



## OPEN Barriers to assistive technology uptake among persons with disabilities in selected urban districts in Ghana

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“Assistive technology” (hereinafter AT) refers to equipment, products, and software designed or adapted to assist individuals to perform a specific task they might otherwise find difficult. AT is gradually becoming a fundamental human right across the globe. This is reinforced in international frameworks such as the Universal Declaration of Human Rights and the United Nations Sustainable Development Goals. However, the lack of empirical data on the prevalence and usage of AT in Ghana poses a significant barrier for policymakers to develop mainstream interventions for disability. The study used a quantitative cross-sectional survey design to examine the prevalence of AT and barriers to its use among 189 persons with mobility and visual impairments in four selected districts in the Ashanti region. The results indicated a relatively high AT utilisation rate of 66% among urban dwellers with disabilities. AT use is lower among women compared to men, with respective utilisation rates of 43.4% and 56.6%. About half of the mobility-impaired participants (50.4%) and 44% of the visually impaired participants identified high device costs as a major barrier. Difficulties in device use (21%) and stigma associated with AT (23.8%) further limited effective adoption. The study underscores the importance of enhancing the equitable distribution of assistive technologies in Ghana.

**Keywords** Assistive technology, Mobility and visual impairments, Barriers, Accessibility, Ghana

Disability is an evolving phenomenon, and it exists in every race, ethnicity, gender, age, and religion<sup>1</sup>. The patterns of disability are constantly influenced by trends in health conditions and contextual factors such as natural disasters, diet, traffic-related accidents, conflict, and substance abuse<sup>2</sup>. Globally, it is estimated that 1.3 billion people, representing 16% of the global population, suffer from disabilities, of which a good number, between 110 and 190 million, experience very significant difficulties in their day-to-day lives<sup>3,4</sup>. About 80% of the global disabled population is from developing countries. This is far higher than the global prevalence. The prevalence of disability is gradually increasing due to an increase in long-term illnesses and the ageing population. Many persons with disabilities or impairments depend on assistive technologies and devices to carry out their daily activities and participate fully in the community<sup>4</sup>.

“Assistive technology” (hereinafter AT) refers to equipment, products, and software designed or adapted to assist individuals to perform a specific task they might otherwise find difficult<sup>5</sup>. It helps compensate for a decline in functionality, improving persons with disabilities’ integration and their quality of life<sup>6,7</sup>. AT devices or products include wheelchairs, crutches, prosthetics, orthotics, eyeglasses, hearing aids, computer software, etc. These devices benefit a wide range of people, such as mobility-impaired and sensory-impaired individuals<sup>8</sup>. Without the devices, persons with disabilities would have remained unproductive and would depend solely on their caregivers<sup>9</sup>.

The global demand for AT is also growing gradually, driven by demographic shifts such as population ageing, an increasing prevalence of chronic health conditions, and disability-related functional limitations<sup>10</sup>.

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It is estimated that over 2.5 billion people worldwide need at least one form of AT; however, nearly one billion people, mainly from low- and middle-income countries (LMICs), lack access to these essential products and services<sup>10–12</sup>. Recognising this challenge, the World Health Organisation (WHO) launched the Global Cooperation on Assistive Technology (GATE) initiative to enhance national capacity, service provision, and innovation ecosystems for AT<sup>13</sup>. Moreover, within the framework of the International Classification of Functioning, Disability and Health (ICF), AT is regarded as a key environmental facilitator that improves functioning and participation<sup>14</sup>. However, barriers such as limited availability of AT, affordability issues, stigma, policy gaps, and inadequate service delivery systems hinder access, particularly among persons with mobility and visual impairments<sup>15–17</sup>.

Additionally, within the last decade, large-scale surveys such as the WHO rapid Assistive Technology Assessment (rATA) have been conducted across thirty-five countries and have provided population-level data on AT needs and access. Findings consistently show low coverage rates, particularly for mobility, vision, and hearing-related technologies, with unmet needs exceeding about 50% in LMICs<sup>6,18,19</sup>.

