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The Experiences of Families Caring for Children with Cerebral Palsy (CP) in Oman during the COVID-19 Pandemic: An Exploratory Qualitative Study

Salha Humaid Al-Bloushi*[1], Wafa Ibrahim Al-Shizawi[2]

[1] PhD in Child Health Nursing, Child Health Nursing Department, Oman College of Health Sciences, North Batinah Branch, Suhar, Oman, salhahumaid@yahoo.com
[2] MSN in Nursing Education, Maternal Health Nursing Department, Oman College of Health Sciences, North Batinah Branch, Suhar, Oman, sweetrose119@hotmail.com

*Corresponding Author Email: salhahumaid@yahoo.com

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***Abstract*:**

During COVID-19 pandemic, children with cerebral palsy (CP) and their families had experienced various physical, psychological, social, and financial effects. This study aimed to explore the lived experiences of families caring for children with cerebral palsy in Oman during the COVID-19 pandemic.

A qualitative research design was used to conduct this study. Eighteen families caring for children with CP including 18 mothers and two fathers participated and were recruited through purposive and snowball sampling. Eighteen semi-structured telephone interviews were conducted; 16 interviews involved mothers individually and two were joint interview involving mothers and fathers. Interviews were collected in Arabic using topic guide, transcribed verbatim, translated into English and analyzed using thematic content analysis.

The study revealed that families' experiences were centered around protecting their children with CP from getting COVID-19 infection. Three main themes emerged from families' accounts: perceived effects of COVID-19 on children with CP, psychosocial effects on families, and financial effects on families. Parents reported that lockdown period had led to physical and behavioral effects on their children with CP. The interruption of rehabilitation and healthcare services resulted in increased muscle spasticity and social distancing reduced their social interaction. Parents expressed concerns about their children contracting COVID-19, fearing it would worsen their children's health. As a result, they socially isolated themselves. Parents also took on additional caregiving tasks during this period, such as protecting their children from the infection and providing medical and rehabilitation services. Some parents reported a positive financial impact, while others were negatively affected.

Parents' accounts indicate that protecting children with CP from COVID-19 infection became a central concern that shaped family routines, social participation, caregiving, and healthcare utilization. Maintaining continuity of rehabilitation and healthcare, strengthening caregiver support, and providing appropriately integrated telehealth and home-based rehabilitation may assist families in managing similar disruptions during future public health emergencies.

***Keywords*:** COVID-19, Cerebral Palsy, Family, Children, Experiences

1. Introduction

Cerebral palsy (CP) is defined as "a group of permanent disorders of the development of movement and posture, causing activity limitation, that are attributed to non-progressive disturbances that occurred in the developing fetal or infant brain" (Rosenbaum et al., 2006). In addition to motor impairment, the disorder is also associated with disturbances in sensation, perception, cognition, communication, behavior, epilepsy, and secondary musculoskeletal problems (Rosenbaum et al., 2006). CP is the most common motor disability in childhood, and children with CP are considered representative of the broader population of disabled children (Colver et al., 2006). The prevalence of CP is reported to be 2 to 2.5 per 1,000 live births (Rosenbaum, 2003; Schiariti et al., 2014). Children with CP and their families often require complex and multidisciplinary care due to the disorder's

complexity (Hayles et al., 2014; Schiariti et al., 2014). A multidisciplinary team approach typically includes physical therapy specialists, pediatricians, physiotherapists, occupational therapists, social workers, educators, orthopedic surgeons, and parents (Hayles et al., 2014; Schiariti et al., 2014).

Under normal circumstances, studies have shown that children with CP face several personal, physical, social, and environmental barriers, including lack of access to essential services such as healthcare and education (Schiariti et al., 2014; Stewart et al., 2012; Colver et al., 2011). Similarly, their parents experience physical, psychological, social, and financial stressors due to caring for a disabled child (Huang et al., 2011; Burkhard, 2013; Dehghan et al., 2016). During the COVID-19 pandemic, studies conducted globally found that the physical, mental, social health, and financial status of children with CP (Cankurtaran et al., 2021; Cacioppo et al., 2020; Masi et al., 2021) and their parents (Cankurtaran et al., 2021; Farajzadeh et al., 2021; Cacioppo et al., 2020; Dhiman et al., 2020) were negatively affected.

A study conducted in Turkey found that most children with CP did not continue follow-up outpatient visits, and many had to suspend physical therapy sessions due to fear of contracting COVID-19 and scheduling problems (Cankurtaran et al., 2021). Caregivers reported that their child's general health, mobility, spasticity, joint motion, communication, and mood worsened during the pandemic compared to the pre-pandemic period (Cankurtaran et al., 2021). Similar findings were reported in a study in France, where the lockdown had negative effects on children's well-being, mental and social health, including morale, behavior, social interaction, and physical activity (Cacioppo et al., 2020). Lack of social interaction also led to a regression in children's communication abilities, and behavioral disorders affected their well-being, increasing parents' feelings of helplessness. The interruption of medical care and rehabilitation services resulted in deterioration of physical status and functional ability (Cacioppo et al., 2020). In Australia, Masi et al. (2021) reported that caregivers observed worsening of physical, mental, and socio-emotional well-being in their children with CP during the COVID-19 pandemic.

