


Research

Towards inclusive development: a participatory study of challenges and opportunities for people with disabilities in Rajshahi City, Bangladesh

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Abstract

People with disabilities in Bangladesh confront significant challenges, including limited access to education, training, and employment, requiring their integration into mainstream development efforts to achieve sustainable progress and reduce societal inequalities, with their active inclusion being essential for enhancing societal well-being. The goal was to assess the actual conditions, problems, and barriers with possible solutions of the communities with physical disabilities and promote the holistic development in Rajshahi City Corporation (RCC) area through their enthusiastic participation. A Participatory Rapid Appraisal (PRA) survey was conducted to assess the challenges, barriers, and opportunities for promoting inclusive development utilizing different PRA tools. The findings revealed a substantial deprivation of basic rights among the community members, alongside a combination of shared and distinct needs for improved facilities, prompting them to aspire to a better quality of life. In response, prospective proposals, infrastructural schemes, and policy recommendations were formulated to enhance the planning and development of both the communities and the RCC area, particularly to benefit people with disabilities.

Keywords People with disabilities · Societal inequalities · Participatory rapid appraisal · Inclusive development

1 Introduction

Health is not merely the absence of disease but a state of well-being that encompasses physical, psychological, and social dimensions [1]. Disability arises from the interaction between health conditions and environmental barriers, often leading to reduced health. As per The Association of People with Disability [2], disabilities can occur at birth, be inherited, or be acquired due to illness. It comprises three aspects: impairments in physical or mental function, activity limitations, and participation restrictions in daily life [3]. As of the end of 2024, the global population was 8.09 billion, with an estimated 1.3 billion people, or 16%, living with disabilities [4, 5]. In recent decades, disability has shifted from a solely medical issue to a societal construct, encompassing a complex interplay between personal characteristics and the socio-cultural environment [6]. Historically, discrimination, segregation, and exclusion from housing, employment, and daily activities

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have shaped the experiences of people with disabilities. Today, however, individuals with developmental or intellectual disabilities hold the same fundamental rights as others [7].

However, disabled individuals still face significant hardships, particularly in education, employment, and emotional well-being, compounded by pervasive societal stigma [8]. Discrimination and human rights abuses remain widespread, especially in developing countries [9]. Routine tasks are often challenging for individuals with disabilities, and the social context in which they engage significantly impacts their personal growth and self-esteem [10]. In Bangladesh, a developing nation, individuals with disabilities face superstitions and societal prejudice, often viewed as burdens or even cursed by malevolent forces [11, 12]. Employment barriers stem from stereotypes and limited access to education, which restrict their job eligibility [13]. These individuals also encounter challenges across poverty, education, employment discrimination, healthcare access, social security, stigma, housing, transportation, sanitation, and gender inequality [14].

Moreover, The Current Status of Rights of Persons with Disabilities in Bangladesh [15] highlights barriers such as inaccessible transport (50%), physical accessibility issues in legal facilities, and discriminatory legal provisions. Disabled women encounter additional challenges, including financial dependence, safety concerns, and gender-based discrimination, with 10% facing limited access to bank loans. Disabled girls often experience child marriages (81%) and barriers to education (18%). The report also notes the lack of accessible washrooms (94%) and health centres, as well as workplace discrimination, including job insecurity (49%) and wage disparities (72%). These findings underscore the need for comprehensive policy reforms to address these challenges.

In contrast, Rajshahi also known as the 'green city' aspires to establish itself as a model in Bangladesh, already taking steps to tackle air pollution and the challenges of climate change [16]. To facilitate such efforts, this study aims to identify the challenges faced by persons with disabilities, evaluate societal and familial attitudes, and assess their needs for facilities and opportunities to support holistic as well as inclusive city development. Using a novel approach in the context of Rajshahi, this research uses Participatory Rapid Appraisal (PRA) methods to engage participants in identifying and addressing their own issues. Through PRA, the study maps existing conditions, citizenship rights, and barriers while exploring potential solutions. The scope includes identifying specific communities, understanding their unique challenges, and gathering expert opinions to address both common issues and distinctive needs across these communities.

The study is organized into six sections: The first reviews the prevalence and challenges faced by individuals with disabilities, drawing background information with a focus on Bangladesh. The second reviews literature on participatory approaches in disability studies. The third provides demographic profiles of people with disabilities in the Rajshahi City Corporation (RCC) area and describes the data collection process in three RCC communities. The fourth segment presents results and discussion from PRA sessions, highlighting challenges and needs of people with disabilities. The fifth and sixth segments propose strategies for improvement, including infrastructure, awareness, and policy reform, and draw conclusions, respectively.

2 Literature review

2.1 Concept of disability

In adherence to the UN Convention on the Rights of Persons with Disabilities [17], individuals classified as having disabilities include those enduring persistent physical, intellectual, mental, as well as sensory impairments that, when confronted with various challenges, may hinder their full and fair participation in societal activities. An individual could be congenitally disabled or develop a disability later in life [18].

Again, definition of disability, according to World Health Organization (WHO) [6], states:

Disability is an umbrella term, covering impairments, activity limitations and participation restrictions. Impairments are problems in body functions or structures while activity limitations are difficulties encountered by an individual in executing tasks or actions. Problems experienced by an individual in life situations are called participation restrictions.

In other words, disability is not just one health problem. It is a complex phenomenon, reflecting the interaction between features of a person's body and features of the society in which he or she lives.

Again, disability definition according to Bangladesh Bureau of Statistics (BBS) [19] says: "a person who was unable to work or perform his/her personal or social activities in full or partially due to loss of any limb, organ or mental faculty or for other reasons". According to the Bangladeshi Rights and Protection of Persons with Disability Act [20], persons with disabilities are categorized into different types like: Psychosocial, Cerebral Palsy, Visual Impaired, Autism, Down Syndrome, as well as Physical, Speech, Intellectual, Hearing, Hearing-Visual, Multiple and other disabilities.

Moreover, Inclusion from a disability perspective involves the active integration of individuals with disabilities into societal domains such as education, employment, and healthcare, while addressing the barriers they face [21]. This requires supportive environments that recognize their unique capabilities, moving beyond traditional views that associate disability solely with limitations [22]. Effective inclusion strategies include organizational awareness in human resource management and proactive workplace accommodations to ensure equitable opportunities [23, 24]. Redefining disability within the context of diversity and equity is also crucial for improving healthcare access and addressing systemic inequities [25]. Ultimately, inclusion is about ensuring that individuals with disabilities can fully participate in community life, promoting their autonomy and well-being through comprehensive support systems [22–24].

