IJNRD.ORG ISSN : 2456-4184
INTERNATIONAL JOURNAL OF NOVEL RESEARCH AND DEVELOPMENT (IJNRD) | IJNRD.ORG
An International Open Access, Peer-reviewed, Refereed Journal

Gender And Reading Disabilities: An In-Depth Study Among Hindi-Speaking Children

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ABSTRACT

Language-based reading disabilities, commonly referred to as dyslexia, pose considerable obstacles in educational environments, impacting children's abilities to read and understand text proficiently. These disabilities are marked by struggles with accurate and fluent word recognition, poor spelling, and difficulties in decoding, which stand in contrast to the individual's overall cognitive abilities and educational exposure. This research explores whether gender plays a significant role in the prevalence of language-based reading disabilities among Hindi-speaking children. A comprehensive checklist assessing speech sound awareness, word retrieval, verbal memory, speech production/perception, comprehension, expressive language, somatic component, and syntactic component was utilized. The study applies rigorous statistical methods to analyze the data, aiming to provide insights into the distribution of reading disabilities between male and female participants. The results are expected to contribute to gender-neutral educational interventions and policies, enhancing support for children with reading difficulties.

Key words: Reading disability, Hindi, Children, Language-based skills, Educational support, Dyslexia, Early identification, Intervention strategies, Gender differences

INTRODUCTION

Language-based reading disabilities, often termed dyslexia, present significant challenges in educational settings, affecting children's ability to read and comprehend text effectively. These disabilities are characterized by difficulties with accurate and/or fluent word recognition, poor spelling, and decoding abilities, which are not consistent with the individual's other cognitive abilities and educational experiences (Lyon, Shaywitz, & Shaywitz, 2003). Understanding the prevalence and factors influencing these disabilities is crucial for developing effective educational interventions and support mechanisms. Research has indicated that reading disabilities are a global issue, affecting children across various linguistic and

cultural backgrounds (Snowling & Hulme, 2012). However, the prevalence and nature of these disabilities can vary significantly depending on the language and orthography in question. In languages with more transparent orthographies, such as Finnish or Italian, the incidence of reading disabilities tends to be lower compared to languages with opaque orthographies like English (Ziegler & Goswami, 2005). Hindi, with its relatively transparent orthography, provides an interesting context for studying reading disabilities, yet research in this linguistic context remains limited.

The relationship between gender and reading disabilities has been a topic of considerable debate. Historically, boys were believed to be more prone to reading disabilities than girls, largely based on early studies that suggested a male predominance (Rutter et al., 2004). However, more recent studies have questioned this gender disparity, suggesting that it may be an artifact of referral bias rather than a true difference in prevalence (Quinn & Wagner, 2015). Studies using population-based samples have found no significant gender differences in the prevalence of reading disabilities, indicating the need for further investigation in diverse contexts and populations (Shaywitz et al., 1990; Catts et al., 2002).

In the Indian context, the educational system faces unique challenges, including varied socio-economic backgrounds, linguistic diversity, and differing levels of access to quality education. These factors can significantly impact the identification and support of children with reading disabilities. The present study aims to fill the gap in the existing literature by investigating the prevalence of language-based reading disabilities in Hindi among young children and examining whether gender plays a significant role in the distribution of these disabilities. In nut shell, this study addresses the critical need for research on reading disabilities in the Hindi language context, explores the potential influence of gender on these disabilities, and underscores the importance of early identification and intervention. The findings are expected to inform the development of effective, evidence-based educational strategies that can be implemented across diverse linguistic and cultural settings.

AIMS & OBJECTIVES

The aims and objectives of this research are as follows:

i. To investigate whether gender significantly influences the prevalence of language-based reading disabilities among Hindi-speaking children.
ii. To provide a detailed understanding of the distribution of various language-based reading skills between male and female participants.
iii. To contribute to the development of gender-neutral educational interventions and policies for children with reading disabilities.