It was also noted that the physical and mental quality of life of caregivers of children with CP who had a history of COVID-19 infection decreased more than those without a history of infection (Cankurtaran et al., 2021). A study in Iran revealed that more than half of the caregivers of children with CP reported symptoms of anxiety, and nearly one-third exhibited both anxiety and depression, reflecting the caregiving challenges during the COVID-19 pandemic (Farajzadeh et al., 2021). The study also found a significant relationship between employment status and depression, with employed caregivers having lower levels of depression compared to those who were unemployed or lost their jobs during the pandemic (Farajzadeh et al., 2021). Furthermore, restricted social participation during the pandemic affected caregivers' mental health (Farajzadeh et al., 2021). A study in India reported high levels of depression, stress, and anxiety among caregivers of children with special needs, including parents of children with CP (Dhiman et al., 2020). Parents also reported greatest difficulty in coping with the mental daily load of intensive caregiving, including providing care, rehabilitation therapies, and education (Cacioppo et al., 2020). Many parents struggled to balance work with childcare and family responsibilities and expressed concerns about financial stability and the future during the pandemic (Masi et al., 2021).

Despite this emerging international evidence, there has been limited qualitative research examining how families caring for children with CP experienced the COVID-19 pandemic in the Middle Eastern context. In particular, the experiences of families in Oman have received little attention. The gap is important because the consequences of pandemic-related restrictions are shaped not only by the availability of healthcare and rehabilitation services but also by family structures, social relationships, cultural practices, employment circumstances, and access to informal support. Accordingly, this study sought to contribute context-specific qualitative evidence from Oman by examining parents' accounts of how the COVID-19 pandemic affected their children's perceived physical, behavioral, and social well-being; how families experienced changes in healthcare, rehabilitation, and social support; and how parents adapted to the additional responsibilities created by the pandemic. Understanding these experiences is important for strengthening family-centered care and informing preparedness for future public health emergencies. In particular, examining how families managed interruptions to rehabilitation, healthcare access, social participation, caregiving, and household finances can identify areas in which healthcare systems and community services may better support families caring for children with complex and long-term needs.

The aim of this qualitative study was to explore the experiences of families caring for children with cerebral palsy in Oman during the COVID-19 pandemic. The study's objectives were:

1. To investigate the impact of COVID-19 on the physical, emotional, and social aspects of children with CP and their families.
2. To explore the perceptions of families caring for children with CP regarding the services and support they received during the COVID-19 pandemic.
3. To develop insights into the coping strategies used by families caring for children with CP during the COVID-19 pandemic.

2. Methodology

A qualitative research design using thematic content analysis, as described by Green and Thorogood (2014), was employed for this study. Qualitative research is commonly used in studies aiming to understand participants' perspectives and explore the meanings they attach to a phenomenon (Green & Thorogood, 2014; Creswell, 2013). This approach can yield meaningful insights and a deeper understanding of individuals' experiences and their socially constructed realities (Hallberg, 2006). Thematic content analysis is a widely used method in qualitative studies exploring health issues, as it provides a map of the content and themes throughout the data (Green & Thorogood, 2014). Study participants were recruited from Suhar Hospital in North Batinah Governorate, Oman, using both purposive and snowball sampling methods. The final sample size was determined by data saturation in which additional interviews were no longer generating substantially new data relevant to the study objectives. Data were collected through semi-structured telephone interviews using interview topic guide. Interviews are considered an effective way to explore areas in which participants have substantial experience (Green & Thorogood, 2014; Birks & Mills, 2015; Brinkmann & Kvale, 2015). The interview topic guide (Box1) was developed based on the study objectives and literature concerning experiences of children with CP and their families during COVID-19. Probes questions such as "tell me more about it" or "what do you mean by" were used throughout the interviews to gain in-depth understanding about concepts of participants' experiences. Interviews were conducted in Arabic between June and September 2022, audio-recorded, transcribed verbatim, and then translated into English. As the children were unable to communicate verbally, their experiences were explored from the perspectives of their parents. The data were analyzed using the steps of thematic content analysis described by Green and Thorogood (2014). These steps included:

1. Familiarizing with the data: The researchers were listening to the recorded interviews and re-reading the transcripts to develop an understanding of the participants' views and identifying recurrent concepts, experiences, topics and issues.

2. Identifying codes and themes: The researchers were summarizing and organizing the participants' recurrent concepts, views, beliefs and experiences and identifying the regularities, differences and similarities and comparing them with each other.

3. Coding the data: The researchers had developed the list of codes, removed redundancy and merged them with each other.

4. Organizing codes and themes: The researchers gathered related codes under the emerged related themes and identified the relationship between them.

2.1 Ethical Considerations

Ethical approval was obtained from the Research and Ethical Review and Approval Committee at the Ministry of Health in Oman (RERAC 11/2022). Participants were recruited through gatekeepers, healthcare providers at the rehabilitation department and pediatric wards in Suhar Hospital. Gatekeepers discussed the study's purpose and the nature of participation with the parents, provided them with the participant information sheet, and obtained informed consent. The researchers emphasized voluntary participation, and participants' identities were kept anonymous, with codes assigned to their transcripts.

