

## Barriers Faced by Individuals with Hearing Impairment in Accessing Information at Public places: A Qualitative Inquiry

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### Abstract

This study examined the barriers encountered by hearing-impaired individuals in obtaining information at public spaces of Lahore, Pakistan. Through qualitative interviews with five hearing-impaired participants, critical themes were identified, including inadequate safety instructions, communication barriers, compromised access to information, digital screen inaccessibility, lack of assistive devices, and difficulties with public address systems. Substantial challenges like design and placement of digital screens, difficulties in accessing verbally disseminated information, and ineffectual communication from customer service staff constituted impediments for hearing impaired individuals in accessing information at public places. Apart from it, the inadequate visual safety instructions, absence of assistive listening devices, captioning, and insufficient visual aids for public address systems were reported to be the key challenges encountered by hearing-impaired individuals. The research suggested the implementation of multi-channel information dissemination strategies, exhaustive training programs for customer service staff, enhanced digital screen accessibility, the availability of assistive technologies and plain visual safety instructions to address the challenges being faced by hearing impaired individuals at public places. The study also recommended that future research should expand the sample size, investigate technological advancements, advocate for policy frameworks, promote inclusive design, engage the hearing-impaired community, establish feedback mechanisms, and implement educational campaigns. The results were consistent with global research, indicating that these challenges are pervasive and ubiquitous. Creating more inclusive public environments to ensure that hearing-impaired individuals can independently and confidently navigate public spaces can be achieved by addressing the aforesaid challenges through improved communication mechanisms, enhanced digital screen designs and the provision of assistive technologies, thereby nurturing a more equitable society.

**Keywords:** Barriers, Information, Hearing Impairment, Public places

### Introduction

All individuals, including those with hearing problems, have a basic right to access information in public settings. Nevertheless, individuals with hearing impairment face substantial obstacles in accessing essential information in public places, particularly in region like Lahore in the province of Punjab, Pakistan. Hearing impairment, often known as hearing loss, is a condition characterized by a partial or complete inability to perceive sound. It is a widespread issue that affects a significant number of individuals worldwide. The World Health Organization (WHO) reports that almost 5% of the global population, which is equivalent to 466 million individuals, have debilitating hearing loss. Hearing impairment is prevalent in Pakistan; however, there is a lack of public awareness and insufficient infrastructure accommodations to address this health condition. Punjab, the most populated province in Pakistan, accommodates a heterogeneous population with varying requirements. Lahore, the capital of the province, is a vibrant city with a multitude of public areas including marketplaces, parks, hospitals, educational institutions, and transit centers.

Individuals with hearing impairment have difficulties in accessing these locations owing to the absence of accessible information. Public announcements, emergency warnings, signs, and customer service encounters sometimes overlook the requirements of those who are deaf, resulting in the social isolation and potential hazards for hearing impaired individuals. The objective of this study was to examine the difficulties encountered by persons with hearing impairment in Lahore and to provide key strategies for improving their accessibility to information in public spaces.

Hearing impairment characterized by a partial or complete inability to perceive sound, impacts a large number of people globally and presents considerable obstacles in obtaining information, particularly in public settings. The World Health Organization (WHO) reports that roughly 466 million people, which is over 5% of the world population, live with debilitating hearing loss. According to Saunders and Chisolm (2016), the strength of people with hearing loss is expected to exceed 900 million by 2050. This growth may be attributed to reasons such as ageing populations, greater exposure to persistent noise, and the absence of prevention measures and therapies.

Hearing impairment is widespread in Pakistan. According to a research conducted by the Pakistan Medical Research Council (PMRC), around 7.6% of the population in Pakistan has varying degrees of hearing impairment (Marschark & Hauser, 2016). Public awareness and infrastructural adjustments for persons with hearing impairment are insufficient, despite the large number of people affected.

Public spaces in metropolitan locales like Lahore are crucial for facilitating social engagement, economic transactions, and providing access to various services. These locations include many amenities such as markets, parks, hospitals, educational institutions and transit hubs to name a few. Individuals with hearing impairment may face significant obstacles due to the absence of accessible information in such contexts. Individuals who are deaf or hard of hearing may face marginalization and significant safety hazards on account of not understanding public announcements, emergency warnings and other auditory information at public spaces.

In Lahore, public places typically rely on auditory announcements and verbal communication to disseminate information, which pose significant barriers for those with hearing impairment. The absence of visual aids, captioning, and assistive listening devices further exacerbate these challenges, making it difficult for hearing-impaired individuals to access essential information at public spots. This lack of accessibility not only affects their ability to navigate public spaces independently but also impacts their overall quality of life and social inclusion.