Despite progress in recognizing the rights of individuals with disabilities, societal perceptions often lag, treating them as “special” rather than as integral members of society [26, 27]. Interventions such as education and training, as emphasized by the United Nations Convention on the Rights of Persons with Disabilities, are vital for fostering a more inclusive environment [28]. However, many disabled individuals still face misrepresentation and marginalization, underscoring the need for ongoing societal acceptance [27].

Furthermore, the implications of inclusion extend across various sectors, emphasizing the necessity for diverse representation and the active participation of marginalized groups. Research highlights that inclusion fosters empathy, support, and reciprocal engagement, which are essential for creating inclusive environments that enhance social cohesion and individual well-being [29]. Intersectional approaches, particularly in participatory action research, uncover hidden inequalities and challenge exclusionary narratives, empowering marginalized populations and promoting broader social change [30].

2.2 Participatory approach in disability studies

Central to participatory research is the principle of fostering open, respectful participation, where individuals are empowered to express themselves and have their input valued by others [31]. Participatory approach engages participants in all research stages through structured tools, activities, and tasks that support active participation, shared decision-making, and collaborative learning [32]. Participatory methods in disability research actively engage individuals as contributors, fostering co-ownership and inclusivity. For instance, an Indian study on vaccination barriers used Community-Based Participatory Research (CBPR) to involve people with disabilities and transgender individuals throughout the research process [33]. Similarly, longitudinal studies with autistic youth allowed participants to define key concerns and co-develop solutions [34]. Australian research on peer support for people with disabilities employed Participatory Action Research (PAR), led by researchers with lived experience and involving peer-led organisations [35]. In adapting well-being measures for adolescents with intellectual disabilities, co-design workshops facilitated direct input to enhance question clarity and format [36]. Such measures address the inclusivity barriers prevalent in disability studies. Thus, participatory studies are growing world-wide and these approaches empower people with disabilities, giving them agency and addressing barriers within research that affects their lives.

2.3 Literature relevant to the study

Inclusive Education (IE) in Bangladesh is still in its nascent phases [37]. Further study reveals the instructors’ limited ability to assist students with hearing and visual impairments and often because of their diverse academic backgrounds [37], as a result, children with Special Educational Needs (SEN) are excluded from regular schools in Bangladesh [38]. Moreover, Rahman and Akther [39] examined the accessibility and structural design issues in Jahangirnagar University’s campus in Bangladesh, particularly concerning Persons with Disabilities (PWDs). Additionally, Fedulova et al. [40] underscores the significance of IE and its role in integrating students with disabilities into society, thereby fostering sustainable societal development.

To facilitate the efficient performance of PRA, multiple tools have been developed by specialists in this arena. These tools are categorized into spatial (e.g., Social Map, Mobility Map, Services and Opportunities Map), temporal (e.g., Daily Activity Schedule, Dream Map, Historical Transect), and relational methods (e.g., Cause-Effect Diagram, Venn Diagram, Pairwise Ranking) [31, 32]. The Problem Tree illustrates problems as the tree’s trunk, causes as roots, and effects as branches, showing problem impact at various levels [41]. The Mobility Map, a spatial tool, examines community travel patterns, highlighting travel reasons, destinations, frequency, and distance [31, 32]. The Daily Activity Schedule, a temporal tool, analyzes community routines, showing activities and their duration visually [31, 33]. Finally, Semi-structured Interviews (SSI) capture community aspirations and vision for the future [42]. SSI employs a flexible interview guide

rather than a formal questionnaire, facilitating focused discussions on pertinent issues while allowing participants the freedom to introduce and explore topics they consider relevant.

In Rajshahi, studies have examined social and family attitudes toward students with disabilities [43] and assessed the behavior of these students in library settings [44]. However, PRA remains largely unutilized in identifying challenges. Given the vulnerable position of individuals with disabilities in society, fostering positive social attitudes is essential. Employing a participatory approach to identify and address issues faced by individuals with disabilities in Rajshahi City is both novel and promising, with potential benefits for future research on related topics.

3 Methodology

After conceptualization of the study, relevant literatures were reviewed and communities were selected to conduct PRA sessions. Final recommendations were provided after identification of the problems as well as dreams and aspirations of the communities. The flowchart of the study has been illustrated in Fig. 1.

3.1 Study area and communities

The data presented in Table 1 summarizes the count of individuals residing in the RCC area with various types of disabilities. The disabilities are categorized into Autism, Physical disability, Psychosocial disability, Visual impairment, Speech disability, Intellectual disability, Hearing disability, Hearing-visual disability, Cerebral Palsy, Down Syndrome, Mental disabilities, and others. The region had a total of 8709 individuals with diverse disabilities. Physical disability has the highest percentage, which is 48.77%, whereas hearing-visual disability has the lowest percentage. The remaining disabilities are ranked according to their respective percentages. The percentage of individuals with lower degree disability is shown in the column for mild disability, which is approximately 28.75% of the total disabled population.

The study was conducted in three communities within the RCC area (Fig. 2). These communities were selected to reflect the conditions of three types of organizations: private, public, and university-level youth-led organizations:

1. Kolpona Protibondhi Unnoyon Songstha (KPUS) is a Disabled Peoples Organization (DPO) working in Rajshahi district, Bangladesh. They generally don't have funds, but they help to reach the people with disabilities if any people want to help them during different occasions like Eid, Puja etc.
2. Physically Handicapped Training Centre (PHTC) is a government aided centre located in the Ranibazar area of RCC. There exists a specialized school for the visual, hearing and speaking impaired. The institution is known locally as the Boba School. Approximately 180 students are currently admitted here. Most of them are residential students, with a few of them living outside of the school premises.

Fig. 1 Research Flowchart.
(Source: Authors, 2024)