Although the availability and use of AT are generally higher in high-income countries, some gaps exist. For instance, Berardi et al.<sup>20</sup> used data from the 2012 Canadian survey on disability to describe the current use and unmet needs of AT among community-dwellers with activity limitation and participation restriction. The results showed that about 95% of the participants use AT such as vision aids, mobility aids, communication aids, a cane, crutches, and walking sticks, among other devices. Despite the high reported use of AT, the study reported 27% of unmet needs, particularly for hearing aids and bathroom supports. Similarly, in the United Kingdom, findings from the WHO's rATA revealed that about 63% of persons with disabilities (PWDs) use mobility aids, hearing aids and other assistive products. This study also recorded 18.5% prevalence of unmet needs for AT, which rose to 37.5% among older adults due to financial constraints and systemic barriers<sup>7</sup>. Other studies also echoed that the majority of PWDs (mobility and visually impaired) in these advanced countries are very satisfied with their AT use; however, affordability remains a great challenge<sup>21–23</sup>.

The situation is not different in Sub-Saharan Africa. Access to AT remains profoundly inadequate. Only 5–25% of PWDs reportedly receive the necessary assistive products they need [24,18,17]. Common AT includes walking sticks, wheelchairs, crutches, spectacles, and magnifying glasses<sup>24</sup>. Numerous studies across LMICs have highlighted diverse patterns of AT use, alongside significant rates of abandonment, often attributed to financial barriers, stigma and poor alignment between devices and users' functional needs<sup>15,17,25,26</sup>.

Furthermore, demographic factors such as age, sex, educational level, employment status, and socioeconomic background play a crucial role in shaping patterns of AT utilisation. Women with disabilities often face compounded barriers, leading to higher unmet AT needs compared to men<sup>26</sup>. For example, Kaye<sup>27</sup>, using a population-based survey to examine disparities in AT use among PWDs in California, reported that women were more likely to use AT than men. Conversely, in Italy, Desideri et al.<sup>28</sup> found no gender-based differences in AT use but identified a strong link between the type of disability and AT adoption. Within the African context, evidence on AT access and utilisation shows nuanced patterns. For instance, Jamali-Phiri et al.<sup>25</sup> reported significant unmet needs among children with disabilities in urban Malawi. However, other studies observed no significant connection between area of residence and overall AT use<sup>19</sup>. Visagie and colleagues further noted that specific types of AT varied according to both gender and setting. Mobility aids such as walking sticks were more often used by men in rural areas, while visual aids were predominantly used by women in urban environments. These contrasting findings may reflect contextual differences influenced by geographic, cultural, and socioeconomic factors.

There is limited empirical data on the number of persons with disabilities who lack access to specific AT in Ghana; however, data from the Ghana Statistical Service<sup>29</sup> suggests that over 2.4 million, representing 8% of the country's population, had some form of disability in 2021 as compared to 3% in 2010. The increase in the prevalence of disability in Ghana suggests a high demand for AT and devices, and it confirms the WHO's prediction that the global demand for AT will increase significantly by 2050. AT is very important in the lives of individuals with disabilities and therefore should be readily available for persons with disabilities (PWDs) to enhance their participation and social inclusion, if the vision of the 2030 agenda of '*leaving no one behind*' still holds. That notwithstanding, Ghana has made strides in committing to some international and local disability inclusion frameworks and policies. One such framework is the United Nations Convention of the Rights of Persons with Disabilities (UNCRPD). Article 20 and Article 26 of the UNCRPD mandate State Parties to ensure the affordability and accessibility of AT and devices to all users<sup>1</sup>. Moreover, Sect. 31 of the Ghana Disability Act (Act 715) seeks to provide free medical care and assistive devices for individuals with disabilities. Despite these legal provisions, the utilisation of AT and devices remains relatively low in Ghana<sup>30</sup>.

