PARENTS’ KNOWLEDGE AND APPLICATION OF ENVIRONMENTAL INTERVENTIONS FOR ENHANCING COGNITIVE DEVELOPMENT IN EARLY CHILDHOOD: A QUALITATIVE STUDY

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ABSTRACT

Purpose: This research aimed to investigate the knowledge and application of environmental interventions among parents to enhance cognitive development in children with disabilities during early childhood.

Methodology/design/approach: Employing a qualitative approach, the study utilized semi-structured individual interviews to collect data from a sample of eight participant parents. The collected data underwent rigorous analysis, focusing on key themes.

Results and Conclusions: The findings revealed a notable discrepancy in parents’ understanding of environmental interventions, including early intervention and socialization. It also identified that while some parents implemented interventions such as cognitive stimulation and good nutrition, they did so without prior knowledge of their significance. Several factors were found to influence parents’ application of these interventions, including self-development, consultation with specialists, and support groups. Conversely, some parents were aware of the importance of these interventions but faced various challenges, such as familial, child-related, and societal obstacles, which hindered their implementation. Comprehensive family and psychological support should be provided to address these challenges effectively.

Recommendations: The researchers recommend organizing training workshops for parents to enhance their expertise in environmental interventions that promote cognitive development, ultimately facilitating the overall growth and development of children with disabilities.

Keywords: environmental interventions, cognitive development, disabilities, early childhood.

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CONHECIMENTO DOS PAIS E APLICAÇÃO DE INTERVENÇÕES AMBIENTAIS PARA MELHORAR O DESENVOLVIMENTO COGNITIVO NA PRIMEIRA INFÂNCIA: UM ESTUDO QUALITATIVO

RESUMO

Objetivo: Esta investigação teve como objetivo investigar o conhecimento e a aplicação de intervenções ambientais entre pais para melhorar o desenvolvimento cognitivo em crianças com deficiência durante a primeira infância.

Metodologia/design/abordagem: Empregando uma abordagem qualitativa, o estudo utilizou entrevistas individuais semiestruturadas para coletar dados de uma amostra de oito pais participantes. Os dados coletados foram submetidos a uma rigorosa análise, com foco em temas-chave.

Resultados e Conclusões: Os resultados revelaram uma discrepância notável na compreensão dos pais das intervenções ambientais, incluindo intervenção precoce e socialização. Também identificou que, enquanto alguns pais implementaram intervenções como estimulação cognitiva e boa nutrição, eles o fizeram sem conhecimento prévio de seu significado. Vários fatores foram encontrados para influenciar a aplicação dos pais dessas intervenções, incluindo autodesenvolvimento, consulta com especialistas e grupos de apoio. Por outro lado, alguns pais estavam cientes da importância dessas intervenções, mas enfrentaram vários desafios, como obstáculos familiares, relacionados à criança e à sociedade, o que dificultou sua implementação. Deve ser fornecido apoio familiar e psicológico abrangente para enfrentar estes desafios de forma eficaz.

Recomendações: Os pesquisadores recomendam a organização de workshops de capacitação para os pais a fim de aprimorar seus conhecimentos em intervenções ambientais que promovam o desenvolvimento cognitivo, facilitando, em última instância, o crescimento e o desenvolvimento geral das crianças com deficiência.

Palavras-chave: intervenções ambientais, desenvolvimento cognitivo, deficiência, infância.

1 INTRODUCTION

The growing attention towards children with disabilities during early childhood stems from the recognition of the crucial role played by families in facilitating the growth and development of their children with disabilities. These families provide a wide range of support and interventions, as children with disabilities require immediate attention to establish positive interventions and interactions within their families. To ensure that families fulfill their responsibilities, it becomes essential for them to acquire knowledge on meeting their child’s needs, developing specialized skills, and enhancing their effectiveness in caregiving (Khatib, 2018) in addition it plays an essential role in inclusive education (Abdullahi, 2023).

When families know the significance and implementation of interventions, as well as the environmental factors that foster early childhood development, they actively strive to establish responsive interactions with their children with disabilities and those in their
immediate surroundings. This factor assumes great importance in the child's growth and development. A child with disabilities receives considerable attention within the family unit and is provided with a stimulating environment characterized by positive familial interactions and interventions. Such an environment directly influences cognitive and social development, thereby significantly impacting the child's psychological and mental development (Hall, 2016; Mappong, Yusran & Takwin, 2023).