RESEARCH METHODOLOGY

Study areas and Samples

The study comprised a sample of 278 children, all aged between 5 and 6 years, providing a comprehensive view of early childhood reading abilities. The gender distribution was fairly balanced, with 148 boys, making up 53.2% of the sample, and 130 girls, accounting for 46.8%. This diverse cohort was drawn from various locations within Madhya Pradesh, India, specifically Bhopal, Itarsi, Narmadapuram, and Raisen. This geographic diversity ensured a representative sample of the region's population, encompassing different socio-economic backgrounds and educational environments. By including children from multiple locations, the study aimed to capture a broad spectrum of reading abilities and disabilities, enhancing the generalizability and applicability of the findings across the wider population of young children in Madhya Pradesh.

Tools and Methods

Checklist Development:

To assess language-based reading skills, a Hindi checklist was developed, with scores ranging from 0 to 44. This checklist was meticulously designed to cover eight selective variables: speech sound awareness, word retrieval, verbal memory, speech production/perception, comprehension, expressive language, somatic component, and syntactic component. The reliability and validity of the checklist were rigorously tested, resulting in a high Cronbach's alpha of 0.996, indicating excellent internal consistency. The 90th percentile was set as the critical cutoff to identify children at risk. Specifically, a score of 16 or higher on this checklist was used to classify participants as having a reading disability.

Reliability and Validity:

The reliability and validity of the checklist were rigorously tested, ensuring that the tool was both accurate and consistent in measuring language-based reading skills. The high Cronbach's alpha value of 0.996 demonstrated excellent internal consistency, meaning that the items on the checklist reliably measured the same underlying construct. This high level of reliability indicates that the checklist is a dependable instrument for assessing reading disabilities, as the near-perfect Cronbach's alpha suggests that the items are well-correlated and provide consistent results across different administrations. Such a robust reliability metric underscores the checklist's capability to accurately identify and differentiate between varying levels of reading disabilities among the participants. This rigorous testing process involved detailed item analysis and validation procedures, ensuring that each component of the checklist contributed meaningfully to the overall assessment of reading skills.

***Factor Analysis*:**

The factor analysis conducted in the study demonstrated strong reliability for the various components of the checklist, as evidenced by high item-total correlation values. These correlations indicate that each item on the checklist is consistently aligned with the overall construct it aims to measure. Specifically, the factors analyzed included speech sound awareness, word retrieval, verbal memory, speech production/perception, comprehension, expressive language, somatic component, and syntactic component. High item-total correlation values for these factors suggest that each item effectively contributes to its respective domain, thereby ensuring that the checklist provides a comprehensive and accurate assessment of language-based reading skills. This reliability means that individual items are highly representative of the overall construct, enhancing the checklist's utility in identifying specific areas of reading disabilities. The robust factor analysis reinforces the checklist's validity and reliability, confirming that it is a well-constructed tool for diagnosing and evaluating reading disabilities in children.

Statistical Analysis

The statistical analysis for the study on Language-Based Reading Disabilities in children was performed using Excel, R Programming, and Jamovi. These tools ensured a robust and comprehensive analysis, enabling a deeper understanding of the prevalence and characteristics of reading disabilities among the participants.

RESULTS AND DISCUSSION

The study aims to determine if there is a significant difference in the prevalence of language-based reading disabilities between male and female participants. For this purpose, one major null hypothesis was formulated: Hypothesis H1 states that there would be no significant difference in Language-Based Reading Disabilities (all 8 selective variables) in Hindi between male and female participants. Table 1 details the distribution of reading disabilities among the participants. Of the 278 total participants, 121 (89.0%) females and 130 (91.5%) males were identified as having no reading disabilities. Conversely, 15 (11.0%) females and 12 (8.5%) males were classified as having reading disabilities (with a reading disorder score of 16 or higher). This table helps compare the observed frequencies of reading disabilities between genders.

