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Comparison of Quality of Life of Parents with Children Having Cerebral Palsy Who Receive Or Do Not Receive Physiotherapy Intervention: A Comparative Cross-Sectional Study.

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ABSTRACT

Background: Cerebral palsy is the most common motor disability in children and it places a significant caregiving burden on parents, which may reduce their quality of life. This study compared the quality of life of parents whose children received physiotherapy to those whose children did not.

Objectives: To compare the quality of life of parents of children with cerebral palsy receiving physiotherapy intervention with those whose children were not receiving physiotherapy intervention

Methods: A six-month comparative cross-sectional study was conducted with 134 parents of children with cerebral palsy (67 in each group). Participants were recruited using convenience sampling. Quality of life was assessed using the WHOQOL-BREF questionnaire. Data were analysed using SPSS version 27.0. Continuous variables were analysed using the independent samples t-test, whereas categorical variables were analysed using the chi-square test. A p-value of <0.05 was considered statistically significant.

Results: Parents of children receiving physiotherapy reported a higher quality of life across all domains than those whose children were not receiving physiotherapy. Mothers showed the greatest difference in physical health scores (52.53 vs 38.40). These differences were statistically significant ($p<0.05$).

Conclusion: Parents of children receiving physiotherapy had better quality of life than parents of children not receiving physiotherapy. These findings support the importance of family-centred rehabilitation and highlight the need for accessible physiotherapy services.

Keywords: Cerebral Palsy, Caregivers, Quality of Life, Physical Therapy, WHOQOL-BREF.

Introduction:

Cerebral palsy is the most common motor disability in childhood. It is a non-progressive disorder of posture and movement that may be associated with epilepsy as well as speech and intellectual abnormalities caused by injury to developing foetal or neonatal brain. whereas the most common cause was thought to be perinatal asphyxia. The following conditions are associated with an increased risk of developing cerebral palsy such as multiple pregnancy, drug abuse, pre-eclampsia, foetal distress, foetal hypoxia, intrauterine growth retardation, intrauterine infection. The childhood physical disabilities most commonly include cerebral palsy, which is described as a group of permanent disorders of the development of movement and posture.[3] Children with cerebral palsy not only experience physical problems, other problems such as weakness, stiffness and clumsiness, but also experience social and emotional difficulties including anxiety, frustration, depression, and rejection by peers.[3] Children with disabilities require ongoing consultations with specialists, rehabilitation exercises, and frequent visits to specialised clinics. The child's functional abilities are the most important. When the child's independence is limited , the burden on the parents increases.[1] The parents' anxiety may be more closely linked to sudden life events, such as receiving a diagnosis and it can also result in depression over time, which becomes more noticeable when the condition becomes chronic.[4] A child's developmental disability has a significant impact on the overall functioning of the family. There are many obstacles that the family members must overcome while everyone makes an effort to adjust to the new circumstances and accept it.[1] Through some of the characteristic features of the family, such as togetherness, support and the ability to adapt to change and unexpected challenges in a quick and calm manner is able to reduce to the negative impact of the situation of disability and provide adequate support to the child.[1] Caring for a child with cerebral palsy is challenging and demanding, and the parent's entire life may be affected. For example, they may have limited freedom, find it difficult to do the things they want to do, have difficulty participating in family activities, struggle to find time for themselves, and experience extreme anxiety that often leaves them feeling helpless and may exacerbate feelings of parental incompetence.[1] According to Brehaut et al.2004; Overall messages from parents show that the physical and mental health of caregivers is impacted by the demands of caregiving.[3] In 2011, Sawyer et al. discovered that mothers of children with CP were associated with maternal psychological issues, depression and came to the conclusion that mothers needed to be trained in time management and stress management to prevent psychological problems.[2] Assessing the quality of life is to examine the state of the patient's physical, mental, and social well-being as well as their level of satisfaction with their life in the various domains.[1] The goal of early physiotherapy intervention is to improve motor control and reduce spasticity through exercises for posture, mobility, and muscle strengthening. The physiotherapy intervention for children with cerebral palsy may indirectly reduce caregiver burden and stress. Children's level of functional independence affects parents' quality of life because improved outcomes lessen the mental and physical burden on caregivers. According to previous studies, children with cerebral palsy can benefit greatly from physiotherapy interventions in terms of their psychosocial well-being and gross motor function. The quality of life of children with cerebral palsy was significantly improved by physiotherapy, especially when it was initiated early and with active parental involvement.[13] It also has important clinical implications for the development of comprehensive and effective family-centered intervention in children with cerebral palsy.[4] The current study aims to determine the impact of a physiotherapy intervention for children with cerebral palsy on the quality of life of their parents.

Aim:

Compare the quality of life of parents of children with cerebral palsy who received physiotherapy intervention with those whose children do not receive such physiotherapy intervention.