The staff in these public places often lacks the training and awareness needed to effectively communicate with hearing-impaired individuals, leading to misunderstandings and inadequate experiences of service provision. Safety instructions and emergency information are frequently not presented in accessible formats, putting hearing-impaired individuals at a greater risk during emergencies.

The problem is further compounded by a lack of comprehensive policies and regulatory frameworks that mandate accessibility standards in public places. Without systematic changes and proactive measures, hearing-impaired individuals will continue to experience significant barriers in accessing information and services in public spaces.

Given these challenges, there is a critical need to investigate the specific barriers faced by hearing-impaired individuals in Lahore's public places and to develop strategies and come up with recommendations to enhance accessibility of hearing impaired ones for information at public places. Addressing these issues is essential for promoting inclusivity, ensuring equal access to information, and improving the quality of life for hearing-impaired individuals. This study aims to fill this gap by exploring the experiences of hearing-impaired individuals in accessing information at public places in Lahore and providing actionable recommendations to mitigate these challenges in future.

In Lahore, there are significant infrastructural and systemic obstacles for hearing impaired individuals, especially at public spaces. Public transit systems mainly depend on auditory announcements to communicate timetables and changes, which might pose difficulties for those with hearing impairment. Similarly, in hospitals and other healthcare settings, important information is often communicated orally, which presents difficulties for people with hearing impairment (Punch & Hyde, 2018).

### Literature Review

The problem of accessibility for those with hearing impairment is of utmost importance on a global scale, since it significantly affects their capacity to fully engage in society. Research has shown that the absence of accessibility in public spaces may result in social isolation and reduced overall well-being for persons affected (Barnett et al., 2011). Technological progress has been significant in enhancing accessibility. Real-time captioning, visual alert systems, and mobile apps that convert spoken language into text are acknowledged as very successful techniques for improving communication for those with hearing impairment (Smith & Harris, 2018). The implementation of these technologies differs throughout nations, with some cities such as New York and London taking the lead in incorporating these solutions into public infrastructure (Williams, 2017; London Transport Authority, 2019).

In underdeveloped nations, the circumstances are often more difficult as a result of few resources and diminished levels of consciousness. Turan et al. (2016) conducted a research that emphasises the insufficient provision of facilities for persons with hearing impairment in public settings in several developing countries. Common obstacles include the absence of visible notifications in public transit, inadequate sign language interpretation services, and the unavailability of real-time text services (Turan et al., 2016).

The accessibility challenges in South Asia, especially Pakistan, are further complicated by cultural and socioeconomic aspects. Disability often faces social stigma, and there is a widespread absence of advocacy and support for those with impairment (Singal, 2010). The cultural context influences the execution of policies and the creation of inclusive infrastructure. Hearing impairment is prevalent in Pakistan, with roughly 7.6% of the population affected (PMRC, 2018). However, there is still a lack of sufficient public knowledge and infrastructure accommodations. According to a study conducted by Yousafzai (2019), people with hearing impairment in Pakistan encounter many obstacles while accessing healthcare services, educational institutions, and public transportation. The research discovered that crucial information is often conveyed orally without any alternate means of communication, resulting in notable difficulties in accessibility (Yousafzai, 2019). In Pakistan, the legal framework consists of the Disabled Persons (Employment and Rehabilitation) Ordinance, 1981, and the ICT Rights of Persons with Disabilities Act, 2020. These laws are designed to safeguard the rights of individuals with disabilities (Government of Pakistan, 2020). The enforcement of these rules is erratic, and many public establishments fail to adhere to accessibility criteria (Khan, 2020).

### Research Objectives

This research aims to:

Identify and categorize the types of barriers being faced by persons with hearing impairment in accessing information at public places.

Assess the impact of public space barriers on the social inclusion and safety of individuals with hearing impairment.

Evaluate the effectiveness of existing accessibility measures in Lahore's public spaces.

Propose recommendations for improving information accessibility for persons with hearing impairment in public places.

### Research Questions

This study seeks to address the following research questions:

What specific barriers do individuals with hearing impairment face in accessing information at public places of Lahore?

How do public space barriers impact daily lives and participation of hearing impaired individuals in public activities?

What are the current measures in place to assist individuals with hearing impairment in public places of Lahore?

How can public spaces in Lahore be made more accessible for persons with hearing impairment?

### Research Methodology

The study used a qualitative research design, which was considered suitable for many reasons. Qualitative research enables a thorough investigation of participants' experiences and views, yielding abundant and intricate data that quantitative approaches may fail to capture (Creswell, 2013). This technique was especially well-suited for comprehending the subtle and intricate difficulties encountered by persons with hearing impairment in public environments. The choice to use a qualitative design was motivated by several needs namely:

There was a need to effectively capture intricate narratives of individual experiences of participants.

