SELF-ESTEEM, AUTOMATIC THOUGHTS AND QUALITY OF LIFE AMONG SIBLINGS OF INDIVIDUALS WITH CEREBRAL PALSY

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Abstract. This paper examines the associations between self-esteem, automatic thoughts, and quality of life among siblings of individuals with Cerebral Palsy, addressing the limited scholarly attention given to their psychosocial challenges. A systematic literature review was conducted, encompassing studies published between 2020 and 2024 from Scopus, ScienceDirect, Emerald Insight, and Google Scholar. Twelve eligible full-text articles were analyzed across three central themes: factors influencing the mental health of siblings and caregivers of individuals with Cerebral Palsy or other developmental disabilities; mental health outcomes within these populations; and determinants of adolescent mental health, with a focus on siblings aged 15 years and above. Findings highlight a strong link between mental health and quality of life among caregivers, with mothers particularly vulnerable. Other significant factors include stigmatization, financial burdens, and social withdrawal, all of which exacerbate psychological distress. The review suggests that parent-child interaction could serve as a moderating variable in future research due to its potential influence on mental health outcomes. Overall, this systematic literature provides critical insights into the complex interrelations among self-esteem, cognitive patterns, and quality of life in siblings of individuals with Cerebral Palsy, contributing to a more nuanced understanding of their mental health needs and informing targeted support interventions.
Keywords: *quality of life, mental health, parental interaction, self-esteem, automatic thought*

Introduction

Siblings of individuals with Cerebral Palsy (CP) play a crucial role in their lives, often offering both emotional and practical support to the individual with CP as well as to their parents. Despite this significant involvement, the challenges faced by these siblings in managing their relationship with a sibling affected by CP remain underexplored in the existing literature. These challenges may have implications for the siblings' overall quality of life. Previous research has indicated that the psychological adjustment of CP siblings is associated with parenting styles and the emotional support received through meaningful relationships, both of which contribute to their psychological well-being (Chong and Yeo, 2018; Umberson and Karas Montez, 2010). These findings suggest that parenting approaches may significantly influence the quality of life of CP siblings, either positively or negatively. Nonetheless, research specifically focuses on the experiences and psychological outcomes of siblings of individuals with CP remains limited and under-documented. Existing literature identifies siblings of children with developmental disabilities as a particularly vulnerable population (Marquis et al., 2019). These siblings have been shown to face a significantly higher risk of depression and other mental health disorders compared to siblings of children without developmental disabilities (Marquis et al., 2019). Furthermore, the International Classification of Functioning, Disability and Health (ICF) asserts that an individual's quality of life can be affected by the presence of disability within their close social

environment (WHO, 2012). This suggests that the mental health and quality of life of siblings of individuals with disabilities may be adversely impacted. Considering this, the present study aims to investigate how specific psychological factors such as self-esteem and automatic thoughts contribute to the quality of life among siblings of individuals with Cerebral Palsy, and aim to examine the relationship between self-esteem, automatic thoughts, and quality of life among siblings of individuals with Cerebral Palsy (CP) in Malaysia.

As noted by Hards et al. (2024), understanding the development of self-concept and its relationship with psychological well-being across the lifespan is a critical area of clinical research. Given the established link between quality of life and mental health (Bastaminia et al., 2016), further examination of the lived experiences of CP siblings is warranted. Additionally, prior studies have emphasized the need for targeted interventions to mitigate the mental health burden faced by this group (Rahman et al., 2020). In addition, the study will also assess the levels of automatic thoughts and self-esteem among siblings of individuals with Cerebral Palsy (CP) in Malaysia; and explore how the developmental experiences of siblings of individuals with CP are associated with their quality of life and mental health during adolescence and into adulthood. And specifically investigate the potential moderating roles of self-esteem and automatic thoughts in alleviating mental health challenges faced by these siblings.

