

Research Paper

Investigating the Parented-reported Quality of Life in Young Children With Cerebral Palsy at Ages of 5 to 7 years

Raed Farooq Khaleel^{1*}, Mohammed Basim Al Khafajy²

1. Department of Physiotherapy, College of Health and Medical Technologies, Middle Technical University, Baghdad, Iraq.

2. Medical Rehabilitation and Rheumatology Center, Baghdad, Iraq.

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ABSTRACT**Objectives:** This study examines the impacts of health-related quality of life (QoL) on children who suffer from cerebral palsy, in addition to sociodemographic characteristics and other aspects.**Methods:** Children who suffer from cerebral palsy (CP) who were referred to a Rehabilitation and Rheumatology Clinic in Bagdad, Iraq, were the subjects of a cross-sectional research. The primary data were gathered from parents and kids via a questionnaire. The CP module for The pediatric QoL inventory 3.0 in Arabic was used. The period of August 2022 to February 2023 was used for gathering the data. Researchers evaluated participants using the body mass index (BMI) and the gross motor function classification system. Data analysis was done using SPSS software, version 26 and involved calculating Mean±SD, reporting descriptive statistics, and testing random distribution assumptions. Reliability was assessed via the Cronbach α coefficient and interference analysis, with a considerable level set at $P \leq 0.05$.**Results:** This research enrolled 139 children of which 55.7% were male and the mean age was 5.7 years. The greatest age group was 5 years (51.1%), 59.7% of children were categorized in levels (III, IV and V) and the majority had a low QoL. The domain of daily activity received the highest score out of the six existing domains (57.05%).**Discussion:** CP affects the QoL of children aged 5 to 7 years. The intensity of the gross motor function classification system, physiological and topographical classification, and health-related QoL were associated significantly.*** Corresponding Author:****Raed Farooq Khaleel****Address:** Department of Physiotherapy, College of Health and Medical Technologies, Middle Technical University, Baghdad, Iraq.**Tel:** +96 (47) 702731248**E-mail:** raed_alobaidi@mtu.edu.iq

Highlights

- Their parents rated the quality of life (QoL) for children with cerebral palsy (CP) as low or poor.
- There were no significant differences in the health-related QoL among children with CP when considering various factors, such as age, gender, or body mass index.
- QoL in children with CP significantly correlates with the gross motor function classification system, which includes physiological and topographical categories.

Plain Language Summary

It is difficult to overstate the importance of individualized support and care in improving the quality of life (QoL) of children with CP. People with physical impairments, such as mobility limitations, spasms and tremors, and difficulties with fine motor skills may experience significant difficulties in their daily lives. Physical therapy and rehabilitation can improve CP children's QoL by improving physical abilities, self-esteem, everyday activities, and social engagement. Furthermore, the QoL for CP patients depends on socialization, emotional well-being, education, and employment opportunities.

Introduction

Cerebral palsy (CP) is caused by non-progressive abnormalities in the growing brain of a fetus or child, resulting in movement and posture problems and activity limitations. In addition to motor impairments, CP patients often have sensory, cognitive, communicative, perceptual, and behavioral problems [1]. CP, one of the most common motor disabilities in childhood, is more common in boys than girls due to biological factors, such as a more vulnerable cerebral structure, hormone protective factors, and genetic polymorphism [2], with an estimated average of approximately 3.6 cases per 1000 individuals [3]. CP is a social problem facing society in general and the family in particular and is associated with a variety of social challenges for families and the community. The family may experience more stress because of the children's need for personal care as well as medical support and protection. CP children have a reduced quality of life (QoL) due to mobility issues and lesser participation in recreational and social activities [4]. World Health Organization (WHO) refers to QoL as a person's sense of self in light of their culture, value system, goals, expectations, and worries [5]. The perspectives of patients about health-related QoL have considerable importance. QoL evaluations are often used by professionals in the fields of physiotherapy, psychology and social work. The pediatric QoL inventory (PedsQL™) is one method used tools to assess this aspect of health in young people, whether they are experiencing acute or chronic illness. The WHO suggests measuring a

child's physical, mental, social, and educational involvement using the PedsQL™ 3.0 generic core scales. The QoL of youngsters (aged 5-7 years) was assessed in this study. Recent attention has focused on CP children's health and QoL. This research used health-related QoL and functional movements to predict social and emotional coping behaviors and the link between QoL and age, gender, and body mass index (BMI). The researchers also want to learn more about the links between the different types of CP categories and patients' QoL.