Objectives:

- To assess the quality of life of parents of children with cerebral palsy receiving physiotherapy intervention.
- To assess the quality of life of parents of children with cerebral palsy not receiving physiotherapy intervention.
- To compare the quality of life scores between the two groups using a WHOQOL-BREF questionnaire.

Materials and Methods:

1) Study design and setting

- Study design: Comparative cross-sectional study.
- Study duration: Six months.
- Study setting: Paediatric physiotherapy department and community-based rehabilitation facilities.

2) Participants and sampling

- Participants: 134 parents of children with cerebral palsy. Group 1 (n = 67) consisted of parents whose children had received at least 2-3 months of physiotherapy, and Group 2 (n = 67) consisted of parents whose children had not received physiotherapy prior to data collection.
- Sampling technique: Convenience sampling.

3) Inclusion criteria

- Parents (both mother and father) of children with cerebral palsy.
- Parents of both boys and girls.
- Parents whose child was receiving physiotherapy for 2 to 3 months.
- Parents whose child was not receiving physiotherapy prior to data collection.

4) Exclusion criteria

- The parents of children with other neurological or developmental disorders.
- Parents whose child received physiotherapy intervention less than 2 months.

Ethical Considerations:

The Institutional Ethics Committee approved the study proposal and granted ethical approval for the conduct of the study before the survey was undertaken. The purpose of the study was explained clearly to the participants. Before the survey, study participants provided their voluntary written informed consent.

Variables:

- Independent variables: Physiotherapy intervention (receiving physiotherapy and not receiving physiotherapy).
- Dependent variables: Quality of life of parents measured using World Health Organization Quality of life-BREF questionnaire.

- Potential confounding variables: Parent's age and educational status were recorded because these factors could influence parental quality of life.

Bias Statement:
Several potential sources of bias were considered during the study. Although convenience sampling may have introduced selection bias, information bias was reduced by administering the standardized WHOQOL-BREF questionnaire to all participants under similar conditions. Demographic characteristics of both groups were also examined to ensure comparability.

Data Collection Procedure:
Following Institutional Ethics Committee approval, parents of children with cerebral palsy were recruited from paediatric physiotherapy departments and community-based rehabilitation facilities using convenience sampling. The study objectives and procedures were explained to all participants, and written informed consent was obtained before participation. Demographic information was collected using a structured data collection form, and participants were divided into two groups according to whether their child was receiving physiotherapy. The WHOQOL-BREF questionnaire was used to assess quality of life, and the data were analysed to compare the two groups.

Outcome Measure (WHOQOL-BREF):
The World Health Organization Quality of Life-BREF (WHOQOL-BREF) questionnaire was used to assess the quality of life for parents of children with cerebral palsy. It is a validated 26-item questionnaire that assesses four areas: physical health, psychological health, social relationships, and the environment. A higher score indicates a better quality of life.

Statistical Analysis:
A priori power analysis was performed using G*Power 3.1 for an independent samples t-test. Based on an effect size (Cohen's d) of 0.4892, a significance level of 5% ($\alpha = 0.05$), and 80% power, the required sample size was calculated as 67 participants per group (total n = 134). Data were analysed using SPSS version 27.0. Continuous variables were analysed using the independent samples t-test, whereas categorical variables were analysed using the chi-square test. A p value of <0.05 was considered statistically significant.

Missing Data:
All questionnaires were checked for completeness during data collection. Participants who provided incomplete responses were excluded from the analysis. There were no significant missing data among the included participants, so complete data from all 134 participants was used for statistical analysis

