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**| RESEARCH ARTICLE**

## **The Situation of Speech and Language Disorders in Morocco: A Comprehensive Analysis of the RSK Region**

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**| ABSTRACT**

This research delves into the nuanced dynamics of speech and language development disorders and academic achievement disorders, unveiling disparities across demographic, environmental, and age-related dimensions. A distinct urban-rural divide emerges, emphasizing the influence of environmental factors on prevalence rates. Individuals in urban settings face higher rates of disorders, necessitating tailored interventions acknowledging the unique challenges of urban environments. Conversely, rural populations demonstrate lower prevalence, urging policymakers to consider resource allocation and intervention strategies attuned to the specific needs of diverse locales. A crucial revelation is the heightened prevalence among individuals under 18 years old, underscoring the imperative for early intervention strategies. Early childhood programs and educational interventions prove pivotal, requiring customization to address the evolving needs of different age groups. Gender-specific considerations become evident, with males exhibiting a higher prevalence. Tailoring interventions to understand and address gender-specific factors is paramount for enhancing support systems and intervention effectiveness.

**| KEYWORDS**

Prevalence rates, RSK, Healthcare interventions, Age-specific prevalence, Urban environments, Policy initiatives, Demographic patterns

**| ARTICLE INFORMATION**

**ACCEPTED:** 01 December 2023

**PUBLISHED:** 20 December 2023

**DOI:** 10.32996/jpbs.2023.3.2.8

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**1. Introduction**

Speech disorders constitute a pervasive yet often underexplored issue within the healthcare landscape, particularly in the context of Morocco. Despite their profound impact on individuals' daily lives, there remains a significant gap in the literature addressing the prevalence, challenges, and opportunities associated with speech disorders both nationally and regionally. This study aims to bridge this gap by providing a comprehensive exploration of the landscape of speech disorders, focusing on the (RSK) region in Morocco.

Recent publications underscore the need for a nuanced understanding of speech disorders and their implications, emphasizing the scarcity of comprehensive studies specific to Morocco. The global discourse on communication disorders has grown substantially, with an increasing recognition of the socio-cultural factors influencing the prevalence and treatment of speech disorders. However, the specific nuances within the Moroccan context, particularly within the RSK region, remain relatively uncharted.

In navigating the intricate landscape of speech and language development disorders and academic achievement disorders, this research embarks on a comprehensive exploration to unravel the multifaceted dynamics underlying these prevalent challenges.

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The journey into understanding the complexities of these disorders reveals pronounced disparities across various dimensions, compelling us to consider the interplay of demographic factors, environmental influences, and age-related patterns.

One of the fundamental aspects unearthed in our analysis is the profound impact of urban and rural environments on the prevalence rates of these disorders. Recognizing the urban-rural divide, we illuminate the distinct challenges individuals face in diverse settings, urging policymakers and healthcare practitioners to tailor interventions that resonate with urban and rural populations' unique needs. This insight underscores the imperative of a nuanced approach that acknowledges the influence of environmental factors on the manifestation of speech and language development disorders and academic achievement disorders.

Moreover, our investigation delves into age-specific patterns, revealing a critical juncture in individuals less than 18 years old. The consistently higher prevalence in this age group emphasizes the pivotal role of early intervention strategies. This insight propels us into early childhood programs and educational interventions, where customization becomes paramount to address evolving needs across different age groups effectively.

Gender-specific considerations add another layer to our understanding, uncovering a higher prevalence among males. As we delve into this gender-based disparity, our analysis underscores the need for interventions that tailor strategies to comprehend and address gender-specific factors, thereby enhancing the efficacy of support systems.

We advocate for an integrated approach as we traverse the interconnected nature of speech and language development disorders and academic achievement disorders. This holistic strategy becomes the linchpin for comprehensive interventions, ensuring a well-rounded response to the multifaceted challenges identified in our study.

