

A Systematic Review of the Needs Assessment for Individuals with Physically and Intellectual Disabilities in Saudi Arabia: Challenges, Services, and Gaps

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Abstract: *Background:* Individuals with disabilities frequently face challenges in accessing healthcare services. Despite growing attention to disability inclusion worldwide, there remains a significant lack of comprehensive needs assessments for individuals with physical and intellectual disabilities in Saudi Arabia. Moreover, there is limited research integrating both quantitative and qualitative findings to provide an evidence-based roadmap for policy and intervention improvements.

Objective: to systematically review the needs assessment for physically and intellectually disabled individuals in Saudi Arabia, focusing on the challenges they face, the services available to them, and the existing gaps in support.

Methods: This study employed a qualitative approach to explore the barriers faced by individuals with physical and intellectual disabilities in Saudi Arabia. Semi-structured interviews were conducted with educators and caregivers who met specific selection criteria, including relevant experience in special education or caregiving roles. The interviews included open-ended questions to gather in-depth perspectives on educational, societal, familial, curricular, and behavioral challenges. Data collected from these interviews were transcribed and analyzed using thematic analysis with NVivo software. The analysis process involved coding the data, categorizing emerging themes, and ensuring credibility through strategies such as member checks and expert validation.

Results: The study identified several critical barriers experienced by disabled individuals in Saudi Arabia. Educational challenges included a lack of specialized teacher training and inadequacies in addressing diverse learning needs. Societal obstacles, such as stigma and rejection, hindered social inclusion and acceptance. Familial constraints were noted, with limited parental engagement often caused by time pressures and a lack of knowledge. Curricular shortcomings highlighted the rigidity and inflexibility of current educational programs, which failed to cater to individual needs. Lastly, behavioral and emotional challenges, including self-injurious behavior and communication difficulties, were prevalent among disabled individuals. These findings underscore the urgent need for systemic reforms and collaborative efforts to improve support systems.

Conclusion: This systematic review underscores the significant barriers faced by physically and intellectually disabled individuals in Saudi Arabia, ranging from limited accessibility in healthcare and public spaces to systemic challenges in education and parental involvement. It underscores the prevalence of physical disabilities (67.3%) among the studied population and identifies that 56.7% of individuals face notable barriers, such as inadequate infrastructure and insufficient specialized healthcare services. Quality-of-life assessments reveal a need for interventions to enhance physical and social inclusion.

Keywords: Accessibility barriers, caregiver challenges, disability, Saudi Arabia.

INTRODUCTION

Individuals with disabilities frequently encounter obstacles when accessing healthcare. These challenges include physical barriers like inaccessible facilities, limited transportation options, and a shortage of assistive devices. Additional difficulties may involve communication barriers and negative perceptions or biases from healthcare staff and society [1].

Health equity emphasizes that everyone should have a fair chance to achieve their maximum health potential and that no individual should face disadvantages in reaching this potential [2]. Research

indicates that people with disabilities often face significant health disparities compared to non-disabled individuals [3], particularly in accessing healthcare services [4].

The World Health Organization (WHO) reports that approximately 15% of the global population lives with some form of disability. Among them, 110 to 190 million individuals experience considerable functional challenges. In Saudi Arabia, a survey by the General Authority for Statistics found that over half a million Saudi citizens (about 1 in 30) reported having a disability, with higher rates among males and those aged 60 and older [5].

Historically, people with disabilities have been underrepresented in public health initiatives. However, recent efforts have shed light on the health challenges

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they face. These health inequities often result in unmet clinical needs, insufficient focus on health promotion, and inadequate access to high-quality healthcare and preventive services [6].

This systematic review is the first to comprehensively synthesize findings from multiple studies across diverse settings, including healthcare, education, and public spaces, to identify overarching challenges and service gaps. By employing a robust qualitative and meta-analytical approach, it highlights the most pressing barriers, quantifies the prevalence of disabilities and accessibility challenges, and proposes targeted solutions to enhance the quality of life for disabled individuals in Saudi Arabia.

The objective of this systematic review was to systematically examine and synthesize research findings related to the barriers faced by individuals with disabilities and the challenges encountered by their caregivers in Saudi Arabia.

METHODS

Searching Databases

According to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines [7], we searched PubMed, Scopus, and Web of Science for articles that fulfill our eligibility to be included in the systematic review and meta-analysis investigating the barriers, challenges, and gaps of healthcare faced by physically disabled individuals or individuals with intellectual disabilities in Saudi Arabia. The search was conducted from inception till October 2024 based on the Medical Subject Headings (MeSH) terms of four main keywords: ("Saudi Arabia" AND "Disability") AND ("Physical" OR "Intellectual").

Screening

The resulting articles from the search process were uploaded to Rayyan software [8]. After this, we conducted the process of title and abstract screening, followed by full-text screening. These processes were conducted by two authors who worked independently, and any disagreements were settled by consensus or referred to a senior author if they persisted. We included all the observational studies (cohort, case-control, and cross-sectional) and interventional randomized controlled trials (RCTs), which investigated the barriers, challenges, and gaps in healthcare faced by physically disabled individuals or individuals with intellectual disabilities in Saudi Arabia.

We excluded studies published in languages other than English or Arabic without an accessible translation and studies addressing only single-case experiences or small qualitative interviews without broader generalizability.

Inter-Rater Reliability

Cohen's kappa coefficient was calculated to ensure consistency in study selection at each stage of screening and data extraction, with an agreement threshold set at ≥ 0.80 , indicating strong reliability.

Data Extraction

The data extraction process was conducted by two authors working independently on a pre-prepared Microsoft Excel spreadsheet. Any disagreements were resolved by consensus, and if the disagreements persisted, the senior author resolved them. We extracted the baseline data of the included studies, including design, location, settings, population, sample size, age, and gender of the included participants. In addition, the outcome data were extracted for the meta-analysis, including the following: the aim and summary of findings of the included studies, frequency of physical disability in the included studies, frequency of barriers and challenges faced by the physically disabled individuals, the types of challenges and barriers, and satisfaction levels.