2.2 Trustworthiness

The credibility and consistency of the findings of this study was achieved through the use of semi-structured interview topic guide that addressed the major domains relevant to the study objectives and allowing participants to elaborate on their experiences. The researchers conducted the interviews and transcribed them verbatim. This allowed immersion in data. In addition, the researchers were conducting consensus meetings and repeatedly reviewed the transcripts during analysis and compared accounts across participants to identify similarities, differences, and recurrent patterns. Codes were reviewed for conceptual overlap and redundancy before being organized into broader themes. The emerging themes were examined against the original participant accounts to ensure that the interpretations remained grounded in the interview data. Direct quotations were incorporated into the results to demonstrate the connection between the thematic interpretations and participants' accounts.

2.3 Participants of the Study

Eligible participants were parents or primary caregivers of children younger than 18 years who had been diagnosed with CP before the COVID-19 pandemic and who were able to communicate in Arabic or English. Participants who were not primary caregivers or who were unable to communicate in Arabic or English were excluded.

Eighteen Omani families participated in the study. A total of 20 parents contributed to the interviews: 18 mothers and two fathers. Eighteen interviews were conducted: 16 individual interviews with mothers and two joints interviews involving mothers and fathers. The parents' ages ranged from 30 to 51 years, and their children's ages ranged from 4 to 18 years. In total, 25 children with CP were involved; 8 females and 17 males. Fourteen families cared for one child with CP, two families cared for two children with CP, one family cared for three children with CP, and one family cared for four children with CP. Four families also cared for children with other disabilities, such as autism and cognitive impairments. Parents' education levels ranged from primary education to university degrees, and they came from varied socioeconomic backgrounds. Families were recruited from urban and rural areas in Oman, with three families from rural areas and 15 from urban areas. Eight parents reported testing positive for COVID-19, seven parents did not, and five were unsure. Nine children with CP contracted COVID-19, seven did not, and five parents were unsure. All parents in the study had received the COVID-19 vaccine; seventeen had two doses, and three had three doses. Only six children with CP, aged 12 and above, had received two doses of the vaccine. Table 1 provides the demographic characteristics of the parents and their children with CP.

Table 1: Demographic Characteristics of the study participants

Family #	Age in years	Education	Employment	Marital status	Health status	Infected with COVID-19	Received COVID-19	Age of child with CP in Years	Sex of child	School grade level	Type of CP	Comorbidity	Infected with COVID-19	Received COVID-19 vaccine	Other children with disability
1.															
Mother	30	BSc	Housewife	Married	Good	Yes	Yes	5	F	-	Spastic	Seizure disorders	Not sure	No	-
Father	30	High school	Government employee		Good	Yes	Yes								
2.															
Mother	45	Primary school	Housewife	Married	Hypertension and thyroid disorder	No	Yes	16	F	-	Hemiplegic spastic	Seizure disorders	No	Yes	-
Father	48	High school	Private employee		Allergic rhinitis	No	Yes								
3.															
Mother	38	High school	Housewife	Married	Good	Yes	Yes	16 15 5 5	M M M M	- - - -	Hypotonic quadriplegic	Seizure disorders	Yes	No	-
4.															
Mother	43	BSc	Teacher	Married	Hypertension and hypothyroidism	No	Yes	15	M	-	Severe quadriplegic spastic	Seizure disorders	No	Yes	-
5.															
Mother	44	BSc	Teacher	Married	Heart disease Hypertension DM Rheumatoid fever	No	Yes	14	M	-	Sever spastic	Sickle cell disease Thalassemia Asthma Seizure disorders	No	No	-
6.															
Mother	37	High school	Housewife	Married	Good	Not sure	Yes	9	M	-	Left hemiplegic spastic	Anemia	Not sure	No	-
7.															
Mother	39	High school	Housewife	Married	Good	Not sure	Yes	7	M	-	Spastic quadriplegic	-	Not sure	No	-
8.			Housewife	Married	Hypertension						Quadriplegic	Seizure			Cognitive
Mother	49	Grade 10			DM	No	Yes	18	M	-	spastic	disorders	No	No	impairments
9.								4	F	-	Diplegic				Autism
Mother	37	BSc	Engineer	Married	Glaucoma	Not sure	Yes	4	F	-	spastic	-	Not sure	No	spectrum disorders
10.					DM										
Mother	33	High school	Housewife	Married	Disc prolapse Kidney disease	Yes	Yes	8 5	F F	- -	Hypotonic Spastic	- -	Yes Yes	No No	-