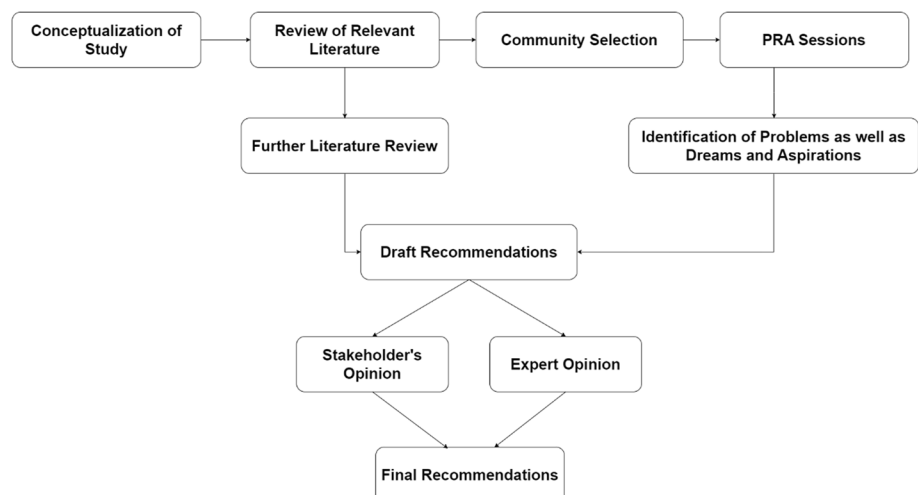
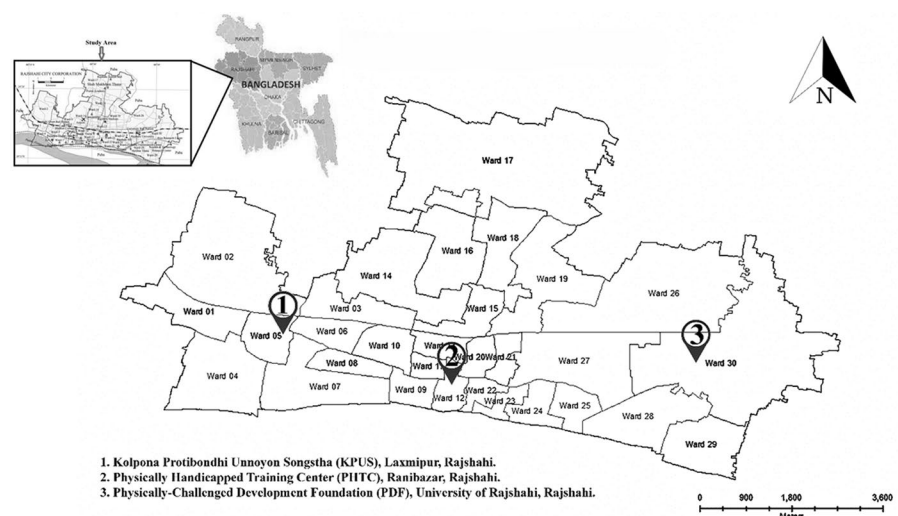


Table 1 Number of people with disabilities in Rajshahi City Corporation

Type	Number	Percentage	Lower degree disabled (%)
Autism	179	1.95	0.5
Physical Disability	4486	48.77	17.46
Psychosocial	387	4.21	0.7
Visual Impaired	1206	13.11	3.34
Speech Disability	333	3.62	1.44
Intellectual Disability	820	8.91	3.15
Hearing Disability	54	5.9	1.38
Hearing-Visual Disability	15	0.16	0.02
Cerebral Palsy	437	4.75	0.55
Down Syndrome	68	0.74	0.03
Multiple Disabilities	660	7.18	0.1
Others	64	0.7	0.08
Total	8709	100	28.75

(Source: Information Collected from Department of Social Services Rajshahi, 2022)

Fig. 2 Community Locations in Rajshahi City Corporation. (Source: Authors, 2024)

3. The Physically-Challenged Development Foundation (PDF) is a nationally registered, youth-led organization. Its membership includes individuals aged 16–35, encompassing both youth with disabilities and those without. This foundation has one of its branches in the University of Rajshahi campus.

3.2 Participatory tools and data collection process

PRA methods were used to gather primary data. To facilitate the PRA sessions, participants were invited in groups and approached based on their interest in participation. In KPUS and PDF, group representatives aided in organizing and ensuring engaged discussions. For PHTC, permission was obtained from the Department of Social Services and the school authority. At PHTC, additional consent was obtained from students under the age of 18, under the supervision of teachers/guardians. Besides data acquired through participatory techniques, supplementary data were collected from sources such as BBS, Department of Social Services, Rajshahi City, research papers, forums, reports, websites, and newspapers as needed. This study employs four PRA tools: Problem Tree, Mobility Map, Daily Activity Schedule, and Semi-structured Interview.

Tables 2 and 3 outline essential data collection parameters and information of participants for conducting the successful PRA sessions. Both male and female participants actively engage in PRA sessions, sharing insights on various aspects including their problems, movement, daily activity, facilities and dreams.

4 Results and discussion

4.1 Problem tree analysis of the communities

Following the application of the PRA tool in collaboration with participants, Figs. 3, 4, and 5 display the results of the Problem Tree Analysis. This analysis categorizes the complex challenges faced by people with disabilities across three communities into four primary groups: Visual Impairment, Hearing and Speech Disabilities, Autism, and Physical Disabilities. Within each category, the analysis reveals a network of interconnected issues spanning education, communication, transportation, infrastructure, healthcare, and social support. This detailed representation provides a foundational framework for understanding the diverse needs and barriers encountered by these individuals.

The figures above illustrate a range of challenges encountered by individuals with disabilities in various aspects of daily life, spanning accessibility, education, employment, and healthcare. Infrastructure inadequacies, such as the lack of tactile pavements and accessible traffic signals, as well as insufficient inclusive educational support and limited employment opportunities, underscore the need for substantial reforms. The absence of disability-friendly facilities and societal neglect further exacerbate these barriers. Additionally, students face the restrictive choice between receiving either the government disability allowance or the study allowance, as they are unable to receive both. Currently, the disability allowance provides 850 TK, whereas the study allowance is slightly higher during the study period; however, opting for the latter requires forgoing the former (Table 4). This analysis highlights critical issues that demand immediate attention, reinforcing the need for inclusive policies and initiatives to secure equal opportunities and an improved quality of life for all community members, irrespective of ability.

4.2 Mobility map analysis of the communities

The study identified distinct categories of disabilities among individuals in the KPUS area and examined their travel patterns for various needs, as depicted in Fig. 6. Respondents reported frequent trips to Court Bazar, located approximately 2 km from Vatapara, Laxmipur, which they visit twice a week due to its proximity. Monthly visits to Saheb Bazar and bi-monthly trips to Rajshahi Medical College Hospital for medical consultations and vaccinations were also reported. For these journeys, they typically rely on autos and auto rickshaws. Additionally, one to two individuals operate a grocery store located within 200–500 m of their residence, allowing them to walk there daily. Some children with disabilities travel to school approximately 2 km away, using either walking or a combination of autos and auto rickshaws for transportation. This data highlights the varied mobility needs and transportation options for individuals with disabilities in this community.

