

ORIGINAL PAPER

PEDIATRICS

Parents' knowledge and attitude towards COVID-19 in children: A Jordanian Study

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Email: Shabuhammad@just.edu.jo**Abstract**

Background: The coronavirus disease 2019 (COVID-19) has had a rapid global spread. All individuals of all age groups are at risk of COVID-19. This study aims to describe the knowledge and attitude of Jordanian parents regarding COVID-19 in children, including clinical signs of the disease, modes of transmission and protection measures.

Method: A cross-section study amongst Jordanian parents was conducted. The size of the sample was 810. Information regarding the clinical signs of the disease, modes of transmission, protection measures against COVID-19 and satisfaction with governmental measures was collected.

Results: The findings indicate that the parents had a good understanding of the clinical signs, mode of transmission and protection measures and were satisfied with governmental measures. According to the parents' responses, the resource they used the most about COVID-19 was social media (78%), followed by news channels. Many correctly stated that fever was a clinical sign, followed by cough (77%). Almost 90% of the parents have an appropriate attitude towards companioning children within crowds. Generally, people are more susceptible to the virus within crowds.

Conclusions: In summary, we believe that the findings reported here are important for understanding the clinical characteristics and vertical transmission potential of COVID-19 infection in children, from the perspective of parents. The knowledge of parents about COVID-19 in children was considered good in the case of most parents. This knowledge helps with creating educational programs to increase awareness for areas that have weaknesses.

1 | INTRODUCTION

The new pandemic 2019 coronavirus disease, also referred to as COVID-19 has spread from Wuhan, China to numerous countries, of which some have had outward spread as well.¹ Initial attempts to stop the spread of COVID-19 focused on defining the clinical path of the virus, recording extreme instances and treating the patients suffering from it. Cases of Middle East respiratory syndrome (MERS), pandemic influenza and various other outbreaks have shown that epidemics change.²

All severe COVID-19 patients so far have suffered from pneumonia.¹ Current reports from the Chinese Centres for Diseases Control and Prevention indicate that COVID-19 rarely attacks

children.^{3,4} These reports show that out of the 44,672 positive COVID-19 cases on February 11, 2020, 416 (0.9%) had an age of 0-10 years, while 1.2% (549) were aged 10-19 years. It is still unclear why children have a higher resistance to some quite infectious diseases. A very active innate immune system in children, a healthy respiratory system as compared with adults and fewer hidden abnormalities in children may play a role.^{5,6} In adults, a highly active immune system may explain disadvantageous immunity, which is related to severe respiratory distress syndrome. The other explanations for the lower amount of COVID-19 infections in children may be because children participate in minimal outdoor activities and have little international travel, which lowers their possibility of catching the virus.^{6,7} In the future, there may be an

increase in paediatric patient numbers, as a lower number of paediatric patients at the start of the pandemic does not imply that children are less prone to the disease.⁶

We urgently need to increase the activities of public health to describe the possible consequences of this disease. The consequences of a pandemic are dependent on the number of infected individuals, the transmission of the infection and the clinical severity spectrum.^{6,7} These exciting results regarding COVID-19 suggest that children may be less prone to COVID-19. It is essential to explain the primary method that may assist in managing COVID-19 in children.⁸ Currently, parents are role models and advocate in their children's health. Good parenting skills are essential when children are restrained within their home. Apart from observing the performance and behaviour of the child, parents should also respect their children's needs and protect them against any danger. Changing perception is a vital objective of WHO to minimise COVID-19 in the whole population and especially in children. Therefore, surveying the knowledge, attitude and beliefs of parents about COVID-19 is essential.

The knowledge and attitude of Jordanian parents on COVID-19 in their children has of yet not been studied. The findings of this study will help in developing educational plans about the appropriate methods of teaching parents about COVID-19 in children. Because little research has yet been performed in this area, the researchers conducted a cross-sectional survey to describe the knowledge and attitude of Jordanian parents regarding COVID-19 in children, including clinical signs of the disease, modes of transmission and protection measures. Moreover, their contentment with the actions of the government was studied.

2 | METHODS

2.1 | Sample and setting

A convenient sample size was used to recruit from Jordanian parents. The researcher aimed to describe parents' knowledge and attitude towards COVID-19 in children. Over a thousand electronic surveys were sent to Jordanian parents. Eight hundred and ten parents completed the survey. Parents from all cities in Jordan that could write and read the Arabic language and were over 18 years old were eligible to participate in the survey.

