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Research Article:

Examining Online Platform Impact, Accessibility Barriers and Psychological Outcomes within the Hearing-Impaired Community

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ABSTRACT

This study investigated the effects of online platform accessibility on social isolation and psychological well-being, within the hearing-impaired (HI) community in Malaysia. Accessibility barriers emerged as significant predictors of increased social isolation and reduced psychological well-being, illustrating the specific challenges HI individuals face in digital spaces. Data were collected from 136 participants, integrating quantitative assessments to address these relationships comprehensively. Quantitative findings indicated that higher accessibility barriers were strongly associated with elevated levels of social isolation and lower psychological well-being. The study underscored the importance of inclusive platform design to support the psychosocial needs of the HI community. The results advocated for policy and platform improvements to promote equitable digital access, affirming that accessibility is essential for fostering well-being and inclusion within marginalised populations.

Keywords: Hearing impairment community, online platforms, social isolation, psychological well-being, accessibility barriers

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INTRODUCTION

The rapid growth of digital technology has expanded interpersonal connections while deepening social divides, particularly for marginalised communities such as individuals with hearing impairments (HI) (Satata, 2023; Botelho, 2021). Despite the widespread use of digital platforms for communication and information-sharing, many still lack inclusive design, presenting barriers like poor audio quality, lack of sign language interpretation and absence of closed captioning (Sen et al., 2021). These barriers limit online participation, contributing to a diminished digital experience and increased social isolation. Restricted access to digital tools negatively impacts psychological well-being, undermining autonomy, self-worth and emotional stability. Communication challenges in non-inclusive online environments often intensify loneliness and social withdrawal among HI individuals.

This study explores how accessibility barriers in digital platforms affect the psychological and emotional well-being of the HI community, focusing on the moderating role of accessibility in the relationship between social isolation and psychological health. Although digital technologies are increasingly integral to social life, the digital divide persists, with many platforms lacking features like captions or visual alternatives (Das et al., 2024). Consequently, HI individuals are often excluded from meaningful interactions and information access. This research addresses these gaps by investigating how inclusive digital design can enhance social participation and mitigate emotional distress. The findings aim to inform more inclusive policies and platform designs, ultimately contributing to equitable digital environments for the HI community (Van Deursen & Mossberger, 2018).

The objectives of this research are as follows:

1. To identify the accessibility barriers the HI community faces when using online platforms.
2. To examine the relationship between accessibility barriers and social isolation within the HI community.
3. To examine the relationship between accessibility barriers and psychological well-being within the HI community.

LITERATURE REVIEW

Online Platforms and the Hearing-Impaired Community

The internet has significantly transformed how individuals interact, communicate and access information. Online platforms such as social media networks, e-commerce marketplaces and various digital applications have rapidly expanded and now permeate nearly every aspect of modern life (Pertiwi et al., 2022). This widespread adoption is driven

by their accessibility, immediacy and ability to foster communication and community-building across geographic boundaries. In particular, social media platforms have become indispensable tools for sharing information, entertainment, and creating social bonds (Kong et al., 2016). Widely used platforms such as Facebook, Instagram, WhatsApp and TikTok allow users to interact constantly and cultivate a sense of belonging. However, alongside these benefits, online platforms also raise concerns regarding privacy, misinformation, and addictive behaviours (Neziri & Hasani, 2024). Their rapid growth and influence underscore the need for continuous research into their broader societal impact (Dai, 2024).

One population that experiences both the potential and the pitfalls of these digital spaces is the hearing-impaired (HI) community. Hearing impairment, a condition that may be congenital or acquired, affects an estimated 1–3 individuals per 1,000 (Wrobel et al., 2021). While technological advancements such as cochlear implants and digital hearing aids have supported speech development and educational inclusion, many digital platforms remain inadequately designed to meet the accessibility needs of this group. Research into the HI population has traditionally focused on academic performance and language development. However, less attention has been given to psychosocial aspects such as quality of life, emotional well-being, and self-esteem (De Jong et al., 2023). A lack of inclusive communication tools on digital platforms can hinder social participation, thereby reducing self-confidence and increasing the risk of social withdrawal (Whicker et al., 2020).