There was a dire need to comprehend the unique difficulties faced by persons with hearing impairment within a certain situation.

There was a need of hour to establish a forum for individuals with hearing impairment to articulate their perspectives using their own language, resulting in genuine and significant observations.

### Population and Sample

#### Population

The research hinged on the population comprising all persons with hearing impairment who live in Lahore, Pakistan. This category consists of persons with a range of hearing impairment, extending from moderate to severe or complete loss of hearing. The varied demographic traits within this community provided wide-ranging viewpoints on the problems being studied.

#### Sample

Due to limitations in time and finances, a purposive sample strategy was used. Purposive sampling is a method of choosing participants in a research study based on their likelihood of providing valuable and detailed information, rather than using random selection (Patton, 2002). The selection of this strategy was made in order to guarantee the inclusion of persons who had the ability to provide useful insights on research questions.

#### Sample Size

The sample included five persons with hearing impairment residing in Lahore. The sample size was chosen to provide a thorough examination of each participant's experiences while yet being feasible within the study's parameters.

Participants (Sample) were chosen according to the specified criteria:

1. Hearing Impairment: Individuals with any level of hearing loss, ranging from mild to severe.
2. Geographic Context: In order to provide a consistent geographical reference, the location specified is Lahore, Punjab, Pakistan.
3. Age: Participants were 18 years old or older in order to ensure their ability to provide required informed permission and express their experiences autonomously.
4. Participants were selected based on their shown desire to actively engage and provide comprehensive accounts of their experiences.

#### Research tool

The research instrument used in this study was an open-ended interview questionnaire specifically created to get thorough and extensive replies from participants describing the difficulties participants encountered as a result of hearing impairment in public locations in Lahore, Pakistan. The creation of this questionnaire underwent a rigorous procedure that consisted of many steps, each

with the purpose of guaranteeing the gathering of comprehensive qualitative data. The questionnaire's ultimate iteration consisted of 15 open-ended questions specifically crafted to investigate different facets of the participants' encounters in public venues. The questions were designed in a manner that enabled respondents to give comprehensive narratives, thereby providing researchers with more profound insights into their difficulties and methods of dealing with them. The questions were designed to be open-ended, allowing participants to freely articulate their views and experiences without being limited to pre-determined answer choices.

### Sample of Questions

Some of the questions included in the final questionnaire were:

Have you encountered any challenges at public places due to your hearing impairment?

Do you often face difficulties in accessing information?

Have you experienced any challenges in communicating with staff or employees at customer service points due to their lack of knowledge or understanding of hearing impairment?

In what ways do you find it challenging to understand information displayed on digital screens in public places?

### Data Collection Procedure

The data collection procedure for this study involved conducting in-depth, semi-structured interviews of hearing-impaired individuals using a carefully developed interview questionnaire. The process was designed to ensure that comprehensive and rich data were gathered, while also maintaining ethical standards and sensitivity to the participants' needs.

### Recruitment of Participants

Participants were enlisted using a multi-stage procedure. The researcher reached out to local organizations that provide assistance to persons with hearing impairment, such as non-profit organizations, community centers, and advocacy groups. These organizations assisted in identifying prospective volunteers who fulfilled the study's eligibility requirements. Prospective participants underwent a screening process to verify their eligibility for the research, which included meeting certain requirements such as being inhabitants of Lahore, being 18 years of age or older, and having some level of hearing impairment. The screening process included conducting preliminary discussions and background investigations, which were aided by the partner organizations. Subsequently, those who met the criteria were sent an invitation to take part in the research. The participants were provided with comprehensive information about the research, including its objectives, methodologies, possible hazards, and advantages.

### Setting up Interviews

After individuals consented to participate in the research, interviews were arranged at mutually suitable and comfortable times and places. The sites included serene chambers in community centers, the dwellings of participants, and secluded areas inside the partner organizations' premises.

### Data Handling

Once the interviews were completed, the data was processed using the following procedures: The audio and video recordings were transcribed word by word. During the PSL interviews, the transcription procedure included the conversion of sign language into written English. The transcripts underwent a thorough examination to ensure their correctness. Participants were having the chance to examine their transcripts in order to confirm the precision of their answers and rectify any required adjustments. The transcripts underwent anonymization to safeguard the identity of the participants. Anonymization techniques were used to eliminate personal identifiers, and pseudonyms were substituted in the final transcripts. The transcripts and recordings were safely saved in files that required a password for access. The study team had exclusive access to these files.

