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Original Article

# Bridging the awareness and referral gaps in audiology services in South Africa

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## Abstract

**Background:** Hearing loss is a significant yet underrecognized public health issue in low- and middle-income countries. In South Africa's public healthcare sector, low awareness and inconsistent referrals from primary healthcare (PHC) providers delay diagnosis and limit audiology service utilization. This study explores barriers to awareness and referral pathways and identifies strategies to improve access.

**Aim:** This study aimed to (1) assess public awareness of audiology services, (2) examine inefficiencies in referral pathways from PHC providers, (3) explore linguistic, cultural, and socioeconomic influences on service-seeking behaviors, and (4) propose strategies to enhance awareness and referrals.

**Methods:** A secondary qualitative analysis was conducted on 15 deidentified interview transcripts from a prior study on public audiology service access in Johannesburg. Thematic analysis identified patterns in awareness, referral experiences, and service barriers.

**Results:** Public awareness of audiology services was limited, with most participants learning about them only after significant hearing difficulties. Information was often obtained through word-of-mouth rather than healthcare providers. Referral inefficiencies resulted in multiple clinic visits before audiology referrals, while some never received referrals. Cultural and linguistic mismatches hindered service-seeking, with some participants initially consulting traditional healers. Financial and transport constraints further limited access, despite free hearing aids.

**Conclusions:** Weak referral systems, low awareness, and socioeconomic barriers hinder audiology service utilization in South Africa. Strengthening public education, integrating hearing screening into PHC, decentralizing services, and training healthcare providers in audiology referrals are critical. Policy reforms, including task-shifting and mobile audiology clinics, are essential for equitable hearing health care.

**Keywords:** Accessibility, audiology services, awareness, hearing loss, low- and middle-income countries, public health care, referral pathways, South Africa

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## INTRODUCTION

Hearing loss affects over 1.5 billion people globally, with nearly 430 million requiring rehabilitation,[1] and is especially burdensome in low- and middle-income countries (LMICs), where limited access to ear and hearing care leads to delayed diagnosis and intervention.[2,3] Early

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detection and timely referral are essential, as untreated hearing loss contributes to communication barriers, poor academic and occupational outcomes, social isolation, and reduced quality of life.[4,5] In high-income countries, programs such as newborn and routine adult hearing screenings have significantly improved outcomes.[6,7] However, in LMICs, public unawareness, weak referral systems, and fragmented healthcare infrastructure hinder effective service delivery.[5,8-10] Despite growing evidence of hearing loss's impact, persistent gaps in awareness and referral continue to delay care and reduce the effectiveness of available audiological services.

Effective healthcare systems depend on robust referral pathways to diagnostic and rehabilitative services.[11,12] Yet, in LMICs, including South Africa, low public awareness leads to late presentations and underutilization of audiology services.[8,13] Studies from Malawi, Kenya, and Nigeria show that delayed referrals often result in prolonged, untreated hearing loss.[2,5,14,15] Fewer than 20% of individuals with hearing loss seek care, citing low awareness, stigma, and limited provider knowledge of audiology services.[8,16-19] Similarly, in Brazil, even when hearing loss is identified, many are not referred due to resource constraints and weak referral systems.[20-23] These trends reveal that inadequate referral mechanisms and low public knowledge are global barriers to hearing health care in LMICs.

South Africa faces a dual burden of disease and healthcare inequality, with 84% of the population relying on the public healthcare system, which is understaffed and overburdened.[24,25] While audiology services are available within tertiary hospitals and some primary healthcare facilities, studies have shown that many individuals with hearing loss do not access these services due to poor awareness and inadequate referral mechanisms.[8,10,19,26] Four key challenges affect awareness and referrals in South Africa.[8,26-30] First, awareness is low, particularly in rural communities where hearing loss is often seen as a natural part of aging or illness, and public health messaging on hearing is minimal. Second, primary healthcare (PHC) providers such as nurses and general practitioners (GPs) frequently lack adequate training in hearing health care, leading to missed or delayed referrals, especially since most audiology services are largely hospital-based and require referrals. However, inefficiencies in referral systems mean that many individuals never reach audiologists.