More so, existing evidence, primarily qualitative, has predominantly focused on children and students with mobility and visual impairments. These studies have identified critical barriers to AT access, including stigma, financial constraints, systemic neglect, limited device availability, and inadequate institutional adaptation<sup>16,31–33</sup>. However, there remains a significant research gap regarding the experiences of adults with disabilities, particularly in urban community settings. The current study aimed to address these gaps by conducting a quantitative cross-sectional survey to investigate the prevalence of AT utilisation, associated barriers, and potential strategies for improving access among adults with mobility and visual impairments in urban districts of the Ashanti region in Ghana.

### The study's contribution to the literature

The study makes a unique contribution to AT literature by addressing significant methodological, demographic, and geographic gaps. Existing empirical studies in Ghana have focused largely on children and students with disabilities, often in institutional settings, using qualitative approaches<sup>16,31,33</sup>. Very little is known about community-dwelling adults, particularly in urban settings, despite evidence that AT coverage in low-resource

contexts can fall below even the minimal functional thresholds<sup>10,19</sup>. Evidence suggests that urban dwellers with disabilities have high unmet AT needs<sup>26</sup>, and they are an underexplored demographic and geographic group in the Ashanti region.

The use of quantitative cross-sectional surveys moves beyond the predominantly qualitative and institution-based studies in Ghana to provide population-level data on AT prevalence, utilisation and barriers. This evidence will help inform policy alignment with WHO's GATE priority and national disability and rehabilitation planning<sup>10,13</sup>. The study therefore provides actionable evidence to guide urban service delivery, financing strategies, and user-centred AT provision in the Ashanti region.

### What is new about the study

This study represents the first multi-district quantitative investigation of AT access, use and barriers regarding their use among adults with mobility and visual impairments in urban communities within the Ashanti region of Ghana. Again, the current study offers a broader and more generalisable understanding of the challenges faced by adults with disabilities in accessing AT. Moreover, the study provides a more comprehensive estimate of the prevalence and barriers to AT use in urban Ghana, and it generates valuable baseline data on AT use that is tailored to the specific context, offering critical insights for evidence-based planning and intervention.

## Methods

### Participants and data collection

The study used a cross-sectional survey design to conduct a quantitative study in four urban districts in the Ashanti Region of Ghana. The four urban districts were Kumasi Metro, Asokwa, Oforikrom and Ejisu Municipalities. These were selected based on Ghana's 2021 Population and Housing Census report, which puts the Ashanti Region as the region with the highest number of persons with disabilities, with these municipalities leading with the numbers. The respondents were selected using simple random sampling. The respondents were selected during their monthly union meetings. At each of their meetings, members present were assigned random numbers, and the numbers were put in a container and shuffled and randomly selected. The person whose corresponding number was selected was included in the study. This gave each person an equal chance of being selected to take part in the study. A structured questionnaire was used for the data collection. The inclusion criteria for selection were that the person should either have visual impairment or physical impairment, must be a registered member of the disability association and be 18 years of age or more and was required to be present at their meetings at the time of selection to take part in the study. A total of 210 persons with mobility and visual disabilities were selected using a simple random sampling technique. Out of this number, 189 participants completed the study. The sample size was calculated using the Yamane Formula with an estimated population of 1321, with a margin of error of 6.73% (0.0673).