Providing well-coordinated and high-quality services focused on their needs encourages social inclusion. It allows them and their families to continue living an everyday life in the community. As the incidence of CP among Iraqi children continues to rise, this study is the first to examine their QoL in Baghdad City, Iraq.

Materials and Methods

This cross-sectional research included CP youngsters and their parents. A pediatric neurologist identified 149 children with CP. They were selected using a nonprobability purposive sampling method from the patients attending the Medical Rehabilitation and Rheumatology Centre. The data were collected from August 2022 to February 2023. This research utilized the Arabic translation of the PedsQL™ 3.0 CP module [6]. Parental reporting for young children (ages 5-7 years) was used instead of a self-completion questionnaire due to intellectual disabilities and communication difficulties in these children [7]. In all patients, mothers completed questionnaires through

direct interviews. We obtained a verbal agreement from all the participants. During this study, mothers completed a 35-item (7 domains) questionnaire on the PedsQL™ 3.0 CP module for each child, as well as providing some sociodemographic information about the mother and her health, diseases, or illnesses associated with pregnancy. Additionally, some information about the age, sex, weight, height, mood of delivery, and place of birth was gathered. The gross motor function classification system (GMFCS) for CP was used to categorize functional status according to motor activity. CP children were classified according to physiological and topographic characteristics.

The Arabic iteration of the PedsQL™ 3.0 CP module comprises 35 items further categorized into 7 distinct domains. The framework encompasses several categories, including daily activities, school-related activities, mobility and balance, pain and injury management, weariness, eating activities and speech and communication skills. The scoring system ranges from 0 (indicating the absence of a problem) to 4 (indicating a high frequency of occurrence) as determined by the format, instructions, and the Likert answer scale. The 0-4 scale components are translated to 0-100 for better understanding. If over 50% of the items within the scale are absent, it is not advisable to calculate the scale scores. Meanwhile, higher scores on the scale indicate a greater QoL characterized by a reduced presence of symptoms or challenges. In this given numerical sequence, the values assigned to the numbers 0, 1, 2, 3 and 4 are 100, 75, 50, 25, and 0, respectively. A pilot study was conducted to verify the questionnaire's reliability, and the final questionnaire was tested on 10 women, yielding the result=0.98, as shown in Table 1. A panel of 10 experts from diverse fields assessed the questionnaire's validity.

As researchers, we excluded the school activities domain from questionnaire responses since most children involved in the study were not enrolled in schools due to a lack of awareness among parents of the possibility of educating their children, whether in a mainstream or a private school, for children with special needs. The data analyses were performed via the SPSS software, version 26. For categorical variables, descriptive statistics were provided as frequencies and percentages, while for continuous variables, the Mean±SD were determined. Furthermore, substantial comparisons were made to test

the reliability of the random distribution hypothesis. The scores were computed based on the PedsQL™ manual. The Cronbach α coefficient was used to conduct reliability analyses based on the average correlation between items, and an interference analysis (contingency coefficient and chi-square) was also conducted to analyze data. The $P \leq 0.05$.

Results

Data characteristics of mothers of children

The characteristics of mothers and birth conditions related to CP in children are summarized in Table 2. More than a third, 51(34.3%), of the mothers married at the age between 21-25 years with a mean age of 27.1 years. In addition, over two-thirds, 110(73.8%) of those surveyed reported a normal pregnancy without bleeding. Maternal healthcare during pregnancy showed that more than two-thirds, 102(68.5%), of mothers are healthy, while a minority suffer from hypertension, anemia, asthma, and diabetes mellitus, respectively. While pregnant, the majority of mothers, 113(75.8%), did not take medication during pregnancy. In this study, 93 children (62.4%) were delivered via vaginal delivery and 56(37.6%) were delivered via cesarean section. Almost all the children, 138(92.6%) born in a hospital, and the minority of them, 13(8.7%), have been exposed to trauma at birth or throughout their first year of life.

