

How Communication Strategies Impact Medical Information Dissemination: A Case Study of SLIs in Nairobi County Hospitals

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Abstract: Healthcare professionals' unfamiliarity with Kenya Sign Language (KSL) creates communication barriers that hinder access to healthcare for deaf patients in Kenya. While sign language interpreters (SLIs) can bridge this gap, some lack the required communicative competence, leading to miscommunication and misunderstanding. The problem is exacerbated by differences between spoken and sign languages, a limited medical sign vocabulary, and the complexity of medical terms. To improve healthcare outcomes for the deaf, SLIs with strong communicative competence are crucial. This study aimed to assess the communicative competence of SLIs. Specifically, the objective was to evaluate the extent to which the communication strategies employed by SLIs in selected hospitals in Nairobi are efficacious in communicating medical information. This study used a multiple case study design and qualitative research methods to assess the communicative competence of SLIs. The study sample consisted of five SLIs employed in selected hospitals, six healthcare professionals, and six deaf patients. The researcher used open-ended questions during interviews and direct observations during medical procedures to establish the competence of the interpreters. The researcher analysed the collected data using both thematic and content analysis methods. Two models guided the study: the communicative competence model (Canale & Swain, 1980; Canale, 1983) and the meaning-based model (Russell, 2005). The findings of the study revealed struggles that deaf patients face during communication, communication challenges faced by SLIs, and strategies they employ in dealing with the communication challenges. The study concluded that SLIs in hospitals need to achieve certain levels of communicative competence to communicate effectively and relay medical information adequately. We hope the study will provide the authorities with insights to identify training needs for SLIs and explore the use of technology-assisted communication tools in healthcare settings.

Keywords: communication, communicative competence, sign language, interpretation, healthcare

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1. INTRODUCTION

1.1. Background Information

Access to information for the deaf, who are considered a linguistic minority and a vulnerable group, is through sign language (SL). In Kenya, the deaf use Kenya Sign Language (KSL) as a medium of communication. From 1960 to 1980, the deaf received instruction in speech (lip reading) for nearly 30 years, leading to the creation of KSL as an official language (Kayla & Karugu, 2020).

According to Cap. 8, Section 129, the 2010 constitution gave KSL official status and recognition as one of parliament's languages. Following the recognition, KSL has been considered to have official status among other languages like English, Kiswahili, and braille,

according to the country's language policy (Jiseve, 2023). The 2019 KSL Bill stipulates full integration of deaf and hard of hearing (HH) people into society, access to quality education and public services, and recognition of sign language interpreters (SLIs). As a result, people have hired SLIs to ensure the deaf can access information in contexts such as parliamentary proceedings, educational, religious, media, and general public gatherings. Such provisions provide deaf citizens in Kenya with the power to effectively compete with hearing counterparts in the job market (Kalya, 2020). The bill also acknowledges KSL's use in legal proceedings and education. Interpreters of signed languages work collaboratively with deaf people.

They are members of the "Deaf community," a large group of people who use sign languages. In 2017, the World Health Organisation (WHO) estimated that over 5% of the world's population (360 million people) had debilitating hearing loss, including 328 million adults and 32 million children (Layton & Borg, 2019). Hearing loss affects approximately 15% of the world's adult population, with 25% of them over the age of 65. This population needs the services of SLIs to make their lives easier regarding accessing information and services.

The estimated population of Kenya is 56,215,221 (UN, 2022), with over 2,300,000 Kenyans suffering from various forms of hearing impairment (Ngugi & Mwiti, 2018). A 2007 census specifically calculated about 600,000 Kenyans who are deaf, although the figure is quite conservative (Mwari, 2018). This large population has a significant need for SLIs who are communicatively competent to fully access government services. The levels of competence among SLIs are important because they ensure that the hallmark of communication, which is effective communication, is realized.

The United Nations Convention on the Rights of People with Disabilities (CRPD) emphasises sign language interpretation as a critical instrument for ensuring the human rights of deaf people. For deaf people to fully enjoy human rights, accessibility to all areas of life through SL interpretation is key. Jiseve (2023) presents reports by WHO and the World Bank on the vital role that SL plays in ensuring the realization of the deaf's human rights. Signed languages play a crucial role in the lives of Deaf people, providing them with autonomy and accessibility, without which they face isolation.

Access to accurate information is a human right that includes deaf people. They can access information through interpretation. This encompasses the ability to access information across various contexts, including the media, legal contexts, parliamentary proceedings, classrooms, hospitals, religious settings, and entertainment venues. For instance, SLIs guarantee complete integration in television newscasts, assisting the deaf in understanding national and global events. Interpreters in legal settings also ensure that deaf convicts have access to justice. These interventions foster inclusivity and prevent adverse outcomes that may arise from excluding the deaf from accessing information.