Literature review

Relationship between quality of life of cerebral palsy with self esteem

A study conducted by Howe et al. (1999) identified a significant relationship between parent–child interactions and attachment patterns. According to their findings, individuals with a secure attachment pattern developed since childhood tend to possess positive self-characteristics, including self-love, efficacy, autonomy, and competence. These individuals are also more capable of offering others emotional availability, effectiveness, autonomy, and support. In contrast, individuals with an avoidant attachment pattern often perceive themselves as unloved yet self-reliant, and they are more likely to display rejection and intrusive behaviors toward others. Those with an ambivalent attachment pattern typically view themselves as having low self-worth, being ineffective and dependent; their interactions with others are often characterized by neglect, insensitivity, unpredictability, and unreliability. Meanwhile, individuals with a disorganized attachment pattern tend to feel confused and hold negative self-views, often coming across as frightening or emotionally unavailable in their relationships. Consequently, individuals with a secure attachment style from infancy generally exhibit higher self-confidence compared to those with avoidant, ambivalent, or disorganized attachment patterns. Bronfenbrenner emphasized that low self-esteem can significantly diminish an individual's sense of self-worth, and individuals with low self-esteem are at greater risk of experiencing issues related to their overall quality of life. Furthermore, Keshavarz and Baharudin (2012) assert that responsive and authoritative parenting styles are associated with the development of an internal locus of control and high self-efficacy in children. In contrast, parenting that is disapproving, unresponsive, or disengaged may contribute to an external locus of control and diminished self-efficacy. Additionally, Masud et al. (2016) highlights that the development of self-efficacy beliefs enhances an individual’s confidence, thereby improving task focus. Notably, the term "confidence" as used by Masud et al. (2016) aligns with the concept of self-esteem.

Consequently, parenting practices can significantly influence an individual's level of self-esteem.

Relationship between quality of life of cerebral palsy with automic thought

According to Beck (1976), a negative view of oneself constitutes one component of the cognitive triad, a core element of his cognitive theory of depression. The cognitive triad comprises three interconnected components: a negative view of the self, a negative view of the world, and a negative view of the future. The persistence of this negative triad is attributed to the presence of negative self-schemas and cognitive biases within the individual. Negative self-schemas are formed through adverse experiences, often originating in childhood. In addition, cognitive biases arising from cognitive distortions reinforce and sustain maladaptive thought patterns, leading individuals to consistently hold negative beliefs about themselves in relation to the world (Beck, 1976). Cognitive biases, as outlined by Beck (1976), include two key distortions: overgeneralization and catastrophizing. Overgeneralization refers to the tendency of individuals with depression to draw broad and often inaccurate conclusions based on a single negative event. For instance, a student who fails one subject may conclude, "I failed this subject, so I will fail the entire course; there's no point in studying if I'm going to fail anyway." Catastrophizing, on the other hand, involves exaggerating the significance of a minor setback and perceiving it as a complete disaster. An example might be, "I failed this subject, which means I will fail the course, never go to university, and never get a good job" (Beck, 1976). These cognitive distortions reinforce and perpetuate the negative thinking patterns characteristic of depression. Furthermore, Monroe and Simons (1991) emphasize that negative perceptions of self, others, and the world are core symptoms of depression. These negative automatic thoughts, particularly those involving a negative view of the self may originate from early childhood experiences and become more pronounced over time. As these maladaptive thought patterns persist into adulthood, they can contribute significantly to the development of mental health issues and negatively impact overall quality of life.

Materials and Methods

This study was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines as outlined by Moher et al. (2015). The PRISMA framework was utilized for data identification, screening, and eligibility assessment. The content of the selected studies was analyzed through thematic (employing themes, categories, and codes) and descriptive reviews. Subsequently, the results of the systematic literature review (SLR) were narratively synthesized and presented in both tabular and graphical formats. Thematic analysis, descriptive review, and the development of tables and figures were facilitated using Mendeley Desktop version 1.19.8.