Sociodemographic characteristics of CP children

According to Table 3, This research included 149 CP patients, with an average age of 5.7 ± 0.8 years, and 83(55.7%) of them were male. Most kids in the oldest age group of 5 years old were not in regular or special education programs, even though just over half of them (51.1%) were old enough to go to school. Nearly 48% of youngsters had quadriplegia and 81.2% of them had spastic CP. The GMFCS classified 38(25.5%) children as level I, followed by 34(22.8%) children as level IV. More than two-thirds of the study cohort (71.80%) had to be admitted to neonatal care facilities, according to our findings. Neonatal jaundice is a known risk factor for CP, and 113 patients (74.8%) in this research exhib-

Table 1. Internal consistency reliability coefficient (Cronbach α) of the questionnaires

Reliability Coefficients of the Studied Questionnaires	Standard Lower Bound	Actual Values	Assessment
Cronbach α	0.70	0.9804	Excellent

Note: Cronbach α was used for questionnaire reliability (internal consistency).

Table 2. Sociodemographic characteristics of mothers

Sociodemographic	Classes	No. (%)
Mother's age at marriage	15-20	19(12.7)
	21-25	51(34.3)
	26-30	36(24.1)
	31-35	26(17.5)
	36-40	14(9.4)
	41-45	3(2)
	Mean±SD	27.1±6.1
Bleeding during pregnancy	1 st trimester	26(17.4)
	2 nd trimester	8(5.4)
	3 rd trimester	5(3.4)
	No bleeding	110(73.8)
Pregnancy and maternal health	Hypertension	26(17.4)
	Diabetic mellitus	2(1.3)
	Anemia	16(10.7)
	Asthma	3(2)
	None	102(68.5)
Pregnancy and medication	Yes	36(24.2)
	No	113(75.8)
Delivery method	Vaginal	56(37.6)
	Cesarean section	93(62.4)
Place of birth	Hospital	138(92.6)
	Home	11(7.4)
Birth trauma	Yes	13(8.7)
	No	136(91.3)

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ited this symptom. Additionally, 101 patients (67.8%) reported experiencing birth asphyxia.

The data reported in Table 4 showed that about two-thirds of the studied sample were underweight (n=92, 61.7%), while 53 cases (36.6%) were registered as normal weight, and only 4(2.7%) were overweight. Among various BMI groups, there were highly significant variations (P=0.01). The preponderance of children with CP

who were assessed are underweight, as supported by the results.

As with the parents of children with CP, QoL was assessed in six different areas. The evaluation did not include academic assignments but rather encompassed different aspects, such as everyday activities, physical coordination and stability, discomfort and discomfort, exhaustion, dietary habits, and verbal expression and communication. On a four-category scale with scores of

Table 3. Sociodemographic characteristics of children with cerebral palsy

Children Sociodemographic and Weight at Birth	Classes	No. (%)	C.S./P*
Gender	Male	83(55.7)	P=0.190 (N.S)
	Female	66(44.3)	
Age groups (y)	5	76(51.1)	$\chi^2=22.644$ P=0.000 (H.S)
	6	30(20.1)	
	7	43(28.8)	
	Mean±SD	5.7±0.8	
Physiological classification of cerebral palsy children	Spastic	121(81.2)	$\chi^2=350.698$ P=0.000 (H.S)
	Athetoid	5(3.4)	
	Hypotonic	11(7.4)	
	Ataxia	10(6.7)	
	Mixed	2(1.3)	
Topographical classification of cerebral palsy children	Monoplegia	5(3.4)	$\chi^2=121.168$ P=0.000 (H.S)
	Hemiplegia	22(14.8)	
	Diplegia	50(33.6)	
	Triplesia	1(0.7)	
	Quadriplegia	71(47.7)	
GMFCS	Walks without limitations(I)	38(25.5)	$\chi^2=5.664$ P=0.226 (N.S)
	Walks with limitations (II)	22(14.8)	
	Walks with hand-held mobility device (III)	30(20.1)	
	Self-mobility with limitations may use powered mobility (IV)	34(22.8)	
	Transported in a manual wheelchair (V)	25(16.8)	
Admission to the intensive care unit	Yes	107(71.8)	
	No	42(28.2)	
Kernicterus	Yes	113(75.8)	-
	No	36(24.2)	
Asphyxia	Yes	101(67.8)	
	No	48(32.2)	