Effective communication is crucial in all contexts, but in healthcare, it is of vital importance. Although effective communication between health workers and deaf patients is critical, deaf patients face severe communication challenges in accessing healthcare services. These challenges include language barriers related to the use of KSL, which most of Kenya's health workers have no or limited knowledge of (Ngugi & Mwiti, 2018). This leads to a poor understanding and failure to comply with health instructions. Despite their efforts to bridge the gap by employing SLIs, some government hospitals have not fully realized effective communication.

For effective interpretation, one needs to understand the meanings and intentions expressed in one language

and express those meanings and intentions in the other language (Buarqoub, 2019). The ability to retain information and manage the flow of communication, most often in real time (simultaneously), is very important to an interpreter. This is particularly crucial in matters related to health care. According to the National Council on Interpreting in Health Care [NCIHC] (2004), an interpreter must also understand and manage the cultural nuances of the environment and follow set professional and ethical standards. Interpreting in a medical environment requires some training, not necessarily going to a medical school. Understanding the communication is necessary before one can interpret it (Morley & Cashell, 2017). Consequently, the cornerstone of good interpretation in a medical setting is knowledge of topics such as physiology and anatomy, as well as medical terminologies.

The role of SLIs is to effectively facilitate communication between the hearing and deaf worlds. Therefore, we expect SLIs to convey precise messages to the deaf, just as the hearing world understands them. The roles of SLIs, as stated by the World Association of Sign Language Interpreters (WASLI, 2019), are as follows:

1. Providing complete and accurate information to both deaf and hearing individuals is crucial.
2. Engaging in proactive activities aimed at enabling deaf people to achieve equality in society is crucial.
3. They are making ethical decisions regarding suitable skills for their work, professional development, and not accepting work for which they lack the necessary qualifications.

1. 2. Statement of the Problem

Despite efforts to integrate SLIs into global healthcare systems, deaf individuals continue to face significant disparities in accessing quality healthcare compared to their hearing counterparts. In Kenya, these disparities are particularly pronounced due to several contextual challenges. While Nairobi County has seen an increase in the use of SLIs in healthcare, the deaf community still faces profound obstacles that hinder effective communication and healthcare access. These disparities stem from a variety of factors, including incomplete interpretations by SLIs, a lack of specialized training in medical interpretation, difficulties in understanding complex medical terminology, and misalignment between the skill set of SLIs and the specific needs of the deaf community, thereby complicating the communication process and resulting in misinterpretation, with their attendant alarming consequences, such as misdiagnoses, inappropriate treatments, increased medical expenses, and even fatal outcomes. Deaf patients in Kenya frequently struggle to understand complex medical information, leading to self-prescription, making their own medical decisions, and taking medication without a doctor's prescription, potentially resulting from communication breakdowns. Varying

degrees of proficiency among SLIs in both Kenyan Sign Language (KSL) and English or Swahili impact the accuracy and effectiveness of medical interpretations. Additionally, potential cultural misunderstandings, such as mislabeling certain behaviors as psychological abnormalities, marginalize the deaf community. Varying degrees of proficiency in both languages can impact the accuracy and effectiveness of interpretation, particularly in a hospital context. Therefore, it is essential to assess the communicative competence of SLIs in hospitals, as the assessment can guide recommendations to enhance their competence, ensuring consistent and effective communication among deaf patients, health professionals, and SLIs at all times.

1. 3. Objectives of the Study

The general objective of this study was to assess the communicative competence of SLIs working in selected hospitals in Nairobi County. Specifically, the study sought to evaluate the extent to which the communication strategies employed by SLIs in selected hospitals in Nairobi County are effective in communicating medical information.

1. 4. The study's justification

The justification for the study lies in the urgent need to address the significant disparities in healthcare access and quality experienced by deaf individuals, despite efforts to integrate sign language interpreters (SLIs) into healthcare systems globally. These disparities are multifaceted, stemming from issues such as incomplete interpretations, a lack of specialized training, difficulties understanding medical terminology, and misalignment between the skills of SLIs and the specific needs of the deaf community. Challenges such as self-prescription among deaf patients persist in Kenya, despite the increasing use of SLIs in healthcare. These issues underscore the need to assess the communicative competence of SLIs in hospitals. This study, whose aim was to evaluate the efficacy of communication strategies employed by SLIs, sought to enhance communication among deaf patients, healthcare professionals, and SLIs to improve healthcare access and outcomes for the deaf community.