Third, cultural and linguistic barriers, such as language mismatches between audiologists and patients and traditional beliefs, complicate communication and delay formal care.[31-35] Cultural beliefs about traditional healing practices sometimes compete with biomedical approaches, delaying referrals to audiology services.[33-35] Fourth, financial and geographical constraints, including transport costs and long distances to tertiary hospitals, deter patients from seeking services, even when hearing aids are subsidized.[30,36-38]

Despite these challenges, several LMICs offer promising models.[39-41] Community-based hearing screening programs in Kenya, Malawi and Uganda-integrated into existing maternal and child health services-have improved early detection and referral.[42,43] In Brazil, task-shifting enables trained nurses to conduct basic hearing assessments, while India uses telehealth and mobile audiology units to reduce geographic barriers and ensure faster referrals.[44] Adapting similar innovative strategies could help South Africa close gaps in awareness and referrals, improving early detection and service access.

This study investigates barriers to awareness and referral pathways for audiology services in South Africa's public healthcare sector and explore strategies to enhance service accessibility. Specifically, the study seeks to (1) assess public awareness levels of audiology services and hearing health care in South Africa; (2) examine referral pathways from primary healthcare providers to audiologists in the public sector; (3) explore linguistic, cultural, and socioeconomic factors influencing service-seeking behaviors; and (4) identify strategies to improve awareness campaigns, strengthen referral systems, and enhance service integration. Findings aim to inform public health initiatives, streamline referral processes, and support policies to integrate audiology into PHC services, thereby improving access for underserved populations.

## METHODS

### Study design

This study employed a secondary qualitative data analysis of interview transcripts from a prior study on public audiology service access in Johannesburg, South Africa. This method allows researchers to extract new insights from existing datasets ethically and efficiently, particularly when exploring research questions not addressed in the original study.[45] The dataset contained rich narratives on audiology awareness and referral experiences, which were not the primary focus of the initial study, making them suitable for further analysis. The goal was to systematically reanalyze these transcripts to explore barriers and facilitators to audiology awareness and referral pathways, ensuring both data saturation and methodological rigor.[46]

## Data source and study population

*Primary data source*

The dataset consisted of 15 deidentified semistructured interview transcripts originally collected at:

1. Chris Hani Baragwanath Academic Hospital (CHBAH): A tertiary hospital serving a high-volume audiology patient population.
2. Hillbrow Community Health Centre (CHC): A primary healthcare facility where audiology services are offered at a community level.

## Participant characteristics

Participants were adults (aged 18–66+ years) who had accessed public sector audiology services at the study sites; could communicate in English or a local language understood by the researcher; and had provided informed consent. Exclusion criteria included individuals aged under 18 years; those who had never accessed audiology services in the public healthcare sector; and participants requiring sign language interpretation when no interpreter was available.

This sample allowed exploration of how participants became aware of audiology services, whether they were referred or self-initiated care, and what factors hindered or facilitated access.

## Data analysis

*Data extraction process*

A structured data extraction template was designed to systematically identify information relevant to awareness and referral pathways. Key extraction categories included:

- How participants first learned about audiology services (e.g., healthcare provider referrals, community awareness, and word-of-mouth)
- Referral mechanisms (e.g., whether they were directed by a GP, self-referred, or referred late in their hearing loss journey)
- Barriers to early detection and referral (e.g., lack of provider knowledge, poor communication, and misinformation)
- Facilitators that improved service access (e.g., family support, health literacy, and outreach programs).

Two researchers independently extracted data to ensure consistency and minimize bias.[47] Discrepancies were resolved through discussion and consensus.

## Thematic analysis approach

The data were analyzed using thematic analysis, following Braun and Clarke's[48] six-step framework:

1. Familiarization with data: Re-reading transcripts to identify mentions of audiology awareness and referral experiences
2. Generating initial codes: Coding specific references to referrals, barriers, facilitators, and information gaps
3. Searching for themes: Organizing coded data into broader themes (e.g., "Lack of referral from primary healthcare providers")
4. Reviewing themes: Refining themes to ensure they accurately reflected patient experiences
5. Defining and naming themes: Finalizing themes to align with study objectives
6. Producing the report: Structuring findings in a coherent narrative.