Early childhood is commonly understood as the developmental stage encompassing the period from birth until the age of eight (Alasimi, 2018). Al-Hazmi and Othman (2019) further elaborate on this definition, stating that it encompasses the nursery stage, kindergarten, and the initial grades of primary school. Within the population of children in early childhood, there exist children with disabilities. Disability is characterized by a child experiencing a total or partial permanent impairment in one or more physical, mental, sensory, communicative, or educational domains. Such impairments may necessitate the child's dependence on others for their daily life requirements or require the use of assistive tools, which the child should be trained and prepared to utilize (Ministry of Health, 2021).

The objective of the study conducted by Shah et al. (2015) was to examine the activities and interactions between parents and children during early childhood. The researchers hypothesized that parental participation and interactions with children are influenced by the economic status of the family. Additionally, the study aimed to explore the association between poverty levels and growth delays. The study sample comprised children aged 4 to 36 months, and the researchers employed a descriptive survey method to gather data. The findings of the study indicated that parents with limited income tend to provide less participation and interventions compared to those with higher incomes. This disparity in parental involvement suggests an increased risk of developmental delay for the child. The study highlighted a significant discrepancy in parental interventions aimed at promoting early childhood growth between families with low-income and high-income backgrounds.

Overall, this research underscores the influence of economic factors on parental engagement and its subsequent impact on the developmental outcomes of children during early childhood. The study highlights the need for targeted interventions and support systems to bridge the gap in parental involvement and reduce the potential developmental risks faced by children from low-income families.
1.1 PROBLEM STATEMENT

The imperative significance of comprehensive and detailed attention to environmental interventions that promote cognitive development in children with disabilities cannot be disregarded. This urgency arises particularly due to the growing recognition in the literature regarding the importance of such interventions for these children, as emphasized by the National Association for the Education of Young Children (2017). Additionally, Luby et al. (2021) have corroborated the efficacy of environmental interventions during early childhood in facilitating cognitive development, cognition, and development across multiple domains for children with disabilities. Conversely, they have also underscored the detrimental consequences of insufficient stimulating environmental interventions on various developmental areas, learning, and optimal cognitive development.

The significance of environmental interventions aimed at promoting cognitive development in children with disabilities is unquestionable. However, numerous challenges hinder the effective implementation of these interventions, as highlighted by Khatib (2018). One such obstacle is the absence of a stimulating social environment for parents, which limits their ability to provide the necessary support. Moreover, Hall (2016) emphasized that parents often lack the necessary knowledge and experience regarding environment-enhancing interventions to facilitate their children's cognitive development. Furthermore, the level of parental interest in such interventions is often insufficient to drive their implementation. Abdel Salam (2017) further emphasized that the low economic status of parents presents a significant barrier to their ability to engage in these interventions.

A comprehensive examination of parents' knowledge and utilization of environmental interventions to enhance cognitive development in children with disabilities during early childhood reveals a notable disparity between their knowledge and the actual application of these interventions. Hall (2016) justifies this finding by highlighting that parents generally possess a higher level of knowledge regarding environmental interventions that promote cognitive development for children with disabilities compared to their actual implementation of these interventions.

Based on the researchers' direct experience with children with disabilities, a significant knowledge gap was identified regarding parents' awareness and utilization of environmental interventions aimed at enhancing cognitive development in children with
disabilities during early childhood. Furthermore, the researchers noted a striking scarcity of comprehensive studies addressing this specific topic. This shortage of research studies motivated the researchers to select this crucial area as the focus of their own investigation.

1.2 AIM OF THE STUDY

The primary objective of the present research was to explore parents' knowledge regarding environmental interventions that enhance cognitive development in children with disabilities during early childhood. Additionally, the research aimed to investigate parents’ experiences in implementing these environmental interventions. Furthermore, the study aimed to identify the challenges encountered by parents during the application of these interventions and to propose effective solutions to overcome these challenges.

To achieve these objectives, the following research questions were formulated:

1. What is the level of parents’ knowledge regarding environmental interventions that promote cognitive development in children with disabilities during early childhood?
2. What are the experiences of parents in implementing environmental interventions that boost cognitive development in children with disabilities during early childhood?