The PHTC houses 180 students, the majority of whom are residents, while the non-resident students come from various locations, as illustrated in Fig. 7. Non-resident students typically travel to the school with their guardians, who drop them off and pick them up after school hours. These students originate from areas such as Mohonpur, Palpur, Horipur, Court-Station, Katakhal, Binodpur, Kazla, and Durgapur, with distances to the institution ranging from 5 to 30 km. For longer distances, students primarily use motorcycles, while those traveling shorter or medium

Table 2 Participatory Tools and Type of Information Collected

PRA tools	Type of information collected
Problem Tree	Identified effects and their root causes on individuals, families, and the community as a whole
Mobility Map	Key destinations with distance, Patterns of movement, Types of transportation mode used, Travel intervals
Daily Activity Timeline	Daily routines and activities and time allocation for various tasks
Semi-structured Interview	Existing availability of services and facilities provided by different institutions, organizations. Their dreams and aspirations

(Source: Authors, 2024)

Table 3 Information Regarding PRA Sessions and Participants

Group	PRA Tool Used	Number of Participants in Group	Gender		Age Range
			Male	Female	
KPUS	Problem Tree Mobility Map Services and Facilities Diagram Dream Map	13 members including female participants	6	7	18–70
PHTC	Problem Tree Mobility Map Daily Activity Timeline Services and Facilities Diagram Dream Map	26 members (18 students including females, 3 teachers and 5 intern students from Rajshahi University)	7 students, 1 teacher, 5 intern students	11 students, 2 teachers	Students: 12–18, Teacher: 35–50, Intern Students: 22–26
PDF, RU	Problem Tree Mobility Map Services and Facilities Diagram Dream Map	12 members including female students	8	4	18–26

(Source: Authors, 2024)

Fig. 3 Problem tree of KPUS participants. (Source: Authors, 2024)

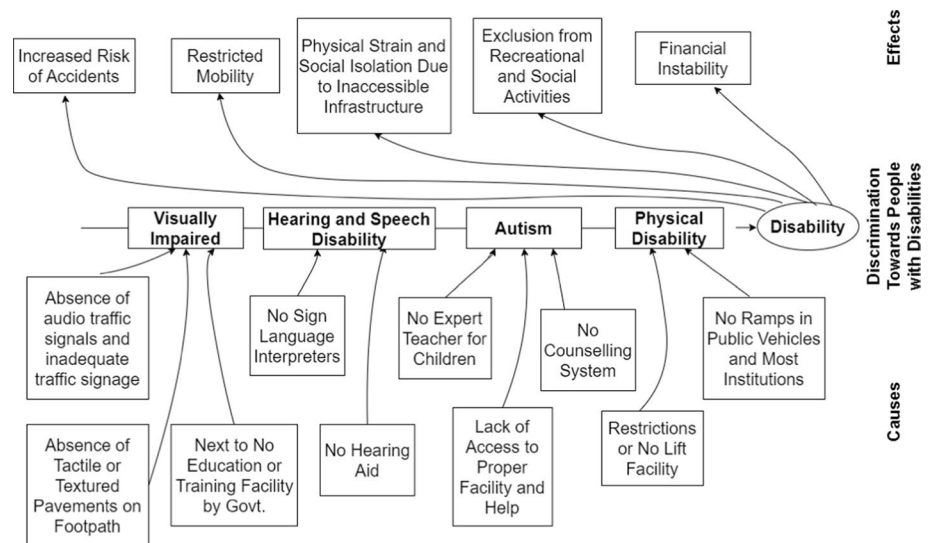


Fig. 4 Problem tree of PHTC Students. (Source: Authors, 2024)

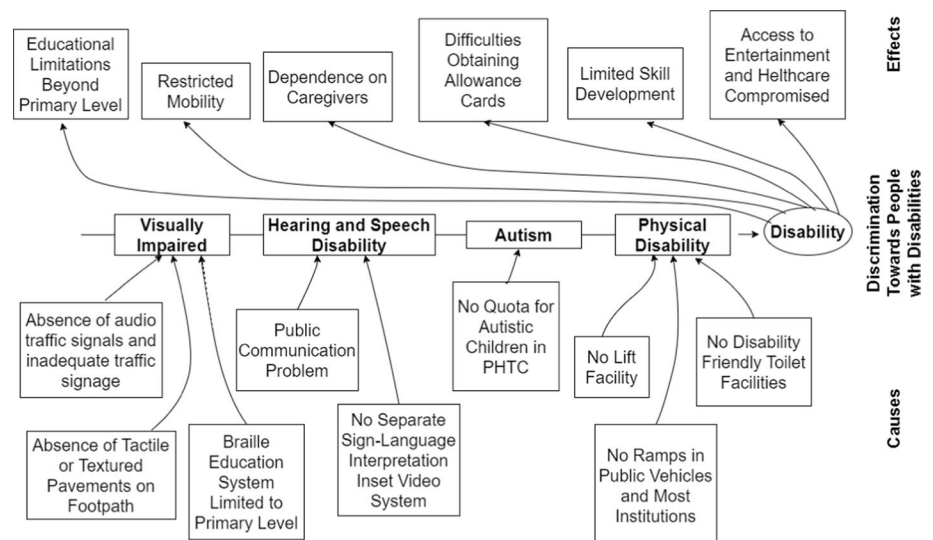


Fig. 5 Problem tree of PDF, RU Participants. (Source: Authors, 2024)

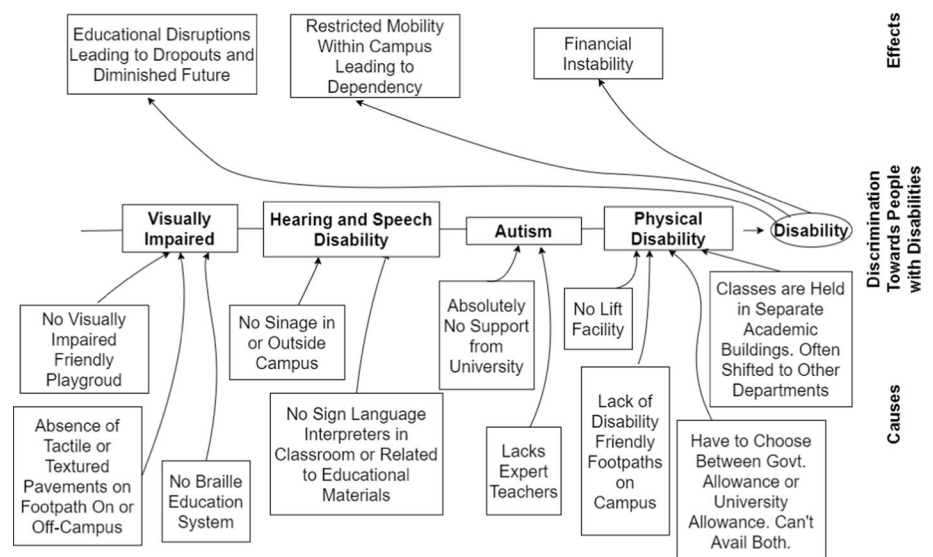


Table 4 Problems faced by the people with disabilities among the three communities