To enhance credibility and trustworthiness, two researchers independently coded 30% of the transcripts and compared coding consistency. Disagreements were resolved collaboratively, ensuring that themes emerged from participant data rather than researcher assumptions.[49]

## Ethical considerations

Since this study analyzed preexisting, deidentified qualitative data, it posed minimal ethical risks. However, ethical clearance was obtained from the University of the Witwatersrand's Human Research Ethics Committee (Medical) (Protocol Number: M220322) to ensure compliance with data protection and confidentiality standards.

Additional ethical measures included:

- No direct contact with participants, minimizing ethical concerns associated with reconsenting
- Strict data confidentiality, with names and identifying details removed to protect participant anonymity
- Acknowledgment of the original study as the primary data source, ensuring research integrity.

## Trustworthiness and rigor

To ensure methodological rigor, the study adhered to Nowell *et al.*'s[47] and Shenton's[50] trustworthiness criteria. First, for credibility, triangulation of findings was done by comparing themes across multiple transcripts to ensure consistency; and peer debriefing with audiology and public health experts was performed to validate interpretations. Second, dependability was assured by keeping a clear audit trail documenting all data extraction and coding decisions; and through independent coding verification by a second researcher. Third, for transferability, thick descriptions of participant experiences were done to ensure applicability to broader public healthcare contexts. Finally, confirmability

was assured through reflexive journaling to minimize researcher bias in interpreting themes.

## RESULTS

The secondary dataset analyzed in this study comprised 15 deidentified interview transcripts. Participants had received government-funded audiology services at either CHBAH (tertiary level) or Hillbrow CHC (primary level) within the past 12 months. Participants' demographic profile is depicted in Table 1.

Most participants were middle-aged or older (66%), with a nearly equal gender distribution. The high unemployment rate (40%) highlighted the financial vulnerability of many public healthcare users, which has implications for audiology service accessibility and affordability.

### Awareness of audiology services

The first theme that emerged was "*Limited Knowledge About Audiology Before Seeking Care.*" Many participants had limited or no prior awareness of audiology services before experiencing hearing difficulties. Some assumed hearing loss was a normal part of aging, while others only learned about audiology services through chance encounters with healthcare providers or acquaintances. Key findings were that (1) most participants had never heard of audiology services until their hearing loss became severe; (2) few had prior knowledge of hearing aids, and many had misconceptions about who qualifies for them; and (3) some participants had never undergone a hearing test before seeking care.

### Participant quotes

*"I didn't even know that government hospitals offered hearing aids. I thought only rich people could afford them."* (Participant 4)

*"I always thought hearing loss was just something you live with when you get old. I didn't think there were treatments."* (Participant 9)

*"Nobody in my family had ever seen an audiologist before. I only found out about it when the doctor referred me."* (Participant 13)

**Table 1: Participant demographics**

| Variable | Category | Frequency, *n* (%) |
|---|---|---|
| Age group (years) | 18–30 | 3 (20) |
| | 31–50 | 4 (27) |
| | 51–65 | 5 (33) |
| | 66+ | 3 (20) |
| Gender | Male | 7 (47) |
| | Female | 8 (53) |
| Employment status | Employed | 4 (27) |
| | Unemployed | 6 (40) |
| | Retired | 5 (33) |

The second theme was "*Reliance on Informal Sources of Information.*" Instead of healthcare professionals, participants often relied on family, friends, or community members for information about hearing care. Key findings included (1) several participants heard about audiology services through word-of-mouth rather than formal health promotion; (2) misinformation about hearing aids and treatment options was common in the community; and (3) some participants were initially hesitant to seek care due to misconceptions about costs and effectiveness.

### Participant quotes

*"A friend at church told me about hearing aids because her father had one. If not for her, I wouldn't have known where to go."* (Participant 7)

*"Someone told me hearing aids don't really work, so I wasn't sure if I should bother."* (Participant 2)

*"My neighbor said the waiting list was too long, so I thought it was pointless to even try."* (Participant 10)

### Referral pathways to audiology services

The first theme that emerged was "*Inconsistent and Delayed Referrals from Primary Healthcare Providers.*" Many participants were not referred to audiology services until their hearing loss had significantly worsened. Some visited clinics multiple times before being directed to an audiologist, while others were never referred and found services on their own. Key findings included (1) several participants visited GPs or primary healthcare nurses multiple times before a referral was made; (2) Some healthcare providers failed to recognize the need for audiology referrals, leading to delayed diagnosis and treatment; and (3) a few participants self-referred after learning about audiology services from family members or other patients.