1. 5. The study's significance

Access to information on healthcare services is crucial for every individual, including those who are deaf. This study aimed to evaluate the communicative abilities of SLIs working at Mbagathi Hospital and Kenyatta National Hospital (KNH). The results of this study are significant for SLIs, who act as intermediaries between deaf patients and healthcare professionals and strive to ensure

effective communication during medical interpretation. By highlighting the extent to which SLIs can communicate with deaf patients and healthcare professionals, the study encourages them to work towards achieving the expected levels of communicative competence. This, in turn, can have a positive impact on the lives of deaf patients.

Furthermore, the study has the potential to influence government policies regarding the training of SLIs. It sheds light on interpreters' deficiencies and competency levels. This can encourage educational institutions to introduce specialised courses in medical interpretation for SLIs, emphasising the essential aspects necessary for effective communication between deaf patients and healthcare professionals. Additionally, the study can serve as a guide for studies involving the use of sign language in accessing medical services in different hospital departments in Kenya.

1. 6. Scope and delimitation

The study investigated the communicative competence of SLIs when interpreting during the provision of medical services to the deaf in hospital settings. It involved interpreters employed in Mbagathi and KNH hospitals in Nairobi County, deaf patients, and healthcare professionals who diagnosed and gave prescriptions to deaf patients. The study also included deaf patients and deaf healthcare professionals, but it excluded family members or friends of the deaf who might have accompanied them to hospitals, as it is unethical for them to interpret.

The focus of this study was on evaluating the efficacy of communication strategies employed in communicating medical information. The meaning-based model of interpretation and the communicative competence theory guided the research.

The study adopted the communicative competence model (Canale & Swain, 1980; Canale, 1983), which emphasises four key areas of communicative competence (grammatical, discourse, sociolinguistics, and strategic). We adopted the meaning-based model of interpretation, which facilitates both consecutive and simultaneous interpreting, to aid in evaluating accuracy during interpretation.

2. LITERATURE REVIEW

2.1 Communication patterns among deaf patients, healthcare professionals and SLIs

In a world where daily activities firmly link to aural and oral abilities, particularly in a hospital setting, negotiating health care can be a frightening and challenging experience for deaf individuals. In many interactions, both deaf patients and healthcare professionals face difficulties in information transfer. When you only think about the issue in terms of equal rights and language

access, Napier et al. (2020) say, "you miss the possibility of the secondary effects on the well-being of leading, to a large extent, a translated life in relationship with the social actors and social encounters that most people would regard as linguistically unproblematic" (p. 75).

An interpreter mediates communication between a deaf patient and a hearing physician, a process known as interpreter-mediated healthcare. The experience of direct (dyadic) communication is often limited; as a result, the development of trust connections in such interactions becomes more complicated (Miller et al., 2018). Other researchers claim that in a provider-patient-interpreter relationship, i.e., a triadic connection, there is inherent tension because each participant has a unique perspective and may have opposing goals and potential goals of the interaction (Lara-Otero et al., 2018).

Bilingual interactions that are cross-modal, i.e., one person communicates by speech (spoken language) and the other via sign (signed language), challenge triadic communication even more. A physician and a patient may misinterpret essential information provided by intonation, loudness, stress, and other prosodic aspects of each other's language in bimodal encounters. An interpreter may not fully address these disparities. For example, one SLI frequently noted that deaf patients may ask about the tone used by healthcare professionals and even make a judgement on their trustworthiness. Such concerns put interpreters in ethical quandaries (Nicodemus et al., 2020).

Anglemyer et al. (2018) observe that the communication process sometimes exposes deaf people to the risks of receiving inadequate health-related information and inappropriate healthcare services. The discussion details how an emergency room physician in Florida placed a 26-year-old patient, a prelingual deaf man with a prior history of HIV, Tourette's syndrome, and bipolar disorder, under an involuntary hold after he acted erratically and responded to internal stimuli. The investigation revealed that the Florida patient was psychotic. An interpreter, present during the patient's later interrogation, revealed that he became agitated due to the healthcare professional's inability to communicate and inadequate care. Upon contacting the patient's family, they confirmed the claim and demanded his release. This interaction showed that the communication process in which the deaf man was involved was unsatisfactory.