2.2 | Design and sample

A cross-sectional design was used to recruit 810 parents in an online survey. All Jordanian parents were qualified for this research. An Arabic version of measurements was used to evaluate the parents' understanding of the clinical symptoms of the disease, risk expectations, modes of transmission, protection measures and contentment with actions of the government against COVID-19 in children.

What's known

- COVID-19 is a rapidly expanding global pandemic.
- Good parenting skills are essential when children are restrained within their home to protect children and the whole community from COVID-19.
- Changing perception is a vital objective of WHO to minimise COVID-19 in the whole population and especially in children.

What's new

- The knowledge of parents about COVID-19 in children was considered good in the case of most parents.
- This knowledge will help in educational programmes to increase awareness for COVID-19 and minimise COVID-19 in children and the whole population.
- The findings of this study will help in developing educational plans about the appropriate methods of teaching parents about COVID-19 in children.

2.3 | Instrument

This instrument was developed by the author regarding the knowledge and attitude towards COVID-19 based on the literature. This instrument consists of 24 statements regarding clinical symptoms (11 statements) and modes of transmission of COVID-19 (four statements), measures to protect children against COVID-19 by the parents (nine statements) and satisfaction with governmental measures against COVID-19 (two statements). Each question-answer was given zero points for the wrong answer and one point for the right answer. This instrument was found to be valid and reliable. Cronbach alpha = 0.85.

2.4 | Ethical consideration

This research was approved by the Jordan XXX (XXX) IRB. Eligible subjects were issued detailed information concerning the aims of the study. This information entailed a consent form to approve the researcher using the information to help the institution and the society and information on the privacy of the parents. Participants' information will not be exposed to the chief investigator and the Human Research Protections Office at XXX.

2.5 | Data collection

The researcher used online surveys to collect data for this research. Before sending the survey to the parents, the researcher got

permission from the Jordan University of Science and Technology IRB. After getting approval, the authors distributed the online survey with consent to collect the required sample of the study.

Surveys were used to collect responses from parents to understand their knowledge and attitude about COVID-19 in children. The objective of the online survey was to collect responses about the knowledge and attitude of parents about COVID-19 in children. The questions in the surveys were straightforward and without typos. Parents were given a reasonable time allowance to finish the survey. The researcher submitted the survey to the research committee to ensure the questions were clear. The research panel had parents who were in the study population sample, but these did not participate in the actual research.

The feedback from the survey committee was that they could use less than 10 minutes to complete the survey and did not find any typographical errors. Additionally, the survey committee said the researcher should correct some questions in the survey to ensure that multiple-response questions allowed the subject to pick several answers. There was no issue content based on the response of the study committee. The parents participating in the study received an email with an agreement form and an online survey for submission, which anonymously and electronically collected data. Over 1000 surveys were sent to Jordanian parents.

2.6 | Data analysis

The statistical package SPSS version 25 was used to analyse all statistical data. To guarantee the significance of the outcomes, a descriptive and bivariate alpha degree of below 0.05 was used. The normality of all continuous factors was tested using the Kolmogorov-Smirnov test. The irregular variables were converted to more distributed scores. Each response from the parents regarding each element of the study was evaluated. If a variable had 40% or more missing information, then there was a list-wise deletion of that response. Descriptive statistics were employed in describing the demographics of the research subject and the total attribute scores. Means, ranges, medians and standard deviations were used as continuous variables, while percentages and frequencies were used for grouped measures. Outliers were detected and excluded.

3 | RESULTS

3.1 | Demographic variables

A total of 1000 questionnaires were sent out by e-mail, generating a response rate of 81%. Hence a total of 810 parents participated in this research of whom 170 (21.0%) were male and 640 (79.0%) were female. The mean age of the participants was 33 years. Parents depended mainly on social media ($n = 520$; 65%) and news channels ($n = 532$; 66.5%) for their information on COVID-19. See Table 1.

TABLE 1 Demographic variables of parents

Variable	Frequency (%) Mean(SD)
Gender	
Male	170 (21.0%)
Female	640 (79.0%)
Age	36.4 (11.4)
Levels of Education	
Primary education or secondary	128 (15.8%)
Diploma	218 (26.9%)
Bachelor	392 (48.4%)
Higher education	72 (8.9%)
Monthly income (USD\$)	
Less than 400	284 (35.1%)
400-600	240 (29.6%)
600-800	104 (12.8%)
800-1000	74 (9.1%)
More than 1000	108 (13.3%)
Area of living/work	
Urban	560 (69.1%)
Rural	250 (30.9%)
Source of information regarding COVID-19	
Social media	474 (59%)
Google and search engines	214 (26%)
Family, friends, neighbours	222 (27%)
News channels	552 (68%)
Ministry of Health website	438 (54%)
Scientific articles and research	258 (32%)
Other, such as newspapers	46 (6%)