The evolving digital landscape has, paradoxically, intensified inequalities for vulnerable populations like the HI community. While digital technologies offer new opportunities for social interaction and knowledge sharing, the lack of universal design and assistive features has led to digital exclusion. This phenomenon, often described as the digital divide, limits the participation of deaf individuals and exposes them to psychological vulnerabilities stemming from exclusion and isolation. As highlighted by Pradeepa et al. (2024), there is an urgent need to understand and address the digital challenges faced by this community, particularly as online platforms become central to everyday life. This study, therefore, positions itself at the intersection of technology, disability and psychological well-being, aiming to explore how online platforms influence the lived experience.

Accessibility Barriers, Social Isolation and Psychological Well-being in Digital Spaces

Digital accessibility issues are closely linked to the increasing prevalence of social isolation among the HI population. As Ellis et al. (2021) explain, people with hearing impairments often encounter considerable difficulties in sustaining meaningful social relationships due to communication challenges and reduced social opportunities. This issue leads to heightened risks of loneliness and isolation (Shukla et al., 2020). Although digital platforms offer new avenues for social interaction and community-building, their effectiveness in alleviating social isolation for the hearing-impaired remains uncertain and inconsistent. Studies by Lin et al. (2020) affirm that online platforms can serve as valuable tools for information-sharing, emotional support and maintaining relationships. However, these benefits are not evenly distributed. Accessibility limitations such as missing captions or inaccessible

multimedia content can severely impede participation in digital spaces (Ntoa et al., 2024). Additionally, gaps in digital literacy and a lack of tailored user training further exacerbate the exclusion of individuals with hearing impairments, reinforcing their isolation and diminishing their sense of inclusion (Kim et al., 2020). A comprehensive understanding of these dynamics is crucial for assessing how platform features, user skills and accessibility intersect to influence social outcomes.

The psychological well-being of individuals with hearing impairments is also deeply affected by their digital experiences. Research has consistently shown that digital exclusion contributes to adverse psychological outcomes, including increased stress, diminished self-esteem, and elevated feelings of loneliness (Welch et al., 2023). The fast-paced nature of online communication, heavily reliant on auditory cues and rapid interaction, can cause emotional distress and disconnection for those unable to participate (Tsatsou, 2020) fully. Furthermore, the phenomenon of fear of missing out (FOMO) amplified by constant social updates can intensify feelings of inadequacy and anxiety within this population (Chakrabarti, 2024). In essence, while digital platforms hold significant potential for enhancing communication and emotional well-being, the continued neglect of accessibility in their design and implementation disproportionately affects the hearing-impaired community. Without inclusive digital environments and adequate user support, these platforms may contribute more to exclusion than empowerment (Wang et al., 2024). Understanding this interplay is crucial for addressing the social and psychological disparities experienced by individuals with hearing impairments in today's digitally connected world.

Digital Divide and Accessibility Challenges for the Hearing-Impaired Community

The persistent digital divide characterised by unequal access to, usage of, and benefits derived from digital technologies remains a critical issue affecting marginalised populations, particularly the Hearing Impairment (HI) community. This divide is not solely about the availability of internet infrastructure but also reflects complex socio-economic, technological and attitudinal disparities that restrict the full participation of individuals with hearing impairments in digital environments (Badiuzzaman, 2024). As technology continues to advance, so too does the risk of deepening these disparities unless proactive interventions are implemented. Beyond infrastructural limitations, the divide is further exacerbated by gaps in digital literacy. Proficiency in navigating digital tools, especially assistive technologies and communication platforms, is essential for effective engagement (Liu, 2024). However, many individuals with hearing impairments require specialised training to utilise these technologies confidently (Ajrun, 2021). The importance of customised digital literacy programmes tailored to the specific needs of the HI community cannot be overstated. These programs must address both technical competencies and accessibility awareness to ensure equitable participation in digital spaces (Fadli Hidayat et al., 2024).