H.S: Highly significant (P<0.01); N.S: Not significant (P>0.05).

*One-sample chi-square test

Table 4. Distribution of CP children according to BMI

Marker	Categories	No. (%)	C.S./P*
Body mass index	Underweight	92(61.7)	$\chi^2=78.295$ P=0.000 (H.S.)
	Normal weight	53(35.6)	
	Overweight	4(2.7)	
	Total	149(100)	

H.S: Highly significant ($P<0.01$). *One-sample chi-square test.

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(0, 1, 2, 3 and 4), “never,” “always,” “never,” “sometimes,” “often” and “almost always” were assigned to each area. Table 5 summarizes the initial assessment statistics, including Mean \pm SD score, and relative adequacy. Scores are categorized into three levels low, medium, and high, depending on their transferred scores and their relative adequacy intervals ([0.00-33.33], [33.34-66.66], [66.67-100]).

Based on the results of Table 5, seven items within the domain of daily activities are evaluated at a moderate level (77.78%) and 2 items at a high level (22.22%). In the movement and balance domain, 3(60.0%) items are evaluated at a moderate level and 1(20.0) item is evaluated at a high and low level. In the response to the pain and aches domain, 3(60.0%) items are rated moderately, 1(20.0) item is rated high, and 1(20.0) item is rated low. In the fatigue domain, all items are rated low. Meanwhile, in the eating activities domain, 3(60%) items rated moderate level and 2(40%) items at a low level. Lastly, in the speech and communicate domain, 2(50%) items were rated low, and 2(50%) items were rated moderate. According to the findings of prior research, the QoL of the parents was shown to have a negative correlation with the health-related QoL of their CP children. This association was mostly the result of the research having a mediocre to bad evaluation of the majority of the items.

The PedsQL™ 3.0 CP module’s first findings were obtained through parents’ reports. These findings are provided in Table 6, which includes the percentile grand mean score, pooled standard deviation and reliability for each subscale. The consistency of the results across all of the subscales was used to evaluate the dependability of the measurements. The Cronbach α coefficient of 0.905 indicates that the PedsQL™ scale exhibited excellent internal consistency in the sample. This suggests that the scale is highly homogeneous.

Additionally, the main domains of the PedsQL™ were evaluated using percentile-transformed scores, categorized into three levels low, moderate and high. These categories were defined by specific intervals: (0.00–33.33), (33.34–66.66) and (66.67–100), respectively. Overall, the domains of the PedsQL™ were evaluated based on these categories. According to the study results, a moderate to low evaluation accounted for the study’s parent-reported QoL and an overall evaluation scored a moderate to low rating. Response rates of parents for the subscale were lowest at pain and hurt (25.67 \pm 25.79) and the highest at daily activities (57.05 \pm 35.21).

As shown in Table 7, which illustrates contingency coefficients with a testing hypothesis, we attempted to determine the relationship between the overall evaluations of the PedsQL™ score based on the lower and upper cutoff points of the percentile grand mean of parent-reported data and some sociodemographic characteristics (gender, age group and BMI). The findings revealed no significant correlations between the PedsQL™ score and these characteristics.

According to the data in Table 8, there is a highly significant correlation between the different classifications of CP (GMCS, topographical, physiological) and the overall PedsQL™ parent-reported QoL with a $P<0.000$.