Significance of the Study

The theoretical significance of this research becomes evident through its focus on examining parents' knowledge and application of environmental interventions that foster cognitive development in children with disabilities during early childhood, as well as the challenges they encounter. Moreover, this research contributes to enhancing parents’ understanding and utilization of these interventions. Additionally, the researchers provide a valuable tool that aids parents in recognizing and implementing these interventions. The novelty of the research topic further adds to its importance.

In terms of practical significance, the findings of this research provide valuable information to decision-makers regarding parents' knowledge and utilization of these interventions, as well as the challenges they face. Furthermore, this research has the potential to inspire further exploration by researchers, who may investigate parents’ application of environmental interventions in relation to other disabilities or through different research approaches.
The findings of this research are constrained by several limitations. Firstly, the scope of the study was restricted to the utilization of a specific tool to assess parents' knowledge and application of environmental interventions that promote cognitive development in children with disabilities during early childhood. Secondly, the study solely focused on parents of children with disabilities within the early childhood stage. Thirdly, the research was conducted exclusively within special education centers, daycare facilities, and kindergartens offering integrated early intervention programs in the city of Makkah. Lastly, the timeframe of the study was confined to the second semester of the academic year 2022.

2 THEORETICAL FRAMEWORK

According to Luby et al. (2021), environmental interventions implemented during early childhood utilize a substantial and profound influence on cognitive development, cognition, social and emotional development, as well as psychological and mental well-being. Conversely, when environmental interventions fail to provide essential support and encounter experiences of deprivation, such as emotional neglect or financial strain associated with poverty, abuse, and insufficient cognitive, social, and linguistic stimulation, they have detrimental effects on developmental and learning domains, impeding optimal cognitive development.

Several environmental interventions play a crucial role in promoting cognitive development during early childhood. Nutrition is recognized as a significant factor that impacts physical, psychological, and cognitive development (Prado & Dewey, 2014). Adequate nutrition is vital for proper growth (Murray, 2020). Language development is another essential intervention, influenced by the child’s surrounding environmental conditions, interactions, and responsiveness (Mahajna & Hassan, 2019). It is interconnected with various domains and has an impact on these aspects and the surrounding environment.

Early intervention programs provide opportunities for early learning and holistic growth, with active involvement from the family (Saliha & Ghania, 2021). Cognitive stimulation, predominantly through parental engagement, plays a vital role in children's adaptation to their environment and facilitates their development (Hall, 2016; Jaballah, 2020). Socialization and community participation contribute to the empowerment and
quality of life for individuals with disabilities, enabling their integration into society (Saleh, 2020).

These environmental interventions, encompassing nutrition, language development, early intervention, cognitive stimulation, socialization, emotional experiences, psychological care, and sensory inputs, collectively contribute to the optimal growth and development of children during early childhood. Understanding and implementing these interventions can have a profound impact on enhancing their overall well-being and facilitating their successful integration into society.

Environmental interventions that enhance cognitive development in individuals with disabilities have gained attention as a relatively recent research topic. However, a notable scarcity of studies addressing this subject, both within Arabic literature and foreign literature, has been observed. Consequently, it is essential to examine the existing studies to explore this area further.

In their study, Al-Ramadi et al. (2019) aimed to explore the relationship between different parenting styles (positive and negative) and how they affect emotional regulation during early childhood. The research involved 80 children and their mothers, all within the age range of 5-6 years. Using a comparative descriptive approach, the researchers found that the ability to regulate emotions in young children can predict the presence of both positive and negative parenting styles.

Similarly, Jreisat and Al-Shatarat (2019) undertook a study with the objective of evaluating the quality of family life experienced by children in their early childhood. The study involved 125 fathers and mothers as participants. To gather data, the researchers employed the analytical descriptive method and administered questionnaires. The primary focus was to examine parents' perceptions of the quality of family life and explore its relationship with children's cognitive development. The study findings revealed that parents rated the quality of family life as high. Furthermore, a significant and positive correlation was identified between overall family life quality scores and measures of children's cognitive development. These results emphasize the significance of family dynamics and their potential impact on the cognitive development of children during their early years.