In this collective pursuit of knowledge, our research sheds light on the complexities inherent in these disorders and sets the stage for tailored interventions. By recognizing and addressing the identified disparities, we aspire to contribute to designing inclusive and practical strategies, ultimately enhancing the quality of life for individuals affected by speech and language development disorders and academic achievement disorders.

## **2. Literature Review**

The literature surrounding communication disorders in Morocco offers valuable insights into the prevalence, challenges, and interventions related to this significant healthcare concern. One notable contribution is the study titled "A Cross-Sectional Descriptive Research on Prevalence of Communication Disorders in Morocco through Speech-Language Therapist Survey" by Brahim Sabir, Touri Bouzekri, and Mohamed Moussetad. Published in July 2015, the study addresses the scarcity of readily available information on communication disorders within the Moroccan population. It emphasizes the reliance on national statistical information as the official authority estimating the magnitude of this prevalent issue. The latter has been the focal source of regional and national data for the present article. The research employs an online survey conducted among Speech-Language Therapists (SLTs) in 15 major cities of the kingdom of Morocco, aiming to estimate the prevalence of communication disorders and explore factors such as the age of the affected population and the tools employed by language therapists in addressing these disorders. The study's findings were significant, indicating that speech and language disorders rank prominently high nationally. The need for early screening to detect these disorders can facilitate effective treatment emerged as a critical conclusion. Furthermore, the study highlights the importance of utilizing appropriate tools tailored to the socio-cultural context of Morocco in addressing communication disorders.

It is crucial to note the distinction between speech and language disorders, and the study by Sabir et al. focuses on communication disorders broadly. While this study contributes substantially to the literature, our research seeks to extend this knowledge by focusing on the specific regional context of the (RSK) region by delving into distinct categories of communication disorders, including Speech and Language Development Disorders and Academic Achievement Development Disorders. By building upon the insights offered by Sabir et al., our study aims to further contribute to the understanding and targeted intervention of speech and language disorders within the Morocco context, considering the unique characteristics of the RSK region.

By definition, speech, language, and communication disorders are related terms, but they refer to distinct aspects of the communication process. "language" and "speech" are commonly used interchangeably in everyday discussions. However, it becomes crucial to discern the nuanced distinctions between these two concepts when delving into communication disorders.

Speech disorders, encompassing deficits that impede the production or understanding of speech, comprise speech sound disorders, voice disorders, and Stuttering. Speech sound disorders, including articulation disorders, Dysarthria, and childhood apraxia of speech, involve deficiencies in producing individual speech sounds due to issues with planning, control, or coordination of oral structures. For instance, Dysarthria, often resulting from medical conditions affecting oral muscles or nerves, can lead to

speech that is challenging to comprehend due to weak, imprecise, or abnormal speech movements. Moreover, childhood apraxia of speech is a rare disorder characterized by difficulty in planning and programming speech movements, resulting in delayed acquisition of expected speech sounds (ASHA, 2007). According to Carding et al. (2006), Voice disorders, also known as dysphonias, arise when laryngeal structures, including vocal cords, function improperly. Conditions such as hoarse or breathy voices may stem from growths, allergies, paralysis, infection, or vocal abuse. Further, Aphonia, a complete inability to produce sound, can result from inflammation, infection, or injury to the vocal cords.

On the other hand, Stuttering, categorized as a fluency disorder, disrupts the smooth flow of speech, manifesting as excessive repetitions, involuntary blocks, hesitations, or prolongations. Severe Stuttering can impede speech altogether and lead to physical and emotional challenges. These various speech disorders encompass a spectrum of challenges affecting different facets of the complex communication process, necessitating tailored interventions for effective management (Conture, 2001).

The American Psychiatric Association (2013) highlights that language encompasses the code or symbol system utilized for representing ideas across various modalities, including auditory and verbal communication, reading, and writing. It also extends to the capacity to interpret and generate manual communication, such as American Sign Language. Language disorders impede a child's capacity to comprehend the code, articulate the code, or both. Language disorders can be divided into two categories: receptive and expressive. The first entails difficulties understanding messages conveyed through language, while the latter manifests in challenges in formulating ideas and messages using language. In some cases, we encounter patients with Expressive-receptive language disorders accompanied by challenges in comprehending and producing messages encoded in language.