$$n = \frac{N}{1 + Ne^2}$$

$$N = 1321/1 + 1321*(0.0672)^2$$

$$n = 189$$

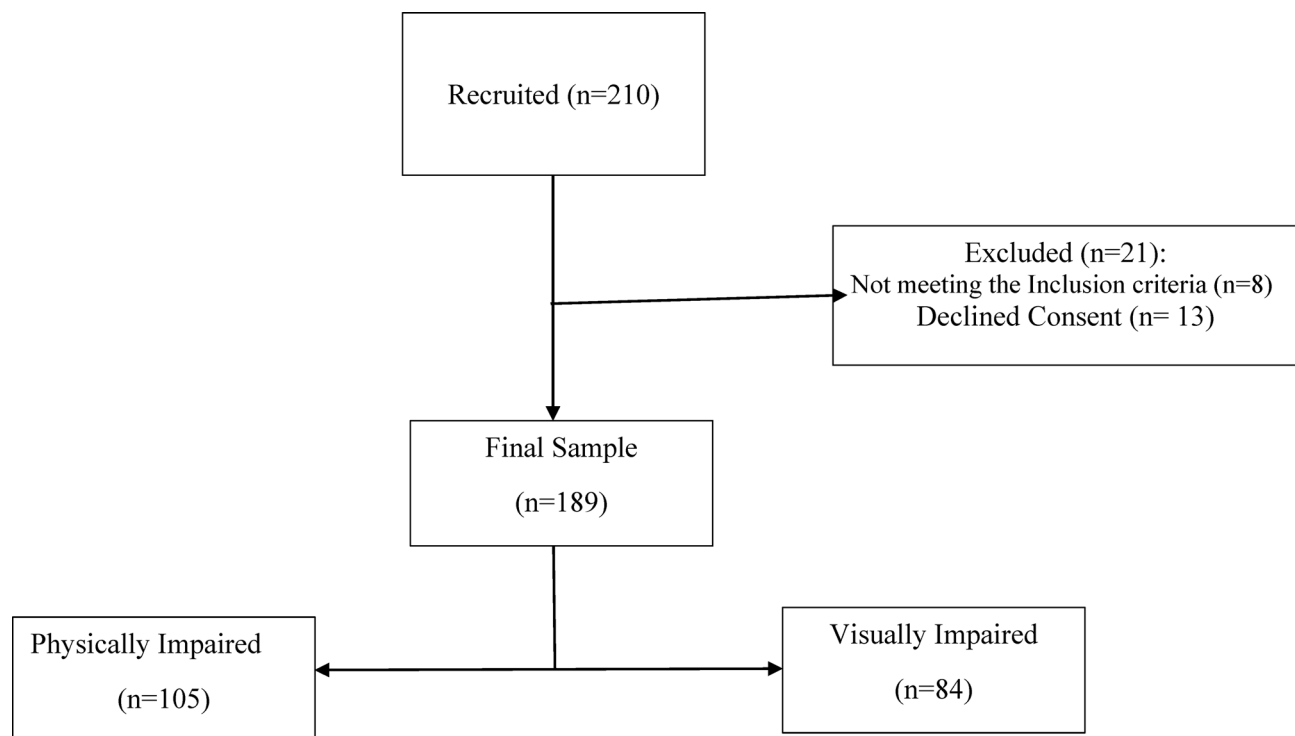
The Sample size of 189 was used for the study.

### Instrumentation and analysis

A structured questionnaire was developed by the team based on the study objectives and was pretested at the Bosomtwe district, which is a peri-urban district and shares almost the same features as the selected districts. Questions that were not clear during the pretest were revised and restructured to ensure reliability and validity. The questionnaire was administered by field data collectors who were trained on the specific questions contained in the questionnaire. Both self-administered and interviewer-administered techniques were adopted during data collection. For those who could read and write, they are made to do self-administration, while those who had difficulty in fully comprehending the questions independently were assisted by the field data collectors. The instrument was divided into two parts. The first part contained the respondents' personal information, while the second part consisted of information on existing assistive devices, their frequency of use, and their effects, as measured using a 4-point Likert scale. A higher score indicated a higher usage of a particular assistive technology and device. The data were analysed using descriptive statistical tools in the Statistical Package for Social Sciences (SPSS) software version 27. The researchers initially developed a coding manual, after which the data were first coded into SPSS and cleaned for entry errors. Frequency distributions and percentages were used to analyse the data, and the results have been presented in frequency tables.