Mathieu et al. (2019) conducted a study that aimed to assess parental practices in early childhood development, specifically focusing on the importance of reading with children and parents' concerns regarding their children’s growth during this stage. The
researchers utilized a multi-method survey approach, collecting data from a sample of parents and conducting structured interviews to gain deeper insights. The study findings underscored the crucial role parents play in the growth of children during early childhood. Moreover, the research emphasized how parental practices influence physical growth, nutrition, and future cognitive development. Additionally, the results shed light on the impact of economic and social conditions in remote and impoverished environments, which can contribute to developmental delays experienced by children in the early stages of their lives.

In a related study, Shah et al. (2016) aimed to assess the effectiveness of interventions focused on nurturing parenting practices that promote early child growth for children under the age of 36 months. The researchers adopted a semi-experimental approach, and the study sample comprised parents of the targeted children. The results of the study revealed a statistically significant positive relationship between the interventions and interactions between parents and their children. These positive interactions encompassed participation in cognitive stimulation activities and the overall quality of parent-child interactions. Moreover, the findings indicated that both the interventions and positive parental behaviors had a significant impact on early childhood growth.

These studies underscore the crucial role of parents in promoting healthy growth and development during early childhood. They emphasize the significance of parental practices, including activities such as reading and positive interactions, as well as the potential influence of environmental factors on child development.

3 METHODOLOGY

The narrative qualitative approach, as utilized by the researchers, entails gathering participants’ responses (Al-Abdul-Karim, 2020) by presenting multiple perspectives in an organized and coherent manner (Al-Qahtani, 2020). This approach was selected due to its alignment with the research topic, namely, parents’ knowledge and application of environmental interventions that enhance cognitive development in children with disabilities during early childhood. Furthermore, the adoption of this approach was aimed at accomplishing the research objectives and addressing the research questions effectively. By employing the narrative qualitative approach, the researchers sought to
capture the rich and varied experiences, perspectives, and insights of the participants, providing a comprehensive understanding of the subject matter.

3.1 PARTICIPANTS

Al-Thawabi (2019) indicated that the number of participants in qualitative narrative research typically ranges between 3 and 10 participants. Based on this, the current study included a total of 8 participants who were parents of children with disabilities in early childhood in the city of Mecca. These participants were purposefully selected during the second semester of the academic year 2022.

3.2 DATA COLLECTION

After selecting the research sample, the research instrument was developed and validated. Subsequently, the instrument was administered to participants. The interviews had a duration of approximately 45 to 60 minutes and consisted of a set of eight open-ended questions. The interview sessions with the participating parents spanned over about a month.

Once the interviews were completed, the collected data underwent transcription and underwent objective analysis. The results of the analysis were then interpreted and compared with findings from relevant studies related to the research topic. Based on these findings, recommendations and proposals were formulated and discussed, taking into account the implications and insights obtained from the research outcomes.

3.3 INSTRUMENTS

The present research employed the method of semi-structured individual interviews, as recommended by Al-Abdul-Karim (2020), to gather comprehensive and substantial data. Drawing from relevant literature and previous studies (Alawi and Maamari, 2021; Al-Fawzan and Al-Rawi, 2019) that focused on the semi-structured individual interview approach, the research tool was developed. The tool was subsequently administered to participants, distinct from those involved in the research, comprising a sample of (3) parents who have children with disabilities. To ensure the validity and appropriateness of the interview questions, the tool was revised by presenting it to (5) experts who were faculty members with expertise in the field. Their input helped assess the validity and formulation of the interview questions.
3.4 ETHICS OF THE RESEARCH

Ensuring the confidentiality of participant data is a paramount ethical consideration in research, as emphasized by Al-Zahrani (2020). In accordance with this principle, rigorous measures were implemented in the current study to safeguard the participants’ information. To obtain their informed and voluntary consent, participants were provided with a written consent form, allowing them to freely agree to participate in the study without any undue pressure. All recordings and data collected during the study were securely stored in a confidential and protected location. Strict protocols were established to prevent unauthorized access, publication, or sharing of the data with any external parties. To maintain the anonymity of the participants, their information and names were anonymized and replaced with symbols or codes throughout the research process. Following the completion of the study, it was ensured that all recorded and written interviews were permanently and irreversibly destroyed, further guaranteeing the protection of the participants’ confidentiality and privacy.

