



## Health Promotion Strategies to Improve Access to Maternal Health Services for Women with Sensory Disabilities: A Scoping Review

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### ABSTRACT

**Background:** Women with sensory disabilities continue to experience inequitable access to maternal health services, particularly due to communication barriers, limited access to information, and insufficiently inclusive health systems. Health promotion strategies have been proposed to address these challenges; however, evidence regarding their effectiveness remains fragmented and has not been systematically synthesized.

**Methods:** This study employed a scoping review design following PRISMA-ScR and Joanna Briggs Institute (JBI) guidelines. Literature searches were conducted across four databases (PubMed, ScienceDirect, Wiley, and Google Scholar) using Boolean operators and truncation techniques. Articles were selected based on Population, Concept, and Context (PCC) criteria. Of 2,484 identified records, 10 studies met the inclusion criteria and were analyzed using data charting. Study quality was assessed using JBI critical appraisal tools.

**Result:** Three major themes of health promotion strategies were identified: (1) inclusive communication strategies, including interpreter services and accessible communication methods; (2) strengthening health system responsiveness through training of healthcare providers and development of inclusive maternal services; and (3) utilization of adaptive digital technologies and patient empowerment. These strategies were associated with improved communication, increased health literacy, and better utilization of maternal health services. However, persistent barriers such as limited resources, lack of trained personnel, and systemic constraints continue to affect implementation.

**Conclusion:** Health promotion strategies play a crucial role in improving access to maternal health services for women with sensory disabilities. Effective implementation requires an integrated, system-level approach that combines inclusive communication, capacity building, and adaptive technologies to achieve equitable and sustainable maternal healthcare.

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## INTRODUCTION

Equal access to maternal health services is a critical prerequisite for achieving reproductive health goals and reducing health disparities (Saeed et al. 2022) (Nakatabira et al. 2025). Globally, more than 1 billion people live with disabilities, including women of reproductive age with hearing and visual impairments who face inequities in access to health services (WHO 2023). In Indonesia, the number of people with disabilities is also quite large. Data from Bappenas estimates that there are approximately 22-23 million people with disabilities in Indonesia, meaning this group requires special attention in the planning of health services and social protection programs (Bappenas 2021).

Although various health promotion strategies have been developed, women with sensory disabilities still face numerous barriers in accessing maternal health services, particularly regarding communication, access to information, and the readiness of the health care system (Saeed et al. 2022) (Purwati, Mansur, and Ruslita 2025) (Gates and Erfani 2025a). These barriers result in low utilization of antenatal care, delayed visits, and an increased risk of pregnancy complications (Dev, Allen, and Sisson 2025) (Clifford et al. 2025).

In this context, health promotion strategies serve as a key approach to improving access to maternal health services (Nakatabira et al. 2025) (Clifford et al. 2025). Various health promotion-based interventions, such as providing adaptive communication (e.g., sign language interpreters), using accessible educational media (audio, Braille, and visual), and leveraging digital technology, have been proposed to enhance health literacy and patient engagement (Purwati et al. 2025) (Akinreni et al. 2025) (Wang et al. 2025). Studies indicate that these strategies have the potential to improve patient understanding, communication quality, and healthcare experience (Saeed et al. 2022) (Gates and Erfani 2025a).

However, evidence regarding the effectiveness of health promotion strategies for women with sensory disabilities remains scattered and has not been systematically integrated (Dev et al. 2025) (Clifford et al. 2025). Some studies indicate that technology- and communication-based interventions can improve access to services (Wang et al. 2025) (Khan 2025), while others emphasize that without systemic support such as training for healthcare workers, inclusive policies, and facility improvements these interventions will not yield optimal outcomes (Pebolo et al. 2025) (Clifford et al. 2025). These differing findings highlight a gap in understanding regarding the most effective strategies, implementation contexts, and resulting outcomes (Dev et al. 2025).