Despite the transformative potential of online platforms in enhancing communication and social engagement, they often pose significant accessibility barriers for individuals with hearing impairments. The exponential growth of websites, audiovisual content platforms

and social media has not been matched with inclusive design practices, thereby limiting the usability of these technologies for the HI population (Greeley et al., 2022). For instance, many websites lack closed captioning, readable transcriptions and alternative formats for audio-only content, making it difficult for hard-of-hearing users to access vital information (Ellis et al., 2021). Audiovisual content platforms are similarly deficient in accessibility features. The absence of sufficient closed captioning, limited sign language interpretation, and poor audio quality compromises the ability of HI users to engage with educational, informational and entertainment content (Treem et al., 2016). Social media platforms, which play a central role in contemporary communication, frequently rely on audio-centric features and visual cues that do not cater to users with hearing loss. The scarcity of real-time captioning and adaptable communication modes further restricts their participation (Kožuh & Debevc, 2018).

These challenges not only prevent the HI community from accessing online content but also intensify their digital marginalisation, reinforcing the psychological and social impacts of exclusion. Bridging this gap requires concerted efforts from platform developers, policymakers and accessibility advocates. By embedding universal design principles into digital platforms, fostering cross-sector collaboration and enforcing inclusive accessibility standards, the digital ecosystem can evolve to ensure equitable and empowering experiences for all users, regardless of hearing ability.

Theoretical Frameworks Including The Conceptual, Social Model of Disability and The Theory of Planned Behaviour

The relationship between HI community, technology and social connection is multifaceted and contributes to social isolation and loneliness in individuals with hearing difficulties. The social model of disability emphasises that hearing loss is not just a personal impairment but a societal obstacle that hinders complete participation (Lin et al., 2020). Therefore, individuals with HI encounter difficulties in social interactions beyond personal characteristics. This emphasises the impact of environmental and attitudinal factors in worsening social isolation (Kariuki, 2021). In this context, online platforms are seen as a promising means of overcoming these obstacles. Applying the theory of planned behaviour can help us gain insights into the factors that influence adopting and utilising these technologies. People's inclination to utilise online platforms is probably affected by their attitudes towards technology, subjective norms and perceived behavioural control (Bricout & Baker, 2010). HI individuals may face increased difficulties due to accessibility challenges, limited digital literacy and heightened concerns regarding privacy and security. Nevertheless, online platforms can mitigate social isolation (Kim et al., 2020).

To fully understand the influence of online platforms on social isolation and loneliness among individuals with hearing impairments, it is essential to consider the social and psychological factors that contribute to their behaviours. The interaction between hearing impairment, technology and social interaction is intricate, especially for individuals with

partial hearing loss. Although online platforms can alleviate social isolation, they can also bring about further difficulties (Shukla et al., 2020). Research should investigate social media's impact on reducing and intensifying loneliness within this group. By employing the social model of disability, attention is directed towards how social media platforms facilitate or impede participation. This review seeks to illuminate the intricate and profound relationship between technology, disability, and social connection by analysing how these theoretical frameworks intersect with the real-life experiences of individuals with hearing loss.