Discussion

In most CP research, muscle strength, postural control, range of motion and motor impairments are studied. Only recently has the QoL evaluation become a significant evaluation area for early treatment. Research on the subject is in full swing in foreign countries, but there needs to be more local data available on the subject. Individualized care and support are essential for CP children’s QoL. Mobility, spasticity and fine motor skill issues may greatly impact everyday living. The health-related QoL of children with CP has been the subject of investigation in several research [8-11], while the report-

Table 5. Summary statistics for studied QoL for young children with CP (n=149)

	Specific PedsQLTM	Mean±SD	RS (%)	Ev.
Daily activities	Difficulty putting on his/her shoes	2.90±1.44	72.5	H
	Difficulty buttoning his/her shirt	2.99±1.40	74.8	H
	Difficulty pulling a shirt on over his/her head	1.81±1.66	45.3	M
	Difficulty putting pants on when getting dressed	2.28±1.53	57.0	M
	Difficulty brushing his/her hair	1.44±1.71	36.0	M
	Difficulty getting into the bathroom to use the toilet	2.65±1.60	66.3	M
	Difficulty undressing to use the toilet	2.42±1.61	60.5	M
	Difficulty getting in and out of the bathtub/shower	2.40±1.68	60.0	M
	Difficulty brushing his/her teeth	1.64±1.77	41.0	M
Movement and balance	Difficulty moving one or both of his/her legs	1.00±1.26	25.0	L
	Difficulty moving one or both of his/her arms	0.99±1.29	24.8	L
	Difficulty moving parts of his/her body	1.15±1.46	28.8	L
	Difficulty keeping his/her balance when sitting in a chair	1.53±1.82	38.3	M
	Difficulty keeping his/her balance when standing	2.70±1.63	67.5	H
Pains and aches	Aches in joints and/or muscles	0.96±1.15	24.0	L
	Having a lot of pain	0.89±1.09	22.3	L
	Trouble sleeping because of pain or aching in joints and/or muscles	0.77±1.08	19.3	L
	Muscles getting stiff and/or sore	1.49±1.42	37.3	M
Fatigue	Feeling tired	1.26±1.36	31.5	L
	Feeling physically weak (not strong)	1.23±1.35	30.8	L
	Needing to rest a lot	1.21±1.36	30.3	L
	Feeling that he/she doesn't have enough energy to do things that he/she likes to do	1.19±1.40	29.8	L
Eating activities	Difficulty eating with a spoon and/or fork	1.65±1.78	41.3	M
	Difficulty chewing his/her food	1.01±1.46	25.3	L
	Difficulty holding a cup	1.42±1.76	35.5	M
	Difficulty drinking on his/her own	1.47±1.79	36.8	M
	Difficulty cutting his/her food	1.33±1.69	33.3	L
Speak and communicate	Difficulty telling the family what he/she wants	1.01±1.49	25.3	L
	Difficulty telling others what he/she wants	1.47±1.75	36.8	M
	Difficulty with family understanding his/her words	0.97±1.49	24.3	L
	Difficulty with others understanding his/her words	1.46±1.77	36.5	M

Abbreviations: RS: Relative sufficiency; L: Low; M: Moderate; H: High, Ev: Evaluation; PedsQLTM: Pediatric QoL inventory.

Table 6. Mean±SD, evaluation and Cronbach α of parented reported the QoL for CP children (n=149)

PedsQLTM Domains	No. of Items	Mean±SD*	Evaluation	α
Daily activities	9	57.05±35.21	M	0.893
Movement and balance	5	36.88±33.38	M	0.890
Pain and hurt	4	25.67±25.79	L	0.922
Fatigue	4	30.62±32.92	L	0.932
Eating activities	5	34.43±40.39	M	0.888
Speech and communication	4	30.75±39.26	L	0.906
Overall scale	31	35.9±34.49	M	0.905

*Percentile grand mean of score±pooled standard deviation.

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ed QoL [12-14] has been evaluated in a few studies. All levels of severity have been included in the subjective categories for a sample of children with CP.

