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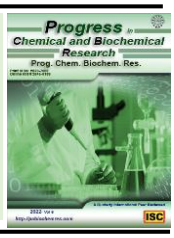

Review Article

A Systematic Review Regarding the Diagnosis, Symptoms, and Methods of Home Quarantine in Children during Covid-19 Pandemic

Nahid Shokrian [1], Hamid Owaysee Osquee [2]*

[1]*Midwifery, Tabriz University of Medical Sciences, Tabriz, Iran*

[2]*Associate Professor of Infectious Disease, Department of Infectious Disease, School of Medicine, Tabriz University of Medical Sciences, Tabriz, Iran*

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ABSTRACT

Introduction: This study was conducted with the aim of transmission methods, diagnosis, and home quarantine of Covid-19 in babies and children.

Methodology: This study is a systematic review that was conducted in 2022. Searches were conducted in PubMed, Elsevier, and Google Scholar to identify related articles from 2019 to 2022. The search terms "Coronavirus 2019", "Covid-19", and "pregnancy" were used, which were adjusted according to the mesh.

Results: Studies published from 2019 to the end of 2022 were evaluated. The contents that were explained in detail about them included the methods of transmission, clinical symptoms, and home quarantine and children.

Conclusion: According to the results of this research and confirming the effect of parents' unwanted thoughts and hyperarousal on children, the need for psychotherapists' intervention for families seems necessary on two levels. First, management and treatment of parental stress and second, children's anxiety and depression should be treated separately and correction of their possibly uncompromising interactive styles should be done in an interactive and confrontational way. This leads to both psychological and financial savings for the government and healthcare providers.

* Corresponding author: Ahmed Mutanabbi Abdula
✉ E-mail: ahm.chem@yahoo.com;

GRAPHICAL ABSTRACT

1- Introduction

Corona virus is a polymorphic enveloped virus with a diameter of 150-160 nm and is a single-stranded RNA virus, and Covid-19, due to its genetic coding (Encoding and additional glycoprotein that has acetyl esterase) and hemagglutinase (Hemagglutination), is another members of the coronavirus family are distinguished. The outbreak of Covid-19 was initially announced by the World Health Organization (WHO) in Wuhan, China in 2019 [1-3]. On February 12, 2020, the World Health Organization reported 45,171 cases and 1,115 deaths from the disease [4-6], which has symptoms similar to the acute respiratory syndrome (SARS) disease in terms of pathophysiology, symptoms and epidemiology [7-9]. It is also known that this disease can cause a range of symptoms from asymptomatic to very severe respiratory symptoms (Figure 1) [10-13]. The most common way of transmission of this virus is inhalation of contaminated aerosols. In addition, this virus has been seen in the urine and stool samples of people with diarrhea. The incubation period of this disease is 3-14 days. The involvement of this virus is preferably in the form of lower airway involvement and other symptoms [14-16].

Fig. 1. PCR test in children for COVID-19 diagnosis

Nasal secretions, blood, and bronchoalveolar lavage samples are used to diagnose this disease. The serological test by ELISA method (ELISA or Western blots) is specific to detect the protein of this virus. In a study conducted at the beginning of the outbreak of this disease and on 44,762 Chinese patients who had a confirmed laboratory test, only 1% were younger than 10 years old and 1% were 10-19 years old, of which 1.8% were under 1 year old, 1.2% were 2-5 years old, 0.6% were 6-10 years old, 1.1% were 11-15 years old, and 1.5% were over 15 years old, which indicated the lower prevalence of this disease among children. In a study conducted on more than 2000 children, it was determined that 4% of patients who had laboratory confirmation were asymptomatic [17].

According to clinicopathology, it has been mentioned that this disease has three phases: (i) The initial phase of the disease has symptoms similar to a cold and a high viral load. (ii) Critical phase accompanied by a decrease in the virus titer and an intensification of the body's response to the infection, which leads to damage to the lungs and other organs, and (iii) Recovery phase, in which the patients' symptoms improve [18-20].

The evidence about the long-term complications of this disease after passing the acute phase of the disease in children is restricted and very limited studies have been done in this regard. This study was conducted to evaluate the long-term outcomes in children who were previously hospitalized with Covid-19, and the need to evaluate the outcomes of this disease in children is essential to inform health experts, doctors, and patients' families [21-23].

2- Methods

This study is a systematic review conducted in 2022. The search terms "Coronavirus 2019", "Covid-19", and "pregnancy" were used, which were adjusted according to the mesh. Searching in PubMed, Google Scholar, Elsevier and other databases, 82,7280 and 12 results were found in English. All abstracts were reviewed and 124 articles were removed due to repetition. 7185 articles were excluded from the study because they did not include pregnant women or humans or were about laboratory studies.