### Ethical Considerations

Ethical issues were given utmost importance throughout the investigation. The measures used to tackle ethical issues encompassed:

- The participants were given comprehensive information on the research, which included its objectives, methodologies, possible hazards, and advantages.
- All participants provided written informed consent. The obtained data were securely stored and anonymized to ensure confidentiality.
- The participants' identities were safeguarded by use pseudonyms in both the transcripts and reports.
- Participants were notified that their involvement in the research was optional and that they had the freedom to discontinue their participation at any point without facing any adverse repercussions.
- The interviews were done with tact and consideration for the individuals' experiences and viewpoints.

### Data Analysis and Results

Thematic analysis was employed to analyze the interview data. This method involves identifying, analyzing, and reporting patterns (themes) within the data (Braun & Clarke, 2006). The process included the following steps:

**Familiarization:** The researcher thoroughly reviewed the transcripts to become familiar with the data.

**Coding:** Initial codes were generated based on significant phrases and ideas relevant to the research questions.

**Theme Development:** Codes were organized into potential themes, which were then reviewed and refined to ensure they accurately represented the data.

**Reporting:** The final themes were defined and named, and a detailed report was prepared to describe the themes and their implications.

### Interview Questions & Responses

**Q 1:** Have you encountered any challenges due to hearing impairment?

Each participant had a range of difficulties, particularly with respect to communicating and obtaining information in public settings. The issues included ranged from obstacles in comprehending oral announcements to engaging with customer service personnel. The main obstacle reported was the absence of easily available means of communication, which affects several elements of public life.

**Q 2:** Do you face difficulties in accessing at public places?

Participants reported to have experienced difficulties in obtaining information, particularly when it was communicated orally or via insufficient written communication. The limited availability of easily accessible information channels, as per participants' opinions, greatly impeded the capacity of those with hearing impairment to traverse public settings autonomously.

**Q 3:** Have you experienced any challenges in communicating with staff or employees at customer service due to their lack of knowledge or understanding of hearing impairment?

A significant number of participants had difficulties with customer service personnel who lacked enough training in successfully communicating with individuals with hearing impairment. There is a clear need for improved training and awareness among customer service personnel in order to enhance the effectiveness of communication.

**Q 4:** In what ways do you find it challenging to understand information displayed on digital screens in public places?

The problems included diminutive font size, quick alterations in presented data, and inadequate screen positioning. Enhancements in the design and positioning of digital displays are essential to enhance accessibility for those with hearing impairment.

**Q 5:** Have you encountered any obstacles in accessing information during guided tours due to lack of assistive listening devices or captioning?

The lack of assistive hearing equipment and captions during guided tours greatly hindered participants' capacity to actively procure the required information. Providing assistive devices during guided tours would significantly improve accessibility for those with hearing impairment.

**Q 6:** How often do you face difficulties in understanding public address systems?

Participants often failed to hear crucial notifications delivered through public speech systems. There is an urgent need for new modes of communication, such as visual displays to effectively transmit crucial information to hearing impaired individuals at public areas.

**Q 7:** Do you find it challenging to understand safety instructions?

A significant number of participants expressed concerns about their safety as a result of the absence of readily available safety guidelines in sign language. Improving the accessibility of safety instructions for those with hearing impairment is essential for their safety. This may be achieved by using visual aids and textual forms.

**Q 8:** Have you encountered any issues in accessing information during conferences, seminars, and workshops due to lack of accommodations for hearing-impaired participants such as sign language interpreter or captioning services?

Attendees of conferences and similar events had considerable difficulties in obtaining information since there were no provisions made for accommodations such as sign language interpreters or captioning services. Attendees observed that many conferences fail to have sign language interpreters, resulting in challenges while trying to comprehend lectures. A participant expressed that the majority of conferences they attend lack sign language interpreters, resulting in a significant loss of knowledge for them. Additionally, there was a prevalent problem about the absence of real-time captioning services, which are important for comprehending spoken information. A participant commented that it is difficult to follow the conversations even when there are slides, but no captions or translators are provided.

**Q 9:** Do you face any problem in accessing information during religious services due to lack of accommodations for hearing-impaired individuals?

Feedback revealed that religious services are often inaccessible to those with hearing impairment owing to the absence of necessary provisions. Participants emphasized the lack of assistive listening equipment at religious events. One participant stated that there are no auditory aids available at mosque, so he depended on written summaries of the sermons. The absence of visual assistance such as screen displays, for songs or prayers, presents a difficulty. A participant told that the absence of visual assistance during services made it difficult for him to follow along.

