



EMOTIONAL-BEHAVIORAL DISORDERS IN HEALTHY SIBLINGS OF CHILDREN WITH NEURODEVELOPMENTAL DISORDERS AND ITS IMPACT ON FAMILY-SPECIAL EDUCATION CENTERS, LAHORE, PAKISTAN

Arooj Fatima^{1*}, Dr. Samina Kausar², Tanzeel Ul Rehman³, Rashida Kanwal⁴, Shazia Saleem⁵, Noor Ul Haq⁶

^{1*}MS Nursing Scholar, University of Health Sciences, Lahore Pakistan,
Email: fatimaarooj223@gmail.com

²Professor & Head of Nursing Department, University of Health Sciences, Lahore Pakistan,
Email: saminamanzoor31@yahoo.com

³Assistant Professor | Institute of Nursing, University of Health Sciences, Lahore Pakistan,
Email: mr.tanxeel@gmail.com

⁴MS Nursing Scholar, University of Health Sciences, Lahore Pakistan,
Email: kanwal188@yahoo.com

⁵MS Nursing Scholar, University of Health Sciences, Lahore Pakistan,
Email: shazmin326@gmail.com

⁶MS Nursing Scholar, University of Health Sciences, Lahore Pakistan,
Email: noorulhaq143@gmail.com

Corresponding Author: Arooj Fatima

MS Nursing Scholar, University of Health Sciences, Lahore Pakistan,
Email: fatimaarooj223@gmail.com

Abstract

Introduction: Globally, the increasing rates of childhood mental health disorders have raised serious concerns. The typically developing siblings of children with neurodevelopmental disorders are vulnerable to behavioral problems as they grow up in a stressful environment. The uneven cognitive development and maladaptive behavior of children with neurodevelopmental disorders, place significant stress not only on parents but also on the healthy siblings who are growing up alongside them in a stressful environment.

Purpose of study: The objectives of the study were to assess the emotional and behavioral disorder in healthy siblings of children with neurodevelopmental disorders (ND) and to examine their correlation with family life.

Research methodology: A correlational study involving 204 participants utilized a non-probability purposive sampling technique. Data were collected from parents, who had both children with neurodevelopmental disorders and healthy children, through a structured questionnaire, at government special education centers of Lahore, Pakistan.

Results: The results indicated that healthy siblings of children with neurodevelopmental disorders had emotional and behavioral problems. Statistically significant positive correlation was also found between healthy siblings' emotional and behavioral disorders and their family life.

Conclusion: The majority of healthy siblings living with children having ND indicating significant level of problems in their emotions and behaviors. Clinical and policy measures recommended to

ensure the well-being of healthy siblings living with children having neurodevelopmental disorders, mainly through appropriate coping training of healthy sibling.

Key words: Neurodevelopmental Disorder, Healthy Siblings, Emotional Disorder, Behavioral Disorder, impact on family life.

INTRODUCTION

The rate of serious mental health problems in developing countries is 1.5%. Mental health disorders often seriously impair individual and their family life worldwide (Piao et al., 2022). Mental disorders rank among the most substantial causes of death and the global burden of disease. Efforts to quantify and address mental illness underscore the dire need to better consider the role of mental disorders in preventable mortality (Plana-Ripoll et al., 2019). Mental health issues impact around 15% of school-age children, with a higher occurrence observed among those experiencing learning-related difficulties compared to the typically developing children of same age. However, less than thirty percent of children grappling with learning challenges receive the requisite mental health assistance. (Vizard et al., 2020).

Neurodevelopmental disorders (ND) refer to conditions that affect the neurological system and brain, resulting in disabilities. According to DSM-V, the classification of mental and behavior disorders, Attention-Deficit Hyperactivity Disorder (ADHD), autism spectrum disorder, learning disabilities, intellectual disability (mental retardation), and impairments in vision and hearing are included in ND. Children diagnosed with neurodevelopmental disorders may encounter challenges related to language and speech, motor skills, behavior, memory, learning, or other neurological functions (Sarmiento and Lau, 2020). Healthy siblings of children with ND may exhibit emotional and behavioral disorders such as disrupting behavior, depression, anxiety, and pervasive developmental disorders. Disruptive behavioral issues, such as temper tantrums, attention deficit hyperactivity disorder (ADHD), oppositional defiant disorder (ODD), or conduct disorders, characterize the major behavioral difficulties among preschool and school-age children. These problems frequently correlate with academic, and social performance of these children. (Vasileva et al., 2021).