Search strategy

Four electronic databases were systematically searched in August 2024, with an update conducted in September 2024. The databases included Scopus, ScienceDirect, Emerald Insight, and Google Scholar. An advanced search strategy was employed using MeSH terms, specifically: ("cerebral palsy" or "cerebral paralysis") and (siblings or

sister or brother) and (self-esteem OR self-confidence) and (automatic) and (thought) and (parent-child) and (interaction) and (quality) and (of) and (life). When necessary, search terms and MeSH terms were refined and combined using appropriate operators, including truncation, Boolean operators, parentheses, wildcards, and quotation marks. The various stages of the current systematic literature review are depicted in the PRISMA flow diagram presented in *Figure 1*.

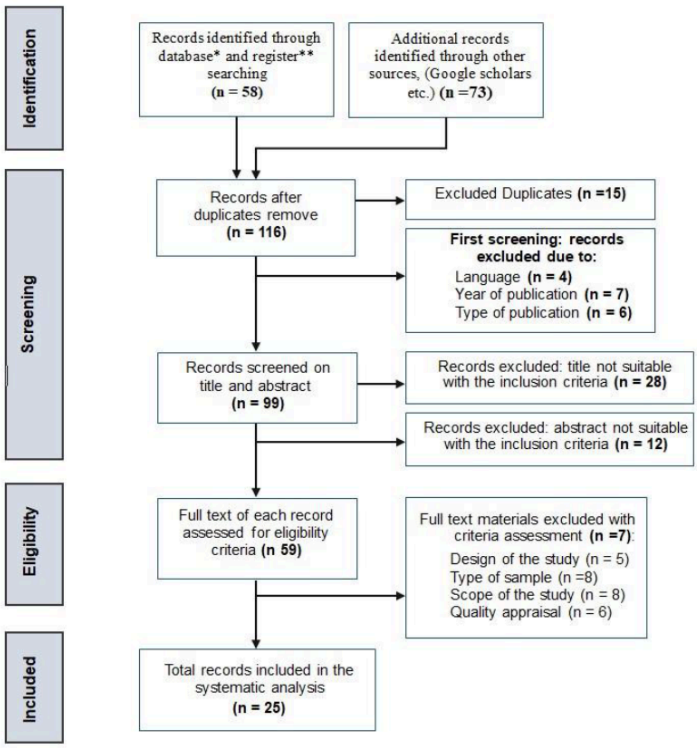

Figure 1. *PRISMA flow diagram for the selected.*

Inclusion and exclusion criteria

The inclusion and exclusion criteria for this systematic literature review (SLR) were defined as follows. First, only peer-reviewed and indexed journal articles were included to ensure the quality of the selected materials, while books, book chapters, reports, and non-indexed publications were excluded. Secondly, only studies employing empirical methodologies quantitative, qualitative, or mixed methods were considered. Thirdly, studies were required to present findings on the moderating role of parent-child interaction in the relationship between self-esteem, automatic thoughts, and quality of life among siblings of individuals with cerebral palsy (CP), aligning with the research questions of this review; studies lacking such findings were excluded. Fourth, the

participant criteria included siblings, caregivers, or parents of family members with CP or other developmental disabilities, typically aged 15 years and above. Given the limited number of studies focusing exclusively on CP, research involving families of individuals with developmental disabilities more broadly was also included. Lastly, only studies published in English within the past five years were considered. These criteria were systematically applied during the screening and identification phases using Mendeley Desktop.

Results and Discussion

A total of 2,219 journal articles were initially identified through the Electronic Management Research Library Database of Universiti Putra Malaysia (UPM). Following the removal of duplicate records and the initial screening process, 310 articles remained. Further screening based on titles and abstracts, which were assessed for relevance to the inclusion criteria, reduced the number to 56 articles. Ultimately, 44 articles were excluded due to inappropriate study design (n=3), unsuitable sample type (n=13), lack of alignment with the study scope (n=17), and inadequate quality appraisal (n=11). Consequently, 12 articles were included in the final systematic literature review (*Table 1*). The selection process is illustrated in *Figure 2* via a PRISMA flow diagram. The findings from these studies were synthesized and analyzed according to three overarching themes.