Table 1: Distribution of Reading Disabilities by Gender

Category	Female	Male	Total
Normal	121 (89.0)	130 (91.5)	251 (90.3)
Reading Disability	15 (11.0)	12 (8.5)	27 (9.7)
Total	136	142	278

Figures in parentheses indicate percentage in that category.

To further investigate, a chi-square (χ^2) test was performed (Table 2) to compare the prevalence of reading disabilities between genders. The chi-square value (χ^2) of 0.527 indicates the difference between the observed frequencies and the expected frequencies under the null hypothesis. The p-value of 0.468 suggests the probability of obtaining these data, or more extreme, under the assumption that the null hypothesis is true.

Table 2: Chi-Square Test Results

Value	df	p
χ^2	0.527	1
N	278	

Since the p-value (0.468) exceeds the conventional alpha level of 0.05, the null hypothesis cannot be rejected at the 95% confidence interval. This indicates insufficient evidence to conclude a significant association between gender and reading disabilities. Hence, the distribution of reading disabilities does not significantly differ between male and female participants.

This finding is significant as it demonstrates that gender does not substantially influence the likelihood of having a reading disability, defined by a score of 16 or higher on the reading disorder scale. The absence of a significant difference implies that both male and female participants are equally prone to scoring above this threshold. This insight is crucial for educational and clinical settings, advocating for gender-neutral interventions and support strategies for reading disabilities.

In the results of this study, notable variations were observed in context of prevalence of different language-based reading disorders among the participants. Syntactic component disorders emerged as the most prevalent, affecting 49.70% of the subjects. Issues related to speech sound awareness were also significant, impacting 29.14% of the children. Comprehension issues were observed in 18.09% of the participants, while word retrieval disorders were the least common, affecting only 1.94% of the sample. Regarding the overall performance, the mean score was found to be 8.85, with a standard deviation of 5.83, indicating a considerable spread in the scores, which ranged from 0 to 29. The 75th percentile score was 14.69, and the 90th percentile score was 16, highlighting the upper range of performance within the group.

In terms of reading disability risk, a critical finding was that only 27 children scored 16 or higher on the checklist, suggesting that these children might be at risk for a reading disability. This data underscores the importance of early identification and intervention for children who exhibit potential reading difficulties. The results of this study align with previous research in the field of language-based reading disabilities. For instance, a study by Catts et al. (2002) found no significant gender differences in the prevalence of reading disabilities among young children, supporting the findings of the current study that gender does not play a crucial role in the distribution of these disabilities. Additionally, Shaywitz et al.

(1990) reported similar results, indicating that reading disabilities are equally distributed among boys and girls when evaluated in a comprehensive manner.

Furthermore, the high prevalence of syntactic component disorders observed in this study is consistent with findings by Bishop and Snowling (2004), who identified syntax and grammar as critical areas of difficulty for children with language-based reading disabilities. The significant impact of speech sound awareness issues observed in 29.14% of participants also corroborates with studies by Hulme et al. (2002), which emphasize the importance of phonological processing skills in reading development.

The overall performance metrics, with a mean score of 8.85 and a significant range of scores, indicate considerable variability in reading abilities among children. This variability highlights the need for personalized and targeted interventions, as supported by the work of Snowling and Hulme (2012), who advocate for tailored educational strategies to address the diverse needs of children with reading difficulties.

CONCLUSION

In conclusion, the findings of this study contribute to the growing body of evidence that gender does not significantly influence the prevalence of language-based reading disabilities. These results underscore the importance of focusing on individual differences and specific skill deficits in developing effective interventions for reading disabilities. By ensuring early identification and appropriate support, educators and clinicians can better address the needs of all children at risk for reading difficulties, regardless of gender.

ACKNOWLEDGEMENT

I wish to express my profound gratitude to my research guide for their invaluable guidance and unwavering support throughout this study. I am also deeply appreciative of the various agencies and organizations that made data collection in the field possible. Their cooperation and resources were essential for obtaining the necessary data and insights, making this research feasible.

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