KPUS	PHTC	PDF, RU
Lack of tactile or textured pavements on footpaths, unfriendly footpath conditions	Braille education system only up to primary level	Inadequate support for disabled individuals in education, including the absence of expert sign language interpreters and experienced teachers and lack of university assistance and accommodations
Nonappearance of proper traffic signs on roads and no provision for audio traffic signals	No audio traffic signals, proper traffic signs, or tactile/textured pavements on footpaths	Limited accessibility infrastructure, such as the absence of tactile pavements, proper traffic signs, and audio traffic signals
No friendly facilities or ramping systems for getting in and out of vehicles, and no provision for climbing multi-storied buildings	Neglect and unconsciousness from neighbours and communication difficulties with peers and other people	Inadequate provisions for multi-story building access, lift facilities, friendly restroom facilities etc
Insufficient friendly toilet facilities	Insufficient friendly toilet facilities	Lack of proper friendly toilet facilities
Limited employment opportunities and inadequate government allowance of TK 850	Difficulties obtaining allowance cards	Inadequate government allowance of TK 850 and limited employment opportunities
Lack of separate and friendly sports complexes and priority in service-related institutions and public transport, including half-fee concessions	Insufficient friendly facilities, ramps, and provision for climbing multi-storied buildings and no separate and friendly sports complexes	Absence of a dedicated sports complex, priority in public services and transportation, rehabilitation centres, and entertainment options tailored for disabled individuals
Insufficient government schools and training institutions for people with disabilities	Few government schools and training institutions for individuals with disabilities, shortage of teachers and many students are dropping out	Experiencing social neglect, with limited training institutions and a lack of healthcare prioritization for disabled individuals
No priority for hospital treatment or giving TCB products	Deficiency of priority for hospital treatment and subtitle system for media entertainment	Complex coordination involving classroom changes across different buildings and the absence of elevator facilities
		Inconsistencies during the admission process, leading to department transfers

(Source: Authors, 2024)

Fig. 6 Mobility Map of KPUS Community. (Source: Authors, 2024)

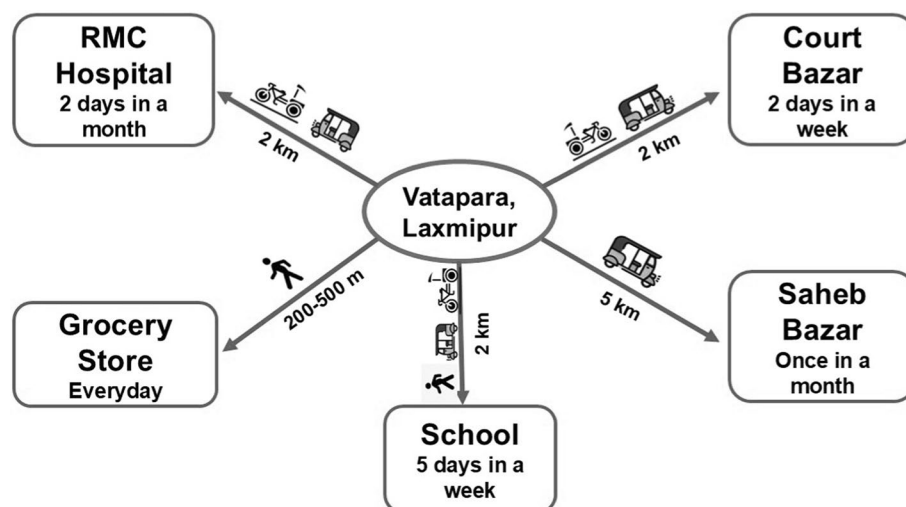
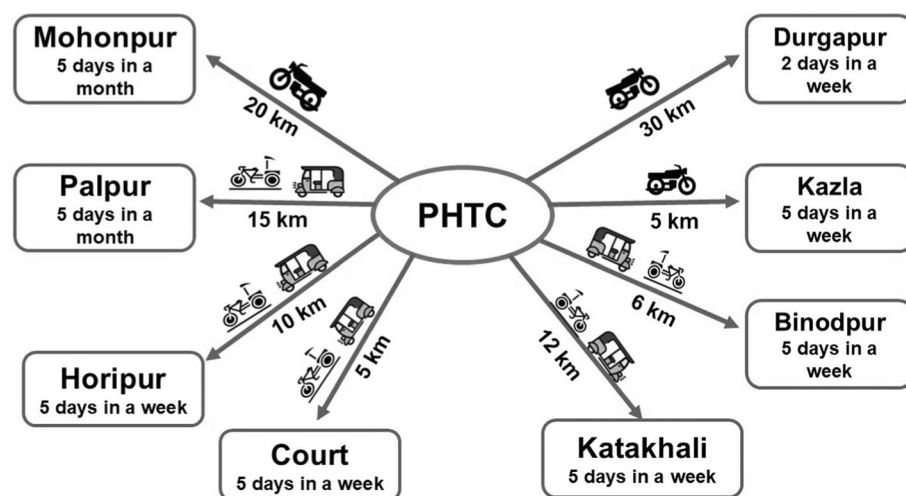


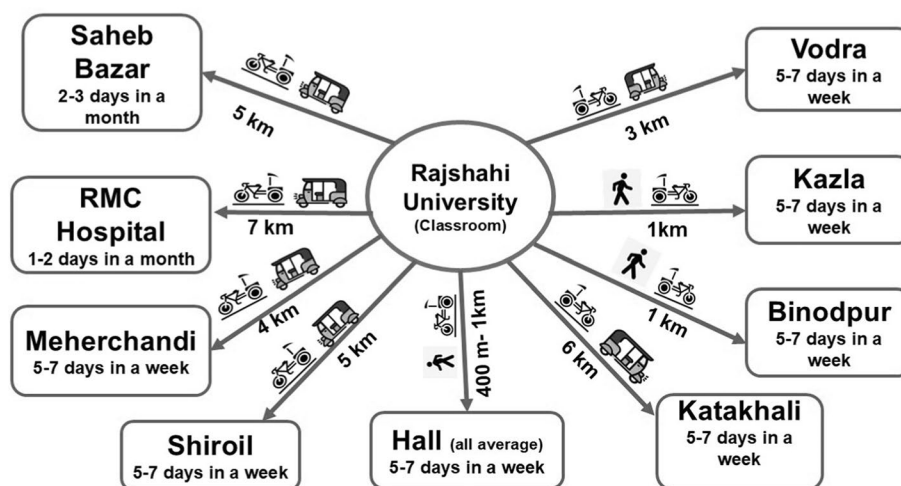
Fig. 7 Mobility Map of PHTC Non-resident Students. (Source: Authors, 2024)



distances generally prefer auto rickshaws or rickshaws. The centre operates 5 days a week, although some students, due to the long travel times, attend only 2–3 days per week. It is important to note that not all students come from affluent backgrounds; the majority are from low-income families, with a few from middle-class backgrounds. The institution's fees are affordable for all families, ensuring that financial constraints do not hinder enrollment. Parents, who are highly invested in their children's education, readily support their attendance and training, enabling both resident and non-resident students to consistently participate in their classes and training sessions.