### Ethical issues

The study obtained ethical approval from the Committee on Human Research Publication and Ethics (CHRPE) at the Kwame Nkrumah University of Science and Technology with approval number CHRPE/AP/551/25, and the principles outlined in the Declaration of Helsinki were followed. Prior to the data collection, all the participants were informed about the purpose, potential risks, and benefits of the study. Informed consent was obtained from all the respondents, with full respect for their autonomy, including their right to withdraw from the study at any time without consequences. The respondents were assured of the confidentiality of all information obtained, their privacy, and anonymity during the data collection, storage, and publication of the study materials.



**Fig. 1.** Participants flow diagram, showing recruitment, exclusion, and final sample included in the study.

Variables	Categories	Frequency	Percentage%
Gender of respondent	Male	107	56.82
	Female	82	43.18
Age of respondents in years	18–27	17	8.9
	28–37	49	25.9
	38–47	84	44.4
	48–57	26	14.0
	58 or more	13	6.8
Level of education	Primary	28	15
	Junior High	42	22
	Senior High	38	20.0
	Tertiary	81	43
Employment status	Unemployed	52	27
	Employed	137	73
Disability Type	Mobility impaired	105	55.6
	Visually impaired	84	44.4

**Table 1.** Demographic characteristics of Respondents. **Source:** Field work, 2024.

## Results

A total of 210 individuals with mobility and visual impairments were approached for recruitment. Of these, 21 were excluded: 8 did not meet the inclusion criteria and 13 declined to participate for several reasons. Individuals who declined were similar to participants in terms of age and sex, suggesting that the final sample of 189 respondents is broadly representative of the target population. The flow of participant selection throughout the study is illustrated below (Fig. 1).

Table 1 below shows the demographic variables of the participants.

## Existing assistive technology and factors associated with usage

The results suggest that the existing assistive technologies include white canes, smartphones, magnifiers, computers, and eyeglasses for the visually impaired, as well as callipers, crutches, wheelchairs, walking sticks, and prostheses for the mobility-impaired. The prevalence of assistive device usage was approximately 66%. The

use of assistive devices among males was 55%, indicating that males were more likely to be exposed to the device than females. The usage of AT among mobility-impaired and visually impaired individuals with tertiary education was high (21.9% for mobility-impaired and 31% for visually impaired individuals) compared to those with primary or basic school qualifications (5.7% and 1.2% for mobility-impaired and visually impaired, respectively). As for employment status, the usage of assistive devices was higher among those who were employed (59% for mobility-impaired and 39.3% for visually impaired) than among unemployed participants. See Table 2 below for details.

Barriers to the utilisation of assistive technology among respondents

A significant proportion of participants (91.4% of mobility-impaired and 87.9% of visually impaired) reported encountering barriers in using assistive technology and devices, while only a handful reported experiencing none. The predominant barrier to the use of AT was the high cost of devices, which was reported by 50% of mobility-impaired individuals and 46.5% of the visually impaired. Additionally, 20.9% of the mobility-impaired cited difficulty in using the devices, while 23.3% of the visually impaired individuals identified stigma associated with AT use as a deterrent. The participants highlighted the need for financial support and user training as key strategies to address the barriers. See Table 3 below for the details.

Discussion

The study examined the prevalence of assistive technology (AT) and device use as well as barriers to their use, among persons with mobility and visual impairments in some selected urban districts in the Ashanti region of Ghana. The study revealed a relatively high prevalence rate of 66% of AT usage, indicating that approximately two-thirds of the respondents were actively using some form of AT. This suggests a positive trend in AT availability and uptake in urban Ghana, specifically in the Ashanti region and may reflect a growing awareness, accessibility improvements, or better urban healthcare infrastructure. Compared to earlier studies in Ghana, this prevalence is notably higher. For instance, Osam et al.<sup>16</sup> employed a qualitative approach to explore parents’