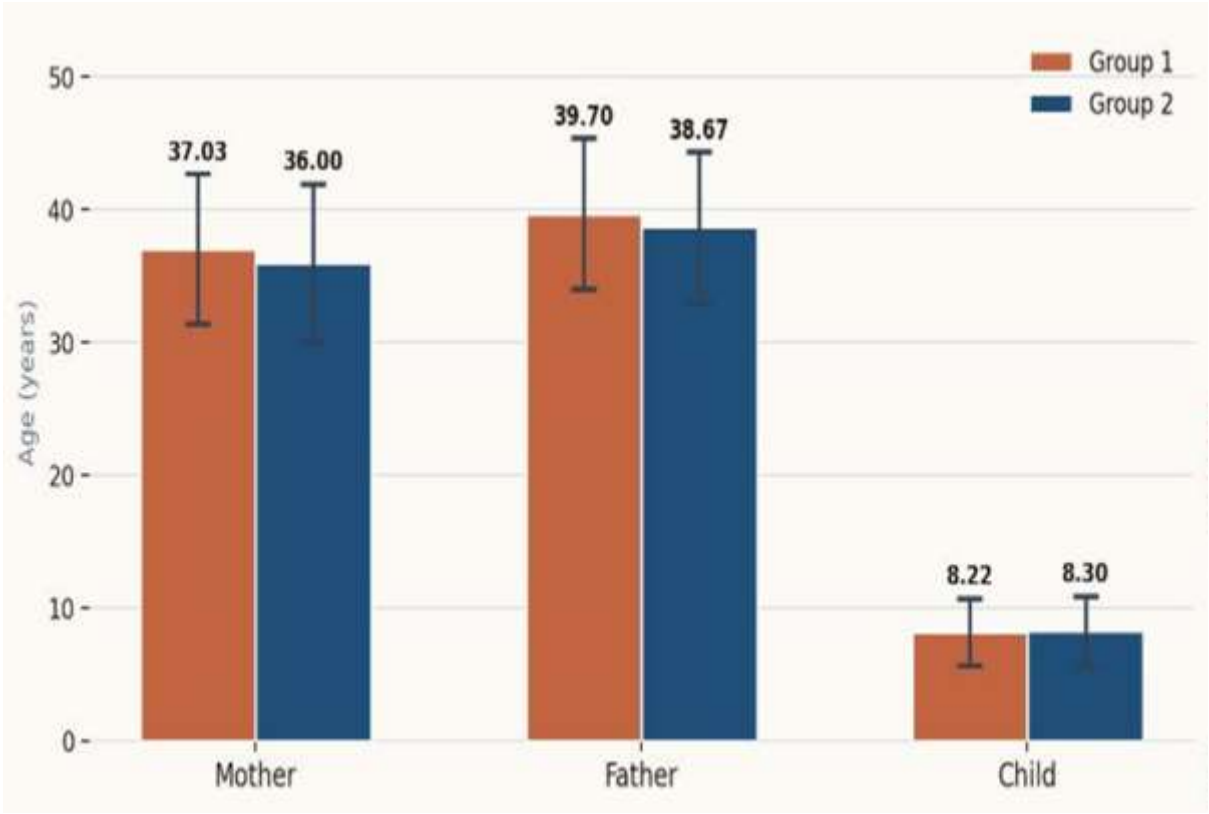
Result :
The study included 134 parents of children with cerebral palsy, with 67 parents in each group. The parents were divided into two groups: Group 1 included parents whose children had received physiotherapy intervention for at least 2–3 months. Group 2 included parents whose children had not received physiotherapy intervention before data collection. All the participants completed the WHOQOL-BREF questionnaire and were included in the final analysis. Demographic characteristics of

the participants are shown in Figures 1 and 2 respectively for age and educational level of parents. The characteristics of the two groups were broadly similar.

The quality of life profile of parents of both groups was assessed in the four WHOQOL-BREF domains: physical health, psychological health, social relationships and environment. The results indicated that parents in Group 1 generally had better quality of life profiles than parents in Group 2, especially in the areas of physical and psychological health. In both groups, social relationship scores were quite low, whereas environmental scores were relatively higher. The comparison of mean scores in all domains showed that Group 1 had higher WHOQOL-BREF scores in all domains, with the largest difference in the physical health domain among mothers.

Tables and Graphs:

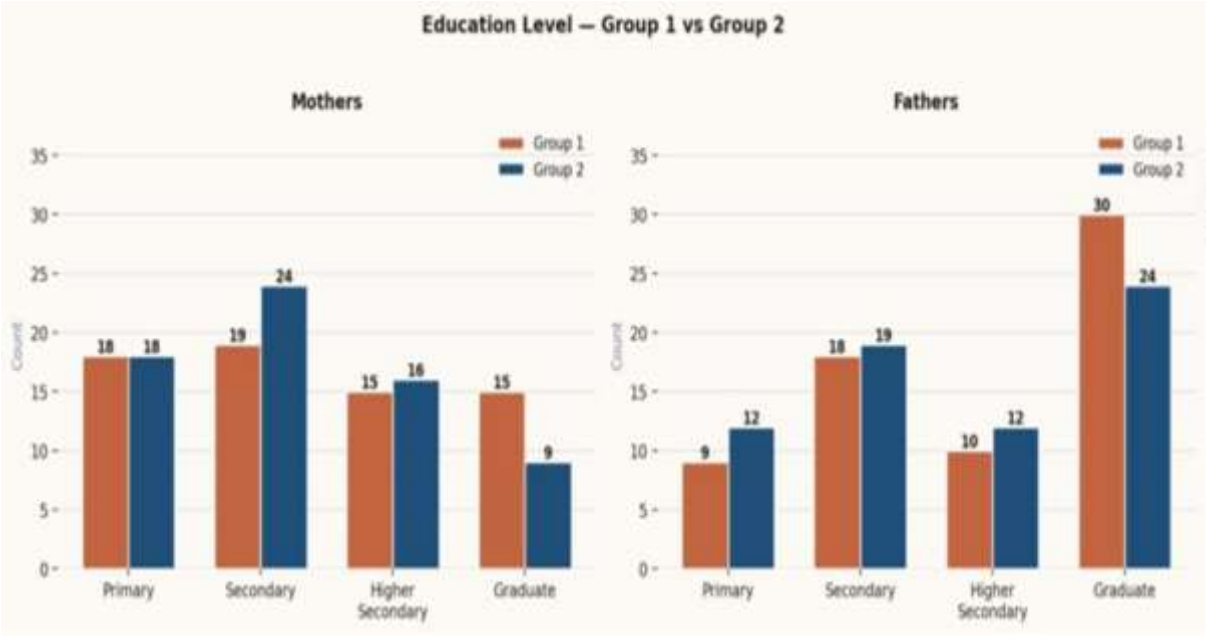
1) The mean age of participants is presented in Graph 1.



