitalised family units in a single tertiary university hospital in Singapore with at least one child <18 years old diagnosed with SARS-CoV-2 infection between March 2020 and May 2020 were recruited. A prospective mixed-methods design involving quantitative questionnaire-derived and qualitative interview data was used.

Patient medical records were reviewed for demographic and clinical information. Parents and children ≥7 years old underwent a telephone-based interview performed by a trained psychologist to explore their understanding of the infection, hospital isolation and pandemic. This was performed retrospectively upon discharge.

Adult interviews were based on McCracken's in-depth interview method.[4] This comprised a series of semi-structured questions to assess understanding of the COVID-19 pandemic and impression of the global and local responses to the pandemic. A structured interview guide was used. The parent and children were separately interviewed via phone calls. They were asked a set of predetermined questions, and all responses were transcribed verbatim. Based on their initial responses, participants were then asked to reflect on their family's experience and emotions regarding hospital isolation, separation from family members and hospitalisation as a family unit. They were also invited to share how their experience could have been improved. Children were interviewed using a modified FACES scale to score their emotional experiences while hospitalised. They were then asked short open-ended questions on their understanding of the virus and the reasons behind their hospitalisation. They were also asked which family member they would want to stay in hospital with if given the choice, and to share the challenges they faced during admission.

Two self-reported questionnaire instruments were used to assess anxiety and depression — the Short Mood and Feelings Questionnaire (SMFQ)[5] and the Screen for Adult Anxiety-Related Disorders (SCAARED)[6] for adults, and the SMFQ for children[7] and the Screen for Child Anxiety-Related Disorders (SCARED)[8] questionnaire for children ≥7 years.

SCAARED is a 44-item self-report questionnaire adapted from the SCARED questionnaire. It is meant for use in individuals aged 18 years and above. The scorings evaluate four factors: significant somatic symptoms or panic, generalised anxiety, separation anxiety and social phobia. SCARED is a 41-item self-report questionnaire assessing anxiety in children and adolescents. The SCARED scorings evaluate five factors: significant somatic symptoms or panic, generalised anxiety, separation anxiety, social anxiety and significant school avoidance. The total score and the score for each factor have been demonstrated to show good discriminant validity between anxiety and other disorders, and within anxiety disorders for generalised and social anxiety.[6] However, an individual may meet the criteria for a suspected anxiety disorder, but not fulfil the criteria for any of the above specific anxiety disorders.

The SMFQ (children, adults) is a 13-point score with the main focus on affective and cognitive symptoms, including one item evaluating low mood ("*I felt miserable or unhappy"*) and one item addressing anhedonia ("*I didn't enjoy anything at all"*). The participant rates each statement as 2 (true), 1 (sometimes true) or 0 (not true) over the past 2 weeks, yielding a maximum total score of 26.[9] This scoring has been validated to identify depression and measure symptom change, especially in adolescents and adults.[10]

Parents were asked to score their opinion and emotions relating to their experience in isolation on a Likert scale of 1–5 in a series of qualitative questionnaires, with 1 being strongly agree and 5 being strongly disagree.

Ethics approval was obtained from the National Healthcare Group Domain Specific Review Board (reference no. 2020/004060). All adult participants gave informed consent; additionally, children >7 years gave assent. Psychosocial support was offered to all families regardless of their participation in this study.

There were two stages of analysis in this study. First, we analysed the data from the quantitative scores. Then, we compared and integrated the qualitative components with the quantitative components to provide a multifaceted viewpoint into the psychological effect of hospitalisation on families during the early phase of the pandemic. A mixed-methods design was chosen to deepen and enrich the range and understanding of our study findings. Where appropriate and feasible, the quantitative and qualitative findings were presented in an integrated way, rather than separately. The emphasis was on placing families' voices at the centre of the study.

