PARENTAL INCOME AND EDUCATIONAL BACKGROUND ON SPEECH AND LANGUAGE DEVELOPMENT OF CHILDREN WITH DOWN SYNDROME IN IBADAN METROPOLIS, NIGERIA

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ABSTRACT

Introduction: Children with Down syndrome often experience delayed milestones, which can impact their academic, social, speech, and language development. However, research suggests that impaired expressive language skills are more common than receptive language skills in this population.

Purpose: This study purposely examined parental income and educational background on speech and language development of children with Down syndrome in Ibadan Metropolis, Nigeria.

Methodology: Descriptive research design was adopted, and a survey method was used. Simple random sampling technique was used to select 30 parents of children with Down syndrome in Ibadan North Local Government. A self-structure questionnaire named Speech-Language with Income and Educational background Assessment Scale (S-LIEAS) was used. Data collected were analyzed using Pearson's Product Moment Correlation, and Multiple Regression Analysis at the 0.05 level of significance.

Results: The results revealed that there is a significant relationship between parental educational background and language development of children with Down syndrome (r=0.47, p<0.05), but no significant relationship between parental income and language development (r=0.02, p>0.05).

Conclusion: This study highlighted the importance of parental educational background and income in promoting speech and language development of children with Down syndrome.

Recommendation: The study suggested that to promote speech and language development of children with Down syndrome, it may be necessary to provide parents with information about available management strategies and financial support to improve their income. Also, regular sensitization programmes was recommended for expectant mothers to educate them about Down syndrome and strategies for promoting speech and language development of children with Down syndrome.

Keywords: Children with Down syndrome, Speech and Language Development, Parental income, Parental educational background

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PUBLIC INTEREST STATEMENT

The beneficiaries of this study are: individuals with Down syndrome, their families, educators, and speech-language therapists. The result of this study would increase awareness of the potential impact of parental educational background and income on speech and language development of individuals with Down syndrome. Speech-language therapists would have a better understanding of how parental educational background and income can impact speech and language development, which will enable them to provide more effective and personalized interventions.

INTRODUCTION

Parental factors such as income and educational background play a significant role in a child's life, impacting their access to education, healthcare, career opportunities, and social life. While these factors are not the only determinants of a child's success, they can influence a child's physical and mental development and future opportunities. Children from lower-income families are usually at a disadvantage when it comes to healthcare access and nutrition. They may not be able to afford health service or may live in areas with limited access to medical facilities, and have less access to healthy food options leading to poorer nutrition and other health problems.

Research has consistently shown that parental educational background and income have a significant influence on the development and outcomes of typically developing children. However, for children with Down syndrome, the impact of these factors may be even greater, as they face additional challenges related to their disability. Therefore, it is important to address the unique needs of this population and provide them with access to quality education, healthcare, and support services to promote their optimal development and wellbeing.

Down syndrome is a genetic disorder that affects approximately one in every 700 births worldwide (Bull, 2020). It is caused by the presence of an extra copy of chromosome 21. The additional genetic material affects the development of the body and brain, leading to physical and intellectual disabilities. Individuals with Down syndrome typically have a range of physical characteristics, including a flat facial profile, small head, upward slanting eyes, a small head, small ears, poor muscle tone, and a single deep crease across the center of the palm (National Down Syndrome Society, 2022). They may also have intellectual disabilities of varying degrees, delayed motor development, and other health conditions such as heart defects, hearing loss, and vision problems. Although there is no cure for Down syndrome, there are many resources and support systems available to help individuals with Down syndrome and their families. Early interventions, such as speech and language therapy and physical therapy, can help children with Down syndrome develop skills and reach their full potential (National Down Syndrome Society, 2022).

Advances in medical care and education have improved the quality of life for individuals with Down syndrome and increased their life expectancy. In the United States, the life expectancy for individuals with Down syndrome has increased from 25 years in 1983 to 60 years in 2021 (National Down Syndrome Society, 2022). Recent research has focused on improving the understanding of the genetic mechanisms that underlie Down syndrome, as well as developing effective interventions to support individuals with the condition. One recent study used a gene editing approach to correct the genetic abnormality that causes Down syndrome in human cells, demonstrating the potential for future therapeutic interventions (Liu, Liu, Wang, Zhong, Wang & Guo, 2021).