***Table 1**. Metrix summary of selected articles.*

Source	Country	Titles	Study objectives	Methods	Sample	Findings
Sommantico et al. (2020)	Italy	Adult siblings of people with and without intellectual and developmental disabilities: Sibling relationship attitudes and psychosocial outcomes	The aim of the study was to: (a) assess sibling relationship attitudes in an IDD-sibs group, compared to a TD-sibs group, by hypothesizing that TD-sibs report more positive sibling relationship attitudes (Hypothesis 1). (b) assess the presence of an increased risk for anxious or depressive problems, as well as for life satisfaction, in the same two groups, by hypothesizing that IDD-sibs report higher levels of depression and anxiety, as well as lower levels of life satisfaction than TD-sibs (Hypothesis 2). (c) examine whether sibling relationship attitudes influence anxiety, depression, and life satisfaction levels, by hypothesizing that more positive sibling relationship attitudes predict lower levels of depression and anxiety, as well as higher levels of life satisfaction (Hypothesis 3). (d) Examine possible indirect effects between group membership (IDD-sibs vs. TD-sibs) and IDD-sibs' psychosocial outcomes through sibling relationship attitudes. (e) evaluate the possible role of socio-demographic variables (e.g., age, gender, birth order, sibling's age and gender, number of siblings, level of education, and economic condition).	Quantitative (Online survey)	Over age 18 years old siblings. (n=273)	The finding shown that, Positive sibling relationship attitudes could give an impact towards levels of depression and anxiety, and it can relate with the levels of life satisfaction of the person. The higher the level of positive sibling relationship attitudes the lower the level of depression and anxiety, and it could increase the levels of life satisfaction in the person. However, in adult siblings of people with intellectual and developmental disabilities shown less positive sibling relationship attitudes thus they had high levels of depression and anxiety, and low levels of life satisfaction.
Tekola et al. (2020)	Ethiopia	Perceptions and experiences of stigma among parents of children with developmental disorders in Ethiopia: A qualitative study.	The aim of our study was to explore perceptions and experiences of stigma among parents of children with Developmental Disorder (DD) in Ethiopia and examine the contributing and protective factors for internalised stigma based on the perspectives of the parents themselves.	Qualitative	Parents of children with developmental disorders (DD) (n=18) Mother = 14 Father =4	The study shown, Parents of children with Developmental Disorder (DD) in Ethiopia do perceive and experienced various forms of stigma from their family and the public. They discussed the negative consequences of stigma on the lives of their child with DD, siblings and themselves. Apart from that, not all the parents internalised or absorb the stigma that was directed to them. It is because some of them perceived family support and acceptance and increased awareness about Developmental Disorder (DD) helped. However, lack of social support and acceptance from their surrounding made some parents to internalised or absorb stigma.
Dieleman et al. (2020)	Belgium, United State of America	Daily parenting of children with cerebral palsy: The role of daily child behaviour,	The purpose of this study was to advance the current understanding of the daily dynamics that are involved in raising a child with Cerebral Palsy (CP).	Qualitative	parents of children with Cerebral Palsy (CP). (n=58)	The study highlights the relationship between daily fluctuations in both child behaviour and parents' own psychological needs and its were found to be associated with this daily variability in parenting. These findings point out towards