Family system, urbanization, and poor health contribute to children's behavioral and emotional issues, increasing risk of mental disorders. Rising crime rates and violence contribute to this issue. (Pillay, 2019). Since the Family functions as an emotional unit, a disabled person within the family brings challenging specially for typically developing siblings who are at high risk of developing mental health issues, which is always a cause of difficulties for healthy siblings both in the family and with peers (interpersonal level) and at school (Caliendo et al., 2020).

Raising a neurodevelopmental disorder child is traumatic, causing psychological stress and maladaptive behavior. The severity of the disorder and its cause further exacerbates this distress. (Haque et al., 2022). In the same way the child with the disability, directly as well as indirectly impact on parental and marital function. Significantly more adjustment problems are found in typically developing siblings of disabled children compared with typically developing siblings of children without disability. (Giannotti et al., 2021).

Life limiting conditions of children with ND presented significantly elevated levels of emotional and behavioral challenges, along with diminished quality of life. Various factors such as the broader influence on the family's socio-economic status, duration since diagnosis, and access to hospital care could potentially contribute to the healthy siblings' poorer psychological adaptation (Quatrosi et al., 2023).

There are numerous challenges in the life of parents having children with neurodevelopmental disorders, that place them on risk of physical and psychological stress when caring for their disabled children, and reduce their quality of life which increases burden on families (Islam et al., 2022).

Siblings play a crucial role because they serve as, unofficial teachers, and surrogate parents. The existence of a child with disability in a family is source of ongoing stress for healthy siblings, influencing both positive aspects such as coping mechanism, adjustment in social life, self-sacrifice, flexibility, and acceptance of diverse behavior, and negative aspects like the impact on the psychological well-being of healthy siblings which ultimately result in stress, loneliness, feelings of insecurity, and low self-esteem (Howe et al., 2022).

The healthy siblings living with children having ND are liable to emotional and behavioral difficulties as they nurture in atmosphere of substantial stress. However, the requirements and behavioral challenges faced by these healthy siblings are disregarded. It highlights the necessity of getting the right mental health care, with a family-centered strategy that includes the siblings in therapy and counseling settings, for early detection and managing of these issues. (Ali Nathwani et al., 2022). However, problems of emotions and behavior in childhood, the magnitude and gap of problems challenging. In the context, the recommendations highlight the importance of enhancing mental health services and ensuring accessibility for children who are vulnerable or experiencing mental health issues. (Malik et al., 2019).

The excessive demand, responsibilities and disruptive emotional-behavioral difficulties in healthy sister/brother of children having neurodevelopmental disorders increases the family stress. Further, the chronic nature of disorder and challenges experienced by family of children with disability demand for identification of behavioral problems of healthy siblings at early stage so that these problems can be addressed timely.

Since many of the mental health facilities focus on the problems of children with neurodevelopmental diseases but have limited focus on siblings growing with them, therefore, tailor interventions to address the specific needs of unaffected siblings is important. In the healthcare team, nurses have significant part in assessing emotional and behavioral problems and its effect on family system (personal life, activities, goals and needs).

Nurses collaborate with families of children with neurodevelopmental disorders across different settings, including general pediatric clinics, developmental centers, hospital wards, and schools. Their role includes assisting parents in comprehending and navigating the uneven development of their children, as well as helping them in managing the behaviors of their unaffected children. This contains employing behavioral strategies to address challenging behaviors, emotional distress, discipline issues, and managing behavior in public settings. Ideally, such approaches should be synchronized with the specialized medical and psychological care provided by practitioner nurse.