Therefore, a comprehensive synthesis is needed to map the various health promotion strategies that have been used to improve access to maternal health services for women with sensory disabilities (Dev et al. 2025) (Clifford et al. 2025). This scoping review aims to identify and categorize various health promotion strategies, understand how these strategies are implemented, and assess the outcomes reported in various studies. Additionally, this study aims to identify gaps in the existing scientific evidence, thereby providing a foundation for the development of more inclusive and evidence-based interventions and policies.

## METHOD

This study is a scoping review conducted in accordance with the 2020 PRISMA-ScR (Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews) guidelines and the methodological guidelines from the Joanna Briggs Institute (JBI) Manual for Evidence Synthesis 2020. This approach was used to map the scientific evidence regarding health promotion strategies aimed at improving access to health services for women with sensory disabilities.

## 1. Research Question Formulation (PCC Framework)

**Table 1. Framework (PCC)**

Population	Concept	Context
Women with sensory disabilities (deaf or blind)	Health promotion strategies, health education, health communication, technology- and media-based interventions	Healthcare systems (ANC, INC, PNC, family planning), healthcare facilities, and communities

Main question:

“What health promotion strategies can be used to improve access to health services for women with sensory disabilities?”

## 2. Identification

In the literature search, truncation techniques were used to broaden the scope of the keywords by capturing various variations of terms related to health promotion, health services, and sensory disabilities. Truncation: (“deaf” OR ‘blind’ OR “sensory disability”) AND (“healthcare access” OR “access to health services” OR “health service utilization”) AND (“maternal health services” OR “antenatal care” OR “intranatal care” OR “postnatal care” OR “perinatal care” OR “family planning”).

**Table 2. Inclusion and Exclusion Criteria**

Inclusion Criteria	Exclusion Criteria
1) A study focusing on women with sensory disabilities.	1) Studies focusing on physical, intellectual, or psychosocial disabilities, excluding sensory disabilities.
2) An article discussing access to health services (ANC, INC, PNC, family planning).	2) Articles that do not provide full-text access.
3) Research evaluating health promotion, health communication, health education, or technology- or digital-based interventions.	3) Opinion pieces, editorials, non-empirical commentary, or non-scientific publications.
4) Publications for 2020–2025 to ensure that the evidence analyzed reflects the latest developments in health promotion strategies, particularly regarding the use of digital technology and inclusive service approaches.	4) An article that does not discuss health promotion or access to services.
5) Scientific publications in Indonesian or English.	

## 3. Article Selection

A literature search was conducted in four major databases, namely PubMed, ScienceDirect, Wiley, and Google Scholar. After screening for duplicates, 78 articles were removed, leaving 2,484 articles for title and abstract screening. At this stage, 2,372 articles were eliminated because they did not meet the inclusion criteria, for example, they did not focus on women with sensory disabilities or were not related to MCH services and health promotion. A total of 112 articles were then examined in full text, but 101 of them were inaccessible or did not provide full text. Of the 11 full-text articles that could be assessed, one article was excluded because it was not relevant to sensory disabilities. Thus, there were 10 articles that met all inclusion criteria and were included in this scoping review analysis.