Quality Assessment and Risk of Bias Assessment

Two independent researchers conducted a quality assessment, and any disagreements were resolved by consensus or by the senior author. The New Castle Ottawa Scale (NOS), which assigns a star rating to each study between 0 and 9, was used to assess the quality of observational studies. Every question has the option to receive one, two, or zero stars, with the exception of the comparison question, which can receive any number of stars. If a study gets 1-3 stars, it is considered low quality; if it gets 4-6 stars, it is considered moderate quality; and if it gets 7-9 stars, it is considered high quality.

Statistical Analysis and Qualitative Synthesis

All the steps of statistical analysis were conducted using Open Meta Analyst software [10]. We pooled the frequency (number) and total of outcomes to calculate the proportion and effect sizes of every outcome. This analysis was conducted at a confidence interval (CI) of 95% and a p-value of 0.05. Due to the absence of

numerical data for the analysis, qualitative synthesis was performed for studies on intellectual disabilities, so a narrative presentation of data was done using a summary of their findings.

RESULTS

Our search process resulted in a total of 387 articles from the three searched databases. We removed 175 articles and conducted title and abstract screening for the remaining 212 articles. A total of 21 articles were eligible for full-text screening, and then a final 17 articles were included in the present systematic review and meta-analysis (Figure 1).

Baseline Characteristics and Qualitative Synthesis

A total of 17 cross-sectional studies were included in the current systematic review and meta-analysis. This encompassed 11 studies with a sample size of 1425 physically disabled individuals, and six studies were conducted regarding children with intellectual disabilities. These studies were conducted in different regions in Saudi Arabia, including Riyadh, Jeddah, Dammam, Eastern Province, Qatif, and Madinah. The settings of the studies differed across the included

articles, including rehabilitation centers, primary healthcare settings, community pharmacies, schools, and public parks. The populations differed among the studies, including disabled individuals, caregivers, parents, and community pharmacists. Some studies were conducted on adults, others on children, and some were conducted on both with ages ranging from 9 to 60 years old. The most frequently reported barriers or challenges were the lack of access to healthcare services and centers, including dental centers and community pharmacists. Most of the included studies pointed out the barriers and challenges faced by disabled individuals and highlighted the importance of providing better accessibility to these patients by improving the services provided to them in different medical centers, public parks, dental centers, schools, and community pharmacies.

Regarding the studies conducted on children with intellectual disabilities, the objectives of these studies were to demonstrate the challenges and barriers faced by these children in learning and education from the point of view of their teachers and parents, not assessing them in the context of children. Some studies aimed to determine parents' role in the

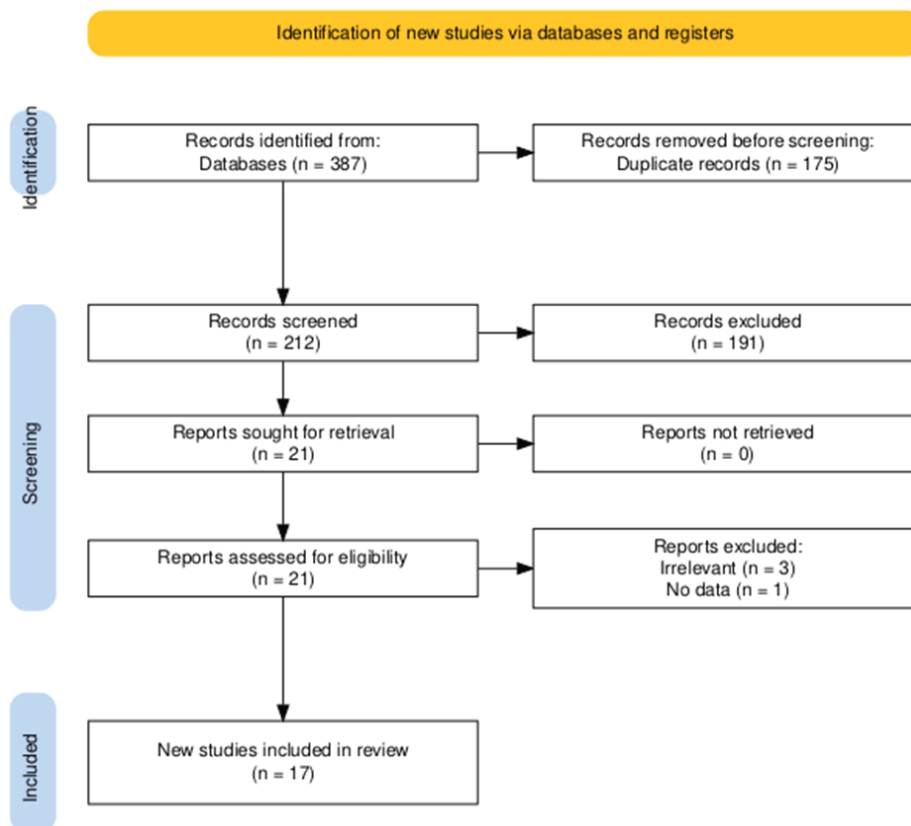


Figure 1: PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analysis) flow diagram of searching and screening processes.