### Participant quotes

*"I kept telling the nurse I was struggling to hear, but she just told me to clean my ears and come back."* (Participant 6)

*"I had to go to the clinic three times before they finally referred me to the hospital."* (Participant 11)

*"Nobody referred me. I just went to the hospital myself after hearing about it from someone else."* (Participant 5)

The second theme was "*Lack of Awareness Among Healthcare Providers."* Some participants reported that even healthcare professionals seemed unaware of audiology services or did not consider hearing loss a priority. Key findings included (1) some nurses and GPs did not provide timely referrals, delaying access to treatment; (2) participants felt that hearing loss was not taken seriously in general healthcare settings; and (3) a few healthcare

providers gave incorrect information about hearing aid eligibility or costs.

### Participant quotes

*"The doctor told me nothing could be done for my hearing loss. If I had listened to him, I would never have gotten a hearing aid."* (Participant 8)

*"The clinic nurse didn't know where to send me. She had to ask another staff member before she could refer me."* (Participant 12)

*"The first GP I saw told me hearing aids were too expensive and that I should just cope without one."* (Participant 1)

### Barriers to early detection and service utilization

The first theme identified was "*Cultural and Linguistic Barriers.*" Some participants faced challenges understanding medical explanations about hearing loss, especially when consultations were conducted in a language they were not fluent in (English/Afrikaans). Key findings included (1) patients preferred audiology consultations in their home language but often had no interpreter available and (2) some participants were more comfortable with traditional healing practices, delaying formal treatment.

### Participant quotes

*"I don't speak English well, so I didn't understand everything they told me about my hearing test."* (Participant 14)

*"In my culture, hearing loss is seen as a sign of aging, so people don't rush to get treatment."* (Participant 3)

*"I first tried a traditional remedy before going to the hospital. When that didn't work, I decided to see a doctor."* (Participant 15)

The second theme that emerged was "*Financial and Transport Constraints."* Even though hearing tests and hearing aids were free in the public healthcare sector, participants struggled with indirect costs such as transportation and lost wages. Key findings included that many participants had to travel long distances to access an audiologist; and that some could not afford to miss work for multiple appointments, leading to missed follow-ups.

### Participant quotes

*"The hospital is far, and transport is expensive. I had to borrow money to go for my appointment."* (Participant 9)

*"I missed my first appointment because I couldn't take time off work."* (Participant 2)

A summary of the above thematic analysis findings is depicted in Table 2.

**Table 2: Summary of key findings**

| Theme | Key issues identified |
|---|---|
| Awareness of audiology services | Limited knowledge, reliance on informal sources |
| Referral pathways | Delayed referrals, lack of provider knowledge |
| Barriers to early detection | Language barriers, traditional beliefs |
| Financial and transport issues | Long distances, cost of transport, and missed work |

These findings highlight critical gaps in the audiology referral system, highlighting the need for targeted interventions to improve patient pathways from primary care to specialized hearing services.

## DISCUSSION

The study included 15 adult hearing aid users who had accessed public sector audiology services in Johannesburg. Most participants (66%) were middle-aged or older, but 34% were under 50 years, reflecting a growing global trend where hearing loss among younger individuals due to factors such as occupational and recreational noise exposure as well as untreated middle ear infections.[1,2] A high unemployment rate (40%) highlighted the financial challenges that often affect healthcare access and adherence to care, similar to trends in other LMICs, where transport costs and time off work hinder follow-up. These findings suggest that expanding workplace hearing screening initiatives could facilitate earlier detection, particularly among younger adults in noisy work environments. In addition, incorporating financial and transportation assistance into hearing healthcare policies could enhance service accessibility for economically disadvantaged populations.

Awareness of audiology services was generally low, with most participants unaware of such services until they experienced significant hearing loss. This mirrors findings from other LMICs, where public knowledge about hearing health care remains low, leading to delayed diagnosis and intervention. Studies from Malawi and Nigeria found that <20% of individuals with hearing loss sought professional care, with most assuming hearing impairment was untreatable or a natural part of aging.[2,51,52] Similarly, Joubert *et al.*[26] found that in South Africa, hearing loss awareness campaigns are virtually nonexistent, limiting proactive healthcare-seeking behaviors. Moreover, in this study, rather than receiving information from healthcare providers, many participants first learned about audiology services through word-of-mouth (e.g., family, friends, or community members). While social networks influence decision-making in African contexts, they also perpetuate misinformation about hearing aid availability, effectiveness, and affordability.[53] These findings support integrating hearing healthcare education into primary

healthcare visits and using trusted community figures like traditional and church leaders and local influencers to share accurate information.

