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Original Article

Factors Related to Refusal of SARS-CoV-2 Testing by the Parents of Anemic Children at a Tertiary Care Hospital of Karachi

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Abstract

Objective: To determine the factors related to refusal of SARS-CoV-2 testing by the parents of anemic children at a tertiary care hospital of Karachi.

Methodology: This prospective observational study was conducted in the Department of Pediatrics at Dr. Ruth K. M. Pfau Civil Hospital, Karachi, from February 2021 to June 2023. A convenient sampling technique was used to recruit 550 parents of symptomatic anemic children who were advised to undergo SARS-CoV-2 RT-PCR testing. The study aimed to determine the factors associated with parental refusal of testing.

Results: Out of 550 parents advised to have their anemic children tested for COVID-19, 386 (70.2%) refused the test, while only 164 (29.8%) consented to testing. The most common reason for refusal was the belief that COVID-19 is merely a rumor ($n = 290$, 75.1%), followed by concerns that the test might be harmful or worsen their child's condition ($n = 286$, 74.1%). A statistically significant association was observed between test refusal and factors such as low parental education and rural background (p -value < 0.05).

Conclusion: More than 70% of parents refused SARS-CoV-2 testing for their anemic children. The refusal was more prevalent among parents with limited awareness, likely due to lower education levels and rural residence. Addressing these misconceptions through targeted health education programs is crucial for improving testing acceptance and ensuring better clinical outcomes for anemic children at risk of COVID-19 complications.

Keywords: Anemic children, COVID-19 testing, test refusal, parental perception, healthcare challenges.

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Introduction

Anemia is a common health concern among children and can arise from multiple factors. Anemic children are at a higher risk of developing superimposed infections, leading to recurrent hospital admissions. Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection in children with anemia, particularly when it causes pneumonia, can result in devastating outcomes.¹ COVID-19 presents with a wide range of clinical manifestations, from mild symptoms such as fever, cough, dyspnea, myalgia, and fatigue to severe complications like profound hypoxia requiring hospitalization.^{2,3}

A crucial step in managing such infectious diseases is addressing the stigma associated with them and promoting testing to ensure early diagnosis, appropriate treatment, and the safety of both patients and the community.^{4,5} Early detection of COVID-19 plays a vital

role in minimizing the risk of outbreaks, and SARS-CoV-2 nucleic acid amplification testing (RT-PCR) is the gold standard diagnostic method recommended by both the Centers for Disease Control and Prevention (CDC) and the World Health Organization (WHO).⁶

Several studies have explored the ethical considerations and dilemmas faced by healthcare professionals during the COVID-19 pandemic.^{7,8} The ethical principles of autonomy and non-maleficence often come into conflict, placing physicians in a challenging position—whether to mandate SARS-CoV-2 testing for the greater good or to respect the autonomy of patients and their legal guardians by allowing them to make the final decision.^{9,10} Understanding patient and caregiver perspectives on COVID-19 testing is essential for addressing non-compliance and improving public health strategies.

A study by McDermott and Newman (2020) in the United Kingdom examined reasons for COVID-19 test refusal. However, the underlying factors often vary based on cultural and religious beliefs.¹¹ To address this gap, it was imperative to conduct an in-depth investigation into parental perspectives on SARS-CoV-2 testing for anemic children. This study was therefore designed to assess the refusal of SARS-CoV-2 RT-PCR testing among parents of

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symptomatic anemic children and identify the factors contributing to this refusal at a tertiary care hospital in Karachi.

Methodology

This cross-sectional study was conducted in the Pediatrics Department of Dr. Ruth K. M. Pfau Civil Hospital, Karachi, from February 2021 to June 2023 using a convenient sampling technique. Parents of anemic children aged ≤ 12 years who exhibited symptoms suggestive of COVID-19 infection (such as fever, sore throat, body aches, and flu-like symptoms) and were advised to undergo SARS-CoV-2 RT-PCR testing were included in the study. However, parents of anemic children with bleeding disorders, severe nasal obstruction, recent trauma or surgery, or a deviated nasal septum were excluded.

The sample size was calculated using the WHO sample size calculator, based on a population prevalence of opposing views toward COVID-19 testing of 4.7%,¹² with a 95% confidence interval and a 5% margin of error. The required sample size was determined to be 550 parents.