3.2 | Clinical symptoms and modes of transmission

The author gathered information about the knowledge and attitude of parents regarding clinical symptoms of COVID-19 in children. Most parents listed fever as a clinical symptom first ($n = 630$; 78.0%) and shortness of breath second ($n = 572$; 71.0%). Parents also reported skin rash ($n = 68$; 8%) and heavy coughing and sneezing ($n = 658$; 81%) as symptoms of COVID-19. Moreover, 61% of parents believe that children may be infected, but are asymptomatic. Handshaking ($n = 536$; 66%) and contacting surfaces like doorknobs and tables ($n = 668$; 82%) were reported as modes of transmission. See Table 2.

3.3 | Measures to protect children against COVID-19

Various measures were executed to fight the outbreak of COVID-19 from home and from the government. Parents were requested to describe multiple ways in which COVID-19 can be prevented in children. For home measures, frequent hand washing for children

and themselves ($n = 732$; 90%), routinely cleaning and disinfecting surfaces that had been in connection with known or suspected patients ($n = 624$; 77%) and placing known or suspected patients in well-ventilated individual rooms ($n = 624$; 77%) were named. For governmental measures, many parents reported that quarantining all members of the family was an effective measure in protecting children ($n = 792$; 99.9%) and that educating individuals on COVID-19 is essential in fighting the spread of the disease ($n = 780$; 97.7%). Considering knowledge and attitude of the actions of the government to protect children against COVID-19, responses indicate that many parents support these government initiatives to curb COVID-19 ($n = 644$; 87%). Additionally, many parents are in agreement for the stay at the home obligation of the government ($n = 792$; 99.2%) and the way the government handles the coronavirus pandemic by for instance the closing of schools ($n = 788$; 98.7%). See Table 3.

4 | DISCUSSION

The new coronavirus causes viral pneumonia, which is a severe infectious respiratory illness. Approximately 30,000 cases had been confirmed by the beginning of February 2020.⁹ However, the actual number of cases could be higher.

TABLE 2 Clinical signs of COVID-19 in children according to parents' responses

Clinical Signs	Number	Percentage
Fever	630	78%
Cough	552	68%
Runny nose	242	30%
Sore throat	444	55%
Shortness of breath	572	71%
Joint/muscle pain	240	30%
Red eyes	116	14%
Skin rash	68	8%
Diarrhoea	330	41%
Vomiting	216	27%
Asymptomatic	498	61%

Prevention measures	N	Percentage
Wash hand frequently	732	90%
Eat boiled and cooked food	350	43%
Apply mask to known or suspected patients	578	71%
Place known or suspected patients in well-ventilated individual rooms	624	77%
All health workers must wear protective clothing	564	70%
Avoid transporting patients and transporting them outside their area unless necessary	492	61%
Routinely cleaning and disinfecting surfaces in connection with known or suspected patients	624	77%

Our results show that the parents in this study depend mainly on the website of the WHO and news channels not social media for their information on COVID-19. This finding is not consistent with Douplex (2020), who found that people rely heavily on social media channels such as Facebook and Twitter for the latest news. However, people need to be careful regarding the information that is presented in these and other resources.¹⁰

It is crucial to understand how the disease is transmitted, to predict the direction of the epidemic and the possibility of sustained transmission. Household studies may be strong sources of evidence on the timing and probability of transmission and can thus be useful. Our results show that the main reported symptom of a COVID-19 infection in children is fever and shortness of breath. Our results were not completely consistent with previous studies regarding the main clinical manifestation that include fever and shortness of breath, which found that children and adult patients have the same clinical manifestation, such as cough and fever.^{11,12} However, these studies also found that some children just have mild overall symptoms such as a runny nose and diarrhoea. Thirteen paediatric patients that tested positive of COVID-19 had been in close contact with a family member who also tested positive. The patients included three neonates.¹² The children underwent a COVID-19 RNA test. Our study shows that 61% of parents believe that children may be infected, but are asymptomatic. This is congruent with previous studies that mentioned that an infected person does not need to show any symptoms to transmit the virus to another person. COVID-19 is highly contagious.^{11,12}

Regarding the major route for transmission, our study shows that almost 90% of the parents in the study agree that the major route of COVID-19 transmission is per respiratory droplet. This is consistent with the finding of other studies. Few parents report that COVID-19 could transmit within the GI tract. This is congruent with other studies that found that the virus can also be transmitted through the digestive tract.^{13,14} Our results show that 90% of the parents have an appropriate attitude towards companioning children within crowds. Generally, people are more susceptible to the virus within crowds.