Mean age of participants with ± SD: Group 1 vs Group 2

Both groups consist of 67 families each (134 total). **Group 1** mothers averaged 37.03 years (SD=5.65) and fathers 39.70 years (SD=5.68). **Group 2** mothers averaged 36.00 years (SD=5.95) and fathers 38.67 years (SD=5.68). Children's mean age was 8.22 years (Group 1) and 8.30 years (Group 2), confirming comparable group profiles.

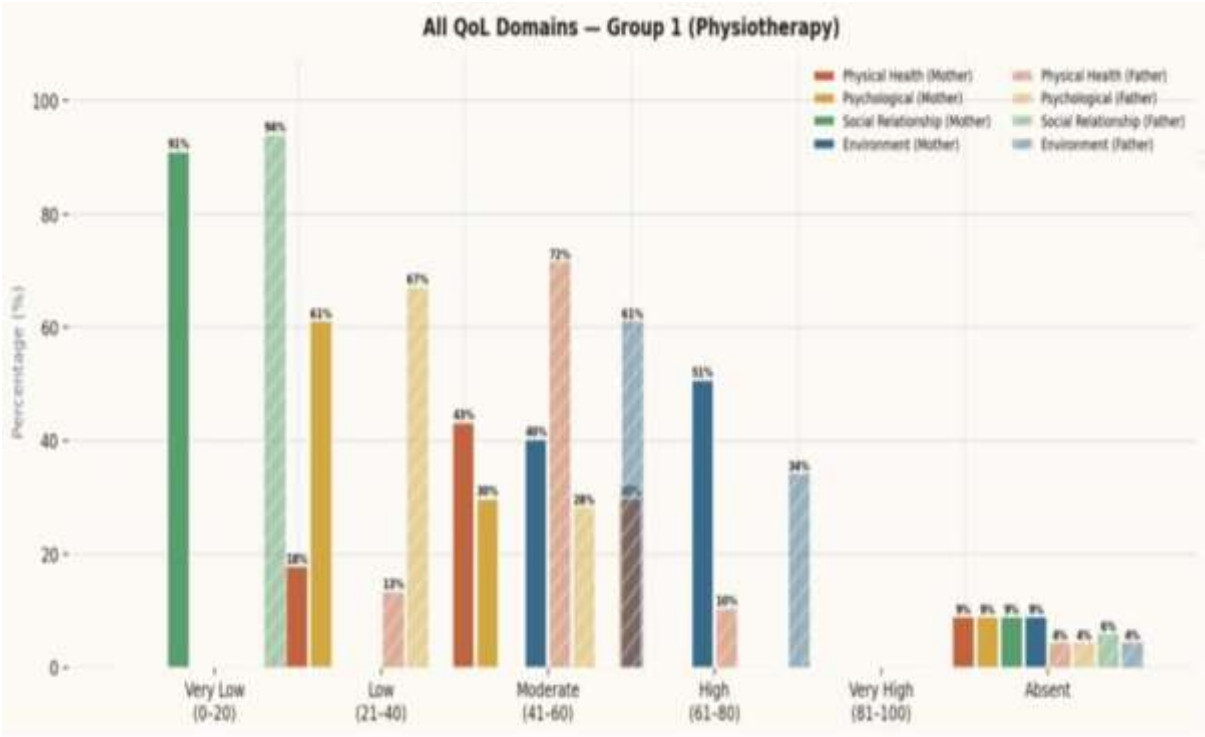
2) The educational level of mothers and fathers is presented in Graph 2.



Education level distribution: Group 1 vs Group 2

Group 1 fathers are more educated (44.8% graduate) compared to Group 2 fathers (35.8% graduate). Mother education is broadly comparable across groups, with Secondary being the most common level in both.

3) The quality of life profile of parents whose children received physiotherapy is presented in Graph 3.