Category	Sub-category	F(%)
Gender	Male	107 (56.6%)
	Female	82(43.4%)
Disability Type	Mobility Impaired	105(55.6%)
	Visually Impaired	84(44.4%)
Overall AT Usage	Users	125(66.1%)
	Non-users	64(34.0%)
Assistive Technology Use by Gender	Male	104(55.0%)
	Female	69(37.0%)
Existing Assistive Technologies	Visually Impaired	
	White Cane	18(21.4%)
	Smart phone	20(23.8%)
	Magnifiers	15(17.9%)
	Computers	16(19.0%)
	Eyeglasses	15(17.9%)
Existing Assistive Technologies	Mobility Impaired	
	Calipers	18(17.1%)
	Crutches	25(23.8%)
	Wheelchair	22(21.0%)
	Walking Stick	20(19.0%)
	Prostheses	20 (19.0%)
AT Use by Employment	Mobility Impaired	62(59.0%)
	Visually Impaired	33(39.3%)
AT Use by Education	Visually Impaired	
	Tertiary	26(31.0%)
	SHS	2(2.38%)
	JHS	1(1.19%)
	Primary	1(1.19%)
	Mobility Impaired	
	Tertiary	23(21.9%)
	SHS	4(3.8%)
	JHS	2(1.9%)
	Primary	6(5.7%)

Table 2. Showing existing assistive technology and usage among Participants. Source: field work, 2.

	Mobility Impaired		Visually Impaired	
	No = F (%)	Yes F (%)	No = F (%)	Yes F (%)
Existence of barriers				
	9(8.6)	96(91.4)	11(13.1)	73(86.9)
Specific barriers				
High cost of devices		53(50.4)		37(44.0)
Difficult to locate the device		17(16.2)		11(13.2)
Stigma is attached to the use of assistive devices		13(12.4)		20(23.8)
Difficulty in usage		22(21.0)		16(19.0)
Overcoming the barriers				
Financial assistance		40(38.1)		25(29.8)
Technical support		14(13.3)		11(13.1)
Training programs		19(18.1)		21(25.0)
Awareness campaigns		8(7.6)		7(8.3)
Advocacy		9(8.6)		9(10.7)
Availability and accessibility		15(14.3)		11(13.1)

**Table 3.** Distribution of barriers to the utilisation of assistive technology among mobility and visually impaired Respondents. **Source:** field work, 2024.

perceptions of their children’s use of assistive technology (AT) and found that the availability of the devices was a significant challenge. Similarly, Osei and Osei<sup>31</sup> reported that AT were often mismatched with the specific needs of visually impaired students, which limited effective use. These prior studies used qualitative approaches and focused predominantly on children and students in institutional settings, where AT access may be more constrained or context-specific. Besides, the differences could also be attributed to the sample size and the study approaches. In contrast, the current study provides a broader community-based estimate among adults, filling a critical national gap.

Again, the WHO’s global estimates suggest that about 10% of people in need of AT in LMICs have access to it<sup>13</sup>, indicating that Ghana’s urban areas may be making better progress relative to global averages. The higher prevalence of AT use in urban Ghana may be partly attributed to the presence of active disability networks, non-governmental organisations, and donor-funded projects within urban centres, which enhance awareness, distribution, and training related to AT use<sup>24</sup>. These organisations frequently run urban-centred programmes due to ease of coordination and infrastructure availability. This may have contributed to increased exposure to AT and reduced affordability barriers among urban dwellers with visual and mobility impairments. Additionally, economic factors also play a role. Urban residents generally experience greater livelihood opportunities, higher income levels, and better access to social protection schemes. These structural advantages likely contribute to the higher AT uptake found among urban residents in this study. This contrasts with rural populations, where poverty and transport challenges can significantly restrict AT acquisition<sup>7,8</sup>.