3- Results

Transmission

Due to the serious threat of Corona virus, most of training and services are of the medical type, which of course has a logical justification. Although, according to theories related to psychoneuroimmunology, the experience and uncompromising tolerance with stress leads to the weakness of the immune system and increases the possibility of contracting the disease, it should not be overlooked that the survivors of this virus, during the control of this disease, and also after they face a serious psychological threat from its eradication. Most of the existing psychological researches regarding this emerging epidemic are related to the adult community such as students, the general population, and the employees of health and treatment centers such as hospitals dealing with Corona patients, and on the other hand, very few researches in this field have been conducted on children (in a published form that is available to experts, health officials, and parents). For example, the research conducted and published in Iran is related to the prediction of mental health based on anxiety and social solidarity caused by Corona disease, which was conducted in the child and infants community.

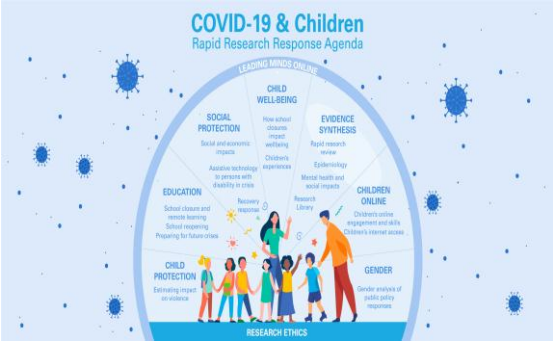

Fig. 2. COVID-19 and Children

Clinical symptoms

There are very few studies for long-term evaluation of Covid-19 disease in children and adolescents. For example, in a study conducted by Osmano *et al.* on residual complications in children with Covid-19 who were hospitalized in a Moscow Hospital, it was determined that the most common complications were fatigue, reduced sense of taste and smell, and headache [24-26]. In the present study, fatigue was seen in 20% of patients in the three-month follow-up. However, due to the fact that in their study, other complications are divided into the systems involved (for example, neurological or digestive

complications, etc.), it is not possible to make an exact comparison between the findings of these two studies [27-29].

Likewise, given that the most common complication reported by families in our study was mood disorder (2.35%), it is possible that many patients did not have the ability to express their problems and the reason for this complication being more among the patients, there is an inability to separate other problems such as headache and myalgia from mood disorders by parents and report it [30-32]. In addition, in Osmano's study, it is mentioned that increasing age can be considered as a risk factor for the remaining complications of the disease in children with Covid-19, so that the number of remaining complications was higher in older patients, which is consistent with the results. Our study is consistent so that in the newborn age group, the lowest and in the age group over 5 years old, the highest rate of disease complications has been seen. In studies conducted on the risk factors of prolonged Covid-19 in adults, such as the study by Munblit *et al.*, conducted in Russia in 2021, as well as the study by Huang *et al.* and several other studies, it has been reported that the long-term development of Covid-19 has a high prevalence in adults [33]. In a study conducted in Australia and on 151 children in the age group of 0-19 years old who were mostly suffering from a mild type of Covid-19, it was found that only 8 children had long-term complications, and in that study, the average age of the patients was 3. It can be concluded that with increasing age, the rate of remaining disease complications increases, a point that was also found in our study [34-36]. Concerning that few studies have been conducted on the remaining complications of Covid-19 in children, and there has been no study in our country until the writing of this report [37]. The results of the present study can be seen as useful for future studies. In this Investigation, only patients who were admitted to the hospital were followed up, and considering that in the children group, a large number of patients remain asymptomatic and their significant percentage are not hospitalized, this conclusion cannot be generalized to the entire group of children [38-40]. Likewise, it is possible that the symptoms mentioned in the patients during follow-up after discharge are caused by another disease other than Covid-19, which is considered to be Covid-19 complications simply due to the coexistence of two diseases. Another point is that the parents have completed the questionnaires and not the patients themselves, which can also lead to the errors in evaluations. It seems necessary to conduct studies with a larger sample size and in wider dimensions and to investigate other aspects of this disease in children [41].