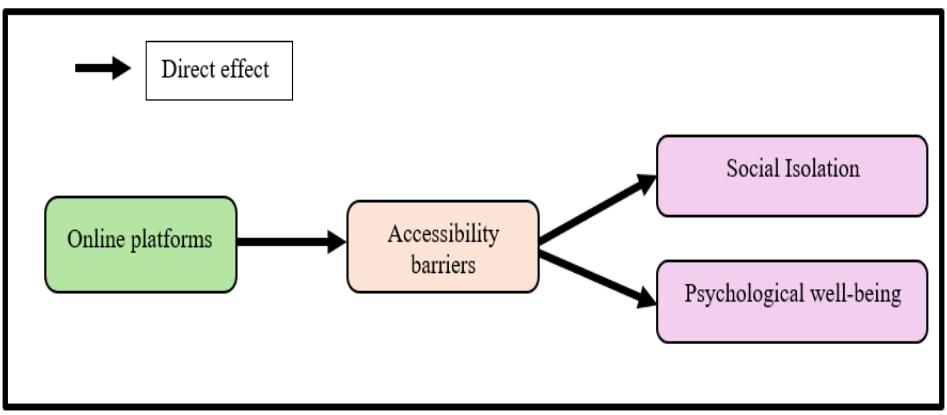

Figure 1. Conceptual model

Research Methodology

The study's participants were recruited through meticulously chosen channels, such as social media platforms, HI community groups, and organisations that serve individuals with hearing impairments in Malaysia. Social media was acknowledged as a potent means of reaching specialised populations in research, particularly when direct access to specific communities was challenging (Powell, 2006). Survey invitations were distributed through these channels, providing a summary of the study's goals and the estimated time required to complete it. This approach ensured that the survey reached a suitable and inclusive audience within the HI community, thereby enhancing the accuracy and reliability of the sample (Qin et al., 2019).

Before initiating the survey, participants received an informed consent form that clearly explained the research objectives, highlighted the voluntary nature of participation and outlined assurances regarding the confidentiality and anonymity of their responses. Obtaining informed consent was a critical component of ethical research practice, as it ensured participants had a full understanding of their rights and the study's purpose (Kang

& Hwang, 2021). Participants indicated their comprehension and agreement by selecting the appropriate consent option, thereby formally agreeing to participate in line with ethical research guidelines.

The survey was conducted via a secure online platform, namely Google Forms, to ensure convenient access for all participants. Online survey platforms have been widely utilised in research for their practicality, cost-effectiveness and ability to reach geographically dispersed populations (Falcão et al., 2023). The survey link was disseminated through various digital channels, including email, social media and networks associated with the HI community. A clear deadline was communicated to encourage timely responses. The platform also included mechanisms to prevent duplicate submissions from the same respondent, thereby protecting data integrity and ensuring the reliability of the findings (Rosenblatt et al., 2015). The research team reached out to 220 members in the HI community via email and social platforms. Over three months, reminder messages were sent monthly to prompt engagement. This outreach resulted in 136 valid responses, which formed the basis of the data analysed in this study.

Table 1. Respondents summary

Online platform users – Hearing Impairments Community (HI) (N = 136)			
Respondent details		No. of respondents	%
Gender	Female	96	70.58
	Male	40	29.41
Age	< 25	31	22.79
	25–35	52	38.23
	36–45	38	27.94
	> 45	15	11.02
Time of using online platforms (hour)	< 3	27	19.85
	4–6	62	45.58
	7–9	34	25.00
	> 9	13	9.55
Online platforms	Twitter	10	7.35
	Facebook	46	33.82
	WhatsApp	58	42.64
	Instagram	22	16.17

According to Table 1, out of the 136 participants, 70.58% (*n* = 96) were female and 29.41% (*n* = 40) were male. Approximately 38.23% (*n* = 52) of the participants were between the ages of 25 and 35, followed by 27.94% (*n* = 38) between the ages of 36 and 45, 22.79% (*n* = 31) below the age of 25, and 11.02% (*n* = 15) above the age of 45. Concerning the daily usage of the online platforms, approximately 45.58% (*n* = 62) of the participants stated that they use it for 4 to 6 hours daily, while 25% reported using it for 7 to 9 hours daily. Regarding Online platforms utilised, 42.64% and 33.82% of respondents reported using WhatsApp and Facebook, respectively. Out of the 136 participants, only 23.52% indicated that they use Instagram (16.17%) and Twitter (7.35%).