**Q 10:** Have you experienced any difficulties in communicating with staff or employees at restaurants, cafes, especially in noisy environments where it becomes challenging to lip-read or follow conversations?

Participants often faced challenges in loud locations such as restaurants and cafés. Challenging conditions with high levels of noise hindered their ability to interpret lips. A participant noted that it was very challenging to comprehend spoken words through lip-reading in a loud café, resulting in frequent misunderstandings of their order or interactions with the staff. A significant number of participants expressed the opinion that the personnel lacked enough training in properly communicating with those who have hearing impairment. "The staff's lack of proficiency in communicating with hearing-impaired customers often results in significant frustration," said one participant.

**Q II:** Do you feel that public places adequately accommodate your needs for accessing information as a hearing-impaired person? The prevailing opinion among participants was that public areas did not sufficiently cater to their requirements. The majority of participants expressed the view that public spaces were deficient in the required amenities. "It is uncommon for me to come across locations that possess the appropriate amenities for individuals with hearing impairment", said one participant. Participants voiced a need for more extensive accessibility solutions. "Public spaces should expand their considerations beyond the provision of ramps and incorporate technologies and services to cater to the needs of individuals with hearing impairment," said a participant.

**Q I2:** Have you experienced any instances where communication barriers have prevented you from receiving important information at public places?

Participants recounted several instances in which communication barriers resulted in the omission of vital information. Frequent problems included the absence of crucial notifications. "I was unable to catch my train because the announcement about the platform change was only made verbally and there was no visual indication", opined one participant. Communication difficulties raised safety issues during crises. "I was completely unaware of the situation during the fire drill as the instructions were solely communicated orally," said a participant.

**Q I3:** How do you currently overcome these challenges when trying to procure information at public places?

Participants reported to have employed several techniques to surmount the above-mentioned problems. A multitude of individuals used technology such as mobile applications to get information. "I utilize a translation application on my mobile device to interact with the staff," said one participant. Some individuals depended on companions or solicit assistance from others. A participant said that they often sought assistance from their friends or family to comprehend the material.

**Q I4:** Are there any specific technologies or assistive devices that you find helpful in accessing information at public places?

Participants highlighted many technologies and equipments that are beneficial. Hearing aids and assistive listening devices are essential. "Although my hearing aids provide assistance, it proves insufficient in environments with high levels of noise," said one participant. The use of real-time captioning on displays is much appreciated. "The implementation of captioning on TV screens in public places would have a significant impact," said a participant.

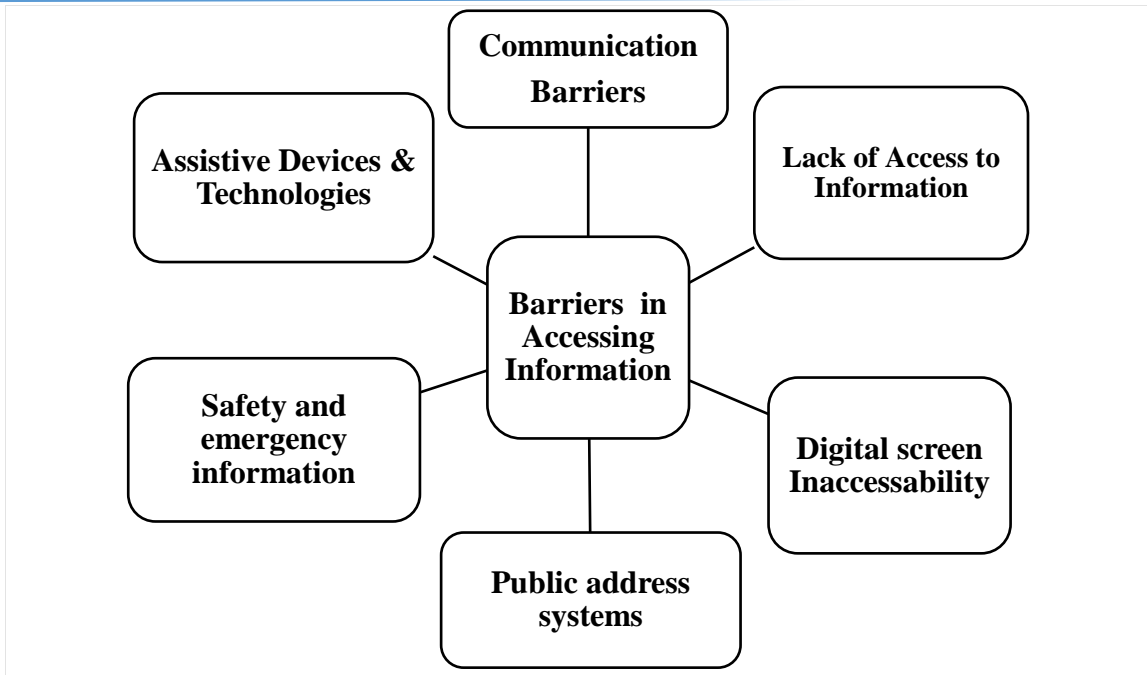
**Q I5:** What Strategies do you believe could help raise awareness and improve accessibility for hearing-impaired individuals at public places?