Further, language disorders identified in the preschool period have been correlated with the development of learning disabilities as children enter school (Sun & Wallach, 2014). The data examined in this current article pertains to speech and language disorders and academic achievement disorders. The existing literature on this correlation holds considerable importance for future research emphasis, allocating compelling evidence suggesting that early language disorders heighten the risk of adverse outcomes in literacy, mental health, and employment well into adulthood (e.g., Atkinson et al., 2015; Clegg et al., 2015; Law et al., 2009). Correspondingly, the definition of a specific learning disability, according to the Individuals with Disabilities Education Act (IDEA) (Section 300.8), characterizes it as "a disorder in one or more of the basic psychological processes engaged in comprehending or employing language, whether spoken or written. This may become apparent through an imperfect ability to listen, think, speak, read, write, spell, or perform mathematical calculations."

Overall, the present publication illustrates a complementary resource for understanding the landscape of communication disorders in Morocco, providing a foundational perspective for our current research. It underscores the necessity of comprehensive data collection and the importance of cultural considerations in addressing communication disorders. While the study by Sabir et al. contributes substantially to the literature, our research seeks to extend this knowledge by focusing on the specific regional context of the (RSK) region by delving into distinct categories of communication disorders, including Speech and Language Development Disorders and Academic Achievement Development Disorders. By building upon the insights offered by Sabir et al., our study aims to contribute further to the understanding and targeted intervention of speech disorders within the Moroccan context.

### **3. Methodology**

#### **3.1 Literature Review and Data Source<sup>1</sup>**

Given the scarcity of literature on speech and language disorders in Morocco, the Ministry of Health is the sole authoritative source of statistical data. As an integral part of our research project, the data obtained from the Moroccan Ministry of Health serves as a fundamental backbone, enabling a comprehensive understanding of the dimensions and prevalence of speech and language disorders in (the RSK) region.

#### **3.2 Data Collection**

The primary data source for this research is the regional statistical depository of health in Morocco. The repository houses extensive and up-to-date information on health-related aspects, including speech and language disorders. This data repository provides a valuable resource for obtaining detailed statistics specific to the RSK region, contributing to the richness of our research.

#### **3.3 Procedure**

Following the necessary authorizations from the University Doctoral Research Centre and the Ministry of Health, the Regional Centre of Statistical Data facilitated access to the required statistics on regional speech and language disorders in Morocco. The authorization process ensures compliance with ethical guidelines and safeguards participant confidentiality. Post-authorization,

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<sup>1</sup>RSK: Rabat, Sale and Kenitra region

we obtained detailed information regarding the prevalence of speech and language disorders, categorizing the data by age, environment, and gender.

Once the data was acquired, we employed the Statistical Package for the Social Sciences (SPSS) for in-depth statistical analysis. The division of data by age, environment, and gender allows for a comprehensive exploration of the nuanced aspects of speech and language disorders within the RSK region.

This methodological approach ensures the reliability and accuracy of our findings, drawing on authoritative and updated statistical data provided by the Ministry of Health. Using SPSS enhances the robustness of our statistical analysis, contributing to the validity of the research outcomes.