RESULTS

Patient demographics

The 15 family units with COVID-19 admitted in our institution between March 2020 and May 2020 were invited to participate in the study. Thirteen family units (73%) with a total of 12 adult caregivers and 14 children were recruited. They comprised 11 child–adult dyads, a triad of two children and one adult, and one child who was admitted alone in the absence of a suitable caregiver. Patient demographics are summarised in Table 1 and the recruitment strategy is summarised in Figure 1.

Five children aged ≥7 years completed the interviews and questionnaires. Twelve adult interviews were completed; the parents of the child admitted alone, a 13-year-old girl, declined to answer the interview questions but consented to their child's participation in the study. Two other parents did not complete the SCAARED questionnaire. The median age of the admitted children was 57 months (range 8–148, interquartile range [IQR] 20.5–91.5). All but one caregiver were COVID-19-positive.

Ten children (71.4%) had asymptomatic SARS-CoV-2 infection, and those who were symptomatic had mild symptoms including intermittent sneezing or a short-lived cough. The median length of hospital stay was 21 days (range 8–35, IQR 5). The median number of COVID-19 polymerase chain reaction (PCR) swabs performed for each child was 8 (mean 7.9, range 2–16).

Two main themes emerged from the qualitative component of our study — anxiety and depressive symptoms. Anxiety symptoms were further categorised into generalised anxiety, separation anxiety, anxiety related to frequent nasopharyngeal swabs and anxiety related to the diagnosis.

Understanding of the COVID-19 virus

Given the unknown nature of the COVID-19 viral infection at the time of interview, even among medical professionals, we wanted to understand our patients' perceptions of the virus. The majority of adults displayed a good understanding of the COVID-19 virus. This included the infectivity of the virus ("*highly contagious*", "*spreads very fast*") and the manifestations, or lack thereof, of symptoms ("*degree of impact varies significantly, mild to pneumonia*", "*does not mean will have symptoms*"). Adults interviewed also cited awareness about the importance of wearing a mask and social distancing measures to contain the spread of virus:

"*[We] need to follow procedures — for example, wash hands, maintain hygiene, put on a mask, stay 1 metre distance from others*." (44-year-old, father of a 3-year-old boy)

"*Stay home, avoid crowded areas*." (28-year-old, mother of a 1-year-old boy)

In contrast, the children interviewed were more verbal about their feelings upon realising that they were infected:

Table 1. Demographics of paediatric patients (*N*=14).

Demographic	*n* (%)
Gender	
Male	8 (57.1)
Female	6 (42.9)
Ethnicity	
Chinese	4 (28.6)
Malay	6 (42.9)
Indian	2 (14.3)
Others	2 (14.3)
Symptomatic for COVID-19 infection	
No	10 (71.4)
Yes	4 (28.6)
History of travel	
Yes	1 (7.1)
No	13 (92.9)
Concordant adult caregiver	
Yes	12 (92.3)
No	1 (7.7)
Interhospital transfer of adult	
Yes	7 (53.8)
No	6 (46.2)

COVID-19: coronavirus disease 2019.

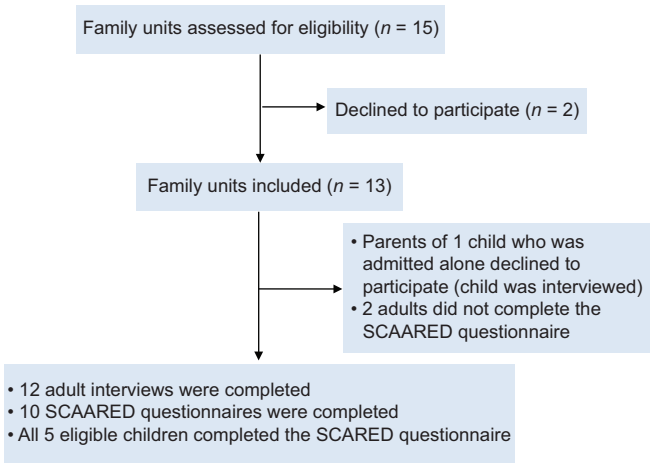

Figure 1: CONSORT diagram shows the recruitment strategy. SCAARED: Screen for Adult Anxiety-Related Disorders, SCARED: Screen for Child Anxiety-Related Disorders.