Attendees proposed many strategies to enhance accessibility. It is crucial to provide training to staff members and increase public awareness. A participant proposed that staff should be provided with training in fundamental sign language and communication techniques specifically tailored for consumers with hearing impairment. Enforcing measures to guarantee accessibility in public spaces are essential. "It is imperative to enact legislation mandating that public establishments offer the requisite facilities," said a participant.

### **Coding and Theme Development**

The interview transcripts underwent repeated reviews in order to uncover noteworthy remarks and repeating trends. The first codes were derived from interviews and then categorized into more general topics. The ultimate themes were identified, assessed and improved to guarantee their appropriate portrayal of the data.

#### ***Themes Identified***



**Theme 1: Communication Barriers**

A considerable number of participants reported encountering notable difficulties while interacting with staff or personnel at customer service counters as a result of their limited awareness about sign language or comprehension of hearing impairment.

**Participant A:** "Articulating my requirements to customer service personnel proves to be a formidable task." Frequently, individuals lack comprehension of sign language or proficiency in successful communication with me.

**Participant B:** "Staff members are typically not trained to interact with customers who are deaf." Resultantly, the deaf individuals are prone to frustration, as am I.

**Theme 2: Lack of Access to Information**

Participants frequently reported encountering challenges in obtaining information in a variety of public locations which impeded their capacity to independently navigate these environments.

**Participant C:** "I frequently encounter difficulty in obtaining the information I require in public locations." I am unable to hear the verbal announcements that are typically made."

**Participant D:** "Occasionally, printed information is not easily readable or visible." It can be difficult to locate an individual who is willing to provide assistance.

**Theme 3: Digital Screen Inaccessibility**

**Digital Screens Inaccessibility**

The analysis demonstrated that participants encountered difficulty in comprehending the information presented on digital displays as a result of the slowness and lack of visual clarity.

**Participant E:** "Digital screens change information too quickly, and the text is often too small for me to read comfortably."

**Participant A:** "Sometimes, the screens are placed too high, making it difficult for me to see the information clearly."

**Theme 4: Assistive Devices and Technologies**

During guided excursions and other activities, interactions were devoid of assistive listening devices or captioning, participants reported encountering obstacles.

**Participant B:** "During guided tours, I miss out on a lot of information because there are no assistive listening devices available."

**Participant D:** "Captioning is rarely provided, which makes it hard for me to follow along with the tour guide."

**Theme 5: Public Address Systems**

In locations such as airports, train stations, and retail centers, numerous participants' encountered challenges comprehending announcements being broadcasted via public address systems.

**Participant C:** "Public address systems pose a significant challenge." I frequently overlook critical announcements and must depend on others for information.

**Participant E:** "The announcements are typically rushed and ambiguous." Even if I am able to hear a small amount, I am unable to comprehend the topic being discussed.

**Theme 6: Safety and Emergency Information**

The difficulties that participants encounter in comprehending safety instructions in public spaces, which can have severe consequences for their safety and well-being, were emphasized by the participants.

**Participant A:** "Safety instructions are seldom conveyed in a manner that is comprehensible to me." Visual aids and written instructions are absent in numerous locations.

**Participant E:** "In emergencies, I feel very vulnerable because I can't hear the announcements and there are no clear visual instructions."

## Results

Thematic analysis identified numerous significant obstacles encountered by hearing-impaired individuals in public spaces of Lahore. Communication barriers, deficient access to information, inadequate safety instructions, and a lack of assistive devices are the primary causes of these challenges. Based on the interview questions, the subsequent section offers a concise overview of the primary discoveries.

### *Challenges Encountered Due to Hearing Impairment:*

Due to their hearing impairment, each participant reported experiencing a variety of obstacles. These challenges encompassed challenges in communication, information access, and comprehension of public announcements and safety instructions.

### *Difficulties in Accessing Information*

Participants frequently reported encountering challenges in obtaining information in public spaces, which frequently resulted in feelings of frustration and dependence on others for support.

### *Communication with Customer Service*

The dearth of training and cognizance among customer service personnel regarding the effective communication of hearing-impaired individuals was a substantial obstruction. In numerous instances, participants reported feeling ignored and misunderstood.