11. Mother	39	BSc	Teacher	Married	Good	Yes	Yes	14	M	Grade 8	Right hemiplegic spastic	-	Yes	Yes	-
12. Mother	39	Primary	Housewife	Married	Good	Yes	Yes	17 12 10	M F M	- - -	Quadriplegic spastic	Hip dislocation Autism	Yes Yes Yes	Yes Yes No	-
13. Mother	38	BSc	Engineer	Married	Good	Not sure	Yes	13	M	-	Quadriplegic spastic	-	No	Yes	Autism spectrum disorders
14. Mother	51	BSc	Psychological counselor	Married	Hypertension	Not sure	Yes	16	M	Grade 11	Quadriplegic	Seizure disorders	No	Yes	-
15. Mother	43	BSc	Teacher	Married	Back pain	Yes	Yes	5	M	-	Quadriplegic spastic	Seizure disorders	Yes	No	-
16. Mother	35	High school	Housewife	Married	Good	No	Yes	11	M	-	Left spastic hemiplegic	Visual disability	No	No	-
17. Mother	48	High school	Housewife	Married	Hypertension Back pain	Yes	Yes	17	F	-	Hypotonic diplegic	Cognitive impairments Asthma	Yes	Yes	Cognitive impairments
18. Mother	40	High school	Housewife	Married	Back pain	No	Yes	10	M	-	Right hemiplegic spastic	Asthma Seizure disorders	No	No	-

3. Results

The study identified that the experiences of families caring for children with cerebral palsy (CP) in Oman during the COVID-19 pandemic were primarily focused on protecting their children from getting the infection. This concern influenced parents' decisions regarding social interaction, healthcare utilization, rehabilitation, caregiving, and everyday family routines. Three main themes emerged from parents' accounts: perceived effects of COVID-19 on children with CP, psychosocial effects on families, and financial effects on families.

3.1 Perceived Effects of COVID-19 on Children with CP

3.1.1 Perceived physical and functional changes

Parents described perceived changes in their children's physical condition during periods when physiotherapy and other rehabilitation services were interrupted. Increased muscle spasticity and joint stiffness were among the physical changes reported.

One mother stated:

> "*During the pandemic, he was greatly affected. His muscle spasticity increased significantly. I tried to do physiotherapy at home, but it wasn't the same as when the therapist did it. When he cried, I felt sympathy and stopped the physiotherapy. The therapists were better able to handle him, and this affected his condition, his movement, and even his sleep."* — Mother 16

Another mother similarly described continuing physical problems:

> *"There was a huge effect. His muscle spasticity increased, and he continues to suffer from joint stiffness. Now, he needs splints, and he will have an injection."* — Mother 18

Parents' accounts suggested that home rehabilitation did not always provide an equivalent experience to professional therapy. One mother described difficulty providing therapy because she was concerned about causing pain or injury to her child:

> *"He needs comprehensive physiotherapy, which was stopped during COVID-19. He became nervous, crying, and getting angry. Physiotherapy may have helped relieve his muscle cramps and provided relaxation. I feel sad when I see my son upset. As a mother, I don't know how to help him. I can only do simple things, like applying oil and moving his legs and arms, but I'm afraid I'll hurt him because he's very thin."* — Mother 7

However, the perceived physical impact was not constant. Some parents reported maintaining rehabilitation at home. One mother described using online resources to learn exercises:

> *"I watched videos on YouTube and followed accounts on TikTok for physiotherapy exercises, which I practiced with my daughter."* — Mother 1

These contrasting accounts suggest variation in families' capacity to continue rehabilitation during service disruption.

3.1.2 Perceived social and behavioral changes

Parents also described perceived changes in their children's behavior and social interaction during lockdown and social distancing. Some parents observed reduced social interaction, crying, negativity, and aggression.

One mother explained:

"Because he stayed at home for one year and didn't go outside, he became aggressive. He was socially isolated. When he was allowed out, he didn't want to interact with people. He refused therapy and social gatherings. When we had family gatherings, he would cry, wanting to return home." — Mother 18

3.1.3 Disruption of healthcare and rehabilitation services

Parents reported disruption to healthcare services, including canceled follow-up appointments, difficulties rescheduling appointments, and postponement of procedures and investigations.

One mother described repeated appointment cancellations:

"There were no services provided through the hospitals. Every time we received an appointment, it was canceled. Then, they rescheduled an appointment through telephone call, where the doctor discussed blood test results done since three years ago, including genetic testing." — Mother 3

Another parent described postponement of an important procedure:

"There was a plan to replace my child's tube feeding with gastrostomy, but the appointment was canceled due to COVID-19." — Mother 4

However, parents' accounts also demonstrated that service disruption was not universal. Some children continued receiving essential follow-up because of the complexity of their medical conditions.

"During COVID-19, my child's appointments remained unchanged. They did not stop his appointments. I also have the clinic's phone number, so if I have any questions or concerns, I can call them." — Mother 5

Another mother reported:

"The hospital continued his monthly blood tests. It was essential for neurology. They contacted me by phone to check on his condition." — Mother 6

Some hospitals provided telemedicine services to monitor the children's progress and some rehabilitation services adapted by communicating with families through WhatsApp and providing home-based guidance:

"They sent us instructions through WhatsApp on how to help her gain independence in daily activities like feeding, dressing, and toileting. They also provided information about play, such as building blocks, and how to conduct exercises at home." — Mother 1

Thus, parents described a combination of service disruption and adaptation during the pandemic.

3.1.4 Avoidance of healthcare because of infection concerns

Fear of COVID-19 exposure influenced some parents' decisions about seeking healthcare. Several parents reported avoiding hospitals or preferring home management when their children became ill.

One mother stated:

"During the COVID-19 period, I tried my best not to take him to the hospital. We have a suction machine and nebulizer machine at home, along with all of his medications. We managed his illnesses ourselves and did our best to prevent any infections other than the usual chest infections." — Mother 4

Some parents maintained supplies of medications at home and treated minor illnesses without hospital attendance.