3.5 RELIABILITY AND VALIDITY

To establish the validity and reliability of the research instrument, the researchers employed the audio recording method during the interviews. This approach ensured that significant information shared by the participants was accurately captured. Subsequently, the collected data was transcribed and shared with a group of individuals possessing expertise in qualitative narrative research. Additionally, the data was also presented to a group of parents who participated in the research. This practice, commonly known as the method of multiple researchers’ analysts, served to enhance the validity of the written data and provided an opportunity for diverse perspectives to be considered.

Furthermore, the researchers incorporated the method of writing observations during the interview process with the participants. These observations were recorded and documented, capturing noteworthy insights. Prior to concluding the interviews, the researchers shared the observations with the participants, allowing them to review and validate the accuracy and comprehensiveness of the recorded observations. This process further contributed to the overall rigor and reliability of the research findings.

The researchers implemented a series of procedures to address each of the identified criteria as follows:
1. Procedures to achieve credibility: Credibility refers to confidence in the data, ensuring that it accurately reflects the research findings or the studied case. To enhance credibility, the researchers employed several methods and strategies. They utilized a review record strategy to organize and schedule interviews systematically, minimizing the risk of missing or forgetting any sessions. Additionally, the researchers employed the peer review strategy, consulting qualitative research specialists to analyze and interpret the interview results. Valuable observations provided by these peers were incorporated into the research, following the strategy of triangulation or multiplicity of analysts. This approach ensured credibility by presenting a diverse range of perspectives and opinions.

2. Procedures to achieve transferability: The researchers acknowledged the variation in cultural and theoretical backgrounds among participants. This diversity allowed for access to abundant information, enriching the research and providing comprehensive answers to the research questions. Al-Saedi (2018) highlighted the importance of addressing this research gap, as it enhances the validity of results and the potential for generalizability in different environments.

3. Procedures to achieve reliability: Reliability in qualitative research can be enhanced by providing a comprehensive description of the data collection method. The researchers meticulously described the research design procedures, tool development stages, participant selection method, sample size determination, tool application procedures, data collection method, interpretation, analysis, and the integration of research findings with existing literature. By meticulously documenting these aspects, the researchers aimed to ensure the reliability of the research and establish a solid foundation for the research outcomes, as indicated by Al-Abd Al-Karim (2020).

4. Procedures to verify confirmatory or assertiveness: The researchers followed clear steps in their research, ensuring that the final results were based on the participants' data rather than subjective opinions. They sought to maintain accuracy, scientific integrity, objectivity, and logical justifications throughout the research process. This included selecting an appropriate methodology, justifying the choice of tools, linking results to conclusions derived from the data, acknowledging weaknesses and shortcomings, and formulating them as
recommendations. The researchers aimed to avoid bias, present both positive and negative results, use clear and sound language, and refrain from creating data, results, or conclusions that did not exist. By adhering to these procedures, the researchers aimed to uphold the standards of scientific research, accuracy, and objectivity.

3.6 DATA ANALYSIS

The researchers employed the objective analysis method to analyze the data, organizing it into specific categories and interpreting it to address the research questions. The data analysis process involved several steps. Firstly, the researchers transcribed the interviews by listening to the audio recordings and organizing the data into Microsoft Word documents. Each participant's data was stored in a separate file and encoded using symbols. The written text was carefully reviewed and verified to ensure the integrity and accuracy of the transcriptions.

Next, the data underwent classification and tabulation, employing open coding techniques. The initial open coding process resulted in the identification of 15 topics. The researchers thoroughly read and analyzed the data multiple times, progressing to axial coding. Through axial coding, the topics were further refined and consolidated, resulting in 7 axial topics. Subsequently, the researchers proceeded with selective coding, giving clear and unified names that accurately represented the presented data.

In the final stage, the researchers compiled, interpreted, and analyzed the data, establishing connections and links to previous studies. They elucidated the similarities and differences in the perspectives of the participating parents, providing a comprehensive understanding of the findings. The data analysis process involved meticulous attention to detail, ensuring the accurate representation of the research participants’ views and experiences.

4 RESULTS & CONCLUSION

Research Question One: What is the extent of parental knowledge regarding environmental interventions that promote cognitive development in children with disabilities during early childhood?
The response to this research question, derived from the findings of researchers, comprises a main theme and several sub-themes that are discussed sequentially as follows.