### *Understanding Digital Screen Information*

It was frequently difficult for hearing-impaired individuals to comprehend essential information on digital displays in public spaces due to the rapid change of information, small text size, and poor positioning.

### *Obstacles during Guided Tours*

Participants were unable to completely comprehend and engage with the information being presented due to the absence of assistive listening devices and captioning during guided tours and similar activities.

### *Understanding Public Address Systems*

Public address systems presented a significant obstacle for participants, as they frequently failed to hear critical announcements and relied on others to communicate information to them.

### *Safety Instructions*

Participants experienced feelings of vulnerability and insecurity during emergencies due to the inadequate visual aids and written instructions for safety procedures.

## Discussion

The results of this study emphasized the substantial obstacles that hearing-impaired individuals encounter while attempting to access information in public spaces in Lahore. The critical areas that require attention are the themes identified—communication barriers; lack of access to information; digital screen inaccessibility; lack of assistive devices; difficulties with public address systems and inadequate safety instructions.

This section contrasts these findings with those from other regions and settings and discusses them in the context of the existing literature.

The research revealed that hearing-impaired individuals encounter substantial communication obstacles, particularly when engaging with customer service personnel who are not adequately trained in effective communication strategies for this demographic. This discovery is consistent with prior research that had identified comparable concerns on a global scale. For instance, Garcia and Rivera (2018) discovered that hearing-impaired individuals in urban centers in the United States frequently encounter untrained staff, which results in misunderstandings and frustration. In India, Singh et al. (2017) conducted a study that found that inadequate staff training in public services substantially impedes effective communication with hearing-impaired individuals.

A finding that is consistent with research conducted in other contexts is that participants in this study frequently reported experiencing challenges in accessing essential information in public spaces. McKee et al. (2011), for example, noted that hearing-impaired individuals in the United Kingdom frequently encounter difficulties in comprehending verbal announcements in public transit systems. Furthermore, Kuenburg et al. (2016) conducted research in Austria that demonstrated that hearing-impaired individuals' autonomy and independence are significantly impacted by inaccessible information. This sentiment was also expressed by the participants of this study. The participants faced substantial challenges with digital displays, including inadequate placement, text size, and the pace of information display. Romano et al. (2019) conducted research that supports this conclusion, revealing that digital signage in public spaces frequently fails to account for the requirements of hearing-impaired individuals, resulting in information & communication gaps. In their investigation of the efficacy of public digital interfaces for individuals with disabilities, Shinohara and Wobbrock



(2011) identified similar and comparable challenges. Participants encountered substantial obstacles due to the absence of captioning and assistive listening devices during guided excursions and comparable activities. This is in accordance with the results of a study conducted by Muzoora and Mubeezi (2020) in Uganda which demonstrated that the absence of assistive listening devices in educational and public institutions significantly restricted the participation of hearing-impaired individuals. Additionally, Brennan et al. (2005) underscored the urgency of assistive technologies in improving the accessibility of public information for individuals with hearing impairment. Other studies have also documented the issue of participants overlooking critical announcements that were being broadcasted through public address systems. For instance, Wilson et al. (2017) discovered that hearing-impaired individuals in Canada frequently depended on visual signals or assistance from others to alleviate the inaccessibility of auditory announcements in public transport centers. The inadequacy of public address systems in delivering plain and accessible information to hearing-impaired users was also underscored by research conducted in the Netherlands by Brons et al. (2021). The critical concern was the inadequacy of written instructions and visual aides for safety procedures. Ferguson-Coleman et al. (2016) conducted a study that corroborated this finding, revealing that hearing-impaired individuals in Australia felt particularly vulnerable during emergencies as a result of a lack of accessible safety information. Additionally, Emond et al. (2015) conducted research in France that underscored the significance of precise visual and written safety instructions in safeguarding the well-being of hearing-impaired individuals during emergencies. The challenges identified in this study are not confined and exclusive to Lahore; rather, they are indicative of more general, worldwide challenges that hearing-impaired individuals encounter while attempting to access public information. The comparison with other studies reveals a consistent pattern of challenges across various regions, indicating that these issues are pervasive and ubiquitous.

For example, studies conducted in the United States (Garcia & Rivera, 2018), India (Singh et al., 2017) and Uganda (Muzoora & Mubeezi, 2020) consistently reported a lack of staff training for effective communication with hearing-impaired individuals. This suggests that there is a worldwide requirement for improved training programs and increased awareness among public service employees.