> *"Praise be to Allah, he didn't fall ill during the pandemic or lockdown. When he did get fever, we immediately gave him antipyretics. We always have them at home."* — Mother 8

However, some children did contract COVID-19. One mother reported:

> *"She had a urinary tract infection (UTI) and was admitted to the hospital. They found out she had COVID-19. She was sick for more than a month and was on antibiotics."* — Mother 10

3.1.5 Perception and decisions concerning vaccination

Parents expressed different views regarding COVID-19 vaccination for their children with CP. Some believed vaccination would provide protection, whereas others were concerned about adverse effects.

One mother explained:

> *"They offered the vaccine at the rehabilitation center, but I refused to give it to them. This wasn't due to negligence on my part, but because I thought natural immunity would be better. We saw the difficulties caused by the vaccine."* — Mother 3

Another mother described giving her child only one dose:

"He received only one dose. After that, he had a high fever and became very sick. Since he doesn't go out and interact with other people, I wasn't motivated to give him the second dose." — Mother 13

These accounts illustrate how parents' perceptions of risk, exposure, and vaccine effects influenced vaccination decisions.

4. Psychosocial Effects on Families

4.1 Fear and anxiety about COVID-19

Parents described COVID-19 as a frightening and uncertain experience. Fear was related not only to infection itself but also to uncertainty about possible complications for children with CP.

One mother explained:

> *"I was worried if my children would get COVID, especially him. If he gets it, I don't know how I'll deal with it. His immunity is low. What will the complications be? I prayed that he wouldn't be affected. How would I care for him? How would he be admitted, and how would I carry him? At the beginning, I was very afraid. It was very dangerous, and many people passed away due to this disease. We were very fearful… all kinds of thoughts ran through my mind."* — Mother 16

Some parents responded to fear by adopting strict infection-control practices. One father reported:

> *"We were afraid of the pandemic; the fear was widespread. So, when the vaccine became available, we took it right away—three doses—to protect ourselves from the infection and prevent transmitting it to others, especially our children."* — Father 2

4.2 Social isolation as protective strategy

Parents described reducing social contact in an effort to protect their children from infection. Some restricted visitors, avoided gatherings, and continued social distancing even after formal restrictions were partially relaxed.

One mother stated:

> *"I tried not to leave the house unless it was for work or school, and even then, education was online. When visitors came, I wouldn't let my son interact with them. I didn't attend any gatherings, even family ones like weddings."* — Mother 15

Another mother described the extent of her concern:

> *"There was constant fear… Imagine being afraid to go out. My mother-in-law got COVID-19, and I took her to the hospital. Then we had to quarantine for two weeks. We were so worried we might have caught it and that my son would be affected, especially since he has no immunity. Or that one of my other children might get sick. It was a very worrying time."* — Mother 7

Although parents recognized the protective value of social distancing, they also described its emotional consequences. They missed Eid celebrations, weddings, funerals, family gatherings, and other social activities.

4.3 Additional caregiving responsibilities

Parents described assuming additional caregiving responsibilities during the pandemic. These responsibilities included infection prevention, healthcare management, home rehabilitation, and monitoring their children's condition.

One mother described extensive infection-control routines:

> *"When I came home from work, I didn't touch my children right away. It became an obsession. I would wear gloves and a mask. When I got home, I would immediately shower, keep my clothes separate, and avoid contact with my son for two hours. I was afraid that I might have contracted the virus and could spread it to him."* — Mother 5

Parents also became more directly involved in rehabilitation when professional services were interrupted.

The combination of infection-control practices and home-based treatment and rehabilitation therefore shifted additional responsibilities toward parents.

4.4 Family social support

Despite restrictions, parents used telephone calls, social media, and video communication to maintain relationships with relatives and friends. Extended family members sometimes provided practical support, particularly when parents became ill.

One mother explained:

> *"My mother and my daughter helped in taking care of them. They're very attached to them, and I've trained them to care for them."* — Mother 10

Parents also described support from friends, relatives, and support groups as important sources of emotional assistance during periods of isolation.

4.5 Perception of government restriction

Parents generally recognized the protective purpose of the restrictions implemented during the pandemic. One mother stated:

> "*The decisions made by the Supreme Committee—lockdowns, protective measures—were appropriate. At first, we didn't like them and were uncomfortable, but we later realized they were necessary to protect ourselves."* — Mother 11

This finding suggests that although restrictions created substantial social and emotional consequences, parents generally viewed the measures as necessary for protecting public health.

5. Financial Effects on Families

5.1 Financial strain

The financial effects of the pandemic varied across families. Parents working in the private sector or operating businesses described income reductions and financial strain.

One mother stated:

> *"We were financially affected. My husband would take leave if someone at his company tested positive for COVID-19, to protect himself and avoid passing it to our son. His company had many cases, and he wanted to limit contact with them. This left us financially strained as his salary was cut in half due to the leave. Although my son receives financial support from social welfare, he has special needs—special food, drinks, and so on."* — Mother 7

Another parent emphasized increasing costs and reduced informal support:

> *"The economic impact of COVID-19 was worse than the social effects. The prices of goods went up. We used to get financial support from others for our son, but during the pandemic, we didn't receive anything. People were isolating themselves, and we were heavily affected."* — Mother 6

These accounts indicate that financial vulnerability was influenced by employment circumstances as well as the additional costs associated with caring for a child with CP.