Home quarantine and children

It seems that the fear of illness, financial problems caused by home quarantine, temporary or permanent unemployment, limited social communication, uncertainty about the end of the pandemic, concern for family and friends, and fear of the future, are among the factors that are considered as negative psychological effects [42-44]. In addition, the stress caused by the Covid-19 pandemic affects parents, and this stress is a predictor of anxiety and depression in children. Home quarantine at least increases the hours of communication and interaction between family members and children with parents, but it seems that this quantitative increase is associated with a qualitative decrease in communication. Because parents experiencing stress caused by quarantine or the spread of this disease, have personal concerns and responsibility towards their children or withheld support from parents or other close people, and are faced with hyperarousal and disturbing thoughts that prevent a sufficient quality relationship with children and probably causes significant symptoms of anxiety and depression in children; a problem that needs more future studies with quasi-experimental designs [45-47]. Due to the

importance of the issue, as mentioned earlier, the health and treatment systems of the countries formulated and communicated strategies for psychological help to children. For example, the National Health Commission of China provided guidelines for the mandatory quarantine of children suspected of having the Corona virus and hospitalization, such as increasing the contact time of children with their parents, increasing children's access to disease information through cartoon books and movies, guiding children to create a list of regular daily activities, providing night lights and small gifts, and that they be referred to psychiatrists immediately if they feel psychological distress such as worry, anxiety, trouble sleeping, and loss of appetite [48-50]. Due to the importance of psychological attention to children, the Iranian Child and Adolescent Psychiatry Association has also issued guidelines focusing on issues such as managing stress and excitement in a crisis (managing stress and crisis in the family, talking with children about the Corona epidemic, etc.), educational activities (resuming educational activities and virtual education), psychological support for the victims (psychological support for the loss of loved ones, help for children bereavement, the affected child: what parents can do to support themselves and the family, etc.), and long-term measures in crisis (timely recognition of symptoms risk and prevention, referral to experts, and counseling in cyberspace: tips for parents, etc.) [51].

4- Discussion

Quarantine refers to the separation and restriction of movement of people who are potentially susceptible to infectious disease and by keeping them away from each other, if they are infected, the possibility of infection and transmission to others is reduced. This term is different from isolation, which emphasizes keeping a distance or not meeting a non-infected person with a person who is definitely infected with a contagious disease [52-54]. Hence, quarantine is a more unpleasant experience. Separation from the loved ones, feeling of uncertainty, fear about getting sick, restriction of freedom, and feeling of boredom are some effects of home quarantine, which in some cases can have significant effects [55]. People in quarantine face the fear of the consequences of this infectious disease and not only experience boredom, loneliness, and anger, but also, if infected, symptoms of infection such as fever, hypoxia, cough, and side effects of drugs such as insomnia caused by the use of steroids. Anxiety and mental tensions lead. Recent meta-analyses have reported significant results regarding the effects of quarantine and isolation on mental health. Things like rejection, loneliness, anger, depression, anxiety, lack of self-respect, lack of self-control, fear, boredom, emotional problems, disruption in daily activities, and negative effects in coping and psychological functions are the most psychological disorders reported as short- and long-term consequences [56-58]. In most studies, based on the diagnostic symptoms of post-traumatic stress disorder in DSM-V, three dimensions of symptoms have been assessed by the Impact of Event Scale-Revised (IES-R):

1- Disturbance (such as intrusive memories, distressing dreams, dissociative reactions or flashbacks; severe stress, and physiological response to trigger stimuli) [59]
2- Extreme hyperactivity or hyperarousal (such as aggression, outbursts of anger, sleep problems, problems with concentration, reckless behavior, or self-destructive behavior).

5- Conclusion

According to the results of this research and confirming the effect of parents' unwanted thoughts and hyperarousal on children, the need for psychotherapists' intervention for families seems necessary on two levels. First, management and treatment of parental stress

and second, children's anxiety and depression should be treated separately and correction of their possibly uncompromising interactive styles should be done in an interactive and confrontational way; this leads to psychological and financial savings for government and healthcare providers.

The current research, like other researches, has limitations, which of course, based on its special conditions, we can initially point to its most important limitation, which is the lack of resources and research background in the field of psychological effects of the pandemic in the world and especially in Iran, and this limitation is particularly the case of psychological research related to children is very impressive. Concerning the role of cultural and geographical factors that are likely to affect the spread of this disease and coping strategies of people in controlling this disease in different parts and provinces of the country. The results should be cautious and, if possible, by conducting such research in other places, effective cultural and social differences should be compared with each other. Furthermore, in terms of the time frame of this research, it was conducted at the beginning of the wave of infection and the recommendation for home quarantine, people may show different psychological reactions as the conditions lengthen, which the present research was not possible to measure this issue in terms of the type of cross-sectional survey. Moreover, the interested researchers are suggested to pay attention to this point in future researches.

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