1.2 Problem statement:

Globally, mental health problems impact approximately 10–20% of children and adolescents. Yet, the rising prevalence of mental health issues in children presents a serious threat to world health. Emotion and behavior issues occur with greater frequency in children between the ages of 5 and 11 compared to younger or older children. One in six children, aged 3–10 years, has been diagnosed with a mental, behavioral, or developmental disorder, representing 17.4% of the total population (Control and Prevention, 2019).

The children's maladaptive conduct, uneven cognitive development, and inadequate social and linguistic skills cause tremendous stress for parents and siblings who grow up in a stressful environment with them. Siblings become exhausted by continuously encountering the subject of disability daily, contributing to a family subjected to continuous stress. It is evident that the research area of siblings' mental health is largely ignored in Pakistan concerning neurodevelopmental

disorders. It is essential to prioritize the mental well-being of unaffected siblings residing with children who have neurodevelopmental disorders, aiming to recognize possible long-term challenges related to personality and character development.

Although they represent a significant cause of health-related disability in this age group and have enduring effects throughout the lifespan, the mental health needs of children without disability living with children having ND, particularly in low and middle-income countries, must be addressed. The prevalence of psychiatric disorders is relatively high and these problems may lead to personality disorders in future which may become source of anxiety and depression in adolescent stage of life and lead to suicidal thoughts (Yousafzai et al., 2020). Very limited literature is available in Pakistan on this topic. Hence, there is need to conduct more studies to research and embrace the magnitude of emotional and behavioral issues among siblings without disabilities living with children having ND in order to facilitate early detection of the problem. Therefore, this research was carried out to assess emotional-behavioral disorders of healthy siblings and its correlation with family life.

1.3: Objectives of the study:

1. To assess emotional-behavioral disorders in healthy siblings of children with neurodevelopmental disorders.
2. To examine correlation between emotional-behavioral disorders of healthy siblings of children with neurodevelopmental disorder and their family life.

1.4: Research questions:

1. What are the emotional-behavioral disorders in healthy siblings of children with neurodevelopmental disorders?
2. Is there any correlation between emotional-behavioral disorders of healthy siblings of children with neurodevelopmental disorders and their family life?

1.5: Significance of study:

This study may be served as an initial effort to gathering data that could facilitate addressing the pertinent issue in the future. It aims to pave the basis for designing and implementing psychosocial interventions or preventative programs specifically promoting the well-being of unaffected siblings residing with disabled children. Additionally, this study seeks to provide insights for healthcare policymakers to devise strategies supporting unaffected siblings through primary care and suitable coping programs, thus fostering family-centered care with positive impacts on all family members.

Moreover, the findings of the present study could raise awareness among nurses regarding their role in maintaining and enhancing the mental health of families, by carrying out training and intervening sessions aiming to enhance their psychological wellness and skills in dealing children with emotional and behavioral problems. It will also help to broaden the practice scope of school nurse.

METHODOLOGY

3.1: Study Design:

A correlational design was used to find the correlation between emotional-behavioral issues in unaffected siblings living with children having ND and their family life.

3.2: Study Setting:

This study was conducted at institute of nursing, UHS in collaboration with special education institutes of Lahore.

1. Government Special Education Center Wahgha Town, Lahore
2. Government Special Education Center, Johar Town Lahore
3. Government Special Education Center, Ravi Town, Lahore.
4. Government Special Education Center, Block-B-1, Shalimar Town, Lahore

3.3: Study Population:

The study population was parents of healthy siblings living with children having neurodevelopmental disorder, chosen from government special education centers of Lahore.

3.4: Study Duration:

Study was completed within 6 months after approval of synopsis from ASRB (Advance Studies and Research Board).

3.5: Calculation of sample size:

The provided formula was used to calculate the sample size while preserving a 95% confidence interval and a 5% margin of error.

$$n = \frac{Z^2_{1-\alpha/2} P (1 - P)}{d^2}$$

n = calculated sample size = 204

3.6: Sampling Technique:

Non-probability purposive sampling was employed in this investigation to choose study participants.