		parents' daily psychological needs, and mindful parenting.				the changeability of parenting behaviour among parents of a child with Cerebral palsy (CP) from day to day and suggest that interventions targeting parenting behaviour in the context of CP will be most effective when taking into account both the parents' and the child's functioning.
Arslan and Genç (2022)	Turkey	Psychological maltreatment and college student mental wellbeing: A unit and multi-dimensional effect of positive perception	The purpose of this study is to investigate whether positive perception mediated and buffered the effect of psychological maltreatment on mental wellbeing among college young adults.	Quantitative (Online survey)	Adolescent (18 - 29 years old) (n= 421)	psychological maltreatment exposure during childhood causes adverse impact. This study find psychological maltreatment are related with positive perception and mental wellbeing. Positive perception also acts as mediated the adverse impact of psychological maltreatment on young adults' mental wellbeing.
Bunning et al. (2022)	Kenya	Empowering caregivers of children with learning and developmental disabilities: from situation analysis to community-based inclusive development in Kilifi, Kenya	There is an impact on caregivers include fatigue, distress and isolation. The purpose of this paper is to report on a programme (2008-2021) that was set up in Kilifi Country, Kenya to investigate and address these difficulties	Mixed method	Parents or caregiver of children with learning and developmental disabilities. (n=254)	The augmentative and alternative communication (AAC) methods intervention could improve caregiver (caregiver of children with learning and developmental disabilities) wellbeing and shown positive changes to caregiver perceptions of the child's communication and some expansion to the child' social activities.
Moriwaki et al. (2022)	Japan	Impact of social support for mothers as caregivers of cerebral palsy children in Japan	This study aims to (1) clarify how cerebral palsy in children affects caregiving burden of the mother, and (2) identify the social supports that can effectively reduce that burden.	Quantitative	A mother of Cerebral Palsy (CP) children (n=1,190)	The study shown the supports that had been provided, such as home care and short stays, had given a significant impact to mother on reducing the sense of burden. Apart from that, child's condition also gives the greatest impact on the mother's sense of caregiving burden. Mothers with children who can move and have an intellectual disability felt more burden compared with mothers of bedridden children.
Dinkelbach et al. (2023)	German	Psychosocial Well-Being of Siblings of Paediatric Patients in Palliative Home Care.	To identify the level of Psychosocial Well-Being of Siblings of Paediatric Patients in Palliative Home Care	Quantitative (Online survey)	7-18 Years old siblings. (n=44) Female, n=28 Male, n=16	The siblings of Children, who receiving paediatric palliative care (PPC) at home care had a risk to have low quality of life.
Zaidman-Zait et al. (2023)	United State of	Health-related quality of life	their mothers' coping resources (i.e., social support and family-centered care), and maternal health-related quality	Quantitative	mothers of children with	The study finds the levels of family functioning and Health Related Quality of Life (HRQoL)

	America & Canada	among mothers of children with cochlear implants with and without developmental disabilities.	of life (HRQoL).		Cochlear implants (CIs) (n=100)	across all dimensions are low among Mothers of deaf children with Cochlear implants (CIs) and Developmental Disability (DD) compared to Mothers of deaf children with Cochlear implants (CIs) without Developmental Disability (DD). Apart from that social support do give significantly positively related to Health-related quality of life (HRQoL) only among mothers of children in the CI-DD group, indicating the protective role of social support.
Mussatto et al. (2023)	United State of America	The Relationship of Family Factors to Psychosocial Outcomes in Children with Hypoplastic Left Heart Syndrome at 6 Years of Age	The objective of this study was to describe the relationships between family factors and outcomes for children with hypoplastic left heart syndrome (HLHS).	Quantitative	parents of children with hypoplastic left heart syndrome (HLHS). (n=186) Mother, n=115 Fathers, n=71	The study shown Parents of children with hypoplastic left heart syndrome (HLHS) had worse level of anxiety, Quality Of life (QOL) and family resources than general population. There is no difference between mothers and fathers.
Folwarski et al. (2024)	Poland	Quality of life of caregivers of patients on home enteral nutrition	This study aimed to identify potentially modifiable factors influencing the Quality of Life (QoL) of Caregivers (CGs) of Home enteral nutrition (HEN) patients.	Quantitative	Caregivers (CGs) of Home enteral nutrition (HEN) patients. Over 18 years old. (n=90)	Caregivers (CGs) of Home enteral nutrition (HEN) patients face a challenge impacting their Quality of Life (QoL), especially about financial, stress and depression. The Caregivers (CGs) well-being is not easy to improve through comprehensive support systems subsequently, patient care outcomes.
Domaradzki and Walkowiak (2024)	Poland	Evaluating the challenges and needs of parents caring for children with Williams syndrome: A preliminary study from Poland.	To focused on the problems and needs of family caregivers of children with Williams syndrome, and parental experiences and perceptions of the impact of the role of caregiving on their quality of life	Quantitative	family caregivers of children with Williams syndrome. (n=32) Mother, n=31 Father, n=1	This research reveals the challenges that had been facing by Parents of children with William Syndrome (WS) its give serious affects every aspect of parents' lives, including their mental health, daily lives, family, their professional and social lives.
Sarman et al. (2024)	Turkey	Anxiety, depression, and support needs of the mothers of children with cerebral palsy and determining their opinions: Mixed methods stud.	This study aimed to determine the level of anxiety, depression, support needs and opinions of mothers of children with cerebral palsy.	Mixed method	mothers of children with cerebral palsy. (n=126)	The study reveals, a mother of children with cerebral palsy (CP) had experienced of stigmatization and withdrawal from social activities their children's illness. Apart from that, depression and trait anxiety were linked to greater maternal support needs.