Both resident and non-resident students with disabilities are present on the University of Rajshahi campus. They typically reside in various areas, including Students' Halls, Vodra, Kazla, Binodpur, Katakhal, Shiroil, Meherchandi, and others, ranging from approximately 400 m–5 kms from their classrooms, as illustrated in Fig. 8. For longer distances, students predominantly rely on autorickshaws or rickshaws, while for shorter distances, they opt for rickshaws or occasionally walk. On average, they commute to the university 5–7 days a week. Additionally, they visit Saheb Bazar, the central business district (CBD) of Rajshahi, two to three times per month for essential purposes, primarily using autorickshaws or rickshaws as their mode of transportation. They also make trips to Rajshahi Medical College Hospital approximately once or twice a month for medical treatment. While these locations are within the city, students report that the transportation infrastructure is inadequate, particularly in areas lacking facilities designed to accommodate people with disabilities.

Fig. 8 Mobility Map of Students with disabilities in Rajshahi University. (Source: Authors, 2024)



4.3 Daily activity timeline of PHTC students

At the PHTC, students adhere to a structured daily routine, as depicted in Fig. 9. Their day begins at 6 am, when they wake up, freshen up, and perform their morning prayers. This is followed by a reading session, after which they have breakfast and take a rest. School activities commence at 9 am and continue until 1 pm. Afterward, students bathe, perform their midday prayers, have lunch, and rest until 4 pm. They then participate in an afternoon prayer and are provided with snacks by the centre. From 4 to 6 pm, students engage in sports activities. After refreshing themselves, they complete their evening prayers and focus on academic studies until 8 pm. Following the study session, they perform another prayer, have dinner, and watch TV before retiring for the night at 10 pm. The institution provides nutritious meals, including rice, dal, mashed potatoes, fish curry, chicken curry, and snacks such as puffed rice and chickpeas. The centre enforces this routine to foster punctuality and promote a healthy lifestyle. As a government institution, students express high satisfaction with the affordable costs, as well as the educational and training facilities offered.

4.4 Semi-structured interview of participants from communities

Table 5 presents the services and facilities provided to students and members by various organizations and institutions, as gathered through semi-structured interviews within these communities. Although these institutions face significant shortcomings, they make efforts to offer support to their members.

Fig. 9 Daily Activity Timeline of PHTC Students. (Source: Authors, 2024)

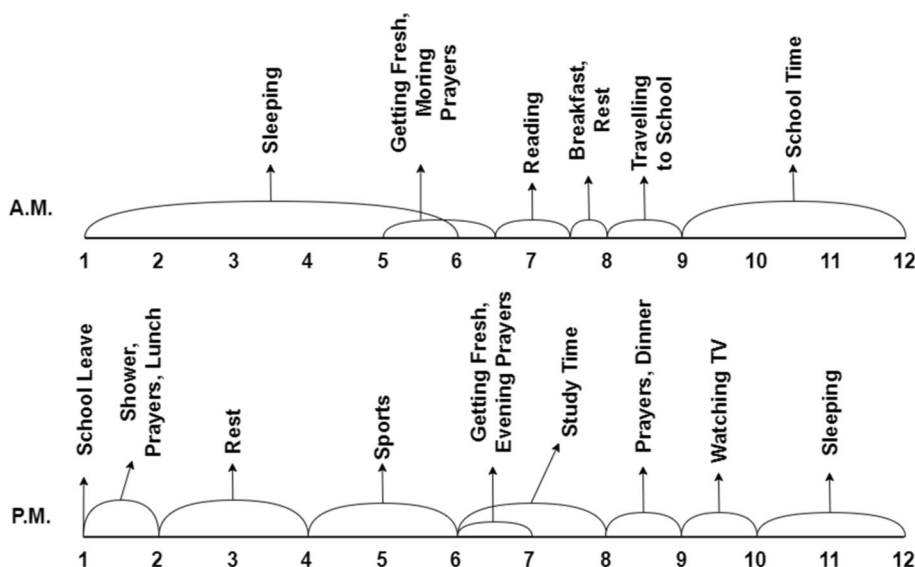


Table 5 Service and Facilities Provided to PHTC, KPUS and PDF Communities

KPUS	PHTC	PDF, RU
1. Mutual support by co-operation and donation/fund raising 2. Occasional distribution of supportive materials e.g., white-cane, wheelchair, sewing machine etc 3. Provides basic sewing and computer training	1. Braille system for blind (up-to primary level) 2. Study materials provided by Govt 3. Playground (not suitable for all) 4. Counselling by teachers 5. Govt. provided smartphone for e-book reading 6. Separate residential facility for male and female students	1. Hall allotment 2. Admission helpline 3. Has volunteers (apart from persons with disabilities) 4. Allowance from university of BDT 2000/month (limited to only 5 students)

(Source: Authors, 2024)

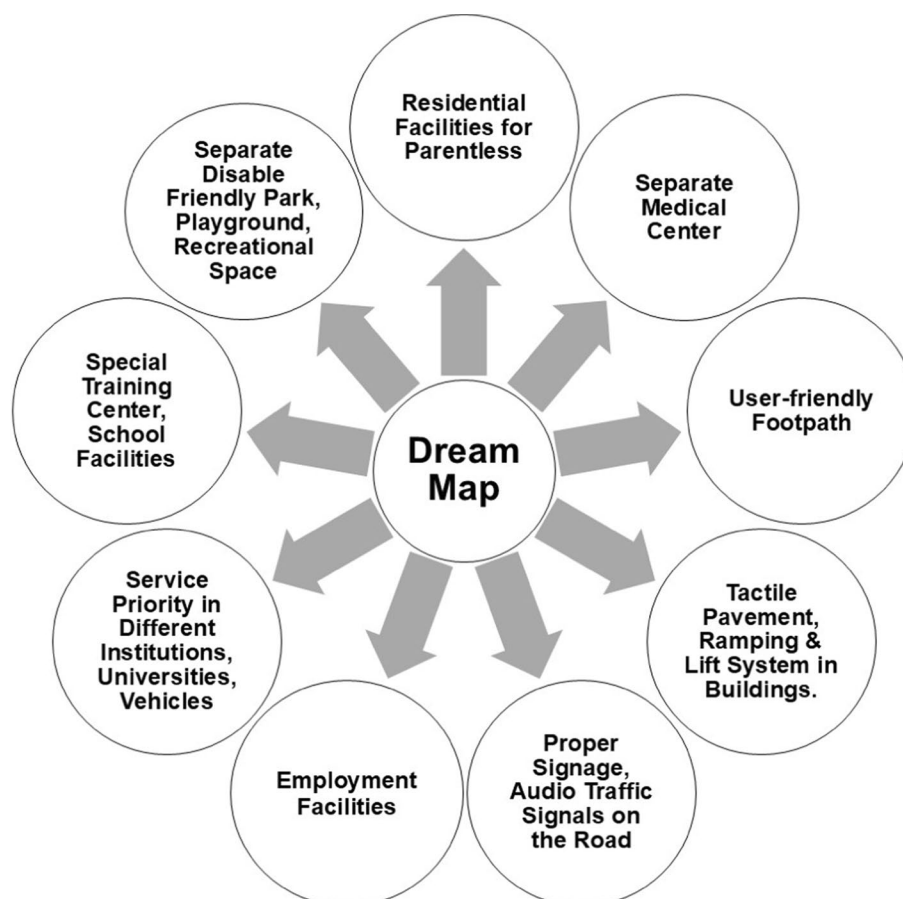
Within the KPUS community, an initiative exists to distribute essential support materials, such as wheelchairs and sewing machines, with the help of affluent individuals. The community also provides training programs in sewing and basic computer skills. At the PHTC, educators play a significant role in addressing the mental well-being of their students. Furthermore, the government facilitates access to e-book readers (smartphones) and offers residential support to students. At the University of Rajshahi, the administrative body actively participates in the allocation of residential halls. Additionally, students with disabilities contribute valuable assistance to their peers during the admission test process, offering support through various means.