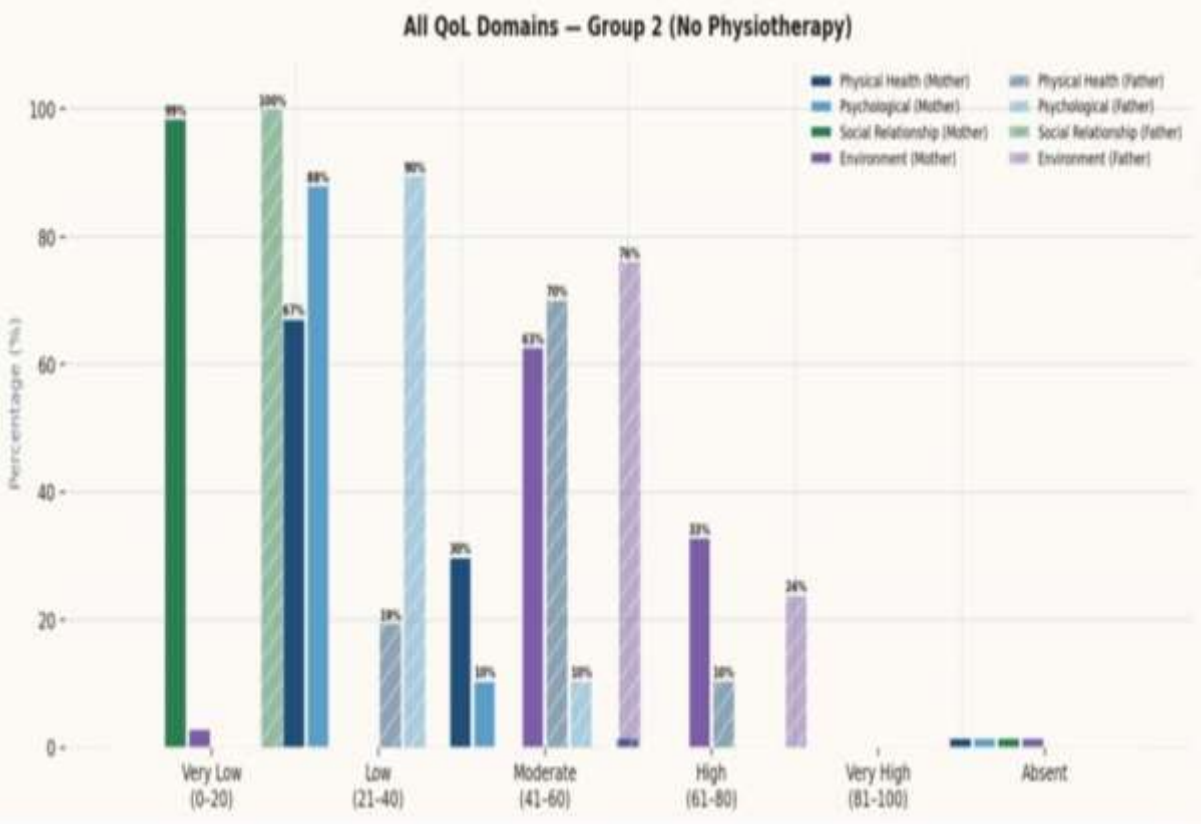


Physiotherapy Treatment (n=67)

Group 1 Result - **Physical Health:** mothers mostly Moderate (43.3%) and High (29.9%); fathers

predominantly Moderate (71.6%). **Psychological:** Low dominates for both (61.2% mothers, 67.2% fathers). **Social Relationship:** critically Very Low for both (91.0% mothers, 94.0% fathers). **Environment:** mothers showed high scores 50.7%, while fathers showed predominantly moderate scores 61.2%.