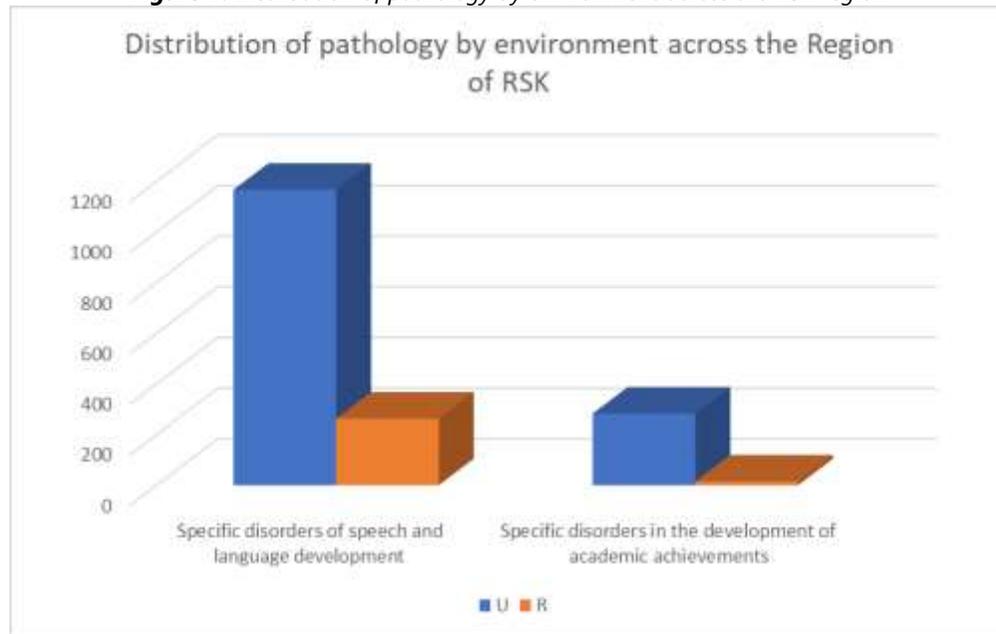
Additionally, the regional specificity of the dataset allowed for a detailed exploration of speech and language disorders within the RSK region; the latter approach addresses the scarcity of existing literature on the subject and ensures that our findings are grounded in authoritative and up-to-date information. The reliance on the Ministry of Health's dataset is a robust foundation, enabling a thorough investigation into the prevalence and nuances of speech and language disorders in the targeted region. The methodological rigor in obtaining and handling this data enhances our research outcomes' overall validity and reliability.

#### **4. Results and Discussion**

##### **4.1. Demographic Patterns in Urban and Rural Environments**

The graphical representation provides a comprehensive view of the distribution of specific disorders of speech and language development in conjunction with specific disorders in the development of academic achievements within the studied population. Notably, the data unveils distinct patterns in urban and rural demographics, offering valuable insights into the prevalence of these disorders across different environments.

**Figure 1:** *Distribution of pathology by environment across the RSK region*



Note: The data source is the Regional Health Directorate RSK.

##### **4.1.1 Distribution of Speech and Language Development Disorders**

###### **I. Urban Environments:**

The graph prominently indicates a higher incidence of specific speech and language development disorders in urban settings. This observation aligns with existing literature on the potential impact of urbanization on speech and language disorders. Factors such as increased environmental stimuli, access to diverse linguistic patterns, and potential environmental stressors in urban areas may contribute to the elevated prevalence.

###### **II. Rural Environments:**

Conversely, the data reveals a comparatively lower rate of specific speech and language development disorders in rural environments. This finding opens avenues for further investigation into the potential protective factors in rural settings, such as

close-knit communities, reduced environmental stressors, or distinct linguistic environments that may positively influence language development.

#### 4.1.2 Relationship with Academic Achievement Disorders

Remarkably, the same demographic trend is mirrored in the distribution of specific disorders in the development of academic achievements. Urban environments exhibit a higher prevalence, suggesting a potential correlation between speech and language disorders and academic challenges. This correlation may be influenced by factors such as the availability of specialized educational resources, early intervention programs, and the overall educational infrastructure in urban areas.

Conversely, rural environments, with their lower prevalence of speech and language disorders, similarly demonstrate a lower incidence of specific disorders in academic achievement development. This observation emphasizes the interconnected nature of speech and language development with academic success, highlighting the need for a holistic approach to address these challenges.