3.7: Sample selection:

3.7.1: Inclusion criteria:

Parents having:

- Children of age 4-10 years.
- At least one child diagnosed with neurodevelopmental disorder, according to DSM–V TR criteria (APA, 2005) minimum for the last 6 months.
- At least one healthy child living with sibling having neurodevelopmental disorder.

3.7.2: Exclusion criteria:

Parents having:

- Adopted children.
- Child who has any medical, physical assistance other than neurodevelopmental disorder.
- More than one child with neurodevelopmental disorders

3.8: Data Collection Tool:

It was comprised of three parts: Demographic Profile, Strengths, and Difficulties Questionnaire (SDQ) and Family impact questionnaire (FIQ)

- 1. Demographic Profile:** It consists of demographic questions with respect to age of child, gender of child, parent's educational status, family type, family income and type of neurodevelopmental disorder in child.
- 2. The Strengths and Difficulties Questionnaire (SDQ)** was used to assess psychosocial problems in unaffected siblings living with children having ND. It was developed by Goodman (1967) to identify problems related to psychosocial domain in children aged 4-10 years. It had five dimensions: emotional problems, conduct problem, hyperactivity/inattention problems, relationship with peers and pro sociality. A three-point Likert scale was utilized to gauge the extent to which a particular attribute describes a child's behavior. The scale had rating range from 1(not true) to 2(somewhat true) to 3(certainly true). The difficulty score of SDQ was calculated through mean and SD. The calculated maximum mean score was 75 and minimum mean score was 25 for the whole questionnaire. The scorings for the Strength and difficulty questionnaire, total difficulty scores given below: Normal: M=25-41.6, Border line: M=41.7-58.3, Abnormal: M=58.4-75. This questionnaire was in open access.

3. The family impact questionnaire (FIQ) was used to assess family life. It was developed by Dannenberg in 1993 to assess parents 'perceptions of child behavior and its impact on their families. The scale had rating range from 1(not true), 2(somewhat true) to 3(certainly true). This questionnaire was comprised of four categories: emotional life (Positive and negative feelings toward child), social life, financial life and marital life.

3.9: Data Collection Procedure:

After approval from synopsis review committee, ERB (Ethical review board) and ASRB (Advance Studies Research Board) of university of health sciences, Lahore. Prior to collection of data a written approval is taken from principals of selected government special education centers of Lahore. The parents of children having neurodevelopmental disorders were nominated according to specified criteria of inclusion and exclusion by using purposive sampling technique. The selected parents were contacted personally in the respective special education centers (Parents were asked to randomly select one child from more than one healthy sibling). The aim of the study as well as potential risks and benefits were clearly explained to parents and a written informed consent form given to them. The adopted questionnaires were distributed among the selected participants and guidance were given to participant for proper understanding of questions asked.

3.10: Data Analysis:

The collected data were analyzed through Statistical Package for Social Sciences (SPSS) version 25.0. To outline the findings, quantitative variables such as emotional and behavioral disorders were summarized using mean \pm SD (standard deviation), whereas qualitative variables like age, gender, education, family type, etc., were presented through frequencies, percentages, and graphical representations.

To examine the correlation between emotional and behavioral disorders among siblings without neurodevelopmental disorders living with disabled children and their family dynamics Pearson's correlation analysis was employed.

RESULTS

Section A: presents information on the general characteristics (demographics) of both parents and healthy siblings; age and gender of healthy siblings living with children having neurodevelopmental disorder and family type, education level for parents, income of parents and diseased children of healthy siblings according to neurodevelopmental disorder.

Section B: represents information about disorders of emotions and behaviors in unaffected siblings of children diagnosed with ND. (Emotional problems, conduct problems, hyperactivity and inattention, relationship with peers and pro sociality).

Section C: presents correlation between emotional and behavioral disorders in unaffected siblings living with children having ND and their family life.