A study by Ljubičić et al. (2017) describes communication interactions between deaf patients and healthcare professionals as problematic. When a nurse in a health institution meets a deaf person, efficient, understandable, and mutually clear communication becomes problematic due to the deaf patient's inability to hear and respond to a message and the nurses' lack of understanding of the message, which further leads to deaf patients isolating themselves. The inability to provide appropriate feedback to the nurses hinders active cooperation and successful medical service, as they primarily rely on writing, lip reading, and, for some, manual alphabets.

Major and Napier (2019) examined communication interactions in healthcare settings to investigate the idea that skilled interpreters facilitate the development of rapport between doctors and patients by occasionally refraining from interpreting and allowing direct communication between them using gestures or other non-verbal means. For example, if a doctor wants to demonstrate empathy and comfort to a patient, they may choose to use gentle touches, comforting gestures, or facial expressions that convey compassion. This approach recognises the importance of non-verbal communication in establishing understanding and connection, and experienced interpreters use their judgement to determine when these moments of direct interaction are beneficial for enhancing the doctor-patient relationship.

On other occasions during hospital interactions, healthcare professionals adopt strategies such as speaking slowly and speaking to the ear with greater hearing ability in the case of a hard-of-hearing (HH) individual, keeping eye contact, and raising their voices when necessary when handling deaf patients. Whenever the above strategies failed, they made use of written notes and instructions, despite these being time-consuming and dependent on the literacy level of deaf patients. Morisod et al. (2022) emphasise that writing is the most commonly used medium physicians use to communicate with deaf patients in the US. As a result, they were able to provide medication to deaf patients. However, the potential for incorrect medication renders the communication process in these situations ineffective.

Lack of eye-to-eye contact during communication interactions in hospitals causes deaf patients to sometimes regard healthcare practitioners as uncaring (Leftridge, 2017). Frequently, during interactions between deaf patients and hearing individuals, especially healthcare providers, the typical response from deaf patients tends to involve minimal replies or gestures, such as nodding or seeking further clarification through follow-up questions (Lam, 2021). Professionals who are unfamiliar with a deaf person's socioeconomic and cultural linguistic backgrounds may mistake such responses. Healthcare professionals may not understand that the deaf frequently utter monosyllabic comments in response to perceived power imbalances.

So, the studies mentioned above show that more research is needed to find out how deaf patients actually talk to each other when they go to hospitals in Kenya. This research is also needed to see how well the communication strategies used by SLIs work.

2.2 Challenges facing SLIs

Effective communication, especially when using SL, is key to deaf patients accessing healthcare services. However, even in nations where deaf people have legal rights to effective communication in medical settings, professional sign language provision in medical contexts

remains tough and complex due to challenges related to language and communication (Allen *et al.*, 2020).

Medical settings are characterized by the use of complex terminologies, many of which are scientific names that are incomprehensible to people outside the field. Moreover, medical procedures are complex and detailed. Interpreters, lacking prior experience, encounter a challenging task. They must first understand these complex terminologies and then find ways to convey the intended message, even though there are few established sign language terms in the medical field. Communication between healthcare professionals and deaf people therefore poses a significant challenge. The inability to accurately understand deaf people's sign languages and unfamiliarity with the deaf culture lead to miscommunication (Chua, 2019).

This further leads to ineffective communication, which intensifies the risks that deaf patients experience, especially when their health needs are improperly met. Ineffective communication impairs healthcare provision for the deaf. To elicit patients' histories and complaints, provide accurate diagnoses, and explain treatment strategies, mutual trust and understanding are required. Al Shamsi *et al.* (2020) contend that despite their language proficiency, some healthcare providers may struggle to effectively communicate information due to their limited knowledge in SL.

According to Lunza and Emma's (2017) research, the lack of SL knowledge among most nurses in Namibia's public health facilities hindered communication with deaf patients. The study recommends that the Namibian government employ SLIs in public hospitals, just as it did with the Namibian Broadcasting Corporation (NBC), which used sign language interpreters to translate news into sign language. Language challenges in medical settings have resulted in a lack of understanding and reduced compliance with recommendations to prevent health problems or follow treatment procedures.

In other instances, deaf adolescents in Uganda encounter difficulties in obtaining sexual and reproductive health care. In Uganda, the use of sign language is not widespread, and the availability of SLIs in public spaces is minimal. Communication barriers prevent them from accessing pertinent health information (Ivanova *et al.*, 2019). The need to equip parents and healthcare professionals with SL to care for the communication needs of deaf adolescents has raised concerns.

Hagan *et al.* (2020) explain that power and dominance further affect hospital communication. Healthcare professionals' dominance directly affects interpreters, but it also indirectly affects them through their impact on deaf patients. Policies that shaped the role and authority of a SLI, along with the unequal distribution of power among those involved, paved the way for dominance. Power and dominance force interpreters not to perform their roles successfully, and this might cause miscommunication, which can further lead to improper medical services.