#### 4.1.3 Implications and Future Considerations

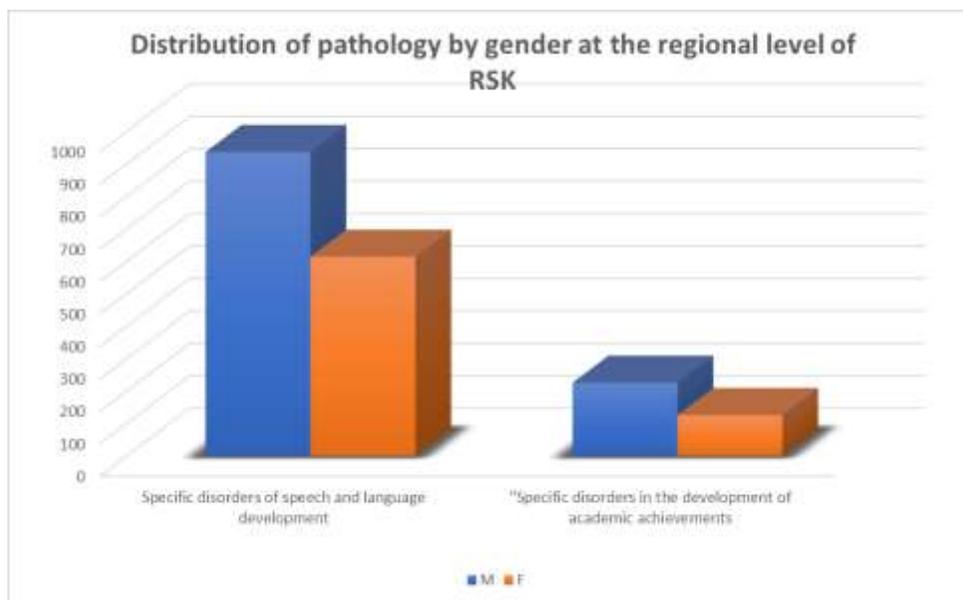
Understanding the demographic nuances presented in the graph has significant implications for targeted interventions and resource allocation. Policymakers, educators, and healthcare professionals can use this information to tailor strategies that address the specific needs of urban and rural populations. These findings underscore the importance of early detection and intervention in urban areas, where the prevalence is notably higher.

While this study sheds light on the demographic distribution of speech and language disorders, further research is warranted to delve into the intricacies of the observed patterns. Exploring the cultural, socioeconomic, and educational factors contributing to these disparities will be instrumental in developing comprehensive and context-specific interventions to support individuals affected by these disorders.

#### 4.2 Demographic Patterns by Gender

The presented graph provides a visual representation of the distribution of specific disorders of speech and language development in conjunction with specific disorders in the development of academic achievements. A striking observation from the graph is the notable gender-based disparity, with males demonstrating a higher prevalence of these disorders compared to females. Additionally, the urban-rural demographic distinction remains evident, with urban environments displaying higher rates of both speech and language development disorders and academic achievement disorders.

**Figure 2:** Distribution of pathology by gender at the RSK region



Note: The data source is the Regional Health Directorate RSK.

#### 4.2.1 Gender Disparities

##### 4.2.1.1. Male Prevalence

The graph underscores a noteworthy gender-based pattern, revealing a higher incidence of specific disorders of speech and language development and academic achievement disorders among the male demographic. This observation further examines potential gender-specific factors contributing to these disparities. Biological, sociocultural, or educational factors may play a role in influencing the higher prevalence observed among males.

##### 4.2.1.2. Female Prevalence

Conversely, females exhibit a comparatively lower rate of specific disorders in speech and language development and academic achievements. Understanding the factors contributing to this gender-based difference is crucial for tailoring interventions that address both male and female populations' unique needs.