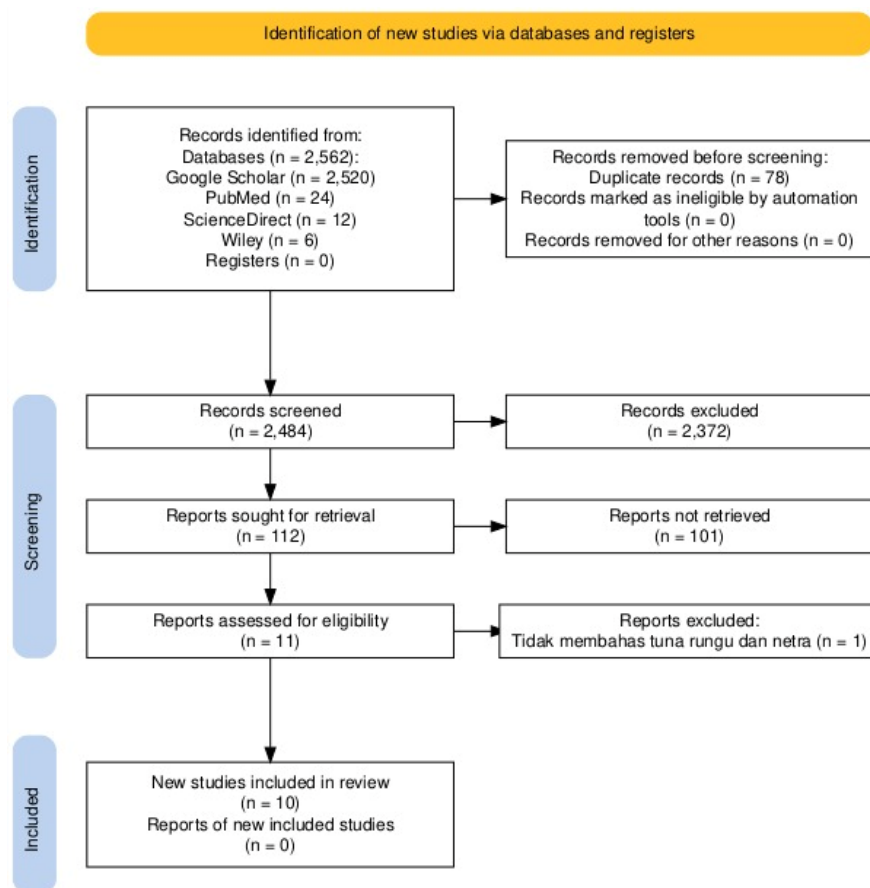


Figure 1. PRISMA-ScR

#### 4. Data Charting

Table 3. Data Charting

No	Researcher, Year, and Title	Country	Research Objectives	Research Method	Research Results
1	Healthcare Communication Access among Deaf and Hard-of-Hearing People During Pregnancy (Panko et al. 2023)	Amerika Serikat	Assessing access to and experience of healthcare communication services during pregnancy for deaf and hard-of-hearing individuals.	Design: Mixed Method Data collection techniques: Accessible online questionnaires and in-depth interviews Data analysis: Descriptive statistics Sampling: Non-probability & snowball sampling Population/Sample: 583 DHH women who gave birth in the last 10 years	The majority of respondents rated prenatal communication as fairly good, but many communication accommodation needs (especially ASL interpreters and communication modifications) were not met, leading to potential gaps in medical information.

2	‘They Forget I’m Deaf’: Exploring the Experience and Perception of Deaf Pregnant Women Attending Antenatal Clinics/Care (Adigun and Mngomezulu 2020)	Nigeria	Exploring the experiences and perceptions of deaf women in antenatal care.	Design: Exploratory qualitative Data collection technique: Semi-structured interviews (video, sign language) Data analysis: Thematic analysis Sampling: Purposive Informants: 9 deaf pregnant women	Communication barriers, attitudes of health workers, cost, and distance cause delays in ANC; private services are more satisfactory than public services.
3	Experiences of deaf women and girls in accessing maternal health rights and services in Uganda (Gimono 2025)	Uganda	Assessing experiences and barriers to access to maternal health rights and services for deaf women and girls.	Design: qualitative approach with intrinsic case study design Data collection techniques: Semi-structured interviews, focus group discussions, document analysis Data analysis: Thematic Sampling: Purposive Informants: 50 deaf women/girls & 13 key informants	Research shows that 100% of informants have not received maternal health services that meet their language needs due to the absence of interpreters or translators, resulting in communication barriers, a lack of understanding of health information, and a tendency to avoid services despite the existence of laws that guarantee maternal health rights.
4	Exploring perinatal care and birth experiences in women with visual impairment: A retrospective study (Makeroufa and Diamanti 2024)	Yunani	Exploring the perinatal care experiences of women with visual impairments.	Design: Quantitative retrospective study Data collection technique: Electronic questionnaire (Google Form) Data analysis: Descriptive statistics Sampling: Purposive Sample: 22 blind women	90.9% stated that health workers lack understanding of specific needs; there is a need for special training for midwives and doctors.