Many parents mentioned that there are several ways to prevent COVID-19. These include washing the children's hands frequently, give children boiled and cooked food, apply masks to known or suspected patients, place known or suspected patients in well-ventilated

TABLE 3 Parents response to prevention measures against COVID-19 in children

individual rooms far away from children, wear protective clothing specially when contacted sick people, avoid transporting patients unless necessary. Many parents (90%) reported that the best way to protect against COVID-19 is by washing hands with water and soap for children and themselves, followed by placing known or suspected patients in well-ventilated individual rooms. This was consistent with previous studies, which mentioned the best practice to break the channel of the outbreak is by washing hands with water and soap. The individuals in previous studies are routinely cleaning and disinfecting surfaces in connection with known or suspected patients.¹⁵⁻¹⁹

Regarding the governmental measures of a lockdown and closing the schools, more than 95% of the parents were in agreement with the government on their measures in the present study. The Jordan government ordered all schools to be closed across the country as an immediate measure to curb the spread of COVID-19. Because of Jordan's strong administrative system, there was a successful implementation of an emergency home school programme. A significant amount of effort has been made by academic institutions in the creation of online courses and the delivery of educational resources through TV broadcasts and the web.¹⁷ Besides, the virtual semester has kicked off in various parts of the country and parents have access to courses in an efficient manner. These actions are helping to eliminate and avoid concerns from parents about the educational achievement of their children by making sure that learning is not halted. Regarding quarantine, many parents (86%) were in agreement that lockdown was protection for them and their children. More than 98% mentioned not to accompany any of their children to a crowded place. According to the previous literature, asymptomatic individuals can also transmit the virus, so measures should emphasise on social distancing, such as avoiding mass gatherings and school closures.¹⁸⁻²⁰ Determining if children are important sources of transmission is essential in evaluating whether the risk posed by school closures to the well-being and education of the children is justified. Household studies can help in viral shedding studies and can assist in determining when a child is most infectious and what the required isolation period is.

Identifying and isolating individuals at early stages is critical to control COVID-19. While in isolation, the infected children should have no visitors and treatment should depend on the clinical experience of adult patients, since there are few cases in children.^{16,21}

Many parents reported that COVID-19 does not have a treatment and that the treatment depends on non-pharmacological support. This is in agreement with previous studies,^{16,22} just like many other viral infections, there no specific drug for COVID-19. Children diagnosed with COVID-19 will be given symptomatic and supportive treatment therapies, such as maintaining acid-base and water-electrolyte balance as well as oxygen supply.^{16,22}

Last, children cannot advocate for themselves. Therefore, the recent Commission on the future of children across the globe called for all-inclusive strategy in preparation for the uncertainties facing the children. All stakeholders, including parents and governments, have the responsibility of ensuring the safety of children against COVID-19.²³

4.1 | Limitations

It should be noted that some limitations need to be taken into account. The major limitation of this study is that it used a convenience sample. The main drawback of using a convenience sample is sampling bias, such that the results of the study may not represent the entire population and are therefore not generalisable to the whole population. This means that this study has low. Furthermore, this study was not used as a validated instrument to measure the knowledge since that time, there was no reliable and validated instrument. This study did not explore the use of mask. A mask also filters out large particles in the air. These masks may protect others by reducing exposure to the saliva and respiratory secretions of the mask wearer. Furthermore, the masks prevent the wearer from spreading the virus to others.⁶ Furthermore, self-reported data collection is susceptible to recall bias and the nature of the cross-sectional study limits the possibility to identify causal relationships. Finally, the online survey is limited because the results cannot be extrapolated to populations that do not have access to the Internet.

5 | CONCLUSION

In summary, we believe that the findings reported here are important for understanding the clinical characteristics and vertical transmission potential of COVID-19 infection in children, from the perspective of parents. The knowledge of parents about COVID-19 in children was considered good. They have good background knowledge on the clinical signs of the disease, modes of transmission of the virus and protection measures against the disease. Moreover, they are satisfied with the governmental measures that are in place to combat COVID-19 in children.

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DISCLOSURE

The authors declare that they have no conflict of interest.

AUTHOR CONTRIBUTIONS

All article steps carried out by SA.

ETHICAL APPROVAL

This article does contain human participants and gets approval from Jordan University of Science and Technology IRB (2020338).

INFORMED CONSENT

Informed consent was obtained from all individual participants included in the study.

DATA AVAILABILITY STATEMENT

Data will be available upon request.

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