Discussion of sociodemographic characteristics of mothers

Current research shows that more than 88.6% of mothers got married before the age of 35 years old, and the Mean±SD were 27.1±6.1 years. The finding matches

that of Ali et al. (2022), which indicated that 94.3% of mothers got married before the age of 35 years [15]. No prior research demonstrated that the mother's age at marriage affects CP risk because numerous other variables influence it. Bleeding during pregnancy, maternal health, and taking medication were identified as risk factors for CP in prenatal. The results obtained from this study showed that (73.8%) did not suffer from bleeding during pregnancy, 68.5% were healthy and did not complain of any diseases and 75.8% did not take medication while

Table 7. Correlation between PedsQL™ score, gender, age group and BMI

Sociodemographic Characteristic	Relationship to PedsQL™ Score	
	Contingency's Coefficient	P*
Gender	0.015	0.857 (N.S)
Age groups	0.164	0.126 (N.S)
Body mass index	0.129	0.285 (N.S)

N.S: Non-significant at P>0.05.

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*Statistical hypothesis based on the contingency coefficient test.

Table 8. Correlation between PedsQL™ score and different classifications (physiological, topographical and gross motor function classification system) of CP

Disorders Classifications	Relationship to PedsQL™ Score	
	Contingency's Coefficient	P*
GMCS classification	0.658	0.000 (H.S)
Topographical classification	0.266	0.023 (S)
Physiological classification	0.563	0.000 (H.S)

*H.S: Highly significant at P<0.01; S: Significant at P<0.05.

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*Statistical hypothesis based on contingency coefficient test.

pregnant. This research indicated that most mothers of children with CP were healthy, agreeing with Khaleel et al. (2022), who reported that 81.6% had no vaginal hemorrhage during pregnancy, 69.7% were disease-free, and 60.5% did not use medication [16].

Several studies have shed light on the association between cesarean section and CP [17]. Our study revealed that cesarean section was delivered in 62.4% of CP patients. The mother's history was the only source of information. The reasons for the emergency cesarean section were not explained, nor whether the fetus was in prenatal distress before delivery. Most of these children (92.6%) were born in the hospital, and these findings appear to be consistent with other research that has found that hospitals are the place of birth of most CP children in those studies [16, 18].

Sociodemographic features of children

The majority of youngsters participating in this research, accounting for 55.7%, were male. Similar findings have been found in other studies, showing that CP is more likely to develop in males than in females [12-14], and at preschool age 51.1% with a mean age of 5.7 ± 0.8 years [13]. According to physiological and topographical classification, the commonly observed type of CP children was spastic 81.2% and quadriplegic 47.7%. Several researchers showed that spastic types represented 70% to 80% [12, 13, 19]. The physical abilities of CP children were stratified based on the GMFCS and there were no significant differences among subgroups of children. When a child was found with CP, it was common for the mother or main caretaker to feel more upset as the situation worsened. According to this cross-sectional survey, levels III, IV, and V were assigned to about 59.7% of the youngsters. This finding differed less from Kelvin Yang's sample [20], which discovered that more than half of the research participants were categorized as levels (IV and V) 59.8%. More than two-thirds of CP children in this research were hospitalized and had kernicterus and hypoxic encephalopathy. All these important risk variables predict impairment and neurodevelopmental delay.

Understanding the symptoms, diagnostic procedures, treatment approaches, and expected outcomes can help parents or caregivers cope and improve. The risk of malnutrition is high for patients with CP [21]. BMI is a simple clinical tool for assessing the patients' nutritional status [22]. The development of the CP, cognitive, and motor function is delayed in people with significant malnutrition [23]. Our investigation observed that individuals diagnosed with CP had a notably reduced BMI (61.7%), which aligns with the findings reported by Feeley et al. [23].