Table 1: Baseline Characteristics and Summary of Findings of the Included Studies

Study ID	Design	Location	Settings	Population	Sample size	Adults or children	Age, mean (SD)	Male, n (%)	Barriers or challenges	Aim of the study	Summary of findings
Alqassim 2022	Cross-sectional	Jazan	Healthcare settings	Hearing and physically disabled persons	289	Adults and children	<15 to >44	214 (74)	Accessing appropriate healthcare services	To assess what physical and hearing disabled persons need from healthcare services and to investigate difficulties in accessing these services in the Jazan area.	There is a need to optimize society for people with physical disabilities and improve access to healthcare facilities.
Zahra 2022	Cross-sectional	Madinah	Rehabilitation hospital	Individuals with and without physical disabilities	359	Adults and children	15 to >55	115 (32)	EQoL: 4.04 (0.80) satisfaction with access to health care services and similar to non-disabled ones	To calculate the physical levels of individuals with and without physical disabilities in Saudi Arabia, their assessment of the environmental (EQoL), and the predictive role of EQoL in physical activity. The International Physical Activity Questionnaire (IPAQ) and the EQoL domain in standardized WHOQoL Questionnaire were administered to both groups of the population.	The findings suggest that upcoming public health interventions should focus on improving various dimensions of EQoL for the promotion of physical activity among individuals with physical disabilities.
Peterson 2021	Cross-sectional	Eastern Province	NR	Patients with physical disabilities	183	Adults	38	84 (46)	Accessing hospitals/doctors	To determine the extent of accessibility to transportation, goods and services, healthcare, employment, and overall independent movement in eastern province by surveying 183 persons with disabilities to ascertain what elements of the built environment are problematic for them and what they believe requires improvement.	Saudi Arabia is currently in the process of phasing in technical and social programs regarding the built environment that should improve accessibility for persons with disabilities, but current conditions are inadequate
Alwadi 2022	Cross-sectional	Riyadh	Centers of disabled children	Children with disabilities in oral health	10	Children	9 to 15 years	0 (0)	Communication from the dentists and waiting times	To include the voices of children with disabilities by representing their perspectives and experiences of oral health.	The study highlights that including children with disabilities in oral health research is possible but that researchers need to be creative and be able to work in tandem with children. One goal for dental research is to include all children as active participants, working with them as collaborators. This would help transform services and reduce children's oral health inequalities.
Bakhsh 2024	Cross-sectional	Riyadh	Five public parks	Disabled patients using wheelchairs	19	Adults	NR	NR	NR	To evaluate the feasibility of using the Path Environment Audit Tool (PEAT) and to explore the wheelchair accessibility of five public parks in Saudi Arabia through descriptive analysis.	Modifications to the environment and the upkeep of existing parks are necessary to encourage physical activity among wheelchair users in Saudi Arabia. Overall, while there are still challenges to overcome, there has been progress in improving accessibility for wheelchair users in Saudi Arabia, and the government and other stakeholders continue to work towards greater inclusion and accessibility for people with disabilities.

(Table 1). Continue.

Study ID	Design	Location	Settings	Population	Sample size	Adults or children	Age, mean (SD)	Male, n (%)	Barriers or challenges	Aim of the study	Summary of findings
Smadi 2022	Cross-sectional	Riyadh	Library and information services	Students with disabilities	35	Adults	NR	NR	Signs for directions, tools, and technologies that meet the disability needs	To examine the level of satisfaction of students with disabilities with library and information services in Saudi universities.	The physical environmental facilities of the library, from the point of view of students with disabilities, were the availability of a personal and designated place to study, such as computer spaces and chairs suitable for students' needs. The signs (directions) related to disability in the library, their compatibility with the needs of students with disabilities, and the availability of tools and technologies to meet their needs in the library without the help of others were rated poor.
Yousef 2023	Cross-sectional	Dammam, AlKhobar, and AlQatif	Primary healthcare settings	Primary healthcare settings	56	NR	NR	NR	Government-built primary healthcare settings had an average accessibility rate of 83.2%, while those located in rented buildings scored an average of 67.1%	To identify challenges related to accessibility in infrastructure, services, equipment, processes, and training in primary healthcare settings.	There is still a long way to go for government-built buildings to become disability-friendly. Nevertheless, they are better equipped and more accessible for persons with disabilities compared to rented primary healthcare settings. Therefore, it is recommended that future investments should prioritize governmentally owned facilities that adhere to disability codes.
Abed and Shackelford 2022	Cross-sectional	Jeddah	NR	Parents of children with physical disabilities	21	Adults	20-60	13 (62)	Hindering provision of play and learning materials	To (a) examine the parental role in providing materials to facilitate learning and play for children with physical disabilities and (b) identify the difficulties expressed by parents that affect the support provided to their children with physical disabilities.	Parents recommended that they initiate and maintain contact with other parents of children with physical disabilities and with associated organizations. Parents also recommended that teachers welcome parents to be involved in support of their children with physical disabilities, especially in the provision of play and learning materials
Alfaraj 2021	Cross-sectional	Qatif	Special needs centers and schools	Caregivers of patients with disabilities	186	Adults	<25 to >45	66 (35.5)	Access to dental care	To assess the magnitude of access to dental care in patients with disabilities and identify barriers responsible for the difficulties in accessing dental care in Qatif, Saudi Arabia, as reported by caregivers of individuals with special healthcare needs.	A large proportion of caregivers in Qatif, Saudi Arabia, experience difficulties with access to dental care services for individuals with special healthcare needs. The most common barriers are physical accessibility of dental facilities (for individuals with special healthcare needs), affordability, and lack of skills and knowledge of dental care providers.
Alkawai and Alowayyed, 2017.	Cross-sectional	Riyadh	King Abdul-Aziz Medical City	Physically disabled patients	227	Adults	NR	110 (48.5)	Healthcare service /structure.	To identify the significant difficulties in access to health care services experienced by patients with physical disabilities.	The majority of patients with physical disability require assistance and cannot move around independently in healthcare facilities. Nearly half of these patients face several challenges in accessing health care services and are unsatisfied with the services received. Patients with a physical disability who are wheelchair-bound have a lesser degree of satisfaction than those who are not wheelchair-bound.

(Table 1). Continue.