The demographic analysis revealed that the sample primarily consisted of female participants. Out of the total 136 respondents, 70.58% (*n* = 96) identified as female, while only 29.41% (*n* = 40) identified as male. Data indicated a significant gender imbalance within the sample. Although specific data on educational background were not included in the reported findings, it was presumed that a majority of the participants were relatively well-educated, as the survey required a certain level of digital literacy and accessibility, which is often associated with higher educational attainment.

INSTRUMENTS

Social Isolation

The assessment of social isolation was conducted using a three-item scale modified from Hughes et al. (2020), research and PROMIS Social Isolation Scales. The inquiries examined emotions of solitude and interpersonal detachment, encompassing statements like "I lack companions for recreational activities," "I experience a sense of isolation from others," and "I lack individuals in whom I can place my trust." The adapted scale showed high reliability and validity, as indicated by its Cronbach's Alpha (CA) of 0.876, Composite Reliability (CR) of 0.915 and Average Variance Extracted (AVE) of 0.865.

Accessibility Barriers

Accessibility barriers prevent individuals with hearing impairments from fully engaging with digital platforms, affecting communication, social interactions and access to information. These barriers include the lack of closed captions, inaccessible websites and social exclusion, leading to increased isolation and reduced psychological well-being (Ellis et al., 2021; Mohammed & Cavus, 2025). Limited digital access contributes to stress, anxiety and fewer opportunities for education and employment (Welch et al., 2023; Badiuzzaman, 2024). In the research, accessibility barriers were measured using a five-point Likert scale, where respondents rated their level of agreement on accessibility-related issues. To promote digital inclusion, it is crucial to implement assistive technologies, improve platform accessibility and enforce policies that ensure equal participation (Fadli

Hidayat et al., 2024). Creating an inclusive digital environment will help enhance social engagement and the overall well-being of the hearing-impaired community (Treem et al., 2016).

Psychological Well-Being

The assessment of psychological well-being was conducted using a five-item scale modified from the study conducted by Salsman et al. (2013), and the Psychological Well-Being (PWB) Scale. The queries centred on personal satisfaction and constructive social interactions, such as "I derive a sense of purpose in life from the presence of others," "My social media connections are nurturing and gratifying," and "I am actively involved and enthusiastic about my daily social media engagements." The modified scale showed strong reliability and validity, as evidenced by its CA of 0.872, CR of 0.909 and AVE of 0.641.

Data Analysis and Measurement

The data analysis was conducted using SPSS version 28.0.1.1, which provided a comprehensive platform for executing both descriptive and inferential statistical procedures. A five-point Likert scale was implemented to capture participants' responses, ranging from 1 ("strongly disagree") to 5 ("strongly agree"). This scale enabled the measurement of perceptions related to accessibility barriers, social isolation and psychological well-being within the HI community. Pearson's correlation coefficient was applied to assess the strength and direction of linear relationships among these variables, specifically for interval-scaled data. This approach allowed for a nuanced understanding of the interplay between social isolation and psychological well-being, considering demographic factors such as age and type of online platform use.

RESULTS

Using SPSS version 28.0.1.1, the study conducted a comprehensive analysis combining both descriptive and inferential statistical techniques to explore the relationships among accessibility barriers, social isolation, and psychological well-being within the HI community. Descriptive statistics summarised the demographic trends and platform usage patterns. At the same time, inferential analyses, namely Pearson's correlation and regression, were applied to test the proposed hypotheses in alignment with each research objective.

RQ1: What Are The Primary Accessibility Barriers The HI Community Faces When Using Online Platforms?

A descriptive analysis was conducted to identify key accessibility barriers experienced by individuals with hearing impairments using digital platforms. Participants rated their experiences using a five-point Likert scale. The results, as presented in Table 2, revealed

that the lack of closed captions was the most frequently reported barrier (M = 4.32, SD = 0.65), followed by inaccessible audio content (M = 4.15, SD = 0.70). The absence of sign language interpretation (M = 3.89, SD = 0.85) and navigation difficulties (M = 3.76, SD = 0.91) were also commonly reported. These findings highlight the widespread nature of accessibility barriers across various forms of digital content. The consistently high mean values indicate that hearing-impaired individuals face frequent and systemic challenges in accessing information, participating in communication and navigating online platforms.