5	Access to Health Care Services by Individuals Who Are Deaf or Hard of Hearing (Dhh) in Botswana: Francistown and Tati (Chinkonono, Namuli, and Atuhaire 2020)	Botswana	Exploring access to healthcare services for deaf and hard-of-hearing individuals.	Design: qualitative approach with phenomenological design Data collection technique: In-depth interviews Data analysis: Thematic Sampling: Purposive & snowball Sample: 22 DHH individuals	The results of the study show that communication barriers are a major problem that causes suboptimal health services for deaf and hard of hearing individuals, characterized by a lack of medical information, medication errors, poor maternal services, and limited privacy, even though they continue to use health services because they have no other alternatives.
6	Antenatal Emergency Department and Inpatient Use Among Massachusetts Deaf and Hard of Hearing Women: A Retrospective Cohort Study (Mckee and Mckee 2021)	Amerika Serikat	Comparing the use of emergency rooms and antenatal hospitalization between DHH mothers or hearing mothers.	Design: Retrospective cohort Data collection technique: Secondary data from the Pregnancy to Early Life Longitudinal (PELL) Data System Data analysis: Multivariate regression Sampling: 1:3 matching (Total population sampling in PELL data, matching based on year of birth, maternal age, and parity) Sample: 925 DHH mothers & 2895 hearing mothers	Pregnant women who are deaf or hard of hearing are more likely to visit the emergency room and be hospitalized during pregnancy than women without hearing impairments. Findings indicate that communication barriers and service quality reveal continuing disparities in service.
7	<i>Experiences of Women with Disabilities</i> of South Africa in	South Africa	Exploring the experiences of women with	Design: Qualitative with case study design	The results of the study show that women with

	<p><i>Accessing Maternal Healthcare Services</i> (Mheta and Sibiya 2023)</p>		<p>disabilities in accessing public maternal health services</p>	<p>Data collection technique: In-depth interviews Data analysis: Framework analysis (Peters et al.) Sampling technique: Purposive (criterion sampling) Sample: 12 women with disabilities (physical, deaf, blind) Informants: Women with disabilities</p>	<p>disabilities still face many barriers in maternal health services, particularly communication problems, limited access to facilities and information, and unfriendly attitudes from health workers, meaning that the services they receive are not yet fully inclusive despite the existence of supportive policies.</p>
8	<p><i>Barriers of Hearing-Impaired Pregnant Women in Utilizing Antenatal Care Services</i> (Yasin et al. 2025)</p>	Ethiopia	<p>Identifying barriers for pregnant women with hearing impairment in accessing ANC services</p>	<p>Design: Community-based Data collection techniques: In-depth interviews, observation, field notes Data analysis: Inductive thematic analysis Sampling technique: Purposive Sample: 11 pregnant women with hearing impairment Informants: Pregnant women with hearing impairment</p>	<p>The results of the study show that pregnant women with hearing impairments face four main barriers in utilizing ANC services, namely: disrespectful attitudes and violations of privacy by health workers, poor communication due to the absence of sign language, perceptions of discrimination and unmet service expectations, and the lack of inclusive ANC services. These barriers cause some mothers to limit or avoid ANC visits at</p>

					public health facilities.
9.	<i>Wait, What? What's Going On? Pregnancy Experiences of Deaf and Hard of Hearing Mothers Who Do Not Sign</i> (Ratakonda et al. 2025)	United States	Exploring pregnancy experiences and access to perinatal health services among deaf and hard-of-hearing (DHH) women who do not use sign language.	Design: descriptive qualitative research. Data collection methods: semi-structured interviews conducted in person and online. Data analysis: thematic analysis. Sampling methods: purposive and snowball sampling. Sample: 22 English-speaking deaf and hard-of-hearing women who have given birth within the past 5 years.	The study identified several key barriers in the perinatal care experience, including communication breakdowns between patients and healthcare providers, a lack of appropriate communication accommodations, and a loss of patient autonomy in medical decision-making. The study also found that inclusive healthcare communication practices, self-advocacy, and the use of assistive technology can improve the perinatal care experience for deaf women.
10	<i>Maternal Health Care for Women with Disabilities: Perspectives of Health Professionals</i> (Obeng et al. 2024)	Ghana	Exploring healthcare workers' perceptions of maternal services for women with disabilities	Design: qualitative approach with case study design. Data collection technique: In-depth interviews. Data analysis: Thematic analysis. Sampling technique: Purposive. Sample: 25 health workers (midwives & doctors). Informants: Health workers	The results of the study show that health workers' perceptions of women with disabilities who access maternal services are diverse, consisting of both positive and negative perceptions. Some health workers view women with disabilities as

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strong, courageous individuals who deserve equal access to maternal services.