Application of Problem Tree tool revealed some common problems as well as unique issues within the communities, resulting in distinct dreams and aspirations. Through semi-structured interviews across all the communities a comprehensive dream diagram was developed (Fig. 10). Their aspirations included seeking employment opportunities, establishing a disability-friendly park, developing a specialized medical centre, providing residential facilities for parentless children, establishing a special training centre, implementing road signage, creating tactile surfaces for the visually impaired, and prioritizing service-related institutions.

5 Recommendations

A comprehensive set of recommendations was methodically developed to address the identified issues and advance inclusive development in Rajshahi City. These recommendations underwent a meticulous process of formulation and were subsequently presented to both experts and stakeholders for their valuable input and feedback. For expert opinion, a professor from the Department of Social Work, University of Rajshahi was consulted. Stakeholder opinion was formulated after consultation with the director of the Department of Social Services, Rajshahi as well as the members of the three communities.

Fig. 10 Dream diagram of the Communities. (Source: Authors, 2024)



Incorporating the insights and suggestions from experts and stakeholders, a final proposal was meticulously crafted. This proposal aims to stimulate the overall development of people with disabilities in Rajshahi City, and Bangladesh as a whole. The final recommendations encompass two distinct categories of initiatives: a physical infrastructural scheme and a non-infrastructural scheme. This dual-pronged approach ensures a comprehensive and well-rounded strategy for sustainable development, addressing both tangible and intangible aspects of progress.

5.1 Physical infrastructural scheme

5.1.1 Accessible footpath

The government, City Corporation, or relevant authorities bear the responsibility of ensuring the provision of disability-friendly sidewalks within the Rajshahi City Corporation. It is noteworthy that currently, there exists a deficiency of such disability-friendly infrastructure. Specifically, the sidewalks have been constructed with coloured tiles in the central walkway as opposed to the more suitable option of utilizing textured tiles or surfaces. This inadequacy warrants immediate attention and rectification to adhere to the necessity of establishing a built environment that is both inclusive and accessible for individuals with disabilities.

5.1.2 Separate medical centre or corner

While regulatory frameworks on paper stipulate provisions for special accommodations for people with disabilities, the actual implementation often falls short, leading to a dearth of adequate facilities. This disparity is particularly pronounced in the realm of healthcare, where people with disabilities frequently encounter substantial challenges in accessing medical services, often enduring prolonged waiting times. In light of this, the establishment of a dedicated medical centre or a specialized medical corner emerges as a more viable and efficacious solution, poised to significantly enhance the quality of life for this demographic on a day-to-day basis.

5.1.3 Accessible building and toilet facilities

It is imperative that public and essential infrastructure be equipped with accessibility features, including elevators and ramping systems, in addition to the provision of facilities catering to individuals with disabilities such as disabled-friendly restrooms. This measure is essential to uphold inclusivity and accommodate the diverse needs of all occupants within buildings.

5.1.4 Proper signage, audio traffic signals on the road

In Rajshahi City, there is a noticeable absence of audio-based traffic systems, as well as a deficiency in appropriate signage along its streets and roads. It is imperative for the government to take measures in establishing disability-friendly sidewalks and traffic systems. This initiative is pivotal for fostering comprehensive development, as individuals with disabilities constitute an integral part of our community. Neglecting their needs would be antithetical to the pursuit of inclusive progress, underscoring the necessity for their equitable integration in urban planning and development endeavours.

5.1.5 Separate disable friendly park, playground, recreational space

It is recommended to propose the establishment of dedicated disability-friendly parks, playgrounds, and recreational spaces, recognizing that individuals with disabilities may encounter mobility limitations in their daily routines and activities. This proactive measure acknowledges the unique needs of this demographic and underscores the importance of creating inclusive environments that cater to a wide range of abilities, thereby enhancing the overall accessibility and quality of life within the community.

5.1.6 Special training centre, school facilities

The government should consider augmenting the quantity of educational institutions catering to children with disabilities, encompassing both primary and secondary levels. Furthermore, it is imperative to provide essential disabled-friendly

educational materials to facilitate their learning processes. Additionally, the establishment and maintenance of Special Training Centres dedicated to the needs of these students should be ensured. This comprehensive approach is fundamental in promoting an inclusive and equitable educational environment that addresses the specific requirements of children with disabilities and empowers them to access quality education.

5.1.7 Reconstruction

The imperative exists for the reconstruction of specific features or infrastructures, including but not limited to ramps, restroom facilities, and structures that have deteriorated to an unusable condition. This necessary intervention is vital to rectify deficiencies, ensuring that these elements meet established standards of accessibility and functionality.

5.1.8 Rehabilitation centre

After conducting the participatory rapid appraisal survey, it was evident that the three communities lacked essential facilities so, a rehabilitation centre is proposed where they can get all these types of facilities under one roof.

The proposed rehabilitation centre addresses the critical lack of essential services within the communities while ensuring an inclusive and supportive environment. It is designed as a comprehensive facility where individuals with disabilities can access necessary services such as medical care, education, employment training, recreation, and housing within a single, accessible space. This reduces the need for individuals to navigate multiple locations, thereby overcoming significant mobility barriers that currently hinder access to such services.