Children with Down syndrome often experience delays in speech and language development, which can impact their social, emotional, and academic functioning (Gichuki & Oburu, 2021). Language development is a significant area of weakness in children with Down syndrome, which is not surprising given that language development has been closely tied to cognitive development. (Liu et al., 2021). Language is referred to as the words we use and how we use them to share ideas and get what we want. It plays a significant...
role in the development of the social interactions, behaviour and academic skills of children in any society or culture. Language development is a complex process that begins in early childhood and involves the acquisition and use of language, including vocabulary, grammar, and pragmatics. It is an essential aspect of cognitive and social development and has a significant impact on a child’s future academic and social success. (Gomes et al., 2020).

Speech is how we say sounds and words. Speech includes articulation which refers to how we make intelligible sounds using mouth, lips, and the tongue. For example, we need to be able to say the "r" sound to say "rabbit" instead of "wabbit". Speech development refers to the process of learning and producing sounds, words, and sentences to communicate with others. This involves the coordination of various speech organs, including the tongue, lips, and vocal cords, to produce speech sounds that are recognizable to others. (Gomes et al., 2020). Early intervention and support are crucial for children with speech delays, as they can help to address potential underlying issues and improve overall communication skills (Fornari & Ferretti, 2021). Speech therapy, for example, has been shown to be an effective intervention for improving speech and language development in children with Down syndrome (Chonchaiya & Nuntnarumit, 2021).

However, while children with Down syndrome face challenges in speech and language development, research suggests that factors such as parental education and income play a role in improving outcomes, and interventions such as music-based therapy have been shown to be effective in promoting language development in children with Down syndrome (Fornari & Ferretti, 2021; Geytenbeek, Nieuwenhuis-Mark, & Sterkenburg, 2021).

Parental income encompasses the type of earned money from work financial security, and subjective perceptions of social status and social class. It informs quality of life attributes as well as the opportunities and privileges afforded to people within society. The income of a family is a consistent and reliable predictor of a vast array of outcomes across the life span, including physical and psychological health. Thus, parental income is relevant to all realms of behavioural and social science, including research, practice, education and advocacy (McLaughlin & Sheridan, 2016). Parental income has effects on overall health functioning, including our physical and mental health. Low parental income and its correlates, such as lower educational achievement, poverty and poor health, ultimately affect our society. Inequities in health distribution, resource distribution, and quality of life are increasing in Nigeria and globally (Gichuki & Oburu, 2021).

The impact of parental income and educational background on speech and language outcomes has been investigated. Recent systematic review by Fagerlund and Gustavsson (2021) found that children with parents who have higher levels of education and income tend to have better language outcomes than those with parents who have lower levels of education and income. This could be because parents with higher education levels may have more knowledge of child development and language stimulation techniques, and may be able to provide more enriched language environments for their children. Another study by Geytenbeek et al. (2021) discovered that higher parental education and income were associated with better communication outcomes, even after controlling for other factors such as age and cognitive ability. In terms of interventions to improve speech and language development in children with Down syndrome, a recent randomized controlled trial by Glennon et al. (2020) found that a music-based intervention was effective in improving speech production and communication skills in young children with Down syndrome. Similarly, a cross-sectional study by Chonchaiya and Nuntnarumit (2021) found that parental education and income were positively associated with language and cognitive development in children with Down syndrome. Moreover, Alghamdi et al. (2021) found that parental education level and family income were significant predictors of speech and language
Okoro, E., N., Olayode, O.S. (2023). Development in children with Down syndrome. The study found that children from families with higher income and parental education levels had better speech and language outcomes compared to those from families with lower income and education levels. It is important to note that while parental educational background and income are important predictors of language development in children with Down syndrome, there are also other factors that can influence language outcomes, such as the child’s age, cognitive abilities, and early intervention services (Fagerlund & Gustavsson, 2021).