However, others have negative views influenced by cultural stigma, such as considering pregnancy in women with disabilities to be a burden, unnecessary, or high risk. These negative perceptions have the potential to affect the quality of services, discriminatory attitudes, and restrictions on the reproductive autonomy of women with disabilities. This study emphasizes the need for training of health workers, a collaborative patient-centered approach, and anti-discrimination policies to realize inclusive maternal services.

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## 5. Compile, Summarize And Report The Results

To ensure the quality and strength of evidence from the articles included in this scoping review, each publication was assessed using the critical appraisal guidelines from the Joanna Briggs Institute (JBI). This assessment covered aspects of design appropriateness, clarity of

methods, data validity, and potential bias in each study. The results of this assessment are presented in the following table to provide an overview of the quality of the articles analyzed.

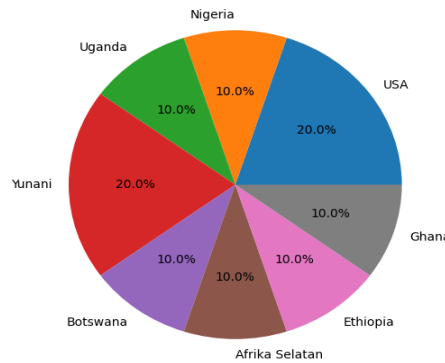
**Table 4. Critical Appraisal.**

No	Article Code	Article Reference (Authors, Year)	Article Title	Types of Article	Assessment Grade
1	A1	(Panko et al. 2023)	<i>Healthcare Communication Access among Deaf and Hard-of-Hearing People During Pregnancy</i>	Mixed method	<b>A</b>
2	A2	(Adigun and Mngomezulu 2020)	<i>"They Forget I'm Deaf": Experiences of Deaf Pregnant Women in ANC</i>	Qualitatif eksploratif	<b>A</b>
3	A3	(Gimono 2025)	<i>Experiences of Deaf Women &amp; Girls Accessing Maternal Health Rights in Uganda</i>	Qualitatif, case study	<b>A</b>
4	A4	(Makeroufa and Diamanti 2024)	<i>Perinatal Care &amp; Birth Experiences in Women with Visual Impairment (Retrospective)</i>	Quantitatif retrospektif	<b>B</b>
5	A5	(Chinkonono et al. 2020)	<i>Access to Health Care for Deaf or Hard-of-Hearing in Botswana</i>	Qualitatif fenomenologis	<b>A</b>
6	A6	(Mckee and Mckee 2021)	<i>Antenatal ED &amp; Inpatient Use among DHH Women</i>	Cohort retrospektif	<b>A</b>
7	A7	(Mheta and Sibiya 2023)	<i>Experiences of Women with Disabilities in Accessing Maternal Healthcare</i>	Qualitatif case study	<b>B</b>
8	A8	(Yasin et al. 2025)	<i>Barriers of Hearing-Impaired Pregnant Women in Utilizing ANC</i>	Qualitatif berbasis komunitas	<b>A</b>
9	A9	(Ratakonda et al. 2025)	<i>Wait, What? What's Going On? Pregnancy Experiences of Deaf and Hard of Hearing Mothers Who Do Not Sign</i>	Qualitatif deskriptif	<b>A</b>
10	A10	(Obeng et al. 2024)	<i>Maternal Health Care for Women with Disabilities: Perspectives of Health Professionals</i>	Qualitatif, case study	<b>A</b>