5.2 Financial stability and saving

In contrast, some parents employed in the government sector reported that their financial circumstances were stable or even improved during lockdown because of reduced transportation and discretionary expenditure.

One father stated:

> *"For me, it was a comfortable period. We worked from home, and financially, we saved a lot. It was actually a good period. We didn't feel as if our freedom was restricted. For example, by working from home, we saved money we would've otherwise spent on gas and transportation."* — Father 2

Similarly, one mother described reduced household expenditure:

> *"It was like saving. Normally, we go out and shop for both necessary and unnecessary things. But during the lockdown, we only bought what was necessary."* — Mother 15

Some parents also reported opportunities to develop online businesses and new interests during lockdown.

6. Discussion

This study explored parents' accounts of caring for children with CP in Oman during the COVID-19 pandemic. Three interrelated themes emerged: perceived effects of COVID-19 on children with CP, psychosocial effects on families, and financial effects on families. Across these themes, protecting children with CP from infection emerged as a central concern that shaped parents' healthcare decisions, social participation, caregiving practices, and daily routines. The findings extend previous global studies by demonstrating how pandemic-related disruption was experienced within the specific context of Omani families caring for children with CP. The findings also illustrate that the pandemic did not affect all families in the same way. The consequences varied according to the child's healthcare and rehabilitation needs, parents' perceptions of infection risk, access to family support, and employment circumstances.

Parents reported increases in muscle spasticity, joint stiffness, and behavioral or social difficulties during periods when rehabilitation and social activities were restricted. These accounts are consistent with studies from Turkey, France, and Australia, where caregivers reported perceived deterioration in physical, behavioral, psychological, and social functioning among children with CP or other neurodevelopmental disabilities during the pandemic (Cacioppo et al., 2020; Cankurtaran et al., 2021; Masi et al., 2021; Akpinar et al., 2021; Nguyen et al., 2023). Parents' accounts concerning rehabilitation suggest that interruption of professional therapy was particularly challenging for some families. Although parents attempted to continue exercises at home, some felt that home therapy could not replicate the professional support provided by therapists. Parents also described uncertainty about how to perform exercises safely and how to respond when children experienced discomfort. This finding has implications for rehabilitation planning in public health emergencies. Families may be willing and able to participate in home rehabilitation, but they require structured guidance, appropriate resources, and ongoing professional support. The use of WhatsApp by some rehabilitation services in this study illustrates an example of how existing communication technologies were adapted to maintain contact with families.

In addition, the findings revealed both disruption and adaptation within healthcare services. Some appointments and procedures were canceled or postponed, while other essential services continued. The degree of continuity appeared to be related partly to the complexity and urgency of the child's healthcare needs. This variation is important because children with CP are not a homogeneous group. Some require regular monitoring, investigations, medications, or procedures, whereas others may primarily depend on rehabilitation and routine follow-up. Parents also described telemedicine as an alternative means of maintaining contact with healthcare providers. However, the lack of physical examination limited parents' satisfaction with remote consultations. The findings therefore suggest that telemedicine can contribute to continuity of care but may not fully replace face-to-face assessment, particularly for children with complex physical and rehabilitation needs. The significance of this finding for Oman lies in the need to develop emergency healthcare plans that distinguish between services that can safely be delivered remotely and those requiring physical assessment. Such planning could reduce unnecessary disruption while minimizing infection risks.

It was also identified that fear of COVID-19 was central to parents' experiences. Parents described concerns about infection, possible complications, and their ability to manage their children if they became seriously ill. Some parents believed that their children had reduced immunity. Fear also influenced parents' behavior. Parents avoided hospitals when possible, limited visitors, reduced participation in family events, and maintained strict infection-control routines. Thus, the desire to protect children from infection resulted in a paradox as measures that parents perceived as protective also reduced social participation and increased caregiving demands. This finding is particularly relevant in the Omani context, where family and social gatherings are important components of everyday life. The loss of Eid celebrations, weddings, funerals, and family visits represented more than a reduction in social activity; it altered important sources of emotional connection and support. Nevertheless, parents demonstrated adaptive strategies. Telephone communication, social media, video calls, and support from extended family enabled some families to maintain social connections. These strategies may represent important resources for families during future periods of restricted face-to-face interaction.

Additionally, the pandemic had altered the distribution of caregiving responsibilities. When rehabilitation services were interrupted, parents became more involved in therapy. When parents feared hospital exposure, they increasingly managed minor illnesses and routine care at home. Infection-control measures also added responsibilities to everyday caregiving. These findings are consistent with previous research showing that

caregivers experienced increased mental and practical burdens during the pandemic (Cacioppo et al., 2020; Dhiman et al., 2020; Farajzadeh et al., 2021). Importantly, parents' accounts suggest that responsibility was accompanied by uncertainty. Some parents were concerned about whether they could safely provide rehabilitation, whether they could recognize deterioration, and whether hospital attendance itself might expose their children to infection. Therefore, family-centered pandemic preparedness should recognize parents as partners in care while avoiding the assumption that families can independently replace professional services.