Table 2. Accessibility barriers experienced by respondents (N = 136)

Accessibility barrier item	Mean	SD
Lack of closed captions	4.32	0.65
Inaccessible audio content	4.15	0.70
Limited sign language interpretation	3.89	0.85
Difficulties in navigating digital platforms	3.76	0.91

RQ2: What Are The Relationship Between Accessibility Barriers and Social Isolation Within The HI Community?

To explore levels of social isolation, participants responded to three items reflecting emotional and interpersonal detachment. As shown in Table 3, the highest mean score was observed for the statement "I feel isolated from others" (M = 3.85, SD = 0.88), followed by "I lack companions for recreational activities" (M = 3.71, SD = 0.92), and "I lack individuals in whom I can place my trust" (M = 3.59, SD = 0.95). The overall results indicate a notable presence of social isolation among individuals with hearing impairments. This descriptive insight was followed by Pearson correlation, which revealed a strong positive correlation between accessibility barriers and social isolation (r = 0.72, p < 0.01).

Table 3. Social isolation items reported by respondents

Social isolation items	Mean	SD
I feel isolated from others.	3.85	0.88
I lack companions for recreationl activities.	3.71	0.92
I lack individuals in whom I can place my trust.	3.59	0.95

Table 4 shows the Pearson correlation analysis findings, with a high level of positive correlation between issues with regard to digital accessibility and the experience of social

isolation in the hearing-impaired sample ($r = 0.72$, $p < 0.01$). This high association supports Hypothesis 1, suggesting that increased levels of issues concerning digital accessibility are linked with increased experiences of isolation in the hearing-impaired sample. The size of this relationship suggests that lack of access to interactive digital spaces, as characterised by the dearth of captioned videos, sign language interpretation, and easy-to-use interfaces, can have a direct effect on feelings of isolation and reduce the potential for effective social interaction.

Table 4. Correlation test of variables

Hypothesis	Test	Variables	Correlation coefficient (r)	Significance level (p-value)
H1: Accessibility Barriers and Social Isolation	Pearson correlation	Accessibility Barriers and Social Isolation	$r = 0.72$	$p < 0.01$

Note: **Correlation is significant at the 0.01 level (2-tailed)

RQ3: What Is The Relationship Between The Accessibility of Online Platforms and The Psychological Well-Being of Individuals Within The HI Community?

Participants' psychological well-being was assessed using three items adapted from the PWB scale. As presented in Table 5, the highest score was recorded for "I derive a sense of purpose in life from the presence of others" (M = 3.78, SD = 0.86), followed by "My social media connections are nurturing and gratifying" (M = 3.64, SD = 0.90), and "I am actively involved and enthusiastic about my daily social media engagements" (M = 3.49, SD = 0.94). The descriptive data indicate moderate levels of psychological well-being among the HI participants yet highlight variability in social media engagement and satisfaction. Inferential analysis revealed a strong negative correlation between accessibility barriers and psychological well-being ($r = –0.68$, $p < 0.01$).

Table 5. Psychological well-being items reported by respondents

Psychological well-being item	Mean	SD
I derived a sense of purpose in life from the presence of others.	3.78	0.86
My social media connections are nurturing and gratifying.	3.64	0.90
I am actively involved and enthusiastic about my daily social media engagements.	3.49	0.94

Table 6 shows the Pearson correlation test findings, probing the relationship between digital access barriers and the psychological status of the hearing-impaired individual. From the analysis, it emerges as a significant negative relationship ($r = –0.68$, $p < 0.01$), indicating an intense association such that increased access barriers are significantly associated with decreased psychological health. This finding supports Hypothesis 2, asserting that the absence of inclusive practices such as closed captioning, assistance in the form of sign language and accessibility of digital interfaces can lead to frustration, emotional distress, and dissatisfaction with online interactions. The size of the association, in addition to its consistency, evinces the fact that as access barriers strengthen, hearing-impaired individuals are more inclined towards lesser self-esteem, increased anxiety, and decreased motivation in accessing online spaces. These findings reaffirm the critical nature of digital inclusion as a determining factor not only in access but also in the emotional equilibrium and psychological status of hearing-impaired users.