Study ID	Design	Location	Settings	Population	Sample size	Adults or children	Age, mean (SD)	Male, n (%)	Barriers or challenges	Aim of the study	Summary of findings
Badr 2024	Cross-sectional	Jeddah	Community pharmacy	Community pharmacists serving individuals with physical, visual, and hearing disabilities	40	Adults	20 to >50	17 (42.5)	Access to community pharmacy services	To examine the barriers faced by community pharmacists when serving individuals with physical, visual, and hearing disabilities in Saudi Arabia, with the goal of recommending ways to enhance future healthcare provisions.	This study reveals a significant gap in the provision of services for patients with disabilities in Saudi Arabia. Addressing physical accessibility, providing targeted training, and leveraging technology can enhance care delivery and promote inclusivity.
Almalki 2021	Cross-sectional	Riyadh	High schools	Special education teachers	91	Children	NR	54 (60)	Lack of parental participation in transition planning for students with intellectual disability.	To examine parental participation in transition planning for students with intellectual disability enrolled in schools in Saudi Arabia.	The study indicated that parents lack participation in transition planning for several reasons, such as lack of time and lack of knowledge about transition. However, the study found that schools did not proactively seek parental participation nor provide substantial guidance about transition services to enable parents to provide a meaningful contribution to planning.
Alsharif and Alasiri 2022	Cross-sectional	Makkah, Jeddah and Taif	Schools	Teachers of disabled children	NR	Children	NR	NR	Barriers during learning	To identify the obstacles facing gifted students with learning disabilities	The study findings indicated several educational obstacles, including the absence of adapted courses or specialized teachers for disabled children and insufficient time for the students to express their talents. According to the findings, there were also societal obstacles, including society's failure to expect the presence of talents along with disabilities or its denial or rejection of their talents in addition to ridiculing them. The findings also confirmed the existence of administrative obstacles, including the lack of community partnerships. There were also family obstacles, such as the family's lack of encouragement for the students and ignorance of the nature of disabled children.
Bagadood 2022	Cross-sectional	Makkah	Schools	Teachers	4	Children	NR	NR	Challenges in education for children with intellectual disabilities	To increase understanding of family participation in special education programs, to gain a deeper understanding of the programs themselves, and to determine the consequences of the research findings.	This study found that parental involvement in their children's education can be very positive. While parents are encouraged to play with their children to make educational progress, the blanket policies of schools worldwide that establish a framework for parental involvement may not always be successful. Education and other variances mean that parents are not on an equal footing; therefore, requesting input from all parents would produce variable results. There is, therefore, a tension involved when seeking to cater to all cultures and all parents.

(Table 1). Continue.

Study ID	Design	Location	Settings	Population	Sample size	Adults or children	Age, mean (SD)	Male, n (%)	Barriers or challenges	Aim of the study	Summary of findings
Alarifi 2024	Cross-sectional	Riyadh	Schools	Parents	120	Children	NR	80 (66.7)	Challenging behavior in children with intellectual disability	To assess the prevalence and correlates of challenging behaviors in preschool-aged children with an intellectual disability in Riyadh.	Preventative measures are suggested for preschool-aged children with an intellectual disability who are more likely to demonstrate challenging behaviors, such as those with autism and poor adaptive behaviors.
Almalki 2022	Cross-sectional	Riyadh	Schools	Teachers	11	Children	NR	NR	Challenges in Saudi transition services to children with intellectual disabilities	To explore current transition services to help identify challenges that weaken these services and recommend improvements	The study concluded that four main issues must be addressed to advance Saudi transition services: (1) special education teacher preparation programs, (2) transition services' policies and regulations, (3) Individualized Transition Plans, and (4) collaborative practices.
Alnahdi 2024	Cross-sectional	Riyadh	Middle and high schools	Family members and teachers	224	Children	NR	NR	Challenges in curricula of children with intellectual disability	To investigate family and teacher perceptions of middle and high school curricula for students with intellectual disability in Saudi Arabia.	This study highlights the inadequacies of a one-size-fits-all approach to designing curricula for students with intellectual disabilities. Curriculum content must be improved and enhanced to meet these individuals' diverse learning needs.

NR: not reported, SD: standard deviation, EQoL: environmental quality of life questionnaire, IPAQ: International Physical Activity Questionnaire, PEAT: Path Environment Audit Tool.

education process of their children suffering from intellectual disabilities, and another study aimed to investigate the challenging behaviors related to intellectual disability. Moreover, a study investigated the challenges based on curricula in the schools of disabled children.

Quality Assessment

According to NOS measurements, all the included cross-sectional studies were of high quality, as shown in Table 2.

Statistical Analysis

The proportion of physical disability in the included studies was 67.3% with an effect estimate of 0.762 (95%CI: 0.678, 0.846) (Figure 2).

The proportion of barriers or challenges faced by the included patients was 56.7% with an effect estimate of 0.64 (95%CI: 0.453, 0.827) (Figure 3).

DISCUSSION

Individuals with disabilities often experience barriers in accessing healthcare facilities, including physical barriers such as inaccessible facilities, transportation difficulties, and a lack of assistive devices. Other barriers may include a lack of communication assistive

devices and stigma or negative attitudes from healthcare personnel or society [1].

Consequently, this meta-analysis was conducted and aimed to systematically review the needs assessment for physically and intellectually disabled individuals in Saudi Arabia, focusing on the challenges they face, the services available to them, and the existing gaps in support.