Cultural aspects such as age, caste, class, gender, and religion cause differences in cultural values and

beliefs. This influences differences in meaning systems and ways of living. Degrie *et al.* (2017), for instance, reveal situations where SLIs must adopt more sensitive communication styles. Some situations are so extreme that SLIs have to teach healthcare professionals the beliefs and values of deaf patients when attending to them. In some instances, an ethical principle governing decision-making may conflict with a patient's beliefs, thus posing challenges to SLIs on how to effectively communicate (Hashemi *et al.*, 2020).

Magill (2017) points out other challenges faced in healthcare interpretation in New Zealand caused by factors like cost, availability, concerns about confidentiality, inadequate knowledge of protocols for working with interpreters, and a lack of ways of evaluating the quality of interpretation that affect SLIs. The research by Magill (2017) also highlights differing perspectives about SLIs. Whereas healthcare providers viewed SLIs as people who only kept patients on track, deaf patients viewed them as co-conversationalists.

Some medical procedures put interpreters in embarrassing situations. During an intimate examination, for instance, some deaf patients prefer SLIs to be present while others may not. In cases where SLIs are allowed to be present during an examination, maintaining professionalism while perhaps viewing a patient's naked body is difficult. Heyerick (2022) illustrates a situation in Flanders where a deaf interviewee related how her husband had to strip for a medical exam, and when he emerged from the dressing cubicle, the (female) interpreter was so frightened to see him naked that she bolted from the surgery, leaving him alone.

2.3 Challenges facing SLIs in hospitals in Kenya

Sometimes, KSL interpreters accompanying deaf patients lack adequate communicative competence, leading to miscommunication. An occurrence of miscommunication may lead to dire medical consequences, such as misdiagnosis, mistreatment, or even death. Hospitals experience incompetence in SL interpretation due to SLIs' lack of in-depth medical training and challenges in navigating the dynamic process of medical interpretation.

Medical interactions involve fast-paced conversations, technical terminology, and nuanced communication. As a result, SLIs must not only understand and translate the spoken language into sign language, but also interpret the patient's signs or gestures back into spoken language for the healthcare provider. This back-and-forth process requires quick thinking, adaptability, and strong linguistic skills. McAller (2006) says, "Nurses who are not trained interpreters but have some knowledge of BSL (British Sign Language) should not operate as interpreters," referring to the situation in the British medical industry, which is comparable to the Kenyan reality.

In hospitals, healthcare practitioners have used staff members who have a basic understanding of KSL, or relatives or friends of the deaf person, to act as interpreters (Kimani, 2019). In this type of setting, errors are more likely to occur. Untrained interpreters are "reliably unreliable." In the worst-case scenario, this leads to the patient's death.

In Kenya, SL interpretation lacks specialization in different fields such as medical, media, legal, or educational. Therefore, people perceive SLIs as multi-talented individuals with limited expertise in specific areas. This hurts the quality of interpretation and professionalism in service delivery. Lack of specialisation, especially in a medical setting, causes great challenges such as misdiagnosis and the wrong medication. Observation reveals that deaf patients face back-and-forth writing when explaining their medical needs in situations without SLI. This process is not accurate and may result in ineffective communication. This is due to the low literacy level of many deaf people in Kenya, which hinders them from fully expressing their experiences in written form. The marginalization of spoken language in literature further complicates their ability to explain their complex conditions.

The existing studies reveal a scarcity of literature investigating the communicative competence of SLIs in hospitals, which could provide more insight into the quality of hospital interpretation and potentially improve the accessibility, reliability, and appropriateness of healthcare services for deaf patients.

3. THEORETICAL MODEL

Two theoretical models guided the study: the communicative competence model (Canale & Swain, 1980; Canale, 1983) and the meaning-based model (Russel, 2005). These models do not derive from a single theory but integrate insights from various linguistic and sociocultural theories.

3.1 Communicative Competence Model

Communicative competence refers to an individual's ability to effectively use language in real-world communication situations. It embraces linguistic knowledge and the ability to adapt language use based on social context, cultural norms, and pragmatic considerations. The communicative competence model (Canale & Swain, 1980; Canale, 1983) has four pillars: grammatical competence, discourse competence, sociocultural competence, and strategic competence.