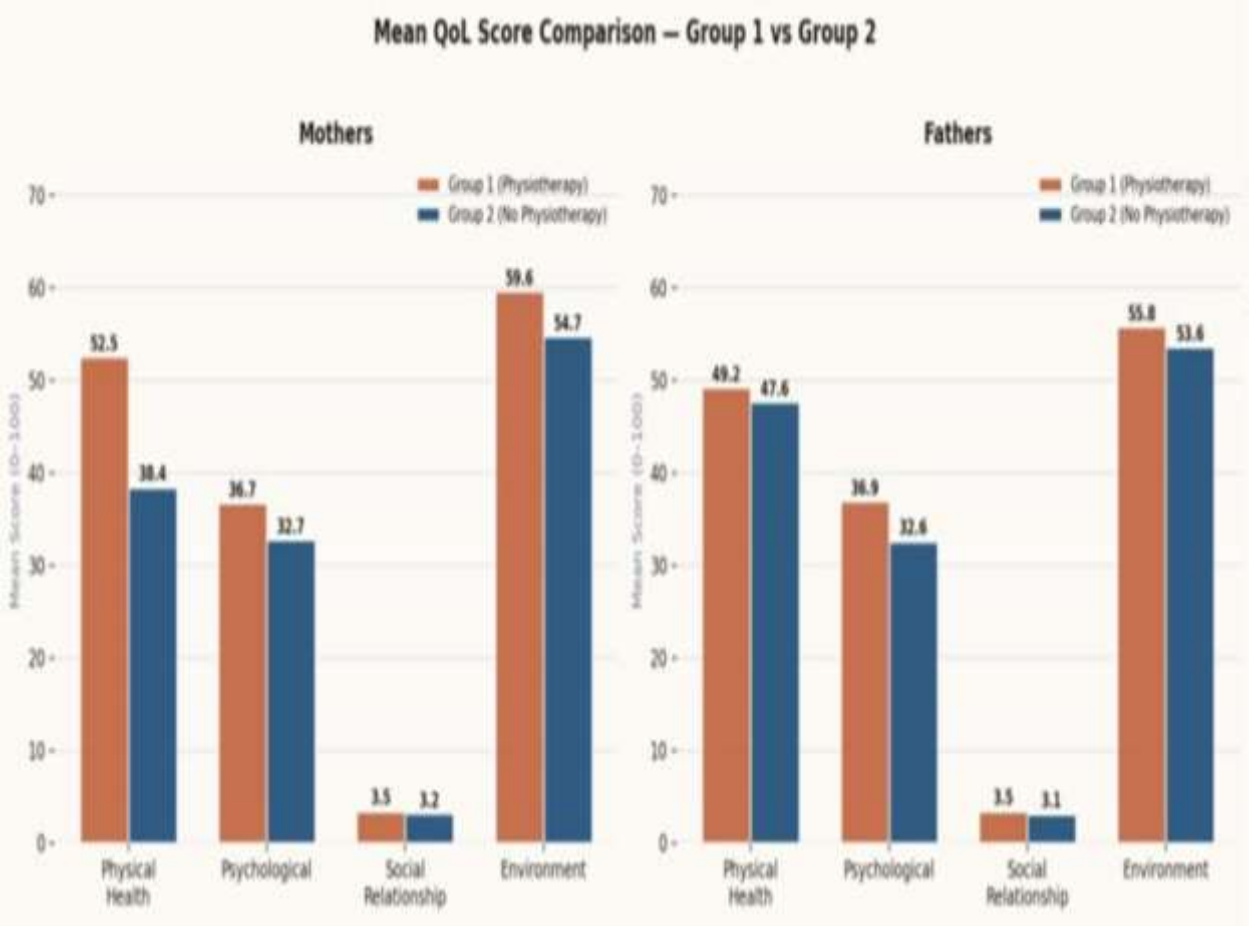
4) The quality of life profile of parents whose children did not received physiotherapy is presented in Graph 4.



No Physiotherapy Treatment (n=67)

Group 2 Result - **Physical Health:** mothers predominantly showed Low scores (67.2%), which were lower than those observed in Group 1. Fathers remain mostly Moderate (70.1%). **Psychological:** Low is even more dominant for both (88.1% mothers, 89.6% fathers) with Moderate dropping significantly to 10.4% and 10.4% respectively. **Social Relationship:** all fathers 100.0% had Very Low scores. **Environment:** mothers drop to Moderate (62.7%) from Group 1 High majority.

5) Comparison of the mean WHOQL-BREF domain scores between Groups 1 and 2 is presented in Graph 5 and Tables 1 and 2.



Direct Comparison — Mean Scores Group 1 vs Group 2

Group 1 demonstrated higher mean WHOQOL-BREF scores than **Group 2** across all domains for both mother and father (Figure 5, Table 1 and 2). The **largest mean** difference was observed in the Physical Health domain among mothers (Group 1: 52.53 vs Group 2: 38.40, mean difference = 14.13 points). The **second largest** mean difference was observed in the Psychological health domain among mothers (Group 1: mothers scored 36.72 vs Group 2: 32.73; mean difference= 3.99 points).