This meta-analysis explored the challenges, service gaps, and barriers faced, like intellectual disabilities (e.g., autism, behavioral challenges) and physical disabilities (e.g., wheelchair users, hearing impairments), with distinct goals and outcomes in Saudi Arabia. The review encompasses 17 studies conducted in regions like Riyadh, Jeddah, Dammam, and Qatif, targeting various settings such as rehabilitation centers, schools, public parks, and healthcare facilities. These studies included a diverse population of disabled individuals, their caregivers, parents, and professionals like pharmacists and teachers. They provided a comprehensive understanding of the healthcare and social service shortcomings in the region. Participants included adults and children with disabilities, caregivers, parents, and community pharmacists. Ages ranged from 9 to 60 years, offering insights into challenges faced across different life stages. The systematic review delves into

Table 2: Quality Assessment of the Included Studies using the NOS Scale

Study ID	Selection (max 4)	Comparability (max 2)	Outcome (max 3)	Total (max 9)
Alqassim 2022	☆☆☆	☆☆	☆☆☆	☆☆☆☆☆☆☆
Zahra 2022	☆☆☆☆	☆☆	☆☆	☆☆☆☆☆☆☆
Peterson 2021	☆☆☆	☆	☆☆☆	☆☆☆☆☆☆☆
Alwadi 2022	☆☆☆	☆☆	☆☆☆	☆☆☆☆☆☆☆
Bakhsh 2024	☆☆☆	☆☆	☆☆☆	☆☆☆☆☆☆☆
Smadi 2022	☆☆☆☆	☆☆	☆☆	☆☆☆☆☆☆☆
Yousef 2023	☆☆☆	☆	☆☆☆	☆☆☆☆☆☆☆
Abed and Shackelford 2022	☆☆☆	☆☆	☆☆	☆☆☆☆☆☆☆
Alfaraj 2021	☆☆☆	☆☆	☆☆	☆☆☆☆☆☆☆
Alkawai and Alowayyed, 2017	☆☆☆	☆☆	☆☆	☆☆☆☆☆☆☆
Badr 2024	☆☆☆	☆☆	☆☆	☆☆☆☆☆☆☆
Almalki 2021	☆☆☆	☆☆	☆☆	☆☆☆☆☆☆☆
Alsharif and Alasiri 2022	☆☆☆	☆☆	☆☆	☆☆☆☆☆☆☆
Bagadood 2022	☆☆☆☆	☆☆	☆☆	☆☆☆☆☆☆☆
Alarifi 2024	☆☆☆☆	☆☆	☆☆	☆☆☆☆☆☆☆
Almalki 2022	☆☆☆	☆☆	☆☆	☆☆☆☆☆☆☆
Alnahdi 2024	☆☆☆☆	☆☆	☆☆	☆☆☆☆☆☆☆

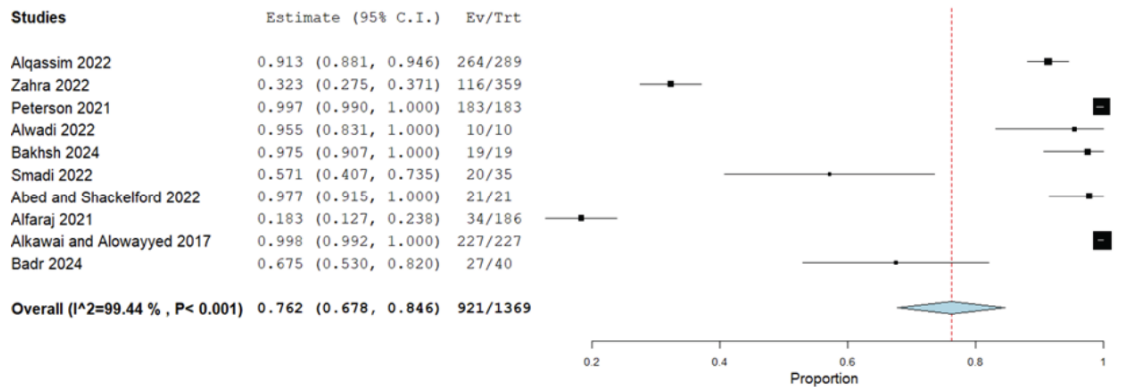


Figure 2: Proportion of physically disabled individuals in the included studies.

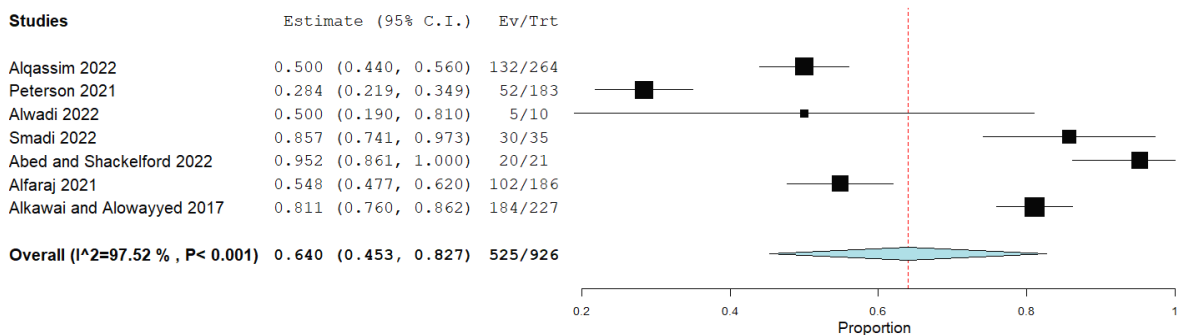


Figure 3: Barriers and challenges faced by disabled individuals in the included studies.

the challenges, services, and gaps in addressing the needs of physically and intellectually disabled individuals. The diversity of settings and populations highlights the pervasive nature of barriers to inclusion and accessibility.

Regarding Insights into Intellectual Disabilities, there viewed studies on individuals with intellectual disabilities (ID) provided detailed insights into the multifaceted challenges these individuals face, particularly in educational and behavioral contexts. These challenges were categorized into educational barriers, social obstacles, curriculum inadequacies, and family-related issues, each reflecting systemic gaps in support and inclusion.