The study also found that men (56.6%) were more likely to use AT than women (43.4%). This suggests gender disparities in the uptake and usage of AT. This finding aligns with Visagie et al.<sup>19</sup>, who explored AT sources, services, and outcomes among PWDs in four Sub-Saharan African countries and reported that patterns of AT use differ by gender and setting. In their study, mobility aids such as walking sticks were more frequently used by men in rural areas, while visual aids were more common among women in urban settings. The current urban-based finding indicates a differentiated gender uptake, possibly influenced by the types of AT available, perceived needs, and gendered access to healthcare resources. Furthermore, the finding contrasts with findings from the United States, which reported higher AT use among women<sup>27</sup>. These discrepancies may be as a result of contextual and structural differences between high-income countries and LMICs. In Ghana and some African countries, gender norms, caregiver roles, lower socioeconomic status, and limited access to information may pose additional barriers for women<sup>8,34,35</sup>. These comparisons show that gender disparities in AT use are not universal, but rather shaped by socioeconomic, cultural and geographical contexts. The finding contributes new insights from an urban Ghanaian perspective, underscoring the importance of locally grounded, gender-sensitive strategies that address the structural and cultural barriers that hinder equitable access. This will go a long way in scaling AT adoption in Ghana.

Another significant finding was that the employment rate for mobility-impaired participants (59%) was considerably higher than that of the visually impaired participants (39.3%). The substantially lower employment rate for visually impaired individuals points to deeper structural inequities rather than individual limitations. This disparity reflects institutionalised labour-market discrimination, where employers may perceive visual impairment as a greater barrier to productivity, leading to fewer job offers, lower security, or informal dismissal practices [2, 36] . It also suggests unequal access to training, vocational preparation, and skills-development pathways, which disproportionately disadvantages visually impaired individuals who often encounter inaccessible training materials, limited workplace adjustments and fewer opportunities for career progression. This finding reinforces earlier arguments by Tebbutt et al.<sup>8</sup> and the World Health Organisation<sup>4</sup>, who emphasise that while assistive technologies can enhance employability, they cannot by themselves dismantle discriminatory hiring norms, negative employer attitudes, and systemic exclusion. Although only a handful of the participants



reported direct employment barriers, these cases are far from negligible. They signal persistent patterns of exclusion that echo broader social and structural inequalities.

The implications for Ghana are quite significant. Persistent employment barriers indicate a clear gap between policy intentions and lived realities, particularly concerning Sustainable Development Goal 8, which advocates for decent work and economic growth for all individuals irrespective of their differences, and Goal 10, which seeks to reduce inequalities. Moreover, the failure to guarantee inclusive labour-market participation challenges the implementation of global and national frameworks such as the United Nations Convention of the Rights of Persons with Disabilities and the Ghana Disability Act, 2006 (Act 715). These frameworks mandate equal access to employment, yet structural constraints such as inaccessible workplaces, limited employer awareness, biased recruitment practices, and the absence of enforceable reasonable accommodation policies continue to undermine these commitments.

This finding underscores the urgent need for multi-level and systemic reforms, including stronger enforcement of anti-discrimination laws, employer sensitisation, investment in inclusive vocational training, and the expansion of AT-enabled work environments. Such interventions are essential for transforming disabling labour-market structures and promoting equitable employment outcomes for persons with disabilities.

Another finding that is worth discussing is the strong association between educational attainment and AT use, with higher adoption rates among participants with tertiary education (mobility-impaired, 21.9% and visually impaired, 31%) compared to those with primary education (5.7% and 1.2%, respectively). This disparity reflects not only greater awareness and knowledge of AT among more educated individuals but also underlying structural inequities. Higher education is linked to increased income, access to formal employment, and exposure to information networks, which facilitate AT acquisition, whereas individuals with lower educational levels face compounded barriers, including limited awareness, financial constraints, and reduced access to rehabilitation services<sup>7,36</sup>. Additionally, many participants reported difficulties using their devices, suggesting gaps in user training and participatory design, which are often more accessible to those with higher education. These findings highlight the need for inclusive, system-level interventions. Healthcare providers, rehabilitation specialists, and NGOs should ensure AT provision includes comprehensive training and user-centred design to enhance accessibility and effectiveness for all persons with disabilities, regardless of educational background.