4.1: Section-A:

4.1.1: Demographic Profile of the Healthy Siblings

Table 4. 1: Distribution of Healthy Siblings according to Age Groups (n=204)

<u>Child age</u>	<u>Frequency</u>	<u>Percentage %</u>
4-6	80	39.2
7-8	69	33.8
9-10	55	27.0

Table 4.1 shows age distribution of healthy siblings. Out of total, 80 children (39.2%) fall into the 4-6 years of age group, indicating higher percentage of all age groups, while 69 children (33.8%) belong to the age group of 7-8 years and 9-10 years' category encompasses 55 children (27.0%).

Table 4. 2: Distribution of Healthy Siblings according to Gender (n=204)

Gender	Frequency	Percentage %
Male	125	61.3
Female	79	38.7

Table 4.2 represents frequency distribution of gender in this study and shows that out of the total participants, 125(61.3 %) were male, while 79(38.7%) were female, indicating a higher representation of males in the study.

4.1.2: Demographic Profile of the Parents:

Table 4. 3: Distribution of Parents according to their Education Level (n=204)

Education level of parents	Frequency	Percentage %
Illiterate	37	18.1
Primary-middle school	34	16.7
Matric	31	15.2
Graduate/professional degree	76	37.3
Religious school/vocational	26	12.7

Table 4.3 shows the education levels of parents in the study, reveals a diverse spectrum of educational backgrounds within the sample. Notably, a substantial portion of the parents, constituting 37.3%, possessed graduate or professional degrees, highlighting a relatively high level of formal education in the study population. While 18.1% of the parents were illiterate, 16.7% have completed education up to the primary-middle school level, and 15.2% had achieved education up to the Matric level. Additionally, 12.7% of parents have received education in religious schools or vocational training.

Table 4. 4: Distribution of Parents according to their Income (n=204)

Parents income	Frequency	Percentage %
<25000	56	27.4
25000 – 50000	43	21.0
50000-750000	50	24.5
75000-100000	35	17.1
>100000	20	9.8

Table 4.4 provides insights into the financial status diversity within the sample. The majority of parents, constituting 56 (29.9%) fell within the income range of less than 25,000 Rupees, indicating a significant proportion facing economic constraints. While 43 (23.5%) of parents reported incomes between 25,000 and 50,000 Rupees, reflecting a moderate-income bracket. A substantial portion, comprising 50 (27.0%), were within the 50,000 to 75,000 Rupees range, while 35 (19.6%) reported their income between 75,000 and 100,000 Rupees. Minimal portion fell in category >100000 comprises 20 (9.8%), in conclusion it reveals that major portion of our society is facing financial restrictions.

4.2: Section B: Emotional-Behavioral Disorders in Healthy siblings

Table 4. 5: Emotional-Behavioral Disorders in Healthy siblings of Children having Neurodevelopmental Disorders

Category	Frequency	Percent
Normal	23	11.2
Borderline	58	28.4
Abnormal	123	60.2
Total	204	100.0

Table 4.5 shows the analysis of emotional-behavioral disorders in siblings without disability living with children having ND, according to scoring criteria 23 (11.2 %) of the healthy siblings were in normal category, suggesting that a minority of the siblings demonstrated emotional-behavioral scores within the normal range whereas, (58) 28.4 % were in borderline, suggesting some level of concern or potential need for attention. However, majority 123 (60.2 %) were in abnormal category implying a notable prevalence of emotional-behavioral disorders among healthy siblings.

4.4: Section C:

Table 4. 6: Correlation between Emotional-Behavioral Disorders in healthy siblings living with children having ND and Family Life.

		Emotional-Behavioral Disorders	Family Life
Emotional-Behavioral Disorders	Pearson Correlation	1	
Family Life	Pearson Correlation	.804**	1

** . Correlation is significant at the 0.01 level (2-tailed).

The association between emotional and behavioral problems of unaffected siblings living with those siblings having ND and family life is a crucial finding. A correlation coefficient (r) value between emotional-behavioral disorder in healthy siblings living with children having neurodevelopmental disease is 0.804 indicated a strong positive correlation between both variables. The statistical significance of this correlation is indicated by the p value of 0.01. This finding suggested a significant association between emotional and behavioral challenges (as measured using SDQ) and family dynamics (as measured using FIQ) among the unaffected siblings living with children having ND and their family life. This implied that as emotional and behavioral difficulties increase among healthy siblings living with children having neurodevelopmental disorders, there was corresponding increase in the difficulties of their parent's life such as emotional, social, financial and marital.