The findings also revealed that the financial effects differed substantially between families. Parents working in the private sector or operating businesses reported income loss and financial pressure, while some government-employed parents reported savings due to working from home and reduced transportation and discretionary expenses. This variation is consistent with previous research indicating that employment stability was associated with caregiver mental health during the pandemic (Farajzadeh et al., 2021; Cankurtaran et al., 2021; Zahaika et al., 2021; Masi et al., 2021). However, the findings also highlight the importance of considering the additional financial needs associated with caring for a child with CP. For some families, the financial burden involved not only lost income but also the cost of specialized food, medications, transportation, and other care requirements. In addition, social distancing reduced informal financial and practical support from relatives and community members. Consequently, emergency support programs for families caring for children with disabilities should consider both household income security and disability-related expenditure.

7. Implications

The findings of this study had some implications for rehabilitation, pediatric healthcare and healthcare policy in Oman. The pandemic appeared to have a negative impact on children's physical mobility due to a lack of access to health and rehabilitation services. Consequently, healthcare organizations should incorporate continuity of rehabilitation into pandemic preparedness plans. When face-to-face services are restricted, families should receive individualized home rehabilitation programs supported by appropriate professional follow-up. Family-focused therapies have been identified as one of the best service models for rehabilitation of children with disabilities, by engaging and empowering parents in the treatment process (Akpinar et al., 2021). Continuing rehabilitation at home was reported to be more effective in improving the functional skills of children with disabilities, as therapies are delivered in a natural environment and the amount of training is increased (Akpinar et al., 2021; Cankurtaran et al., 2021).

Parents also assumed additional rehabilitation and caregiving responsibilities during service disruptions. Structured education should therefore be provided regarding safe home exercises, positioning, mobility, symptom monitoring, and indications for seeking professional assistance. Healthcare providers should also regularly assess the situation of both the child and the caregivers (Nguyen et al., 2023; Akpinar et al., 2021).

Additionally, telephone follow-up, telemedicine, messaging applications, and telerehabilitation can help maintain communication with families when physical attendance is difficult. Studies reported that telerehabilitation could reduce stress and burden on caregivers (Akpinar et al., 2021; Cankurtaran et al., 2021). Telemedicine has also played a significant role in ensuring the continuity of care for children with CP and neuromuscular complex conditions outside of standard settings, serving as an adjunct to in-person clinic visits (Nguyen et al., 2023). However, these approaches should complement rather than automatically replace face-to-face assessment when physical examination is clinically necessary.

The study highlighted that parents had experienced increased physical and emotional responsibilities when professional services are disrupted. Therefore, emergency planning should include assessment of caregiver needs. Multidisciplinary services should therefore provide accessible caregiver education, psychosocial support, and referral pathways. Multidisciplinary support, proper communication, and interaction between healthcare professionals and families are essential for providing better care for children with CP and their families during the COVID-19 pandemic and future pandemics (Akpinar et al., 2021).

In addition, social isolation was identified to be both a protective strategy and a source of distress for families caring for children with CP. As a result, families should have access to alternative forms of social and psychological support during periods of restricted contact. Telephone-based support groups, online family

networks, and remote counseling may help maintain social connection. Furthermore, financial assistance should be responsive to differences in employment security and disability-related costs. Families who experience employment-related income loss may require targeted support, particularly when caring for children with substantial nutritional, medical, or rehabilitation needs.

8. Strengths and Limitations of the Study

The strength of this study lies in its qualitative approach, which provides an in-depth understanding of the experiences of families caring for children with CP in Oman during the COVID-19 pandemic. The study provided detailed accounts of how families caring for children with CP experienced healthcare disruption, rehabilitation interruption, social isolation, caregiving responsibilities, and financial change during the COVID-19 pandemic. The use of semi-structured interviews allowed participants to describe experiences in their own words, while participant quotations provide evidence supporting the thematic interpretations.

However, the study has some limitations. Children with CP did not participate directly in the interviews. Their experiences were reported by their parents. Therefore, findings concerning children's physical, psychological, behavioral, and social experiences represent parental observations and perceptions rather than direct accounts of the children's lived experiences. The interviews were conducted by telephone. Although telephone interviews facilitated participation during the pandemic, they prevented researchers from directly observing participants or children and did not permit physical assessment of the children's condition. Additionally, purposive and snowball sampling may have introduced selection bias. Families who were connected to healthcare services or social networks may have been more likely to participate than families who were less connected to these networks. The participants were recruited through Suhar Hospital, a single healthcare site. Families receiving services from other institutions or living in other regions of Oman may have experienced the pandemic differently. Thus, transferability of the study findings could be limited. Furthermore, the study relied on participants' retrospective accounts of pandemic experiences. Recall may have influenced how participants described events that occurred during earlier stages of the pandemic.

9. Conclusion

The findings of this study suggest that the major concern for families caring for children with CP in Oman during the COVID-19 pandemic was protecting their child from contracting the virus. This concern led to social isolation, which, in turn, had psychosocial effects on the parents and physical and behavioral effects on their children with CP. The findings highlight the importance of maintaining continuity of healthcare and rehabilitation services during public health emergencies. Home-based rehabilitation supported by healthcare professionals, appropriately integrated telehealth, clear communication between healthcare providers and families, caregiver support, and targeted financial and psychosocial assistance may help reduce the burden associated with future disruptions.