"*I don't know (about the virus) …. I hate COVID-19*." (7-year-old boy)

"*The (doctor said) I must be admitted to the hospital…. My heart was still feeling very shocked*." (10-year-old boy)

Anxiety

Both parents and children exhibited heightened anxiety, and it was especially so in children. The mean score of parents was 21.2 and their median score was 14.5 (range 0–51) on the SCAARED questionnaire. Children had a higher mean score of 26.2 and a median score of 27 (range 11–37) on the SCARED questionnaire, indicating higher levels of anxiety. A score of ≥25 on either scale may indicate the presence of an anxiety disorder, which was shown by four parents (40%) and four children (80%). Half of them (50%, $n = 2$) belonged to the same parent–child dyad. Interestingly, although the four parents who met the criteria for a suspected anxiety disorder also met the criteria for suspected generalised anxiety disorder, none of the children fulfilled these criteria. This raises concerns of possible situation-specific anxiety in children. Four parents (40%) and three children (60%) met the criteria for possible panic disorder.

Separation from other family members who were not in hospital was a prominent contributor to anxiety. In particular, all parents who were initially separated from their children until an interhospital transfer could be facilitated identified this as a major source of stress:

"*I was worried about my children — very nervous*." (36-year-old, mother of a 9-month-old girl)

"*My son was left alone (temporarily) after admission. Maybe (they) should allow parents to stay even if parents were tested negative*." (28-year-old, mother of a 1-year-old boy)

This was corroborated in the quantitative analysis, in which the majority of parents (60%, $n = 6$) had symptoms indicative of separation anxiety. Additionally, children (100%, $n = 5$) seemed to have greater separation anxiety than their parents, despite all but one staying with their parents. The reasons for this observation are unclear, but we hypothesise that this may be a function of young age and difficulty in verbalising complex emotions.

Prolonged hospitalisation and frequent swabs caused significant distress for parents and children:

"*(I was) isolated (for) 27 days …. There was swab after swab every 3–4 days. It was painful and traumatising*." (Undisclosed age, mother of a 1-year-old boy)

"*Perhaps it would be good not to have to stay in the hospital environment. (This) poses as a stress factor for the child*." (Undisclosed age, mother of a 7-year-old boy)

"*I have to take one thousand swabs. I only got three-day break, then one-day break, then (a) two-hour break (between swabs). Swab is the stubborn-est thing I heard of*." (7-year-old boy)

"*I am so angry, I want to become a monster. All because of just one headache*." (7-year-old boy)

While 9/12 (75%) of parents agreed or strongly agreed to feeling anxious about their own diagnosis of COVID-19, 11/12 (91.7%) of the interviewed parents agreed or strongly agreed with being anxious when their child was diagnosed with COVID-19. Also, 75% ($n = 9$) of parents felt sad that they had to be separated from the other members of their family.

Depressive symptoms

The mean score of parents was 6.1 and their median score was 6 (range 0–17) on the SMFQ, well below the cutoff of 12 or higher, which may otherwise indicate the presence of depression in the respondent. None of the participants met the criteria suggestive of depression on the SMFQ. Qualitative responses did not capture significant depressive symptoms in either parents or children. The median score of children was 5.0 (range 0–12) and their mean score was 4 on the SMFQ. Similar to adults, a cutoff of 12 or higher indicates the presence of depression in the respondent and only one child (20%) met this criterion.

DISCUSSION

COVID-19 has affected more adults than children, with children generally having milder disease than adults. While the psychological impact of the COVID-19 pandemic on children and adolescents resulting from home quarantine or lockdown has been extensively described,[11-15] little has been said about the psychological impact on children and family clusters requiring hospitalisation for illness or isolation. This study uniquely describes quantitatively and qualitatively the ideas, concerns and psychological impact of COVID-19 in these patients. It highlights that parents and children hospitalised with mild disease have heightened anxiety, and this is especially so in children.