In the same vein, the inadequacy of digital displays and public address systems in providing accessible information to hearing-impaired individuals is a recurring issue in studies conducted in the United Kingdom (McKee et al., 2011), Canada (Wilson et al., 2017) and the Netherlands (Brons et al., 2021). These results indicate that the design and implementation of public information systems must be taken into account to cater the diverse requirements of all consumers including those with hearing impairment. Another prevalent obstacle is the absence of assistive technologies including captioning and listening devices during public activities and guided excursions. The critical role of these technologies in improving accessibility and inclusion for hearing-impaired individuals is underscored by research conducted in Austria (Kuenburg et al., 2016) and Australia (Ferguson-Coleman et al., 2016).

### Conclusion

The results of this study are consistent with and substantiated the current body of literature regarding the obstacles encountered by individuals with hearing impairment vis-à-vis accessing information at public spaces. The necessity of global initiatives to enhance accessibility and inclusivity for hearing-impaired individuals is emphasized by research findings across various regions. This research adds to the expanding body of evidence that emphasizes the significance of inclusive designs, assistive technologies, and training in the development of accessible public spaces. In order to improve the quality of life for hearing-impaired individuals worldwide, future research should concentrate on the development and evaluation of interventions that address these challenges. This research study examined the obstacles encountered by hearing-impaired individuals in obtaining information in public spaces in Lahore, Pakistan. Interviews were conducted with five hearing-impaired participants to obtain comprehensive insights into their experiences, utilizing a qualitative research design. Thematic analysis of the interview data identified several critical themes, including inadequate safety instructions, communication barriers, lack of access to information, digital screen inaccessibility, dearth of assistive devices, and difficulties with public address systems.

The participants reported that they encountered substantial difficulties in communicating with customer service personnel as a result of their lack of training and awareness of effective communication methods for interacting with hearing-impaired individuals. This led to ineffectual service interactions and frustration, underscoring the necessity of comprehensive training programs for customer service employees. In environments where information was predominantly disseminated verbally, hearing-impaired individuals frequently encountered difficulty in accessing essential information. This matter had a substantial effect on their capacity to independently navigate public spaces and emphasized the necessity of information channels that were easily accessible.

The participants encountered challenges in comprehending the information presented on digital displays as a result of the screen placement, text size, and sites of information display. Improving the design and placement of digital displays was thought of as a critical step in the process of improving information accessibility. The engagement and comprehension of participants were restricted by the absence of assistive listening devices and captioning during guided excursions and similar activities.

The importance of providing public venues with assistive technologies to ensure that hearing-impaired individuals can fully participate was underscored by this study. In locations such as airports, train terminals, and retail centers, public address systems are essential for the dissemination of information. However, participants frequently overlooked critical announcements that were announced through these systems. This underscored the necessity of alternative communication methods, such as visual displays, to supplement public address systems. Participants experienced feelings of vulnerability and insecurity during emergencies due to the

absence of explicit written instructions and visual aids for safety procedures. The significance of furnishing exhaustive and inclusive safety information through written and visual aids was underscored by this discovery.

The challenges identified in this study were consistent with the results of comparable studies conducted in various regions and settings. Similar challenges have been identified in research conducted in the United States, India, Uganda, the UK, Austria, Canada, the Netherlands, and Australia, suggesting that they are pervasive and prevalent. The necessity of global initiatives to enhance inclusivity and accessibility for individuals with hearing impairment is emphasized by the comparison and contrast. The results of this study emphasize the substantial obstacles that hearing-impaired individuals encounter while attempting to access information in public spaces of Lahore.

The themes identified—communication barriers, lack of access to information, digital screen inaccessibility, lack of assistive devices, difficulties with public address systems, and inadequate safety instructions—highlight critical areas that need attention for developing policy frameworks. It is imperative to address these issues by implementing improved communication strategies, providing staff with better training, improving the accessibility of digital screens, providing assistive technologies, and providing clear visual safety instructions in order to create more inclusive public environments.

### Recommendations

1. Implement comprehensive Sign Language training programs for customer service staff to improve their ability to communicate with hearing-impaired individuals effectively.
2. Develop and promote multiple accessible information channels, including visual aids and written formats, to ensure hearing-impaired individuals can independently navigate public spaces.
3. Improve the design and placement of digital screens to enhance readability and accessibility thereof for hearing-impaired individuals.
4. Ensure the availability of assistive listening devices and captioning during guided tours and other public activities to facilitate full participation of hearing-impaired individuals.
5. Integrate alternative communication methods, such as visual displays, to complement public address systems and ensure important announcements are accessible.
6. Provide comprehensive and critical safety information through visual aids and written formats to enhance the safety and well-being of hearing-impaired individuals during emergencies.

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