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Conflicts of Interest

The authors declare no conflicts of interest in association with this study.

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تجارب الأسر التي تعتني باطفال مصابين بالشلل الدماغي في سلطنة عمان خلال جائحة كوفيد-١٩: دراسة نوعية استكشافية

صالحة حميد البلوشي [١*] ، وفاء ابراهيم الشيزاوي [٢]

[١] قسم صحة الطفل، كلية عمان للعلوم الصحية، فرع شمال الباطنة، صحار, سلطنة عمان

[٢] قسم صحة الأم ، كلية عمان للعلوم الصحية، فرع شمال الباطنة، صحار, سلطنة عمان

الملخص:

خلال جائحة كوفيد-١٩، واجه الأطفال المصابون بالشلل الدماغي وعائلاتهم تداعيات متنوعة شملت الجوانب الجسدية والنفسية والاجتماعية والمالية. هدفت هذه الدراسة إلى استكشاف التجارب المعيشية للعائلات التي ترعى أطفالاً مصابين بالشلل الدماغي في سلطنة عمان خلال الجائحة.

اعتمدت الدراسة منهجية البحث النوعي، وشاركت فيها ثماني عشرة عائلة (ضمت ١٨ أماً وأبَين اثنين) تم اختيارهم باستخدام أسلوبي العينة الهادفة وعينة كرة الثلج. أُجريت ثماني عشرة مقابلة هاتفية شبه منظمة؛ حيث شملت ١٦ مقابلة الأمهات بشكل فردي، بينما كانت مقابلتان مشتركتين ضمت كلاً من الأمهات والآباء. أُجريت المقابلات باللغة العربية استناداً إلى دليل محاور محدد، ثم نُقلت نصوصها حرفياً وتُرجمت إلى الإنجليزية وحُللت باستخدام أسلوب تحليل المحتوى الموضوعي.

كشفت الدراسة أن تجارب العائلات تمحورت حول حماية أطفالهم المصابين بالشلل الدماغي من الإصابة بفيروس كوفيد-١٩. وقد برزت ثلاثة محاور رئيسية من روايات العائلات: الآثار الملحوظة لكوفيد-١٩ على الأطفال المصابين بالشلل الدماغي، والآثار النفسية والاجتماعية على العائلات، والآثار المالية عليها. وأفاد الآباء بأن فترة الإغلاق أدت إلى ظهور آثار جسدية وسلوكية على أطفالهم؛ إذ تسبب انقطاع خدمات إعادة التأهيل والرعاية الصحية في زيادة التشنج العضلي، كما أدى التباعد الاجتماعي إلى تقليص التفاعل الاجتماعي للأطفال. وعبر الآباء عن قلقهم من احتمال إصابة أطفالهم بالفيروس، خشية أن يؤدي ذلك إلى تدهور حالتهم الصحية، مما دفعهم إلى عزل أنفسهم اجتماعياً. كما تحمل الآباء أعباءً إضافية تتعلق بالرعاية خلال تلك الفترة، مثل حماية أطفالهم من العدوى وتوفير الخدمات الطبية وخدمات إعادة التأهيل. وفي حين أشار بعض الآباء إلى تأثير مالي إيجابي، تأثر آخرون سلباً من الناحية المالية.

وتشير روايات الآباء إلى أن حماية الأطفال المصابين بالشلل الدماغي من عدوى كوفيد-١٩ أصبحت شاغلاً رئيسياً صاغ الروتين العائلي، وأنماط المشاركة الاجتماعية، وممارسات الرعاية، والاستفادة من خدمات الرعاية الصحية. لذا، فإن ضمان استمرارية خدمات إعادة التأهيل والرعاية الصحية، وتعزيز الدعم لمقدمي الرعاية، وتوفير خدمات متكاملة ومناسبة للرعاية الصحية عن بُعد وإعادة التأهيل المنزلي، قد يساعد العائلات في التعامل مع اضطرابات مماثلة خلال حالات الطوارئ الصحية العامة مستقبلاً.

الكلمات المفتاحية: جائحة كوفيد-١٩ , الشلل الدماغي , الأسر , الأطفال , التجارب

Box1: Interviews topic guide

Interview Topic Guide

The experiences of families caring for children with cerebral palsy (CP) in Oman during pandemic of COVID-19: An exploratory qualitative study

Perception of COVID-19:

- Knowledge about COVID-19
- Perception about the governmental restriction
- Periods of lockdown
- Living arrangement
- Vaccinations

The effect of COVID-19 pandemic on the child:

- Physical health
- Psychological health
- Social participation
- Behavior
- Lifestyle and daily routines

The effect of COVID-19 pandemic on the parent or the caregiver:

- Physical health
- Psychological health
- Social participation
- Lifestyle and daily routines
- Financial status

Experiences with services:

- Health care services
- Rehabilitation
- Education
- Other services

Support

- Sources of support
- Nature of support
- Unmet support needs

Coping strategies