The centre is not intended to segregate individuals with disabilities but to serve as a model of inclusive design and accessibility. Facilities such as tactile surfaces, ramp systems, and sensory-friendly spaces aim to meet diverse needs while promoting dignity and self-reliance. Additionally, recommendations include integrating disability-friendly adaptations into broader urban infrastructure, such as public parks, streets, and service buildings, to foster inclusion across the city.

The rehabilitation centre complements this citywide strategy by serving as a central hub for specialized services that cannot be replicated everywhere. This approach, supported by feedback from community members and the director of the Department of Social Services, balances the need for specialized facilities with the broader goal of fostering an inclusive urban environment.

5.2 Non-infrastructure scheme

5.2.1 Awareness program

It is advisable to implement awareness programs with the aim of educating both people with disabilities and the broader community about their rights as citizens. These initiatives can serve as a valuable platform for disseminating information pertaining to legal entitlements, advocating for inclusivity, and fostering a comprehensive understanding of the rights and privileges afforded to individuals with disabilities within the society.

5.2.2 Service priority in different institutions, universities, vehicles

People with disabilities often endure prolonged waiting times when seeking medical services and accessing government facilities. Additionally, their ability to move around in public transportation is impeded due to a shortage of amenities, such as the absence of reserved seating. The bureaucratic requirements, including the need for recommendation letters and documentation alongside their disability identification cards, add an additional layer of burden and distress. While there are established regulations prioritizing the needs of this demographic, the implementation and enforcement of these provisions are frequently lacking. It is essential for the government to prioritize the advancement of these sectors to ensure that all citizens receive improved services, irrespective of their abilities, across various domains and locations.

5.2.3 Classroom organization in ground floor

In consideration of students with physical disabilities, it is imperative to establish the classrooms within departments containing such students and the residential halls on the ground floor. This accommodation is essential to ensure accessibility

and convenience for these individuals, aligning with principles of inclusive education and providing an environment that facilitates their participation in academic and residential activities effectively.

5.2.4 Increase government allowance

The government allowance of 850 Taka (BDT) is deemed inadequate to cater to the requirements of individuals with disabilities. The government must prioritize increasing this allowance to meet the financial needs of this demographic more effectively.

5.2.5 Increase teacher, trainer, psychologist etc

The government should prioritize the appointment of highly skilled educators to facilitate the implementation of disability-friendly educational systems. Furthermore, the recruitment of proficient trainers is essential to enhance employment opportunities for people with disabilities. Additionally, the inclusion of psychologists is imperative to provide consistent counselling and support services to meet their psychological and emotional needs.

5.2.6 Government initiatives

The government may also take some initiatives aimed at establishing disability-friendly educational systems, which may encompass the following provisions:

1. Implement measures against discrimination that forbid bias based on disability across various aspects of life, such as employment, housing, and public services.
2. Develop and enforce comprehensive disability rights legislation that guarantees equal access to education, employment, healthcare, transportation, and public services. This legislation should also address issues such as non-discrimination, accessibility, and reasonable accommodation.
3. Extending additional time allowances in the examination hall to house the specific needs of students with disabilities.
4. Streamlining processes to reduce bureaucratic obstacles associated with securing audio writers or other assistive technologies, ensuring a smoother experience for students requiring such support.
5. Allow for flexibility in curriculum design and valuation approaches to house diverse learning styles and needs, ensuring that students with disabilities have an equitable opportunity to demonstrate their knowledge and skills.

The application of PRA tools, including the Problem Tree, Mobility Map, Daily Activity Timeline, Services and Facilities Diagram, and Dream Map, provided valuable insights into the living conditions, challenges and aspirations of the communities. There seen clearly establish the connections between the issues identified through PRA tools and the corresponding recommendations. For instance, the aspiration for a separate medical centre identified through the Problem Tree and Dream Map directly informed the recommendation for enhancing healthcare infrastructure. Similarly, challenges with mobility and accessibility highlighted in the Mobility Map guided proposals for tactile surfaces and accessible footpath. The Dream Map reflected community aspirations for inclusive amenities, such as disability-friendly parks and residential facilities for parentless children, which were directly incorporated into the proposed interventions. Each recommendation was developed with a focus on addressing these specific issues and aspirations, ensuring relevance and practical impact.

6 Conclusion

The growing global population of people with disabilities underscores the urgent necessity for more effective inclusion strategies [4]. Despite policies aimed at equal opportunities, persistent physical and societal barriers restrict access to education, employment, and public services [45]. The findings from this study emphasize that while challenges remain, focused interventions including disability-friendly infrastructure, enhanced rehabilitation services, and improved accessibility in urban planning can substantially improve the quality of life and opportunities for people with disabilities. Addressing these structural and societal barriers will allow communities to cultivate an inclusive and empowering environment. Effective implementation of such measures will enable greater participation of people

with disabilities in social and economic development, highlighting the transformative potential of inclusive policies in building a more equitable society.

6.1 Practical implications

The study achieved its objectives of assessing the prevailing conditions, identifying existing problems and barriers, and proposing potential solutions for communities with disabilities in the RCC area provides actionable insights for policymakers and practitioners. For instance, community-led rehabilitation hubs and universal design adaptations such as tactile pathways and employer-linked vocational training could directly address RCC's infrastructural and employment gaps while serving as scalable blueprints. Promoting a disability-inclusive environment through cross-sector collaboration (e.g., university-led teacher training) and technology-driven accessibility tools (e.g., navigation apps) would further empower participation across sectors. Such strategies not only foster holistic development within Rajshahi City but also advance global disability rights frameworks by translating policy into measurable, locally grounded action.

6.2 Limitations and future research directions

This study was limited to three specific communities within the Rajshahi City Corporation (RCC) area due to practical constraints, including time, resources, and the feasibility of implementing participatory approaches. Engaging certain vulnerable groups proved particularly challenging due to the absence of appropriate communicators or intermediaries to facilitate their participation. Additionally, while our participatory approach provided valuable community-level insights, it may not fully capture nuanced individual-level challenges. This underscores the need for future research that develops inclusive strategies and partnerships to ensure the representation of all subpopulations, especially the most marginalized. A longitudinal approach would further help assess the impact of interventions on the quality of life for people with disabilities over time.

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Data availability “The data that support the findings of this study are available from the corresponding author upon reasonable request”.

Declarations

Ethics approval and consent to participate The research was ethically approved by the Department of Urban & Regional Planning, Rajshahi University of Engineering & Technology (RUET) (Approval No: URP/EA/2024/02, dated 20-01-2024). Prior to participation, all participants were fully informed of their rights and responsibilities and provided explicit written consent. The study was conducted in accordance with the ethical guidelines governing research involving human participants, as outlined by the Department of Urban & Regional Planning, RUET.

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