DISCUSSION

The present study was carried out to assess the emotional-behavioral problems in healthy siblings living with children having ND and its correlation with family life. This chapter consists of three sections i.e., demographics, emotional-behavioral disorders in unaffected siblings living with those siblings having ND and their association with family life.

5.1 Section-1 Demographic variables:

In this section facts regarding age and gender of healthy siblings and family type, education level of parents, income of parents and neurodevelopmental disorders in diseased children are discussed.

In this study, the majority of healthy siblings were in age group 4-6 years, which comprising 39.2% of the total 204, it highlighted the significance of understanding early developmental stages. This finding were align with a study, in which out of 174 participants, 117 (67.3%) were in age range 3-9 years that emphasizing the formative nature of cognitive and behavioral processes during the preschool and early school years (Pourbagheri et al., 2018). However, unlike this study, assessment

on the prevalence of problems in emotions and behaviors in school-age children and adolescents indicated notable age-group differences, with older age groups showing higher prevalence (19.0%) in those aged 12–16 compared to older age groups (15.9%) in 4–10 years. (Cui et al., 2021).

In terms of gender distribution of healthy siblings, the findings of this study showed that out of total 204, 125 (61.2%) were male, while 79 (38.7 %) were females. These findings were align with a study that showed a significant male preponderance observed in childhood emotional-behavioral disorders and clinical investigations of ND as compare to females (Posserud et al., 2021). Likewise, a research project carried out in Beijing, China, explored the emotional and behavioral issues among children, their social competence, and the various risk factors across different age groups. This study comprised 51.7% boys and 48.3% girls. (Yang et al., 2019).

Regarding the educational level of parents, 18.1 % were illiterate, 16.7% were primary-middle school, 15.2 % were matric, and 12.7 % religious' school/ vocational and majority 37.3% of the participating parents hold graduate or professional degrees, which highlighted a relatively high level of formal education of parents. The results are in line with a study on the stress level of primary caregivers of children with ND that was carried out in Lahore revealed that a sizable portion of the participants (49.0%) had higher education, such as master's and M.Phil. degrees, while the remaining participants (27.1%) had bachelor's degrees and 24.0% had lower-level qualifications (Aslam et al., 2022). These results are also aligned with study that revealed a broad spectrum of educational attainment, providing valuable attention to children with neurodevelopmental disorders (Davis-Kean et al., 2021). Comparable findings were reported in another study conducted on mechanisms linking parental educational attainment with child having neurodevelopmental disorders documented that 26.9% of the participants had completed lower than junior high school 45.5% had completed senior high school and 27.6% had completed higher than junior college (Torvik et al., 2020).

With regard to income of parents, 27.4 % families had income < 25000, while 45.5 % of the families were earning 25000-75000 per month and 9.8% families had income > 100000. These findings represent economic status of the families having children with ND and showing financial limitations of the families as they had to manage their diseased children along with educational, food and overall well-being of their normal as well as disabled children. These findings were align with a study on effects of socioeconomic status of parents on mental health of children, indicated 25.2 % families reported their income < 30000, while 50.4 % families reported their income 30000-60000 rest of the families 16.7% reported 60000 to 100000, while 8.7 % families reported >100000 (Bruno et al., 2023).