Cognitive Background: To ascertain parents' knowledge of environmental interventions that enhance cognitive development in children with disabilities during early childhood, interviews were conducted. The results indicated a discrepancy in parental understanding on this subject matter. The participating parents' knowledge regarding environmental interventions that boost cognitive development can be summarized into two main themes: early intervention and socialization. The subsequent sections provide a detailed discussion of these themes.

First, Early Intervention:

Within the themes of early intervention, parents' knowledge of environmental interventions that promote cognitive development was primarily represented by the parents themselves, as they were the primary sources of information. Out of the eight parents surveyed, six of them repeatedly emphasized the significance of early learning and intervention in enhancing cognitive development. Their understanding of environmental interventions that boost cognitive development was largely confined to this theme. The parents highlighted the importance and positive impact of early learning and intervention on child development. This viewpoint was corroborated by statements such as that of (A.T.), who stated, "With early learning and intervention when he was young, I noticed the difference." Similarly, (A.M.) emphasized the necessity of starting from birth and spreading awareness among others about the importance of early intervention. Additionally, (A.K.) expressed, "I cared for him from his childhood."

Based on these responses, the researchers acknowledge the crucial role of early intervention during the early stages of a child with disabilities. They recognize the significance of this stage as it serves as the foundation for subsequent developmental phases. The importance of early intervention is further underscored by its impact on the cognitive development of children with disabilities, which in turn influences various domains of development.

The researchers posit that parents should actively invest in this stage of their child's life by engaging in early intervention practices. They advocate for the provision of necessary skills within the home environment through collaborative efforts between
parents and specialists. Such interventions aim to appropriately address the child's needs, mitigate the adverse effects of disability, and prevent further complications.

Second, Socialization:

Upon examining the parents' perspectives on their knowledge of environmental interventions that promote cognitive development, the significance of socialization in a child's development emerged as the second theme. This theme received mention from 4 out of the 8 parents, indicating that the concept of environmental interventions was linked to the role of socialization in facilitating child growth.

The parents recognized the impact of good social interaction, effective communication with others, and engaging in group play with peers on their child's development. For instance, (A.Y.) emphasized, "Mixing with normal children helped me a lot." Similarly, (A.M.) stated, "Being with peers enhances the cognitive process." Additionally, (A.A.) highlighted the importance of the child's interaction with society and their immediate environment.

The researchers contend that the socialization of children with disabilities and their integration into the family's social and recreational activities, as well as their involvement in the broader community during early childhood, are of paramount importance. By actively engaging with society, such as interacting with friends, relatives, and family members, the child learns their language, customs, and social norms. This process contributes to the cognitive, social, and linguistic development of children with disabilities, equipping them with age-appropriate skills and facilitating the formation of their personalities. Moreover, it aids in the correction of their behavior within diverse social settings.

Socialization during the early years of a child's life plays a crucial role in imparting fundamental skills and teaching them the social norms and expectations that are appropriate within their cultural and societal context. The child learns what behaviors are deemed socially acceptable and unacceptable, along with societal expectations, behavioral standards, and social interactions. The integration of children with disabilities into different environments facilitates the formation of friendships and shared play experiences with their peers. This fosters a love for exploration, imaginative play, and the development of imitation skills. Consequently, these experiences contribute to cognitive development and the overall development of various domains.
The findings of the current research align with the study conducted by Jreisat & Al-Shatarat (2019), which emphasized the impact of family life quality and interactions on children in early childhood, particularly their cognitive skills. The results revealed a positive correlation between the quality of family life and the child's cognitive development. The study further highlighted the role of the family in fostering cognitive skills and the necessity of providing them with appropriate training, as it significantly influences the child's psychological and social development.

Furthermore, the current research concurs with the findings of Abu Stash et al. (2017), which emphasize that early intervention aims to enhance the skills and abilities of children with disabilities across various areas, including cognition, socialization, and emotional development. Early intervention services cater to the specific educational and healthcare needs of these children, thereby fulfilling their requirements.

Additionally, the study aligns with the findings of Radwan and Hanak (2019), who established a correlation between parenting methods and the child's social interaction and integration into society. The study emphasized that effective parenting practices play a pivotal role in shaping the child's personality and facilitating social communication.