Regarding Educational Barriers, a recurring theme in the studies was the inadequacy of educational structures for children with intellectual disabilities. Many schools lacked specialized teachers trained to address the unique needs of these students. Additionally, there were few, if any, adapted courses tailored to the diverse learning requirements of students with intellectual disabilities. Teachers often reported insufficient time to allow these students to express their talents, further limiting their potential development. The absence of adequate educational tools and resources exacerbated these issues, leaving children with ID under-supported in academic settings.

The study by Alsharif and Alasiri [11] highlights the absence of tailored curricula and specialized educators for children with disabilities. This gap not only stifles their ability to express and develop their talents but also limits their academic progress. For example, the lack of sufficient time for activities that enable self-expression underscores a systemic issue in the educational approach for disabled students. Almalki [12] supports this finding by revealing the lack of parental involvement in transitional planning for children with intellectual disabilities, often due to time constraints or limited knowledge about educational processes. These findings emphasize the necessity for reforms in teacher preparation programs and curricular design to address the unique needs of these students.

Regarding Social and Societal Obstacles, Social stigma and negative societal perceptions presented another significant barrier. Studies highlighted societal denial or rejection of the talents and capabilities of individuals with intellectual disabilities. This stigma not only isolated individuals with ID but also discouraged active engagement from their families and

communities. Moreover, societal ridicule and the absence of inclusive community partnerships further marginalized these individuals, creating additional hurdles in their integration into mainstream society.

Societal attitudes pose significant hurdles, as outlined by Alsharif and Alasiri [11]. Many communities fail to recognize or actively deny the talents of disabled individuals, often ridiculing their abilities. This societal rejection compounds the difficulties of integration and acceptance. As indicated in the studies, efforts to foster community awareness and encourage inclusive practices are critical. Moreover, societal stigma towards disabilities, as highlighted by Almalki [12], can discourage families from seeking active roles in their children's education.

Regarding Curriculum Inadequacies, the design of educational curricula for children with intellectual disabilities was often highlighted as being insufficiently tailored to their needs. Many schools employed a one-size-fits-all approach that failed to accommodate the cognitive diversity within this group. Teachers and families frequently emphasized the need for more personalized and inclusive curriculum models. In particular, middle and high school curricula did not adequately address the transition needs of students with ID, making it challenging for them to prepare for adulthood and potential vocational opportunities.

Studies like those by Alnahdi [13] and Almalki [14] reveal the inadequacies of a uniform curriculum approach. These studies reveal widespread dissatisfaction among families and teachers regarding the ability of current curricula to enhance academic and life skills in students with intellectual disabilities. For instance, both groups expressed concerns about the curricula's failure to address individual learning needs effectively. A particularly striking finding is the low satisfaction scores, with only a minority believing the curricula significantly improve skills.

Regarding Family and Caregiver Challenges, Parental involvement in the educational and developmental process of children with intellectual disabilities was often limited due to various factors. Key barriers included a lack of time, insufficient knowledge about how to support their children, and minimal guidance from schools regarding transition services. Moreover, families often faced a lack of encouragement and support from both educational institutions and society at large. This reduced their

ability to actively participate in their child's educational journey or advocate effectively for necessary services.

Family and caregiver involvement is pivotal yet limited due to various constraints. Almalki [12] identifies that schools do not proactively seek parental participation, and many parents lack the time or knowledge to contribute meaningfully to transition planning. Similarly, Bagadood [15] stresses the variability in parental involvement across different cultural and educational backgrounds. Alarifi *et al.* [16] also point out the emotional and societal pressures that parents face, which can hinder their active participation. Such findings suggest that improving communication and offering support programs for families could bridge this gap and promote collaborative educational practices.

Regarding Behavioral and Emotional Challenges, Children with intellectual disabilities also face significant behavioral challenges, including difficulties with adaptive behaviors and higher prevalence rates of conditions like autism. These challenges often went unaddressed due to a lack of specialized support and preventative measures in early childhood education. Teachers and families emphasized the importance of early intervention programs and behavior management strategies to mitigate these issues and improve overall developmental outcomes.

Behavioral challenges, particularly in children with intellectual disabilities, are well-documented in the study by Alarifi *et al.* [16]. Self-injurious behaviors, aggressive tendencies, and stereotypical actions are prevalent, especially in children with autism or low adaptive skills. By identifying risk factors, such as co-occurring autism or poor communication abilities, the study highlights opportunities for targeted support and preventative measures.

Regarding Barriers to Accessibility, the most frequently reported barriers were related to healthcare access. Many individuals experienced difficulties accessing primary healthcare and dental services. Healthcare services for individuals with disabilities are fraught with structural, procedural, and communication challenges. Alqassim *et al.* [17] reported that 52% of individuals with physical and hearing disabilities faced difficulty obtaining medications for chronic diseases like diabetes and hypertension. Additionally, 46.5% encountered barriers in accessing seasonal vaccinations. Patients with physical disabilities struggled with basic tasks like entering healthcare

venues (25% difficulty) and accessing toilets (28% difficulty compared to 8% for hearing-disabled individuals).

Alkawai and Allowayyed [4] found a significant 79.3% dissatisfaction with hospital parking among wheelchair users, with 65.2% of participants citing an inability to use wheelchairs independently in healthcare facilities. While 77.3% appreciated automated door systems at hospital entrances, only 33.6% of restroom facilities met the needs of disabled patients.

Yousef *et al.* [1] compared government-built and rented healthcare facilities, revealing that 83.2% of government centers adhered to accessibility codes versus 67.1% of rented centers. However, critical gaps persisted: only 54% of facilities had wheelchair-accessible restrooms, and just 14% employed staff trained to assist disabled patients. This lack of trained personnel and equipment underscores the importance of developing disability-inclusive policies in healthcare infrastructure.