At the start of the COVID-19 outbreak, Brooks *et al*. reviewed the evidence surrounding the psychological effects of quarantine on the population in general and found that stressors included longer quarantine duration, infection fears, frustration, boredom, inadequate supplies, inadequate information and financial loss.[16] Our study similarly identified long hospitalisation duration as a key stressor. In addition, the need for frequent nasopharyngeal swabs was frequently cited in our study. Since the time of this study, the number of positive COVID-19 cases in children in Singapore has risen, especially with new variants evolving, particularly the Delta variant.[1] Understanding of the virus has significantly increased, and it is now known that children remain at low risk of severe disease and mortality, even with the Delta variant. In Singapore, no child thus far has developed severe disease requiring oxygen supplementation or intensive care unit (ICU) care.[1] However, the indirect effects of the pandemic on children have been well documented, with increased anxiety noted among

children overall.[17-19] This is significant as children comprise a vulnerable group who cannot advocate for themselves in the way that adults can. Children, especially infants and young children, are also dependent on adults for their physical and emotional needs.[20]

In this study, the majority of parents expressed anxiety over their personal well-being as well as that of their child. A significant proportion met the criteria for anxiety, but not depression. Children appeared particularly susceptible to separation anxiety. We hypothesise that this is due to limited understanding of the illness and the rationale behind isolation. Future studies on the persistence of anxiety in children after recovery from COVID-19 should be conducted.

With evolving scientific knowledge on viral load kinetics and transmission, Singapore has been able to shift from a test-based to a time-based discharge criterion.[21] After 29 May 2020, the national policy was revised to allow time-based discharge of patients who were well after day 21 of illness regardless of the nasopharyngeal swab results in asymptomatic patients. As of 6 October 2021, the national policy was further revised to allow home isolation of children aged above 1 year who were well, along with adults, through the Home Recovery Programme (HRP).[22] We postulate that the HRP is a step in the right direction. Having certain and shortened isolation durations, fewer nasopharyngeal swabs, and being in the comfort of their own homes with family, will likely reduce anxiety in parents and children.

As recognition of the psychosocial impact of the pandemic on children and special populations grows,[23-25] more resources have been dedicated to supporting them in Singapore and worldwide.[26,27] This is timely as increasing literature has emerged showing that the ongoing pandemic and restrictions have led to deterioration of both parent and child mental health.[15,28] Assessing changes in their perspective through the course of the pandemic may reveal fatigue, frustration and perhaps eventual acceptance of the 'new normal'.

Our study population was small, and the majority of children were younger than 7 years of age. As only five of the 14 recruited children were over 7 years of age and had a telephone-based interview with a self-reported questionnaire, there was limited direct information from the young children in this study. The study was also conducted at the beginning of the COVID-19 pandemic. We did not pursue a longer follow-up period to determine if these psychological observations persisted or changed through the course of the pandemic. There was also no home isolation programme in place at the time of the study for comparison of psychological states between hospitalised and nonhospitalised family clusters. Another limitation was the absence of baseline scoring to differentiate anxiety disorders that developed after isolation versus parents who may have had pre-existing anxiety disorders. Parents and adolescents were not asked to declare beforehand if they had an underlying psychiatric illness; however, a review of their past medical history did not reveal any such conditions.

In conclusion, parental anxiety and child anxiety were common during hospital isolation for COVID-19. Prominent stressors were separation from other family members, prolonged hospitalisation and discomfort from frequent nasopharyngeal swabs. We recommend that a psychosocial review be offered to all families in isolation and frequent review of isolation policies be conducted as the information on transmission and severity of infection evolves. With home isolation, beyond the benefits of appropriate siting of care and healthcare resource utilisation, children are also spared the negative effects of hospitalisation.

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Conflicts of interest

There are no conflicts of interest.

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