In summary, the process of socialization during the early years of a child's life contributes significantly to their cognitive, social, and emotional development. The findings of the current research align with previous studies, underscoring the importance of family interactions, early intervention, and positive parenting methods in fostering the holistic development of children, particularly those with disabilities.

Research Question 2: What are the experiences of parents in implementing environmental interventions that promote cognitive development for children with disabilities during early childhood?

The response to this research question, based on the findings of the researchers regarding parents' experiences in implementing environmental interventions that enhance cognitive development, encompasses a main topic: the specific areas in which parents apply these interventions to support cognitive development in children with disabilities during early childhood. Several sub-themes derived from this question are sequentially discussed as follows.

Parents' Areas of Application of Environmental Interventions for Cognitive Development
The areas in which parents apply environmental interventions that promote cognitive development in children with disabilities can be summarized as cognitive stimulation and nutrition. These areas will now be examined in detail.

A. Cognitive and Perceptual Stimulation:

Upon analyzing the data provided by the participating parents, it became evident that they emphasized the application of environmental interventions that promote cognitive development for their children with disabilities primarily through cognitive and perceptual stimulation. The majority of parents (7 out of 8) highlighted their engagement in educational and cognitive games, as well as various cognitive and sensory activities with their children with disabilities. Through these interventions, the parents recognized the crucial role of cognitive and perceptual stimulation in cognitive development, particularly when combined with intensive training, and the utilization of educational games, environmental materials, and models.

For instance, (A.M.) emphasized the significance of cognitive games in improving and developing cognitive in children, while (A.A.) stated, "I provide my child with educational games and incorporate them into his daily routine," and (A.K.) highlighted the benefits of learning through play. The researchers contend that parents' emphasis on cognitive and perceptual stimulation stems from their awareness of its profound impact on the cognitive development of their children with disabilities. Such stimulation is achieved through daily interactions and the provision of age-appropriate cognitive and perceptual stimuli. The interventions are carefully tailored, progressing from simpler to more challenging tasks, while continuously monitoring the child's progress.

Cognitive development also plays a pivotal role in helping children with disabilities explore their environment. This includes engaging in purposeful interactive activities aimed at enhancing visual perception skills, shape recognition and naming, categorization of different shapes, and stimulating visual communication, focus, and attention skills. Furthermore, learning through play is considered an effective educational strategy that fosters various cognitive skills during early childhood and enhances the child's motivation to learn.

In summary, parents' focus on cognitive and perceptual stimulation as a means of implementing environmental interventions for cognitive development in children with disabilities highlights their understanding of the significant influence such stimulation has on their child's cognitive development. This approach involves providing suitable
cognitive and perceptual stimuli, gradually progressing in difficulty, and monitoring progress. Cognitive development not only aids in the child's exploration of their surroundings but also contributes to the development of various cognitive skills, supported by engaging educational play experiences.

The researchers assert that offering varying levels of cognitive stimulation during early childhood and providing interactive environments play a crucial role in fostering the development of mental processes, memory, and thinking skills, as well as higher-order mental and problem-solving abilities. These interventions contribute to enriching the cognitive skills of children with disabilities. Consequently, the child becomes capable of comprehending the dynamics of their surroundings, including situations, events, the outcomes of those situations, their underlying causes, and the interactions occurring within their environment. Through these experiences, the child's cognitive undergoes growth, and they acquire a multitude of social, psychological, and language skills.

B. Nutrition

In examining the responses of parents who participated in the study, it was found that one of the environmental interventions implemented by parents of children with disabilities to promote cognitive development is the adoption of proper nutrition practices and the provision of healthy meals that encompass a variety of essential elements such as iron, protein, fats, and vitamins from diverse food sources. These parents emphasized the significance of incorporating foods that contain essential nutrients and maintaining a balanced and diverse diet throughout the day, including carbohydrates and proteins. Out of the eight parents surveyed, three mentioned the importance of nutrition in relation to the perceptual and cognitive development of their children, as well as its contribution to their overall physical health.

One parent, identified as (A.A.), highlighted the role of nutrition in growth, sharing their approach of providing small amounts of food, including water, to their child during their early years. They expressed concern for their child's well-being, particularly due to their small and weak physical structure, which did not show improvement compared to other children. Another parent, (A.T.), mentioned following medical advice by restricting their child's intake of chocolate, canned juices, and sugars. Similarly, (A.Y.) described their practice of providing avocados, which they believed to be beneficial for cognitive development, while also preparing homemade juice and food, and avoiding canned food, fast food, and sugars. Moreover, (A.M.) mentioned administering the
necessary vitamins and supplements to their child, and (A.Y.) emphasized the significant role of nutrition in their child's growth.