In addition to income and educational background, other factors such as family-centered care, and multidisciplinary collaboration, access to resources and support, and culturally sensitive care have also been identified as important factors in promoting language development in children with Down syndrome (Gomes et al., 2020; Uzun & Ozdemir, 2021). Understanding the complex interplay between these factors can help healthcare professionals and educators develop effective interventions and support programmes for children with Down syndrome and their families. In Nigeria, where poverty and limited access to educational resources are prevalent, it is important to understand how parental income and educational background influence speech and language outcomes in children with Down syndrome.

In this study, we aim to investigate the impact of parental income and educational background on the speech and language development of children with Down syndrome in Ibadan Metropolis, Nigeria. By identifying the specific factors that influence language outcomes in this population, we hope to inform the development of more effective interventions and support programs that can improve the quality of life for children with Down syndrome and their families in Nigeria.

STATEMENT OF THE PROBLEM

Children with Down syndrome are usually known to have speech and language delays. The delay is a result of problems ranging from dysfluency to poor articulation due to irregularities in muscle tone. The degree of speech and language development can be altered by the level of the educational background and the income of the parents. Some parents, due to a poor educational background, may not be able to obtain useful information that will help their children develop speech and language as early as possible. The income of the parents is another factor that may affect the speech and language development of children with Down syndrome. Due to their low income, some parent may not be able to afford the cost of managing their children’s conditions. This will greatly affect the children’s ability to develop speech and language easily since no intervention may be provided. This study was therefore carried out to find out the implication of the parental educational background and income on the speech and language development of children with Down syndrome in Ibadan metropolis.

PURPOSE OF THE STUDY

Some specific objectives of this study include:

1. assess the relationship between parental educational background and language development of children with Down syndrome
2. determine the relationship between parental income and language development of children with Down syndrome.

RESEARCH QUESTIONS

1. What is the significant relationship between parental educational background and language development of children with Down syndrome?
2. What is the significant relationship between parental income and language development of children with Down syndrome?

METHODOLOGY

Research Design

A descriptive research design was adopted, and a survey method was used for this study. In order to determine the impact of parental income and educational background on speech and language development of children with Down
syndrome, a well-structured questionnaire was used. Due to the prevalence of Down syndrome and its impact on children's social interactions, speech, language and overall quality of life, the research was designed to give clear understanding of the unique needs of this population.

Population and Sample
The population of this study includes parents of children with Down syndrome in Ibadan North Local Government, Oyo State, Nigeria. The researcher adopted a purposive random technique and used a simple random sampling technique for the selection of the participants. Three special homes or schools in Ibadan North Local Government were chosen for this study, from which 30 out of 40 parents of children with Down syndrome were selected at random using the random number method, where children with Down syndrome were assigned a number from 1 to 40, and 30 parents of the children whose number was chosen were invited. The selected homes include Oluyole Chesire Home, Terranjos Foundation Agbowo, and Ijokodo Home for the Handicapped Ibadan.

Instrument for Data Collection
A self-structure questionnaire named Speech-Language with Income and Educational background Assessment Scale (S-LIEAS) was used for this study. The questionnaire was divided into four (4) sections. Section A focuses on the demographic information. Section B entails parental income rating scale. Section C consists of parental educational background rating scale and section D consists of speech and language skills questionnaire. The questionnaire contains (33) questions in total. To ensure the validity of the instrument, the questionnaire was subjected to scrutiny by the project supervisor who read through and made necessary corrections in determining its appropriateness. The relevant suggestions were taken accordingly before final administration by the researchers. The reliability of the research instrument was determined using pilot study to assess the reliability and this was used to enhance its accuracy for assessment and evaluation. The participants for the pilot study were selected from the school apart from those to be used for the real study. The reliability of the research questionnaire was determined using Cronbach alpha and was found to be substantial at $\alpha= 0.81$. This indicates that about 81.0% of the variability in the sum score is true score variability. The research instrument is reliable.

Procedure of Data Collection
The researchers visited the selected homes with the letter of introduction from the department of Special Education University of Ibadan, introducing his intentions to the management. The researcher sensitized the parents, teachers and authority of the Home about the research. The parents were enlightened about the questionnaire and why they needed to be sincere in their responses. The researcher personally administered the questionnaire directly to the respondents in the selected Homes in Ibadan North Local Government. The administration was conducted strictly with parents of children with Down syndrome in the study areas.