A structured questionnaire was designed to collect demographic data and relevant study variables. Informed consent was obtained from all participants, and confidentiality of personal information was ensured. Data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 23.0. Frequencies and percentages were calculated for qualitative variables such as test refusal, gender of anemic children and parents, and reasons for refusal. The Pearson chi-square test was applied to assess associations between various factors and refusal of SARS-CoV-2 testing. A p-value of ≤ 0.05 was considered statistically significant.

Results

Out of 550 parents of anemic children who were advised a COVID-19 PCR test, 386 (70.2%) refused testing, while only 164 (29.8%) consented to have their children tested. Among the participants, 202 (36.7%) had an education level below matriculation, whereas 348 (63.3%) had education above matriculation. A total of 349 (63.45%) parents belonged to urban areas, while 201 (36.54%) were from rural backgrounds.

Regarding parental demographics, 448 (81.4%) participants were mothers, while 102 (18.6%) were

fathers. The majority of anemic children fell within the mild anemia category (Hb levels: 10–10.9 g/dL). However, a statistically significant association was observed between test refusal and severe anemia, with a p-value of 0.03 (Table I, Figure 1 & 2).

Table I: Demographic Characteristics of Parents / Study Participants.

Variables	N	(%)
Age		
<40 yrs	401	72.1%
≥ 40 yrs	149	27.9%
Education		
<Matriculation	202	36.7%
$\geq$ Matriculation	348	63.3%
Area of residence		
Urban	349	63.45%
Rural	201	36.54%

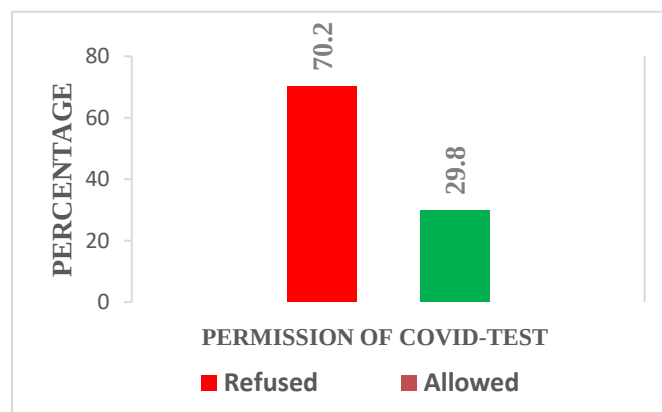


Figure 1. Frequency of Test Refusal by the Parents Among Anemic Children. (N = 550)

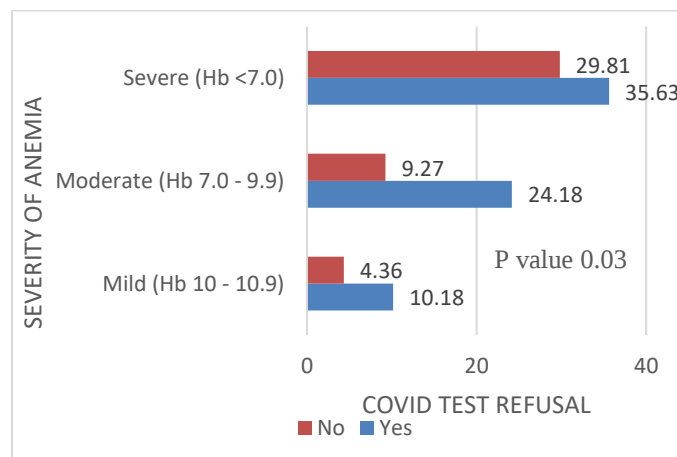


Figure 2. Association of Anemia Severity and COVID-19 Test Refusal. (N = 550)

Tables II & III illustrate the most common reasons for refusal of COVID-19 PCR testing. The primary factor was the belief that COVID-19 is a rumor (n = 290, 75.1%),

followed by concerns that the test might be harmful to the child's health (n = 286, 74.1%). The least common reason was fear of social isolation (n = 108, 27.9%). A low level of parental education (p-value = 0.003) and rural residence (p-value = 0.002) were found to be significant factors associated with higher rates of test refusal.