Grammatical competence is the mastery of the language code (verbal or nonverbal), which includes knowledge of vocabulary, morphology, syntax, semantics, phonetic, and orthographic rules. This competence allows the speaker to apply the knowledge

and abilities required to comprehend and communicate the literal meaning of utterances.

Sociolinguistic competence entails understanding the rules and conventions that underpin effective comprehension and language use in a variety of sociolinguistic and sociocultural contexts (Canale & Swain, 1980; Canale, 1983). This model defines discourse competence as the mastery of rules that govern the combination of forms and meanings to achieve a meaningful unity of spoken or written texts. The model emphasizes the importance of cohesion and coherence in utterances. The use of cohesion devices like pronouns, conjunctions, synonyms, and parallel structures achieves cohesion. Repetition, progression, consistency, and relevance of ideas achieve coherence.

Lastly, strategic competence encompasses the understanding of both verbal and non-verbal communication strategies that can counteract communication breakdowns resulting from deficiencies in one or more of the previously mentioned components. This encompasses strategies such as repetition, guessing, circumlocution, style and register changes, avoidance of words, structures, or themes, reluctance, and message modifications. The communicative competence model developed by Canale and Swain (1980) and Canale (1983) emphasizes functional aspects of communication. It attempts to ensure that communication becomes as meaningful as possible, resulting in effective communication. It also emphasises strategies that language users adopt to overcome communicative problems.

Communicating effectively entails more than knowing a language's grammar, the social situations involved, and the message to convey. Using verbal and non-verbal strategies to compensate for communication breakdowns is important. The framework of strategic competence enabled the researcher to understand the strategies that SLIs apply when faced with communication challenges and determine how successful the strategies are in achieving the intended communication goal. Sociolinguistic competence and strategic competence work closely together to achieve communication functionality.

Scholars have used the communicative competence model in various settings, such as in education to teach second language acquisition (Gong, 2018) and in intercultural communication, where scholars investigate how individuals from different cultural backgrounds develop and navigate communicative competence to effectively interact with and understand each other (Hussain & Tahira, 2023). Researchers have used the communicative competence model in a legal setting to explore the skills and strategies required for effective legal communication, and to analyze the impact of communication competence on the outcomes of legal processes (Moore et al., 2020).

Healthcare settings have also used this model to examine the competencies required for effective

healthcare communication. These include patient-centred care, empathy, active listening, and clear information exchange to improve patient outcomes and satisfaction (Kwame & Petrucka, 2020). Bengü (2020) explores the curriculum of International Teaching Assistant (ITA) programmes, focusing on elements of communicative competence. The communicative competence framework provides an integrated, theoretically valid paradigm for ITA programme development and evaluation, as well as a suitable foundation for comprehending new programmes' competence models.

This research uses the communicative competence model since it provides a comprehensive framework for assessing language proficiency and understanding how individuals navigate real-world communication situations. This choice is unique because this study not only adopts communicative competence in a Kenyan hospital system, but also in a multimodal setting.

The communicative competence model guided the realization of the study objective, which was to assess the extent to which the communication strategies employed by SLIs in selected hospitals in Nairobi County are effective in communicating medical information. We used the model as a diagnostic tool, identifying successful interpreting patterns and areas of need, to gain insight into an interpreter's capabilities and foster continuous professional growth.

Given the triadic nature of communication encounters in hospitals, there is an additional model known as the meaning-based interpreting model, which places emphasis on producing accuracy in interpretation.

3.2 Meaning-based model

This study also relies on a meaning-based model (Russell, 2005). The model acknowledges the importance of meaning-based work in shaping the desired interpretation outcome during interaction, while also acknowledging the differences in linguistic and cultural interpretations between two languages. It attempts to build on the following existing models of interpretation: A meaning-based model emphasizes text and language analysis and aims to incorporate the dynamics of the interaction in context. It aids in both consecutive and simultaneous interpretation.

The model is guided by the following steps as discussed by Russel (2005):

- i. Examining contextual factors and monitoring the process: the interpreter continuously assesses contextual factors and impact on communication during interpretation process. It is through context that the interpreter can determine the speaker's or signer's intended meaning within the specific interpreted interaction. Factors to be examined include: relationship between the parties in the interaction, the formal and informal power structures represented, the participants' backgrounds and experiences, the emotional overlay of the interaction, and the impact of having an interpreter

present on the way the speaker and signer construct their messages. The interpreter continues to monitor the communication process as new experience and context arise during the conversation.

- ii. Comprehension of source language message: the interpreter draws upon skills related to bilingual and bicultural awareness and text analysis so as to support comprehension of the original message. Fluency is derived from syntactic and semantic knowledge, background, cultural and associated knowledge and contextual awareness. The interpreter processes information at different levels: lexical, sentential, phrasal, and discourse level and also checks and corrects any arising error resulting from insufficient contextual knowledge.