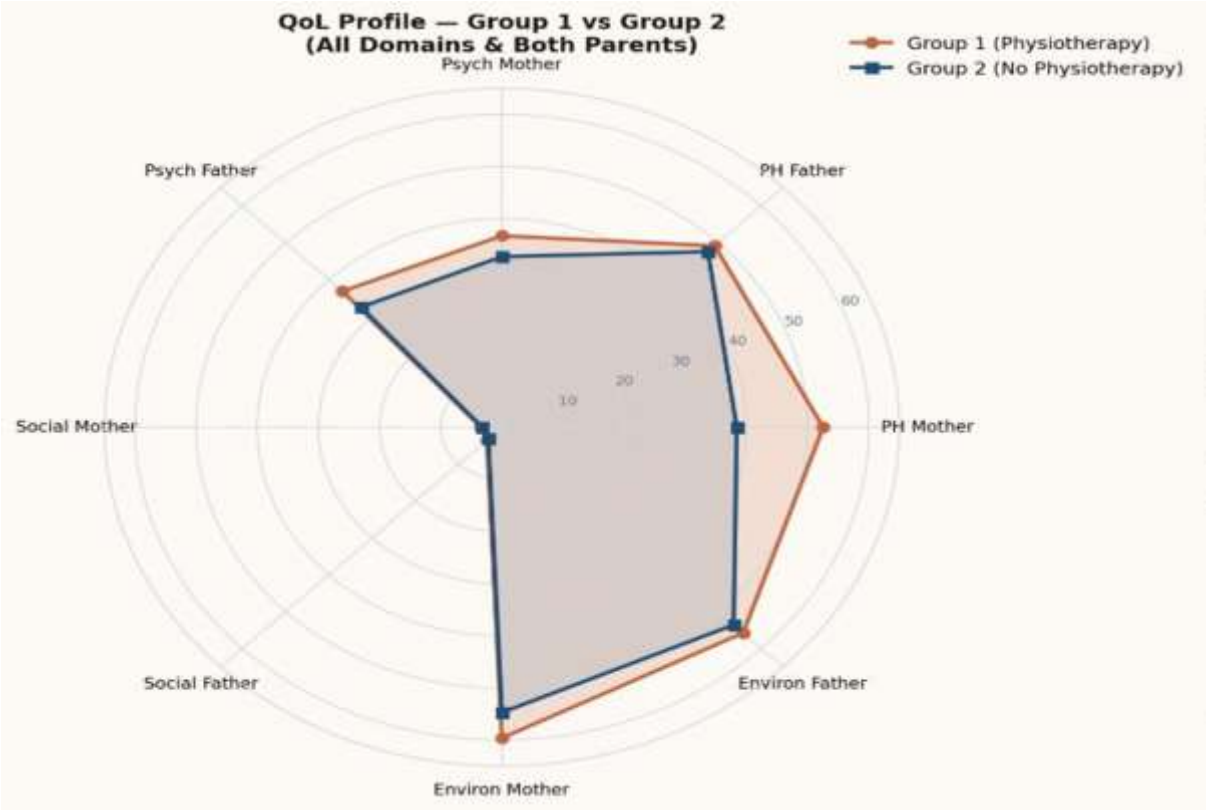
Table 1: Mean QoL scores of mother

Domain (Mothers)	Group 1 Mean	Group 2 Mean	Difference	Better
Physical health	52.53	38.40	+14.13	Group
Psychological	36.72	32.73	+3.99	Group 1
Social relationship	3.45	3.19	+0.26	Group 1
Environment	59.61	54.71	+4.90	Group 1

Table 2: Mean QoL scores of fathers

Domain (Fathers)	Group 1 Mean	Group 2 Mean	Difference	Better
Physical health	49.20	47.63	+1.57	Group 1
Psychological	36.89	32.59	+4.30	Group 1
Social relationship	3.45	3.14	+0.31	Group 1
Environment	55.77	53.59	+2.18	Group 1

6) The overall quality of life profile of both groups is illustrated in radar chart.



Radar Comparison

Illustrates the overall WHOQOL-BREF domain scores of both groups using a radar chart. Group 1 showed higher scores across all four domain than Group 2.

Discussion:

Cerebral palsy is the most common motor disability in childhood, and it is associated with significant physical, psychological, and social challenges for both children and caregivers. The present comparative cross-sectional study compared the quality of life of parents whose children received physiotherapy to those whose children did not. The study found that parents of children who received physiotherapy reported better quality of life across all WHOQOL-BREF domains than parents whose children did not receive physiotherapy. The demographic characteristics of the two groups were similar, with no statistically significant differences in age, education level, or occupation ($p > 0.05$). This suggests that the observed differences in quality of life were primarily associated with access to physiotherapy intervention. Parents in Group 1 had better physical health than those in Group 2, with the greatest

improvement seen in mothers. Improved physical health may be attributed to the positive effects of physiotherapy on children's functional independence, which may reduce the physical demands and caregiving burden placed on parents. Parents in the physiotherapy group reported higher levels of psychological well-being. These findings imply that physiotherapy intervention may indirectly improve caregivers' mental health by increasing confidence in the child's progress, lowering stress, and improving coping mechanisms. Although parents in the physiotherapy group had slightly higher social relationship scores, this domain remained low in both groups. This finding indicates that physiotherapy alone may not adequately address the social isolation experienced by caregivers. Long-term caregiving responsibilities, limited opportunities for social participation, and the societal stigma associated with disability may all contribute to poor social relationships. These findings emphasise the importance of caregiver counselling, community support, and family-centered rehabilitation programs. The environmental domain also showed higher scores among parents whose children received physiotherapy. Increased access to rehabilitation services, professional guidance, healthcare resources, and caregiver education may have contributed to improved environmental quality of life. These findings indicate that regular interaction with rehabilitation professionals may improve caregivers' satisfaction with their surroundings environment and available support systems. The current findings are consistent with those reported by Brehaut et al., Ones et al., Davis et al., and Okurowska-Zawada et al., who all found that parents of children with cerebral palsy experience increased stress and a lower quality of life. The current study builds on these findings by showing that physiotherapy intervention improves parental quality of life across multiple WHOQOL-BREF domains, particularly the physical and psychological domains. Overall, the findings suggest that physiotherapy intervention benefits both children with cerebral palsy and their caregivers by improving physical and psychological well-being. However, additional psychosocial support and comprehensive family-centered rehabilitation programmes are still required to improve social participation and the overall quality of life for parents caring for children with cerebral palsy. The findings of this study should be interpreted with caution because the comparative cross-sectional design and convenience sampling do not permit causal inferences. The findings may be generalisable to parents of children with cerebral palsy attending similar physiotherapy and rehabilitation centres; however, they may not be applicable to all populations or healthcare settings.