Table 6. Correlation test of variables

Hypothesis	Test	Variables	Correlation coefficient (r)	Significance level (p-value)
H2: Accessibility Barriers and Psychological Well-being	Pearson correlation	Accessibility Barriers and Psychological Well-being	$r = –0.68$	$p < 0.01$

Note: **Correlation is significant at the 0.01 level (2-tailed).

DISCUSSION

This study sought to examine the impact of digital accessibility barriers on social isolation and psychological well-being among individuals with HI in Malaysia. The findings provide compelling empirical evidence that digital accessibility is a critical factor in shaping the social and emotional experiences of the HI community, especially in the context of increasing digital reliance in post-pandemic communication environments. Each objective is discussed in depth, with analytical connections to established theories and prior empirical studies across global and regional contexts. The study first aimed to identify the accessibility barriers experienced by HI individuals on digital platforms. The results revealed high mean scores for the lack of closed captions, inaccessible audio content, limited sign language interpretation and difficulty navigating online interfaces. These outcomes confirm that digital technologies remain structurally exclusionary, designed predominantly for normative sensory users without regard for sensory-divergent populations. These findings reinforce global literature highlighting the neglect of inclusive design in mainstream digital systems.

Farayola et al. (2024), for example, emphasised that digital content often lacks multimodal input and output channels, placing deaf users at a disadvantage in navigating auditory-

heavy environments. Similarly, Greeley et al. (2022) found that digital accessibility gaps compromise communication and access to education, employment and civic participation for the deaf and hard-of-hearing population. These barriers echo the social model of disability, which defines disability as the result of socially constructed obstacles rather than inherent impairments (Riddle, 2020). Inaccessible online platforms thus function as digital gatekeepers, systematically excluding HI users from full participation in virtual life. This exclusion is further compounded by insufficient user training and a lack of awareness among platform developers regarding the communication preferences of the HI community. Research by Ajrun (2021) in the Malaysian context confirmed that even when digital infrastructure is available, many deaf users cannot benefit due to poor interface adaptation and unfamiliarity with available assistive features. Thus, accessibility is not solely a design challenge but a social justice imperative, requiring inclusive design, digital literacy training and policy enforcement to foster equity.

The second objective focused on the relationship between accessibility and social isolation. The results indicated a strong positive correlation, suggesting that inaccessible digital environments significantly increase the likelihood of social isolation among HI users. Participants expressed a lack of social companions, feelings of detachment, and reduced trust in their online connections—symptoms widely recognised in loneliness literature. These results substantiate the findings of Shukla et al. (2020), who reported that individuals with hearing loss are more likely to experience social withdrawal due to communication breakdowns. Similarly, Ellis et al. (2021) highlighted that older adults with hearing impairments often avoid digital social interactions entirely when digital interfaces lack supportive features like captions or amplification tools. The present study adds to this growing body of evidence by offering quantitative support for the assertion that accessibility is not merely about usability but also about preserving social connectedness in an increasingly digital society. Furthermore, the implications of digital isolation extend beyond individual loneliness. According to Welch et al. (2023), digital exclusion reduces access to information, health services and peer networks, contributing to broader social disempowerment among people with disabilities. As this study shows, HI individuals are not only deprived of informal digital interactions but are also less likely to participate in formal or educational digital engagements. This study deepens social inequality and reinforces cycles of marginalisation.