Participants often reported visiting clinics multiple times before being referred to an audiologist, suggesting systemic inefficiencies. This pattern has been observed in Brazil, India, and Malawi, where delayed referrals from GPs and nurses are a primary reason for late audiological diagnosis. Delays were primarily due to (1) limited knowledge about hearing loss among primary healthcare workers; (2) lack of clear referral protocols for audiology services; and (3) healthcare system constraints, including long waiting times at tertiary hospitals. Some participants reported that even healthcare professionals lacked awareness about audiology services, with some GPs and nurses dismissing hearing loss as untreatable. This highlights a training gap in primary health care, as general medical practitioners are often not equipped to diagnose or refer hearing loss cases efficiently. Incorporating audiology content into medical and nursing education and developing standardized referral guidelines could address these issues.

Barriers to early detection and service utilization included difficulties understanding medical explanations due to language mismatches between providers and patients. South Africa's multilingual environment complicates provider-patient communication, especially in the absence of interpreters.[31,32] Traditional beliefs about hearing loss—e.g., viewing it as age-related or spiritual—also contributed to delays in seeking care, as seen in Rwanda, Nigeria, and Uganda.[53-56] Thus; expanding multilingual audiology services could improve patient-provider communication; and cultural competency training for healthcare workers could enhance their ability to address traditional beliefs respectfully while promoting evidence-based care. Additionally, current findings revealed financial and transport constraints. Even though hearing assessments and hearing aids were free, transportation costs and lost wages deterred some participants from seeking care. This is consistent with findings from South Africa's rural provinces, where findings reveal that many patients abandon referrals due to high travel costs. Beyond financial and geographic barriers, the absence of a structured national audiology referral policy further complicates access to hearing health care. While the National Health Insurance (NHI) aims to address broader healthcare disparities, the specific inclusion of audiological services remains unclear, leaving patients reliant on inconsistent referral pathways. Similar geographic access barriers have been noted in India and Kenya, where centralized audiology services limit accessibility for low-income populations. These findings highlight that decentralizing audiology services through mobile clinics could improve accessibility for rural and low-income populations; and that transport subsidies or home-based screening programs may reduce missed appointments due to financial constraints.

When it comes to recommendations for strengthening awareness and referral pathways, participants suggested several strategies to improve hearing healthcare access: (1) public awareness campaigns to educate communities on audiology services and hearing loss treatment options; (2) integration of audiology referrals into primary healthcare services, ensuring that GPs and nurses recognize hearing loss symptoms early; and (3) mobile audiology outreach programs to improve service accessibility in underserved areas. These recommendations align with global best practices, where task-shifting models, where trained community healthcare workers conduct basic hearing screenings, have significantly improved early detection and referrals.

While this study provides important insights into awareness and referral challenges in South Africa's audiology services, several limitations must be acknowledged. First, small sample size – the study was limited to 15 participants, which, while sufficient for qualitative analysis, may not fully represent all public healthcare users. Second, urban-centric data – the study focused on Johannesburg, meaning findings may not generalize to rural areas, where awareness and referral barriers may differ. Third, secondary data constraints – the dataset was originally collected for a different study, meaning some relevant topics (e.g., provider perspectives) were not directly explored. Fourth, exclusion of pediatric and profoundly deaf populations – the study did not include children or individuals who primarily use sign language, whose awareness and referral experiences may differ. This study raises future research directions, including expanding research to rural settings to explore geographic disparities in audiology awareness and referrals; investigating primary healthcare providers' knowledge and attitudes toward audiology services; and exploring task-shifting models for hearing screening in community healthcare settings. By addressing these gaps, future studies can contribute to strengthening South Africa's hearing healthcare system, ensuring timely and equitable access to audiology services.