##### 4.2.1.3. Implications and Future Directions

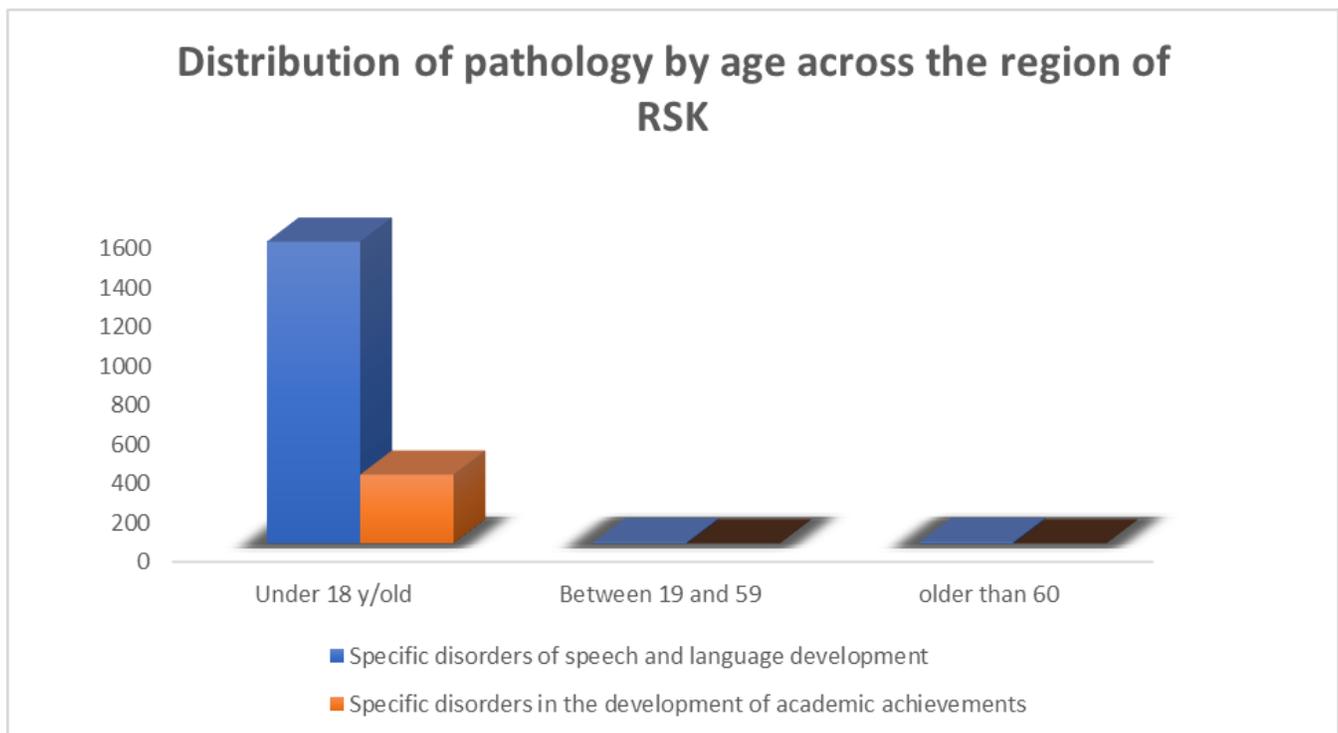
Understanding these gender and demographic disparities has significant implications for developing targeted interventions and support systems. Tailoring strategies based on gender-specific and urban-rural considerations will be crucial for addressing the unique challenges individuals in different demographic groups face.

Future research should investigate the underlying factors contributing to the observed disparities. Exploring sociocultural, educational, and environmental influences on speech and language development and academic achievements can inform the development of more nuanced and effective interventions. Additionally, focusing on gender-specific factors contributing to these disparities will provide a more comprehensive understanding of the intricate dynamics involved.

#### 4.3 Demographic Patterns by Age

The graphical representation offers a detailed insight into the distribution of specific disorders of speech and language development alongside disorders in the development of academic achievements across different age groups. The graph is segmented into three categories: individuals under 18, those between 19 and 59, and those older than 60. A striking observation is the considerably higher rate observed in the category of less than 18 years old, particularly concerning both speech and language development disorders and academic achievement disorders.

Figure 3: Distribution of pathology by age across the RSK region



Note: The data source is the Regional Health Directorate RSK.