The third objective addressed the influence of accessibility barriers on psychological well-being. The findings revealed a significant negative correlation ($r = -0.68$, $p < 0.01$), confirming that reduced digital access contributes to emotional dissatisfaction, lower self-worth and reduced motivation. These results align with Self-Determination Theory (SDT), which posits that autonomy, competence and relatedness are essential for psychological flourishing (Guay, 2021). Digital inaccessibility disrupts these psychological needs. HI, individuals experience reduced autonomy when they must rely on others to access information, diminished competence due to difficulty using mainstream platforms, and limited relatedness as they are excluded from interactive spaces. These findings are supported by Tsatsou (2020), who emphasised that inaccessible digital platforms amplify disability stigma and perpetuate mental health vulnerabilities. Additionally, Ostic et al.

(2021) demonstrated that accessible digital tools foster higher self-esteem and emotional resilience, particularly among marginalised users. In the current study, participants' moderate engagement with social media revealed a paradox: while online platforms provide the potential for connection, they can also reinforce exclusion when not designed inclusively. The quality of interaction, rather than the mere quantity of usage, emerged as a critical determinant of emotional well-being. These findings urge developers to focus not only on platform accessibility but also on interactional inclusivity, such as meaningful content adaptation and culturally sensitive communication modes, including regional sign languages.

An important insight emerging from the study is the paradox of engagement. While participants frequently used platforms such as WhatsApp and Facebook, their psychological benefits were undermined by inadequate accessibility. Excessive digital exposure without meaningful interaction can lead to emotional fatigue and a fear of social exclusion, particularly when users are constantly reminded of their inability to participate fully. This phenomenon has been documented by Chakrabarti (2024), who found that users experiencing FOMO due to social media exclusion reported increased anxiety and depressive symptoms. Similarly, Dai (2024) concluded that incomplete participation in digital communities often has more detrimental effects on mental health than complete non-participation. Inaccessible platforms create a dual burden: they encourage engagement without providing the tools for effective participation. This gap not only affects individual users but also undermines the inclusive promise of digital citizenship.

The findings of this study present strong implications for policy, platform development and advocacy. Accessibility must be embedded as a fundamental design principle rather than treated as an add-on. The Web Content Accessibility Guidelines (WCAG) provide essential guidance but must be actively enforced across platforms, especially in social media, education, and public service websites. Raymond et al. (2024) emphasised that most popular platforms lack formal accountability mechanisms to ensure accessibility, leaving vulnerable users unsupported. This study reinforces the urgency of regulatory reform and suggests that accessibility audits, user co-design practices and legal compliance frameworks be institutionalised. At the same time, innovation in assistive technologies shows promising potential. Mohammed and Cavus (2025) demonstrated that mobile apps designed for people who are deaf or hard of hearing, incorporating features such as sound awareness and text-to-sign translation, can bridge interactional gaps and improve users' quality of life. If integrated into mainstream platforms, such tools could redefine accessibility from a reactive feature to a proactive standard.

Although the study contributes valuable empirical evidence, certain limitations must be acknowledged. The reliance on self-reported data may introduce bias, and the sample was limited in size and geographic scope. Future research should adopt mixed methods approaches, incorporating longitudinal data, ethnographic insights and technological usage patterns to provide a holistic understanding of digital accessibility for the HI community. Furthermore, researchers should investigate intersectional factors such as gender, age,

language proficiency and rurality that intersect with hearing impairment to shape digital access experiences. Investigating how these variables influence digital behaviour could inform more targeted and culturally nuanced interventions. Besides that, future research should explore long-term impacts, intersecting social inequities, and the integration of assistive technologies into mainstream digital environments to reduce user burden and promote equitable digital inclusion.

CONCLUSIONS

In conclusion, this study demonstrates that digital accessibility is not merely a technical issue but a foundational element of social inclusion and mental health. As society continues to evolve in a digitally connected world, ensuring that online spaces are designed to accommodate all users, particularly those with hearing impairments, is essential for fostering equitable and empowering digital environments. Addressing accessibility gaps has the potential to reduce social isolation, improve psychological well-being and create a more inclusive digital future.

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