Method of Data Analysis
The data collected were analyzed with the use Pearson’s Product Moment Correlation (PPMC) and Multiple Regression Analysis (MRA). The results were presented in tables.

RESULTS
Research Question 1: What is the significant relationship between parental educational background and language development of children with Down syndrome?
Table 1: Relationship between parental educational background and language development of children with Down syndrome

<table>
<thead>
<tr>
<th>Variable</th>
<th>Number</th>
<th>Mean</th>
<th>Std. dev</th>
<th>R</th>
<th>P value</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speech and Language development</td>
<td>30</td>
<td>20.10</td>
<td>2.99</td>
<td>0.47**</td>
<td>0.01</td>
<td>Significant</td>
</tr>
<tr>
<td>Parental educational background</td>
<td>30</td>
<td>19.96</td>
<td>1.79</td>
<td>0.02</td>
<td>0.93</td>
<td>Not Significant</td>
</tr>
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</table>

Table 1 shows that there is a significant relationship between parental educational background and language development of children with Down syndrome \((r=0.47, \ P.value= 0.01; \ p<0.05)\). This implies that the parental educational background had influence on language development of children with Down syndrome.

**Research Question 2:** What is the significant relationship between parental income and language development of children with Down syndrome?

Table 2: Relationship between parental income and language development of children with Down syndrome

<table>
<thead>
<tr>
<th>Variable</th>
<th>Number</th>
<th>Mean</th>
<th>Std. dev</th>
<th>R</th>
<th>P value</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
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<td>30</td>
<td>20.10</td>
<td>2.99</td>
<td>0.02</td>
<td>0.93</td>
<td>Not Significant</td>
</tr>
<tr>
<td>Parental income</td>
<td>30</td>
<td>18.80</td>
<td>3.77</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Table 2 shows that there is no significant relationship between parental income and language development of children with Down syndrome \((r=0.02, \ P.value= 0.93; \ p>0.05)\). This implies that parental income had no influence on language development of children with Down syndrome.

**DISCUSSIONS**

This study assesses the parental income and educational background on speech and language development of children with Down syndrome in Ibadan Metropolis, Nigeria. The finding of this study from research question 1 shows that one of the independent variables, parental educational background, has a positive significance on speech and language development of children with Down syndrome. Table 1 shows that parental educational background is an important indicator of speech and language development in children with Down syndrome \((r=0.47, \ P.value= 0.01; \ p<0.05)\). This implies that the parental educational background had an influence on the language development of children with Down syndrome.

The finding supports the work of Alghamdi and his colleagues (2021) cross-sectional study, which aimed to investigate the impact of parental education level and family income on speech and language development in children with Down syndrome. Results showed that children of parents with higher education levels had better speech and language development than those with lower levels of education. Hence, parental education level is an important determinant of speech and language development in children with Down syndrome.

In the same way, the finding is consistent with Kumar, Singhal, and Okoro, E., N., Olayode, O.S. (2023).
Sharma, (2019)’s findings that Parental education is significantly associated with both receptive and total language scores of children with down syndrome (p < 0.05). Therefore, educating parents of children with Down syndrome may be an effective strategy to improve speech and language skills of their children.

Also, the finding supports the work of Fornari and Ferretti (2021), where it was affirmed that parental education significantly predicted language development in children with Down syndrome, with higher levels of education being associated with better language outcomes. Finally, the result of this finding backed the work of Fagerlund and Gustavsson (2021), from which it was concluded that parental education was a significant predictor of speech and language development in children with Down syndrome. Children of educated parents are provided with a better learning environment at home. To achieve their objectives, facilities are provided for the children at home. Parents who do not go beyond elementary or secondary schools are not able to give their children proper help with their speech and language problems.