CP patients' QoL

The complicated societal issue of CP has repercussions not just for society and for individual families. CP patients' QoL must be assessed to determine how the illness and treatment affect them. It is regarded as one of the most essential results of treatment and rehabilitation. Neurodevelopmental diseases, such as CP benefit from health-related QoL studies and therapies. Individual physical, mental and social well-being is a health-related QoL [24]. Parents assessed pediatric QoL as low or impaired, with variability across domains, according to our research. Those children's physical health, emotional perception, social communication, and educational function are all affected. In the current study and comparison with other domains, daily activities had the highest mean value based on the Mean \pm SD of 57.05 ± 35.21 . Research shows that CP youngsters who exercise regularly have a better physical QoL [25]. Children with CP have physical restrictions in mobility and balance, which lowers their QoL. Anxiety and stress have big effects on everyday life. In 2016, a study by Findlay et al. found that pain and getting older were bad for the health-related QoL [26]. Previous research has shown that children diagnosed with CP have significantly worse health-related QoL when they are afflicted by pain, in comparison to their counterparts who do not experience pain that is free of charge [27]. In the world of grief and suffering, there was no zero value, thus there was still hope for answering questions. This research also investigated weariness.

The study found a negative correlation between tiredness severity and physical exercise [28]. However, the causal association between physical exercise and weariness is unclear. It remains uncertain if engaging in physical activity avoids fatigue or whether weariness hinders individuals from participating in physical activity. In adolescents or adults with bilateral CP, the QoL decreases when fatigue increases [29]. Moderate to low were also observed in Mean \pm SD values in eating activities (34.43 ± 40.39) and the speech and communication domain (30.75 ± 39.26). Several studies using the PedsQL™ 3.0 module for evaluating the quality of life for CP found that children and young adults showed decreased performance levels in daily activities, mobility, balance, speech, and eating [30, 31]. This study investigated the association between several sociodemographic factors, such as gender, age group, and BMI and the overall reported QoL among parents. At a $P \leq 0.05$, this study found no statistically significant differences between QoL and these attributes.

Similarly, Mohammed et al. concluded that there is no significant influence of gender on QoL [32]. In addition, Surender et al. (2016) demonstrated a lack of statistically meaningful association between gender/age and QoL [33]. This study contradicts Şimşek et al. (2014), who reported that lower BMI affects health-related QoL for CP children [34]. According to Table 8, there is a correlation between PedsQL™ and the levels of GMFCS, as well as the topographical and physiological classifications. Statistically significant differences were found at $P \leq 0.05$. This research confirmed the results of Surender et al. (2016) [33] and Mohammed et al. (2016) [32] that GMFCS severity lowers QoL. In contrast, quadriplegic children exhibited a considerably worse health-related QoL than diplegic and hemiplegic children [35].

Conclusion

This research evaluated the QoL among children diagnosed with CP in Baghdad City, Iraq, marking the first effort of its kind, as far as our current understanding allows us to ascertain. The primary objective of the present research was to assess the health-related QoL of parents of children. Additionally, the study sought to investigate the possible influence of sociodemographic variables, such as gender, age, and BMI, as well as identify any potential factors that might have a detrimental effect on health-related QoL. Children aged 5–7 with CP have low health-related QoL. Linking GMFCS severity, physiological and topographical categorization and health-related QoL. GMFCS is a valid measure of health and QoL. No evidence links age, sex or BMI to life quality. Physical treatment may promote self-esteem, daily living participation, and social engagement in CP patients.

Study limitations

The information about the QoL reported by parents of children diagnosed with CP is often on par with the information supplied by the children themselves. Nevertheless, there are distinctions. Due to their intellectual disabilities and communication difficulties, we could not obtain the children's reports. The school activities domain was excluded from the questionnaire results since more than half of the participants were of preschool age (5 years), and most children of other ages (6,7 years) were not enrolled in school. Parents' higher stress levels may affect children's QoL determination.

Ethical Considerations

Compliance with ethical guidelines

According to letter 81471 from the Baghdad Al-Rusafa Health Directorate, the Research and Development Committee authorized this study on July 6, 2022. A verbal agreement was directly gained from the mothers of the study's participant children.

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Authors' contributions

All authors have contributed equally to the implementation of this study.

Conflict of interest

The authors declared no conflict of interest.

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