Table II: Reasons for COVID-19 Test Refusal by the Parents of Anemic Children (N = 550)

Reasons	N	%
Covid-19 is a rumor	290	(75.1%)
Test is harmful	286	(74.1%)
Government showing false results	271	(70.2%)
Child will suffer if tested positive	109	(28.2%)
Family will be socially isolated	108	(27.9%)
Others	21	(5.4%)

Table III: Association of Baseline Parameters With COVID-19 PCR Test Refusal by the Parents of Anemic Children (N = 550)

Socio demographic factors	Refusal for testing (n=164)	Acceptance for Testing (n=386)	p-value
Age of parent			
<40 years	125 (76.2%)	276 (71.5%)	0.251
≥40 years	39 (23.8%)	110 (28.5%)	
Gender			
Male	137 (83.5%)	311 (80.5%)	0.409
Female	27 (16.5%)	75 (19.5%)	
Education of parent			
≥Matriculation	119 (72.5%)	229 (59.3%)	0.003*
<Matriculation	45 (27.5%)	157 (40.7%)	
Socioeconomic status			
Urban	120 (73.1%)	229 (59.3%)	0.002*
Rural	44 (26.9%)	157 (40.7%)	

Discussion

Our study highlighted that a huge number of parents refused testing for their symptomatic children. Attitudes towards this infection have been documented in the local population in the recent past.¹³ The gravity of this pandemic and the role that the community has to play in effectively and successfully handling the situation is not possible without understanding the importance of testing.¹⁴ It was imperative that the general population's perspective, in this regard, was explored so that their implications and misunderstandings could be addressed. This research highlighted the outlook of individuals who are advised to get tested for the Coronavirus by a doctor and whether they choose to go through with it or not especially for their children. Furthermore, it underlined the reasons for refusal in symptomatic children patients

by their parents or caregivers. Evidence-based counseling guidelines and awareness campaigns could be designed to counter the concerns and risk factors observed in the study.

McElfish et al. in 2019 published a paper regarding perceived barriers that could hinder testing for COVID-19.¹⁵ They revealed that confusion and uncertainty regarding testing procedures and administrative problems were the main barriers. Our study was conducted in a different culture so the main barriers remained regarding the etiopathogenesis of disease and most people who refused testing for their children thought that COVID-19 was just a rumor and not a real disease. Thought regarding the harmfulness of a test that actually is useful for the individual himself but others as well was also a common reason for refusal in our study participants.

An interesting paper was published by Kelly et al. comprising of cases in which parents refused to get their children tested for COVID-19. The common reason was that they thought it was not necessary and if positive children will miss school and isolation would also be a cumbersome procedure.¹⁶ Our results were alarming as more than 70% of the parents/caregivers refused COVID-19 PCR test advice for their children. Parents with low education and rural backgrounds had more chances of refusing the test as compared to those with education more than those matriculate and urban living backgrounds. A qualitative study was published in 2022 regarding the attitudes of parents toward testing and self-isolation of their children when they are symptomatic for COVID-19.¹⁷ Most people did not get their children tested because of a lack of knowledge or a perception that the result of the test may be wrong. Researchers stated that adequate information care about procedure of test may improve the attitude of parents in this regard.¹⁷ Our results were similar, slight differences can be explained based on different cultural and educational backgrounds of our study participants. Still improving knowledge regarding COVID-19 and the benefits of testing can decrease the refusal rate in our population as well.

Parental perceptions of COVID-19-like illness in children were assessed by Hudson et al. in 2021. It was concluded that parents usually were reluctant to get their children tested because they thought it would be very difficult for them to isolate at home and things would be

difficult to manage.¹⁸ The Main purpose of our study is justified when results are compared with other studies done in Western world as their needs are entirely different from of ours. Our results revolved around lack of education, awareness, and accessibility as most of the parents who refused testing were from rural areas and low education backgrounds.

The main limitations of this analysis included the authenticity of self-reported data, greater time consumption due to the process of sieving through eligible individuals, and lack of cooperation from the individuals due to stigmatization in a few cases. It may be an over-generalization of results as the study was only conducted in one tertiary care hospital in Karachi. People may have different understandings of the questions in the survey leading to inaccurate results. The study relied on self-reported data that may create bias.

Conclusion

More than 70% of the parents/caregivers refused COVID-19 PCR test advice for their children. Parents with low education and rural background had more chances of refusing the test as compared to those with education more than matriculate and urban living background. Counselling the parents about the importance while conceding their previous perceptions and concerns regarding the procedure can play a major role to ensure rapid medical care and prevent serious complications.

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