- iii. Applying contextual and linguistic schemas and selecting type of interpretation: an interpreter applies the examined contextual factors like linguistic competence, cultural frames and experiences in communication.

- iv. Formulating equivalent message: the interpreter makes cultural and linguistic decisions, preparing, developing, and reviewing the pieces that will be used to represent an equal message in the target language.

- v. Producing target language interpretation.

A meaning-based interpretation model, just like a communicative model, aims to achieve the intended meaning in a communication process. Through the dynamics of context, the model facilitated the researcher's understanding of the process of achieving meaning in communication. As previously mentioned, the model places significant emphasis on achieving accuracy in interpretation, and its relevance is further enhanced by the triadic nature of communication encounters in hospitals. Both models helped the researcher achieve the study's goal, which is to shed light on the communicative competence levels of SLIs. Specifically, the study aimed to assess the effectiveness of the communication strategies used by SLIs in selected Nairobi County hospitals in conveying medical information.

4. METHODOLOGY

4.1 Research design and approach

This research, which aimed at assessing the communicative competence of SLIs in hospitals, employed a case study design and adopted a qualitative research approach. The study employed a multiple-case design due to the limited number of SLIs operating in hospital settings, which likely resulted in a low participant count. A case in this study was an SLI interpreting for a deaf patient receiving healthcare services in a hospital, and the study targeted a sufficient number of cases until saturation was achieved. Each case examined SLIs' communicative competence at various stages of patient interaction.

Qualitative research is a form of social action that

stresses the way people interpret and make sense of their experiences to understand the social reality of individuals (Muzari *et al.*, 2022). In adopting a qualitative research approach, the researcher was able to generate in-depth data and explore in detail the real situation in the selected hospitals, examining interactions from diagnosis and prescription to assess communicative competence in interactions between SLIs, healthcare professionals, and deaf patients in the hospitals. This approach was appropriate for the study since it allowed the researcher to understand behaviours, attitudes, and other factors that enabled SLIs to achieve or caused them not to achieve desirable levels of communicative competencies in performing their duties.

4.2 Study location

The research took place in Nairobi County, which is a cosmopolitan environment that accommodates great cultural diversity. Statistics by Coalition Violence Against Women (COVAW) show that Nairobi County has about 31 hospitals: 25 private and six public hospitals (Brooks *et al.*, 2019). We specifically conducted the research at two public hospitals in Nairobi County: Kenyatta National Hospital (KNH), situated west of Upper Hill, and Mbagathi Hospital, situated in Lang'ata Sub-county.

KNH is East Africa's only level seven hospital and the largest referral hospital. It experiences a huge traffic of patients, including those with disabilities such as deafness. Among other hospitals such as Mathare and Mama Lucy Kibaki, Mbagathi is a county hospital responsible for disability assessment. Because of its proximity to KNH, it receives a lot of deaf patients. Every Wednesday, the hospital conducts this assessment, resulting in a steady flow of patients, including deaf patients, seeking healthcare services.

4.3 Target population

This study's target population was sign language interpreters in Nairobi County. As there was no readily available concrete data on the total number of SLIs in Nairobi County, the study relied on a sample drawn from a WhatsApp group dedicated to SLIs. The WhatsApp

group consisted of a hundred (100) members, representing a portion of the sign language interpreter community in the area. Although the source of this data may be unconventional, it represents a community of actively practicing sign language interpreters connected through a digital platform. Note that factors such as willingness to join the group and any associated conditions, access to technology, personal connections, etc., may influence WhatsApp membership, making this sample not representative of the entire population of SLIs in Nairobi County. Nevertheless, due to the lack of more reliable and comprehensive data sources, this study relied on information from the WhatsApp group to represent the population.

The study involved only SLIs in two public hospitals (KNH and Mbagathi) in Nairobi County, where deaf patients and healthcare professionals diagnose and give prescriptions to patients with whom they interact with the assistance of SLIs.

4.4 Sampling technique and sample size

The selected hospitals, KNH and Mbagathi, had already known cases of SLI employees, so this research employed a purposive sampling technique. Burgette *et al.* (2019) further define the purposive sampling technique as a method that allows researchers to employ instances that are known to provide the necessary information for the issue under investigation. We purposefully selected the facilities based on their potential to receive a high inflow of deaf patients. The purposive sampling technique was well suited to the study because it allowed the researcher to focus only on the specific characteristics of the population under study and their ability to interpret correctly in hospitals. To sample SLIs, the researcher used total population sampling because there are very few of them working in any given hospital. During the study period, all SLIs engaged in triadic communicative interactions with deaf patients and health professionals, thereby constituting the study sample.