5.2 Section-2 Emotional and behavioral disorders in healthy siblings living with children having neurodevelopmental disorders:

The findings of this study revealed most of the healthy children 125 (60.2%) were in abnormal range of emotional-behavioral disorders, 58 (28.4%) were experience in problems on borderline category and 21 (11.4%) were normal. Similar findings were shown in a cross-sectional study conducted on The occurrence rate of socio-emotional difficulties among children of school age living with siblings diagnosed with ND revealed that out of 292 school children, 27 % were in normal category, 19% were at borderline and 54 % were in abnormal category (Zafar et al., 2019). in contrast a study conducted on strength and difficulties in siblings of children with ND out of the 115 children, 69 (60.0 %) was in normal range, 17 (14.8 %) was in borderline range, and 29 (25.2 %) was in abnormal range according to the SDQ total difficulties scores (Kaiser and Halvorsen, 2022).

5.3: Section-3: Correlation between emotional and behavioral disorders in healthy siblings living with children having ND and family life

Correlation between emotional-behavioral disorders in healthy siblings of children with ND and family life was also assessed. The findings revealed a strong positive relation between variables under study. These findings are suggestive of the fact that if emotional-behavioral difficulties among healthy siblings of diseased children increased corresponding increase in social and financial burden

on family life was observed. The current study's findings are in line with a longitudinal study conducted on children's mental health issues and care utilization in a rural area of the Southeast United States (United States), which found a positive correlation between emotional-behavioral disorders in healthy siblings and their influence on family life (Bitsko et al., 2022). Additionally, the study's findings agreed with a systematic review carried out to find multidimensional impact of severe mental illness on family members found that there is significant association between mental health problems of healthy siblings and their family life (Fekadu et al., 2019). These results are also aligning with a study examining the influence of children's mental health on family dynamics, which concluded that the extent to which a child experiences emotional and behavioral challenges had a broad range effects on parents and family. (Dammeyer et al., 2019). In contrast, a research focusing on behavioral and emotional challenges in unaffected siblings residing with indicated that emotional-behavioral disorders have a reciprocal impact on the overall well-being of the family (Operto et al., 2021).

5.4: Conclusion:

This study provides evidence that healthy sibling's livings with children having neurodevelopmental disorders experience emotional and behavioral disorders and there is strong positive relationship between emotional-behavioral disorders in these healthy siblings and their family life as these disorders cause significant change in family life of parent's likesome parents show overprotective behaviors toward the disabled child and ignore the basic psychological needs of the healthy child. Therefore, the issues that siblings of disabled children deal with have a lasting impact on their personalities. This highlights the necessity of setting up support groups for healthy siblings so that these children can live a positive life and learn from their sibling's disability without fear of negative outcomes for their mental and psychological well-being.

5.5: Implication for future

- Findings of this research lead to the development of interventions aimed at supporting the emotional well-being of healthy siblings by understanding their unique challenges and needs and help in designing counseling programs and support groups.
- Findings from this research help policy maker to organize healthcare and support services for families of children with neurodevelopmental disorders and ensuring comprehensive support networks and resource allocation.
- Research findings help educators to develop strategies to support healthy siblings academically, socially, and emotionally by identifying potential stressors at home and in their personal lives.
- The research findings help in increasing community awareness regarding the obstacles encountered by families or parents of children with neurodevelopmental disorders (ND) which can lead to greater empathy, support, and advocacy efforts for healthy siblings as well as their families.
- This research highlights the importance of school nurse in early assessment and intervention for emotional-behavioral disorders in healthy siblings, conducting screenings, observe behavioral patterns and providing initial support.

5.6: Strength of the study:

- Many studies had been conducted on the problems related to emotions and behaviors of children with neurodevelopmental disorders in Pakistan, hence this was the first study, which has been concentrating on the mental health of healthy siblings living with those children having neurodevelopmental disorders and their correlation with family life which might be helpful in contributing to the literature regarding the association among variables like emotional- behavioral problems in unaffected siblings living with children having ND and their family life.
- The findings of the study have provided sufficient scope to be generalized because data were obtained from four government special education centers of Lahore that covers the larger geographical area.

5.7: Limitations of the study:

- During data collection from parents of healthy siblings living with children having ND, incomplete responses and possibility of recall bias were the limitations of this study.
- The researcher's lack of control over variables can lead to the influence of confounding or extraneous factors on the relationship between the variables under investigation.

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