## RESULTS AND DISCUSSION

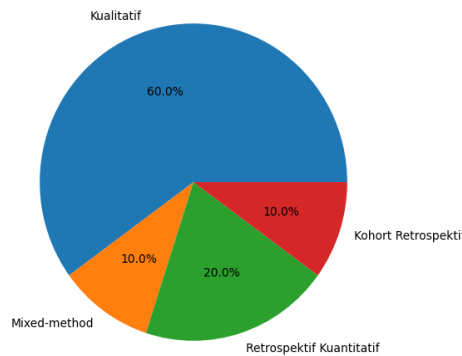
### Article Characteristics

The country distribution diagram shows that most articles originated from the United States and Greece, each accounting for 20%. Other countries such as Nigeria, Uganda, Botswana, South Africa, Ethiopia, and Ghana each contributed 10%. These findings show that the issue of access to KIA services for women with sensory disabilities has been studied in various regions, but is still limited overall.



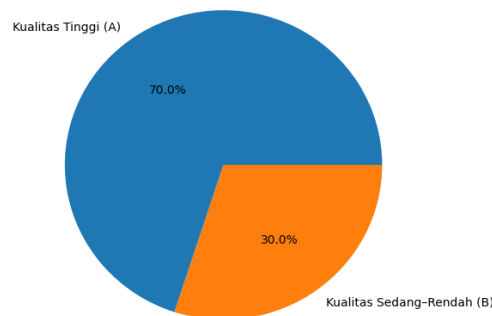
**Figure 2. Analysis by Country**

The diagram shows that qualitative approaches are the most widely used method in the studies analyzed, at 60%. Meanwhile, quantitative retrospective methods (20%), mixed methods (10%), and cohort studies (10%) were used to a limited extent.



**Figure 3. Analysis Based on Research Methods**

The majority of articles analyzed in this scoping review met high-quality criteria (70%) based on JBI assessment, characterized by robust design and clear analysis. Meanwhile, the remaining 30% of articles were of moderate quality due to several methodological limitations. Overall, the quality of available evidence was sufficient to support reliable interpretation of results.



**Figure 4. Analysis Based on Critical Appraisal****Table 5. Theme Mapping**

<b>THEME</b>	<b>SUBTHEME</b>	<b>ARTICLE NUMBER</b>
<b>Health Promotion Strategies Based on Inclusive Communication</b>	1.1 Provision of adaptive communication accommodations (interpreters, communication modifications)	A1, A2, A3, A5, A7, A10
	1.2 Use of accessible communication media (visual, audio, Braille)	A1, A3, A4, A8, A9
<b>Strategies for Enhancing the Capacity and Responsiveness of the Service System</b>	2.1 Training for healthcare workers regarding sensory disabilities	A3, A4, A8, A9, A10
	2.2 Development of Inclusive Maternal Services (Disability-Friendly ANC)	A3, A6, A7, A10
<b>Strategies for Technology Utilization and Patient Empowerment</b>	3.1 Utilization of adaptive digital technology	A1, A4, A8
	3.2 Empowerment and Improvement of Health Literacy	A1, A2, A8

### **THEME 1. Health Promotion Strategies Based on Inclusive Communication**

#### **1.1 Provision of adaptive communication accommodations (interpreters, communication modifications)**

Several articles namely A1, A2, A3, A7, and A10 consistently indicate that women with hearing disabilities have a high need for sign language interpreters in maternal health services to support effective communication. Meanwhile, study A5 confirms that communication barriers between healthcare providers and patients can lead to errors in the delivery or understanding of important medical information. Recent studies indicate that communication barriers are a key factor contributing to delays and underutilization of ANC services among deaf women (Adigun and Akinrinoye 2021). These findings align with the notion that communication barriers not only affect service access but also the experience and quality of interactions within maternal care (Helm et al. 2024).