Public spaces also presented significant accessibility deficits. Peterson., [19] surveyed 183 individuals with disabilities and found that ramps, restrooms, and signage were consistently rated below average, with restrooms scoring an overall accessibility rating of 48.6% and ramps at 52%. Respondents highlighted poor design and public indifference, with 45% rating societal respect for disability needs as poor.

Recreational facilities fared no better. Bakhsh *et al.* [21] audited five public parks and found wheelchair accessibility inconsistent, with only 20% of park paths meeting smooth terrain requirements. Accessible restrooms were nearly absent, and materials like bricks and uneven surfaces posed risks for wheelchair users. Despite these limitations, features like adequate lateral clearance and designated parking were recognized as positive developments.

Educational environments showed similar issues. Smadi., [22] evaluated university library services, revealing that while high satisfaction was reported for some services like book borrowing, physical accommodations were rated poorly. Only 38% of libraries had accessible study spaces, and signage for disabled students was universally deemed inadequate.

Dental health services were particularly inaccessible for individuals with disabilities. Alfaraj *et al.* [24] surveyed 186 caregivers in Qatif and found that 54.8% reported difficulties accessing dental care. The most

significant barriers were transportation (51.9%), unsuitable clinic environments (53.9%), and the lack of skilled dental practitioners (60.8%). Furthermore, 33.3% of individuals required hospitalization consent from a primary physician, further complicating access.

In a related study, Alwadiet *al.* [20] highlighted the experiences of children with disabilities in oral health care. Physical barriers were reported, such as long wait times and inaccessible facilities. However, the study emphasized the potential of involving children as active participants in dental care, advocating for creative solutions to reduce health disparities.

Regarding Barriers in Community Pharmacies, Badr. [5], investigated barriers in community pharmacies and found that 57.5% of pharmacists struggled to serve disabled patients effectively due to inadequate training. Over 65% of pharmacies lacked specialized counters or tools like height-adjustable desks for wheelchair users. Pharmacists also reported challenges in educating patients with hearing disabilities (median difficulty score: 4) and visual impairments (median score: 3.68). The study recommended adopting technology-driven solutions, such as mobile apps and digital health tools, for improving communication and service delivery.

Regarding Environmental and Social Quality of Life, Zahraet *al.* [18] examined the role of Environmental Quality of Life (EQoL) in promoting physical activity. The study revealed that individuals with disabilities who had access to safe environments and leisure activities were 2.3 times more likely to engage in regular physical activity. However, 54% of disabled participants failed to meet World Health Organization physical activity guidelines, partly due to limited access to transport and recreational facilities. Safety and financial resources were identified as critical predictors of active engagement.

Regarding parental and caregiver challenges, the role of caregivers and parents is also featured prominently in the analysis. The role of caregivers is pivotal yet often overlooked. Abed and Shackelford [23] explored the experiences of 21 parents, identifying significant emotional, financial, and logistical challenges. 95% of parents cited economic difficulties as the primary barrier to providing adequate care. They struggled to afford assistive devices, therapy, and medical treatments. A notable 90% highlighted the absence of accessible playgrounds, limiting their children's social interactions and rehabilitation opportunities.

Caregivers also faced societal stigma, with 19% reporting feelings of shame due to public attitudes. One parent recounted being denied entry to a recreational facility for their child, reflecting broader issues of exclusion. Despite these challenges, 81% of parents valued play as a critical component of rehabilitation, emphasizing the need for inclusive recreational spaces and schools.

Quantitatively, the analysis revealed that physical disabilities accounted for 67.3% of the population studied, with an effect estimate of 0.762 (95% CI: 0.678–0.846). Additionally, 56.7% of participants reported significant barriers, with an effect estimate of 0.64 (95% CI: 0.453–0.827).

The studies also highlighted recommendations for improvement. Enhancing government-built facilities to meet disability codes, developing training programs for healthcare providers, and improving public spaces were frequently suggested. For example, wheelchair accessibility in public parks was assessed as inadequate despite some recent progress, as noted by Bakhshet *al.* [21]. Similarly, dental care access for disabled individuals in Qatif was hampered by issues like affordability and the lack of skilled providers, as highlighted by Alfarajet *al.* [24].

All studies included in the meta-analysis were of high quality, with Newcastle-Ottawa Scale scores ranging from 7 to 9, ensuring reliable findings. However, limitations included small sample sizes in certain sub-studies, such as Bakhsh *et al.* [21], which assessed only 19 participants. Additionally, disparities in study designs and reporting standards reduced the homogeneity of the findings, posing challenges for comparative analysis.

In this meta-analysis on barriers to accessibility and caregiver challenges for individuals with disabilities in Saudi Arabia, heterogeneity is evident across several dimensions: study design, population characteristics, and contextual factors. These variations provide both strengths and challenges in synthesizing the findings.

The included studies employed diverse methodologies, ranging from qualitative ethnographic studies to cross-sectional surveys. This methodological heterogeneity introduces differences in data collection, analysis, and reporting. For instance, some studies used structured questionnaires to quantify accessibility barriers, while others employed in-depth interviews or observational techniques to explore caregiver

challenges. While this diversity enhances the richness of insights, it complicates the direct comparison of results across studies due to differences in data collection approaches and analytical frameworks.

The populations studied were also heterogeneous, encompassing individuals with various types of disabilities, including physical, intellectual, and sensory impairments. For example, some studies focused exclusively on wheelchair users, while others included broader groups such as children with intellectual disabilities or hearing impairments. Additionally, the age ranges of participants varied significantly, from young children to adults. This diversity reflects the multi-faceted nature of disability but adds complexity to the analysis, as the barriers experienced by one group (e.g., children with cerebral palsy) may differ substantially from those faced by another group (e.g., adults with visual impairments).