### **4.3.1. Age-Based Disparities**

#### **4.3.1.1 Under 18 y/old:**

The data prominently reveals a higher prevalence of specific disorders in speech and language development and academic achievements among individuals less than 18 years old. This finding underscores the critical importance of addressing these challenges during the formative years of development. Factors such as early intervention, educational support, and family involvement play pivotal roles in mitigating the impact of these disorders on the younger demographic.

#### **4.3.1.2 Between 19 and 59:**

Conversely, the graph indicates a comparatively lower rate of disorders in the age group between 19 and 59. While the prevalence remains present, the observed decline may be attributed to various factors such as increased adaptability, coping mechanisms, or potentially reduced environmental stressors as individuals transition into adulthood.

#### **4.3.1.3 Older Than 60:**

The category of individuals older than 60 demonstrates a further decline in the prevalence of these disorders. This decline may be influenced by various factors, including adaptive strategies developed over the lifespan, generational differences, or the impact of age-related cognitive changes on the perception and manifestation of these disorders.

#### **4.3.1.4 Implications and Significance**

- **Early Intervention Importance:**

The higher rates observed among individuals under 18 highlight the critical need for early intervention strategies targeting speech and language development and academic achievements. Implementing effective interventions during these crucial developmental stages can significantly impact long-term outcomes.

- **Lifespan Considerations**

Understanding the variations in prevalence across different age groups emphasizes the need for a lifespan approach to addressing speech and language development and academic achievement disorders. Tailored strategies for each age group can contribute to more effective interventions and support systems.

#### **4.3.1.5 Future Research Considerations**

Future research endeavours should investigate the factors contributing to the observed disparities among different age groups. Exploring the role of environmental, educational, and cognitive factors within each age category will contribute to a more nuanced understanding of these disorders across the lifespan. Additionally, identifying age-specific intervention strategies will be crucial for optimizing outcomes and promoting lifelong success in speech and language development and academic achievements.

## **5. Conclusion**

In culmination, this research has uncovered a multifaceted landscape of speech and language development disorders and academic achievement disorders, unveiling significant disparities across various dimensions. The distinct prevalence rates observed between urban and rural environments emphasize the pivotal role of environmental factors in shaping these challenges. Policymakers and healthcare practitioners are urged to acknowledge and address individuals' unique challenges in each setting, advocating for tailored interventions that resonate with the specific needs of urban and rural populations.

Notably, the research underscores the critical importance of early intervention strategies, emphasizing individuals under 18 exhibiting higher prevalence rates. Early childhood programs and educational interventions emerge as linchpins in the effort to address these disorders effectively. Tailoring interventions to cater to the specific needs of different age groups is imperative, recognizing the evolving challenges across the lifespan. Gender-specific considerations take center stage as the research illuminates a higher prevalence of disorders among males. Tailoring interventions to understand and address gender-specific factors is paramount for enhancing the effectiveness of support systems and interventions, fostering more equitable outcomes.

The interconnected nature of speech and language development disorders and academic achievement disorders becomes evident, necessitating an integrated approach that considers both linguistic and academic aspects. This holistic strategy proves crucial for comprehensive interventions, ensuring a well-rounded response to the multifaceted challenges identified in the study.

Moreover, the urban-rural divide in the prevalence of disorders points to the influential role of environmental factors. Understanding these disparities informs resource allocation and guides intervention strategies and policy initiatives. Recognizing and addressing individuals' unique challenges in diverse environments will contribute to more inclusive and effective strategies.

In conclusion, this research offers a nuanced understanding of the intricate dynamics surrounding speech and language development and academic achievement disorders. The identified demographic, environmental, and age-related patterns provide valuable insights, serving as a compass for policymakers, educators, and healthcare practitioners to design targeted and context-specific interventions. The imperative lies in recognizing and addressing these disparities, paving the way for more inclusive and practical strategies that ultimately enhance the quality of life for individuals affected by these disorders.

**Funding:** This research received no external funding.

**Conflicts of Interest:** The authors declare no conflict of interest.

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**Publisher's Note:** All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers.

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