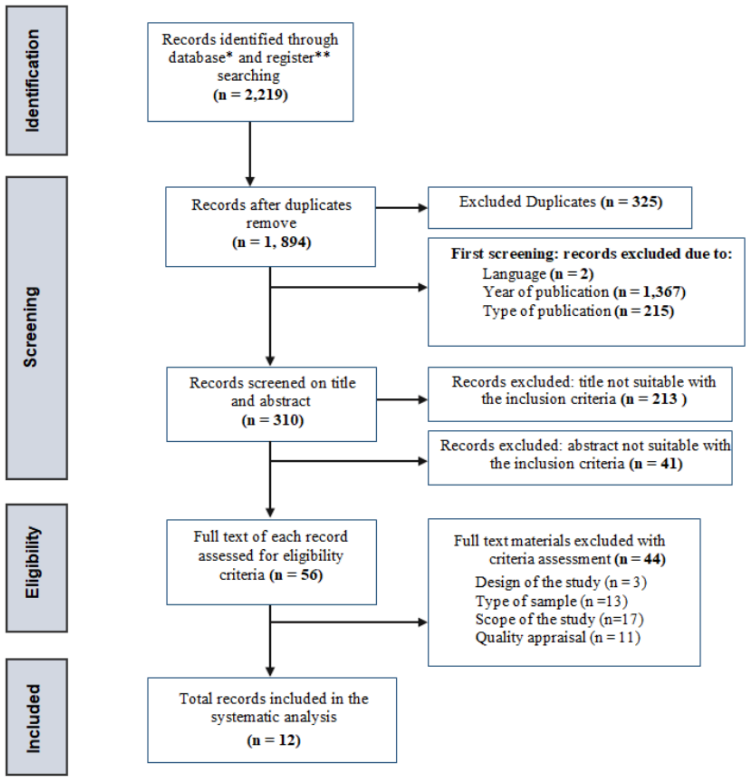

Figure 2. *PRISMA flow diagram for the selected.*

Theme 1: Psychological well-being and perceptions

Arslan and Genç (2022) found that psychological maltreatment experienced during childhood adversely affects emotional, psychological, and social well-being. Their study, which included 421 young adults (65% female), demonstrated that positive self-perception mediates these negative effects and serves as a coping mechanism, ultimately supporting mental health. Sommantico et al. (2020) reported that positive sibling relationship attitudes are inversely associated with depression and anxiety and positively associated with life satisfaction. Adult siblings of individuals with intellectual and developmental disabilities exhibited less positive relationship attitudes, contributing to higher levels of depression and anxiety and lower life satisfaction. This underscores the importance of nurturing positive sibling relationships to promote mental health, including among siblings of individuals with cerebral palsy (CP).

Theme 2: Quality of life and caregiving challenges

Dinkelbach et al. (2023) found that siblings of children receiving pediatric palliative care at home had lower quality of life, with significant reductions in physical and psychological well-being and self-esteem (N=44; 28 females, 16 males). Folwarski et al. (2024) studied 90 caregivers of patients receiving home enteral nutrition and found that 57% experienced depression (32.6% mild, 15.7% moderate, 8.9% severe). Quality of life was significantly compromised in caregivers with depression and was closely related to financial satisfaction, stress, and poor sleep quality. Bunning et al. (2022) investigated the impact of augmentative and alternative communication (AAC) interventions among 254 parents of children with learning and developmental disabilities in Kenya. The intervention improved caregiver perceptions of their children's communication skills and enhanced social activities, helping alleviate psychological distress and feelings of isolation. Tekola et al. (2020) examined stigma experienced by 18 Ethiopian parents of children with developmental disorders. They reported multiple forms of stigma, including public, courtesy, and affiliate stigma. Factors such as perceived family support and increased awareness mitigated internalization of stigma.