The findings highlight the recognition among parents of the influence of proper nutrition on the perceptual, cognitive, and physical development of children with disabilities. These parents have implemented strategies to ensure a diverse and balanced diet, emphasizing the importance of essential nutrients and avoiding certain food items based on medical advice. The insights from the parents’ experiences provide valuable contributions to understanding the significance of nutrition in promoting optimal cognitive development for children with disabilities.

The researchers posit that proper nutrition plays a vital role in the growth, development, and improvement of cognitive and behavioral functions in children with disabilities. Adequate nutrition is recognized as a fundamental source of energy for the body, facilitating appropriate growth, physical strength, and immune system function, thereby safeguarding against diseases. For optimal cognitive development and cellular growth, it is essential for children to consume foods rich in proteins, fatty acids, carbohydrates, and whole grains, while also incorporating fruits and vegetables to provide necessary vitamins. Additionally, the researchers emphasize the significance of nutritional supplementation during pregnancy and lactation for both the mother and child, as these stages are critical in the cognitive development and cognitive abilities of the child.

Furthermore, the researchers underscore the adverse effects of undernutrition on the mental, cognitive, social, emotional, and motor skills of children with disabilities. Insufficient and inadequate nutrition can lead to poor physical health, which subsequently impacts the psychological and mental well-being of the child, contributing to feelings of isolation and irritability. Individuals with disabilities are particularly vulnerable to malnutrition and the consumption of unhealthy foods containing preservatives, which can exacerbate disability-related symptoms, contribute to obesity, and increase the risk of chronic diseases and heart conditions. Consequently, compromised growth, weakened memory, shortened attention span, and reduced concentration are observed in children affected by these nutritional deficiencies.

The researchers advocate for a holistic understanding of the profound impact of proper nutrition on the overall development and well-being of children with disabilities. By addressing nutritional needs and promoting healthy dietary practices, it is possible to
mitigate the negative consequences associated with undernutrition, fostering optimal growth, cognitive abilities, and psychological health in this population.

The findings of the present study align with the research conducted by Shah et al. (2016), highlighting a positive correlation between parental interventions, parent-child interactions, and engagement in cognitive stimulation activities, and their influence on early childhood development. Furthermore, these results are consistent with the assertions made by Prado and Dewey (2014), emphasizing the significance and indispensability of nutrition in promoting normal cognitive development. Nutrition serves as a foundation for the development of cognitive, social, and motor skills, as it provides the body with the necessary energy and strength. Conversely, the absence of adequate nutrition results in a lasting deficit in the child's perception and ability to interact effectively.

5 RECOMMENDATION

Based on the findings of this research, the researchers propose several recommendations aimed at enhancing parents' knowledge and experience regarding environmental interventions that promote cognitive development in children with disabilities. They suggest the organization of applied training workshops to provide intensive and continuous training to parents, enabling them to develop their understanding and expertise in implementing these interventions for their children. Furthermore, the researchers emphasize the importance of involving official agencies and the media in raising awareness about the significance of environmental interventions in enhancing cognitive development for children with disabilities, as well as highlighting the crucial role of families in this process.

Additionally, the researchers recommend conducting further research and studies in diverse settings to explore parents' knowledge and application of environmental interventions that promote cognitive development in children with disabilities. They suggest employing alternative methodologies to gather comprehensive insights into parents' understanding and utilization of these interventions. Moreover, the researchers propose conducting research specifically focused on environmental interventions that boost cognitive development in children with disabilities, using approaches distinct from those employed in the current study.

In conclusion, the researchers advocate for the implementation of practical measures to enhance parents' knowledge and skills in utilizing environmental
interventions for promoting cognitive development in children with disabilities. They stress the importance of collaboration between various stakeholders, including parents, official agencies, and the media, in raising awareness and promoting the adoption of these interventions. Additionally, they emphasize the need for further research to expand the understanding of parents' knowledge and application of these interventions, as well as to explore different approaches and environments in studying their effectiveness.
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