Conclusion:

The current study emphasizes the important connection between parents' quality of life and physiotherapy interventions for children with cerebral palsy. Parents frequently face significant physical, emotional, and social challenges when raising a child with cerebral palsy. According to the results, parents may have better quality of life in a number of areas, such as physical health, psychological well-being, social relationships, and environmental satisfaction, when their children receive regular physiotherapy intervention. In addition to supporting the child's mobility, functional independence, and participation in everyday activities, physiotherapy interventions may also associated with a lower caregiving burden among parents. Better functional outcomes for children may be associated with higher caregivers self-esteem, better coping ability, and lessen the stress associated with their daily caregiving duties. Additionally, parents may receive education, direction, and emotional support from physiotherapists and rehabilitation specialists on a regular basis, which may contribute to better general wellbeing. On the other hand, parents of children who do not receive physiotherapy services may find it more difficult to manage their child's condition because there is a lack of structured rehabilitation

strategies and professional support. As a result, the study highlights the value of easily accessible physiotherapy services and the necessity of a family-centred rehabilitation strategy in the treatment of cerebral palsy. The findings support the importance of accessible physiotherapy services and family-centred rehabilitation for children with cerebral palsy and their families.

Limitations

- The study used convenience sampling, which may limit the generalizability of the results.
- The cross-sectional design does not allow determination of causal relationships
- Data were collected using self-reported questionnaires, which may be influenced by response bias.
- The study was carried out in a specific geographic area and may not represent all parents of children with cerebral palsy.

Suggestions for Future Research and Practice

- longitudinal research to look at changes in parents' quality of life over time.
- Research involving larger and more diverse populations.
- An analysis of the effects of particular physiotherapy programmes on the well-being of caregivers.
- Research, which includes psychological support interventions for parents of children with cerebral palsy.

Acknowledgement

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REFERENCES:

1. Okurowska-Zawada B, Kułak W, Wojtkowski J, Sienkiewicz D, Paszko- Patej G. Quality of life of parents of children with cerebral palsy. Prog Health Sci. 2011 Jun 1;1(1):116-23
2. Pousada M, Guillamón N, Hernández-Encuentra E, Muñoz E, Redolar D, Boixadós M, Gómez-Zúñiga B. Impact of caring for a child with cerebral palsy on the quality of life of parents: a systematic review of the literature. Journal of Developmental and Physical Disabilities. 2013 Oct;25:545-77.
3. Davis E, Shelly A, Waters E, Boyd R, Cook K, Davern M. The impact of caring for a child with cerebral palsy: quality of life for mothers and fathers. Child: care, health and development. 2010 Jan;36(1):63-73.
4. Guillamón N, Nieto R, Pousada M, Redolar D, Muñoz E, Hernández E, Boixadós M, Gómez-Zúñiga B. Quality of life and mental health among parents of children with cerebral palsy: The influence of self-efficacy and coping strategies. Journal of clinical nursing. 2013 Jun;22(11-12):1579-90
5. John A. Stress among mothers of children with intellectual disabilities in urban India: role of gender and maternal coping. Journal of Applied Research in Intellectual Disabilities. 2012 Jul;25(4):372-82.
6. Eker L, Tüzün EH. An evaluation of quality of life of mothers of children with cerebral palsy. Disability and rehabilitation. 2004 Jan 1;26(23):1354-9.

7. Ones K, Yilmaz E, Cetinkaya B, Caglar N. Assessment of the quality of life of mothers of children with cerebral palsy (primary caregivers). Neurorehabilitation and neural repair. 2005 Sep;19(3):232-7.
8. Sajedi F, Alizad V, Malekkhosravi G, Karimlou M, Vameghi R. Depression in mothers of children with cerebral palsy and its relation to severity and type of cerebral palsy. Acta Med Iran. 2010 Jul-Aug; 48(4):250-4
9. Brehaut JC, Kohen DE, Raina P, Walter SD, Russell DJ, Swinton M, O'Donnell M, Rosenbaum P. The health of primary caregivers of children with cerebral palsy: how does it compare with that of other Canadian caregivers?. Pediatrics. 2004 Aug 1;114(2):e182- 91.
10. Cheshire A, Barlow JH, Powell LA. The psychosocial well-being of parents of children with cerebral palsy: a comparison study. Disability and rehabilitation. 2010 Jan 1;32(20):1673-7.
11. Saka MJ, Odunewu MA, Saka AO, Akinwale SG, Anjorin OU. Quality of life of children with cerebral palsy: Accumulative effect of physiotherapy intervention in North central andSouthwest Nigeria. African Journal of Physiotherapy and Rehabilitation Sciences. 2017;9(1-2):27-33.