Theme 3: Family support and maternal well-being

Zaidman-Zait et al. (2023) assessed 100 mothers of deaf children with cochlear implants (54 in the group with developmental disabilities and 46 without). Mothers of children with developmental disabilities had lower health-related quality of life (HRQoL), but social support was positively associated with HRQoL in this group. Domaradzki and Walkowiak (2024) highlighted the multifaceted challenges faced by parents of children with Williams syndrome (N=32; 31 mothers, 1 father), affecting their mental health, social lives, and employment status. A significant proportion (71.9%) lacked external support, with many resigning from jobs to provide full-time care. Mussatto et al. (2023) found that 186 parents of children with hypoplastic left heart syndrome (115 mothers, 71 fathers) in the USA reported higher anxiety levels, lower quality of life, and fewer family resources compared to the general population, with no differences observed between mothers and fathers. Sarman et al. (2024) demonstrated that mothers of children with CP experienced stigma, social withdrawal, and higher needs for support, with increased depression and anxiety levels associated with more severe child disability and older maternal age.

Moriwaki et al. (2022), in a study of 1,190 mothers of children with CP, revealed that family support, including from siblings, significantly alleviated the mothers' caregiving burden. The presence of siblings providing support was linked to the lower perceived caregiving burden. Dieleman et al. (2020), through a diary study involving 58 parents of children with CP, highlighted daily variability in parenting behaviors linked to fluctuations in both child behavior and parental psychological needs. A mindful approach to parent–child interactions was suggested to improve constructive parenting and address parents' psychological needs. Overall, these findings underscore the profound impact of parent-child and sibling relationships on mental health, well-being, and quality of life in families of individuals with cerebral palsy and other developmental disabilities. The studies consistently suggest that supportive family dynamics, positive self-perception, and adequate social support can mitigate negative psychological outcomes. It is thus recommended that future research explicitly includes parent-child

interaction as a moderating variable, as it represents a key component of social and family support systems critical for enhancing self-esteem and mental health outcomes.

Conclusion

Based on the analysis and synthesis of the selected articles, it is evident that the mental health of caregivers, including mothers, siblings, and other family members of children with developmental disabilities can be significantly affected. Various strategies have been identified to support and improve caregivers' mental health, such as fostering positive sibling relationship attitudes, enhancing social and family support, promoting self-esteem, and encouraging the internalization of positive self-perceptions. Moreover, caregivers' mental health is closely linked to their overall quality of life, as the strong interconnection between these two dimensions has been noted. Among caregivers, mothers of children with cerebral palsy (CP) appear to be the most profoundly affected, particularly regarding their mental health status. Multiple factors can further influence the mental health and quality of life of caregivers. These include experiences of stigmatization, financial challenges, social withdrawal resulting from their child's illness, as well as the child's attitudes and behaviors. Stigmatization may lead to feelings of isolation and exacerbate psychological distress, while financial difficulties can intensify stress and diminish life satisfaction. Withdrawal from social activities, often driven by caregiving responsibilities and societal judgment, further compounds these negative effects. Given these findings, it is suggested that parent–child interaction may play a critical role in shaping caregivers' mental health outcomes. Exploring parent–child interaction as a moderating variable in future research could offer valuable insights into mechanisms that enhance resilience and psychological well-being among caregivers. Such studies would be instrumental in developing targeted interventions aimed at improving the mental health and quality of life of families caring for children with developmental disabilities.

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Conflict of interest

The authors hereby declare that there are no conflicts of interest associated with this publication. No financial, professional, or personal relationships have influenced or could be perceived to have influenced the content, interpretation, or presentation of the findings reported in this study.

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