The studies were conducted in various regions of Saudi Arabia, each with unique cultural, economic, and infrastructural contexts. Urban areas such as Riyadh were often better equipped with healthcare and recreational facilities than rural regions, where accessibility challenges were more pronounced. Cultural norms, such as gender segregation in education and healthcare, also influenced the findings. For instance, studies conducted in female-only environments highlighted barriers specific to girls and women with disabilities, leaving gaps in understanding the experiences of male participants.

The meta-analysis also exhibited heterogeneity in the outcomes measured. While some studies focused on physical barriers (e.g., lack of ramps or inaccessible restrooms), others emphasized psychological challenges, such as societal stigma or caregiver stress. This diversity in focus broadens the scope of the analysis but makes it challenging to draw unified conclusions or assess the relative impact of each type of barrier.

This heterogeneity has significant implications for interpreting and applying the meta-analysis findings. On the positive side, the diversity of studies allows for a comprehensive understanding of the challenges faced by individuals with disabilities and their caregivers. The variability highlights systemic issues that cut across different regions, populations, and contexts, providing a strong basis for broad policy recommendations.

However, heterogeneity also presents limitations. Differences in study design, populations, and outcomes

may contribute to inconsistent findings, reducing the reliability of aggregated results. For example, a barrier identified in a study focusing on urban children with disabilities may not be relevant in rural contexts. To address these challenges, subgroup analyses and sensitivity tests could help isolate the effects of specific factors and enhance the robustness of the conclusions.

Strengths Points of the Study

The systematic review provides several strengths that enhance its credibility and relevance. First, it employed a robust search methodology, identifying 17 high-quality studies from various regions and settings in Saudi Arabia. The use of a PRISMA flow diagram ensured transparency in the study selection process. Additionally, the review comprehensively addressed both physical and intellectual disabilities, encompassing diverse settings such as healthcare facilities, educational institutions, and public spaces. This holistic approach highlights the breadth of challenges faced by disabled individuals. Another strength lies in the inclusion of validated tools, such as the WHOQoL and IPAQ, which improved the reliability of the findings. Moreover, the analysis incorporated a wide range of stakeholders, including disabled individuals, parents, caregivers, and professionals, providing a multi-faceted perspective on the barriers and gaps in service delivery.

Limitations of the Study

Despite its strengths, the review has several limitations. The included studies were predominantly cross-sectional, which limits the ability to infer causal relationships or evaluate the long-term impacts of interventions. The heterogeneity in study designs, populations, and outcomes posed challenges in synthesizing results and drawing generalized conclusions. Furthermore, many studies focused on specific regions or settings, which may not fully represent the broader experiences of disabled individuals across Saudi Arabia. Limited reporting on sociodemographic variables, such as socioeconomic status and rural versus urban differences, restricts the ability to explore potential disparities. Another notable limitation is the lack of longitudinal or intervention-based studies, which are essential for assessing the effectiveness of proposed solutions. Additionally, some studies had small sample sizes, particularly those focusing on intellectual disabilities, which could affect the robustness and generalizability of the findings.

Heterogeneity in this study cannot be fully eliminated due to variability in study populations, differences in methodologies, regional disparities, and diverse outcome measures. Studies assess both physical and intellectual disabilities across different age groups and settings, leading to inconsistent findings. Additionally, differences in sampling, measurement tools, and reporting standards contribute to variation.

Practical Policy Implications

Policies should improve healthcare accessibility through better infrastructure, provider training, and assistive technologies to enhance disability inclusion in Saudi Arabia. Education reforms must include adaptive curricula, specialized teacher training, and greater family involvement. Stronger disability rights enforcement is needed, with clear accessibility regulations, compliance monitoring, and inclusive employment policies. Caregiver support should be expanded through financial aid, psychological services, and educational resources. A multi-sectoral approach involving government, healthcare, education, and advocacy groups is essential for sustainable, inclusive progress.

Future Research Directions

Future research should prioritize longitudinal studies to track disabled individuals over time, assessing the effectiveness of policies and interventions in improving healthcare access, education, and social inclusion. Additionally, more studies are needed in rural and underserved areas, where accessibility challenges are often more pronounced due to limited infrastructure and healthcare resources. Research should also focus on evaluating policy implementation, examining whether government initiatives and disability reforms are effectively addressing systemic barriers. Furthermore, an intersectional approach is necessary to explore how gender, socioeconomic status, and cultural factors influence the experiences of disabled individuals, particularly in conservative societies where stigma and family roles may impact access to services. Standardizing measurement tools and outcome indicators across studies will also enhance comparability, ensuring that future research produces more reliable and actionable findings. Lastly, qualitative studies involving direct input from individuals with disabilities and their caregivers can provide deeper insights into lived experiences, guiding the development of more inclusive and person-centered policies.

CONCLUSION

This systematic review highlights persistent barriers to healthcare, education, and social inclusion for individuals with physical and intellectual disabilities in Saudi Arabia despite ongoing governmental efforts. Infrastructural deficiencies, policy gaps, and societal stigma continue to hinder full inclusion, underscoring the need for targeted reforms. Healthcare policies should focus on improving accessibility through enhanced infrastructure, provider training, and assistive technologies to address these challenges. The education system must adopt adaptive curricula, specialized teacher training, and structured transition support to better serve students with disabilities. Additionally, stricter enforcement of disability rights, investment in inclusive employment programs, and expanded caregiver support services are essential to improving quality of life. A multi-sectoral approach—engaging government agencies, healthcare providers, educators, and advocacy groups—is crucial to fostering meaningful and sustainable change. Beyond policy development, effective implementation and monitoring mechanisms are necessary to ensure lasting impact. By promoting greater awareness, collaboration, and investment in disability services, Saudi Arabia can advance toward a more inclusive and equitable society where individuals with disabilities have equal opportunities for independence and social participation.

CONFLICTS OF INTEREST

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