Moreover, financial assistance, policy advocacy and training programmes emerged as critical facilitators in addressing the barriers to the adoption of AT in Ghana. Both mobility and visually impaired individuals found financial assistance as a remedy to their challenges. It is possible that the high cost of AT can compel users to access fewer effective devices. These potential elements were acknowledged by even participants who do not experience barriers in using assistive devices. Financial support alone is not enough to resolve the barriers. It is important to couple that with awareness campaigns, sensitisation and sustainable policies. This underscores the importance of a multi-sectoral and system-based approach to AT policy and implementation. Proper coordination of financial, policy and capacity-building interventions can reduce physical barriers and enhance inclusive and equitable access.

## Limitations

Despite providing important insights into AT use among adults with mobility and visual impairments in urban Ghana, this study is not without limitations. The study relied on self-reported data, which is subject to recall errors and social desirability effects. The respondents may have over- or under-reported their use due to memory lapses or the desire to present themselves in a socially acceptable manner. Again, the study was limited to selected urban districts in the Ashanti region. As a result, the findings may not be generalisable to populations in rural areas where access to healthcare may differ significantly. Future studies should consider including both rural and urban dwellers and incorporate objective measures to validate self-reported data.

Again, the study is subject to potential union-based sampling bias, as participants were recruited from a registered disability group. Membership in such associations may confer advantages which include increased awareness, stronger advocacy support, and better access to services that are not equally to non-members. Therefore, the findings may underrepresent the challenges faced by persons with disabilities who are not affiliated with organised groups. Future studies should include broader sampling strategies to capture a more diverse range of experiences.

Moreso, the current study lacks intersectional data, particularly across age, gender, disability type, and socioeconomic status. An intersectional approach would have made it possible to examine how multiple social identities interact to shape differentiated experiences of AT access and utilisation. This would likely have provided more nuanced insights into why certain subgroups experience greater barriers or lower adoption rates. Future studies should consider incorporating intersectional data to generate a more comprehensive and equity-sensitive understanding of AT access in Ghana.

Finally, despite the fact that the respondents were drawn from multiple urban districts, the analysis was limited by incomplete district-level data due to some respondents not specifying their district of residence. As a result, we could not compare the analysis of AT usage across districts. Future studies should consider a more comprehensive geographic data collection to explore district-level disparities and identify contributing factors. Addressing these limitations would enhance the robustness and generalisability of findings on AT utilisation in Ghana.

## Conclusion

The current study used a quantitative and cross-sectional design to examine the prevalence and pattern of AT use and barriers that hinder access to AT among adults with mobility and visual impairments in selected urban districts in the Ashanti region of Ghana. The findings revealed a high prevalence of AT use. Educational level also has a significant influence on AT use, with participants having a tertiary education being frequent users.

Employment status also influences AT usage, as the majority of AT users are employed. Most importantly, the study revealed gender-based disparities in AT adoption, reflecting broader patterns of social exclusion that call for an urgent and intersectional policy response. Addressing these inequalities is not only a matter of justice but a necessary tool for achieving the 2030 Sustainable Agenda and the United Nations Convention of the Rights of Persons with Disabilities.

Moreover, despite the high prevalence of AT usage, some users encounter barriers such as financial challenges. The participants identified financial assistance, policy advocacy and training programs as solutions to the barriers captured above. The study suggests that while AT significantly contributes to employability, mobility and independence, barriers regarding accessibility and technical support impede its full potential. It is therefore important to address the issues through policy interventions, collaboration among stakeholders, and user training to improve the effectiveness of AT in Ghana.

# Data availability

Data that support the findings of this study is publicly available in a GitHub repository at: <https://github.com/RAILADT/uptake-usage-dataset> Any additional information will be shared upon request from the corresponding author.

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## Declarations

## Competing interests

The authors declare no competing interests.

## Additional information

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