The finding revealed that there is no significant relationship between parental income and language development of children with Down syndrome (r=0.02, P.value= 0.93; p>0.05). This implies that parental income had no influence on speech and language development of children with Down syndrome. This finding is not consistent with the work of Rashid, Shahid and Umer, (2020), a cross-sectional study which was conducted to investigate the impact of parental education and income on speech and language development of children with Down syndrome. The results revealed a significant positive correlation between parental income and language development (r = 0.400, p < 0.01). This implied that parental income is a significant predictor of language development in children with Down syndrome. But this is contrary to this study where parental income is not significantly correlated to speech and language development of children with Down syndrome.

Furthermore, the finding is not in support of the work of Uzun and Ozdemir (2021), which explained that parental income were significant predictors of speech and language development in children with Down syndrome. Children with parents who had higher income levels showed better speech and language outcomes than those with lower income levels. This implies that the affordability of the speech therapy for the management of the speech disorder of children with Down syndrome is largely determined by the strength of the family income.

This finding also contradicts the work of Chonchaiya and Nuntnarumit (2021) who found that parental income was significantly associated with language and cognitive development in children with Down syndrome. Children with parents who had higher income levels showed better language and cognitive outcomes than those with lower income levels. Children whose parents have economic, human, and social capital experience enriching home learning environments, which subsequently shape their later learning in language and other domains. This explanation contradicts the results of this finding, which reveals that parental income had no influence on the language development of children with Down syndrome.

CONCLUSION

This study investigated the impact of parental educational background on speech and language development of children with Down syndrome in Ibadan Metropolis, Nigeria. The study found that there is a significant relationship between parental educational background and speech and language development of children with Down syndrome. Therefore, the effective strategy to improve speech and language development of children with Down syndrome is to provide sound education to the parents.

However, this study concluded that parental income has no significant relationship between speech and language development. This implies that regardless of the parent income level, if they lack appropriate information, it might be difficult to find appropriate interventions for their children’s speech and language development.
development. Therefore, it is essential for parents to have access to information about speech and language development, as well as resources and support to help their children reach full potential.

RECOMMENDATIONS

Based on the findings of the studies, the following recommendations have been made:

1. The educational background of the parents has a significant relationship with the speech and language development of children with Down syndrome; therefore, it is recommended that regular sensitization programs be provided for the expectant mothers to equip them with the latest information about Down syndrome and management strategies for the speech and language development of children with Down syndrome.

2. Collaboration between healthcare and education systems: Given the importance of parental education in supporting speech and language development, healthcare and education systems should collaborate to provide resources and support to families. Healthcare professionals should help identify families with lower education levels and incomes and connect them with education and community resources.

3. Early identification and intervention: Early identification and intervention are crucial for promoting speech and language in children with Down syndrome. Therefore, healthcare professionals and educators should work together to identify children with Down syndrome as early as possible and provide interventions that are tailored to their individual needs.

4. Access to resources and support: Families of children with Down syndrome may face challenges in accessing resources and support, especially if they have lower income and education levels. Therefore, government and non-governmental organizations should provide resources such as educational programmes, financial assistance, and healthcare services for parents of children with Down syndrome.

5. The current study discovered that parents’ knowledge about Down syndrome during the period of schooling is very poor, so curriculum planners are encouraged to include special education in school curricula at various levels of education.

Conflict of interest: The authors hereby declares no conflict of interest.

Disclaimer Statement

This study is original thought of the researchers carried out to determine parental income and educational background on speech and language development of children with Down syndrome in Ibadan Metropolis, Nigeria. Therefore, this article is the result of the research.

Authors’ Bionotes

Edna Nnenna Okoro got three of her degrees from the University of Ibadan majoring in Hearing Impairment. She is a Speech and Language Therapist. Okoro has contributed in many academic and professional journals. Presently, she is a principal Lecturer at the Department of Education for Learners with Hearing Impairment, Federal College of Education (Special) Oyo. Oyo State, Nigeria.

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Authorship and Level of Contributions

Edna Nnenna Okoro drafted and proof read the manuscript, developed the research instrument and funded the research work.
Okoro, E., N., Olayode, O.S. (2023). Olaniyi Samuel OLAYODE also proof read the manuscript, shared and collected the data used in the study and, prepared the results.

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