#### **1.2 Use of accessible communication media (visual, audio, Braille)**

Articles A3, A8, and A9 indicate that a lack of accessible information contributes to low utilization of antenatal care (ANC) services, while A1 and A4 emphasize the importance of providing adaptive information tailored to patients' needs. Meanwhile, low maternal health literacy has been shown to be associated with poor pregnancy outcomes and an increased risk of complications (Bello et al. 2022) (Tahira 2024). Additionally, other references note that limited access to information and communication barriers also contribute to low utilization of antenatal care services, although other factors such as social conditions and the service system also play a role (Adigun and Akinrinoye 2021).

### **THEME 2. Strategies for Enhancing the Capacity and Responsiveness of the Service System**

#### **2.1 Training for healthcare workers regarding sensory disabilities**

Articles A3, A4, A8, and A9 highlight limitations in healthcare workers' competencies when providing services to women with sensory disabilities, while A10 identifies the presence of stigma in service delivery. Healthcare providers' lack of understanding regarding the

communication needs of patients with hearing impairments has been shown to result in suboptimal service experiences, including difficulty understanding medical information and dissatisfaction with services (Helm et al. 2024) (Gates and Erfani 2025b). Additionally, systematic reviews indicate that training healthcare providers in sign language and inclusive communication is one of the primary solutions for improving the quality of maternal services for women with sensory disabilities (Adigun and Akinrinoye 2021).

## **2.2 Development of Inclusive Maternal Services (Disability-Friendly ANC)**

According to Articles A3 and A10, available health services do not yet fully meet the needs of women with disabilities, while A6 and A7 highlight limitations within the health care system itself. These findings are reinforced by studies showing that women with disabilities face various structural barriers in accessing maternal services, including inadequate facilities, a lack of trained personnel, and inequities within the health system (Osório 2026). Additionally, other studies indicate a quality gap in health services for deaf women, characterized by the unavailability of services tailored to communication needs and low-quality interactions with healthcare providers (Nakatabira et al. 2025).

## **THEME 3. Strategies for Technology Utilization and Patient Empowerment**

### **3.1 Utilization of adaptive digital technology**

Studies A1, A4, and A8 indicate that the use of technology plays a role in improving access to health information. This is consistent with findings from other studies showing that communication technologies, such as sign language interpretation systems, can help reduce miscommunication between patients and healthcare providers in healthcare settings (Irene Strasly, Bouillon, and Spechbach 2021). Additionally, other research indicates that digital technology can improve communication access for deaf individuals and enhance understanding of healthcare services (Liu, Yi, and Chari 2025).

### **3.2 Empowerment and Improvement of Health Literacy**

Study A2 indicates low understanding regarding antenatal care (ANC), while A1 and A8 identify limitations in health literacy among women with sensory disabilities. These findings are supported by the study by Adigun et al. (2021), which shows that communication barriers and limited access to information contribute to low utilization of antenatal care (ANC) (Adigun and Akinrinoye 2021). Furthermore, other studies indicate that limited literacy and access to information among women with hearing impairments are associated with an increased risk of high-risk pregnancy conditions such as preeclampsia and gestational diabetes (Tahira 2024) (Chidera and Chichebem 2022).

## **CONCLUSION**

This scoping review confirms that improving access to maternal health services for women with sensory disabilities cannot be achieved through a single intervention but requires an integrated health promotion approach. The strategies most consistently shown to have a positive impact include inclusive communication, the provision of accessible information, capacity building for health workers, the development of disability-responsive maternal services, and the use of adaptive digital technologies. However, the effectiveness of these strategies is highly dependent on the readiness of the health system, the social context, and the integration among interventions. Without changes at the system level including continuous training, inclusive policies, and infrastructure strengthening health promotion strategies risk failing to achieve optimal impact. Therefore, the main implication of this study is the need for a

transformation toward a truly inclusive maternal health care system, based on equitable communication, and oriented toward patient needs. These efforts are not only important for improving access to services but also for reducing health inequities and ensuring the fulfillment of reproductive health rights for women with sensory disabilities.

### **AI DISCLOSURE STATEMENT**

The author utilized artificial intelligence (AI) tools in the preparation of this work, specifically to assist with language editing, paraphrasing, and refining the writing structure. Following the use of these tools, the author reviewed the entire manuscript.

### **ACKNOWLEDGMENT**

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