## CONCLUSIONS

This study explored awareness and referral pathways to audiology services in South Africa's public healthcare sector, revealing significant gaps in public knowledge, referral efficiency, and service accessibility. Many individuals remain

unaware of audiology services until hearing loss becomes severe, with limited public health education and outreach contributing to delays. Referral inefficiencies at the PHC level, due to inadequate provider training on hearing health, further hinder timely access. Cultural beliefs, linguistic mismatches, financial constraints, and transport limitations compound these challenges – reflecting trend across LMICs. Despite these challenges, participants proposed several actionable solutions, including public education campaigns, healthcare provider training, decentralized service delivery, and mobile audiology clinics. Addressing these issues is critical to ensuring timely, equitable, and effective audiology care in South Africa.

Five key actionable recommendations are highlighted by current findings. First, public awareness campaigns on hearing health care must be strengthened. This includes incorporating hearing health education into public health messaging, using radio, television, social media, and community health talks to improve awareness of audiology services and hearing loss interventions; engaging community leaders, traditional healers, and faith-based organizations to dispel myths about hearing loss and encourage early intervention; and launching school-based hearing awareness programs, ensuring that children and parents recognize the signs of hearing loss and seek audiology services early. Second, referral pathways between primary healthcare and audiology services must be improved. This includes training nurses and GPs in hearing loss identification and referral protocols, ensuring that primary healthcare workers recognize hearing loss symptoms early and refer appropriately; developing standardized referral guidelines for hearing health care, ensuring that patients are directed to audiologists without unnecessary delays; and integrating hearing screening into routine PHC checkups, particularly for at-risk groups such as the elderly, individuals exposed to occupational noise and ototoxic medications, and those with diabetes or hypertension. Leveraging digital health solutions such as teleaudiology could provide an innovative approach to bridging referral gaps. Mobile screening units, coupled with remote consultations, have proven effective in other LMICs, ensuring that patients in underserved areas receive timely referrals to audiologists. Third, geographic and financial barriers to hearing health care must be reduced. This includes expanding mobile audiology clinics in underserved areas, ensuring that individuals who cannot travel to hospitals can still access basic hearing screenings and referrals; providing transport subsidies for low-income patients, ensuring that travel costs do not prevent individuals from accessing care; and implementing decentralized battery distribution systems, allowing patients to access hearing aid batteries at local pharmacies or primary healthcare centers instead of traveling long distances to hospitals.

Fourth, linguistic and cultural barriers in audiology services must be addressed. This includes ensuring audiologists and healthcare providers are trained in multilingual communication, reducing language mismatches during consultations; employing community health workers (CHWs) as hearing healthcare advocates, bridging the gap between biomedical and traditional health beliefs while promoting evidence-based hearing care; and providing culturally sensitive hearing healthcare education, acknowledging local beliefs about hearing loss and working with communities to increase trust in audiology services. Finally, research and policy development for sustainable audiology service delivery must be invested in. This includes expanding national data collection on hearing healthcare utilization, ensuring that policy decisions are based on evidence; evaluating task-shifting models, where trained CHWs or nurses conduct basic hearing screenings and refer patients efficiently; and advocating for audiology integration into South Africa's NHI framework, ensuring sustainable funding for hearing healthcare programs.

Bridging the awareness and referral gaps in audiology services is essential to ensuring equitable hearing healthcare access in South Africa. Without targeted interventions, individuals with hearing loss will continue to experience delayed diagnosis, social isolation, and reduced quality of life. Implementing community-based awareness campaigns, strengthening referral pathways, and addressing geographic and economic barriers can significantly improve hearing healthcare access in public healthcare settings. To achieve universal access to hearing health care, collaboration between government policymakers, healthcare providers, researchers, and community leaders is necessary. By adopting the recommended strategies, South Africa can move toward a more inclusive and responsive audiology service system, ensuring that no individual is left behind due to lack of awareness or inefficient referral pathways.

## Ethics approval and consent to participate

Prior to commencing any form of data collection, the researcher secured ethical clearance from the University of the Witwatersrand's Human Research Ethics Committee (Medical) (Protocol Number: M220322). Written consent to participate in the study was secured from all participants.

## Availability of data and materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

## Authors' contributions

T-JM and KKS co conceptualized the study. T-JM performed all data collection and conducted data capturing with KKS supervising. T-JM and KKS analyzed and interpreted the data. Both authors read and approved the final manuscript.

## Financial support and sponsorship

Nil.

## Conflicts of interest

There are no conflicts of interest.

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