Instead of the four SLIs the researcher had originally anticipated, the sample size included five SLIs who worked in the two hospitals: two in Mbagathi and three in KNH.

Table 1: Number of participants and their keys

Participant	Hospitals		Total Number
	Mbagathi	KNH	
SLIs	2	3	5
Participant code	SP4M SP5M	SP1K SP2K SP3K	

Key:

SP- Code for SLI participant

K- Code for KNH

M-Code for Mbagathi Hospital

5 RESEARCH INSTRUMENTS

Interview schedules and observation schedules were the research tools used. These instruments allowed the researcher to collect firsthand information for assessing the communicative competence of SLIs in conversation encounters in hospitals and to help triangulate the data.

5.1 Data collection

The researcher conducted direct observations on the communication encounter during diagnoses when both deaf patients and healthcare professionals were engaging in a conversation in the presence of an SLI. The aim was to conduct ten observations of SLIs interpreting during a diagnosis stage, each in the two hospitals, weekly for five weeks. We conducted two observations of communication interactions at Mbagathi Hospital during the first and second weeks, and another one in the third week. We conducted two observations at Mbagathi Hospital in the fourth week and one in the sixth week. We conducted the remaining four observations on communication encounters at KNH, two in the third week, one in the fifth week, and the final one in the sixth week. Every week, we conducted the practice observations sequentially in both hospitals.

The researcher conducted interviews with SLIs using open-ended questions. In the first week of the study, the researcher interviewed one SLI from Mbagathi Hospital, and in the second week, they interviewed two SLIs from each hospital. We interviewed two SLIs from KNH in weeks three and four. The researcher recorded and analyzed the participants' responses after each session.

5.2 Data analysis

Data analysis involves examining the data for accuracy and drawing conclusions. We analysed the data using thematic and content analysis methods. We thematically analysed the data from the interviews. Thematic analysis is a technique for identifying, analysing, and reporting data patterns (themes). This research found its usefulness in identifying key themes that aligned with the research objectives.

We used content analysis to analyze data collected using observation schedules. Schreier et al. (2019) use content analysis as a data analysis technique to identify specific words, concepts, or themes in qualitative data.

The researcher used a neutral SLI who was not among the participants to transcribe the recorded information. The professional watched the recorded video and listened to the audio recordings, then transcribed them to help with assessing the competence of SLIs. Feedback from SL professionals assisted the researcher in assessing SLIs' competencies based on the communicative competence model in terms of grammatical, sociolinguistic, strategic, and discourse competence.

5.3 Pilot Study

At Mama Lucy Kibaki Hospital, a pilot study to test the research instruments took place. This level five hospital employs a single SLI and a KSL-trained nurse who provides assistance to deaf patients. We chose this hospital based on its similarity in service delivery and category to the targeted location of our research. We observed two SLIs during the pilot study. The session enabled the researcher to work on areas such as restructuring research questions, changing interview schedules, and data collection tools. Direct questions about instances of misdiagnosis did not sit well with the SLI; thus, the researcher had to be more tactful, change the questioning approach, and even rework some questions. The researcher also realized that the interview questions elicited limited responses, following the structured interviewing process as initially planned. Therefore, the researcher used semi-structured interview questions during the actual study, which allowed participants to freely share their experiences without holding back.

5.4 Ethical considerations

The researcher sought approval to conduct the research by obtaining an introductory letter from the Technical University of Kenya (TU-K), ethical clearance from KNH, and a permit to conduct the study from the National Commission for Science, Technology, and Innovation (NACOSTI). In terms of health, the study obtained other authorization permits from Nairobi County Health Services, Mama Lucy, and Mbagathi hospitals, as well as a study registration certificate from KNH. It took about six months to get all the necessary authorizations.

We provided all participants with information sheets that explained the purpose of the study, followed by consent forms that ensured their voluntary participation and allowed them to opt out at any time during the study. We ensured confidentiality by informing participants that we would only report aggregate results, keep their names confidential, and never reveal their identity.

6. This study aims to evaluate the effectiveness of communication strategies used by SLIs at Mbagathi Hospital and KNH in communicating medical information.

Two theoretical models, namely the communicative competence model (Canale & Swain, 1980; Canale, 1983) and the meaning-based model (Russel, 2005), guided the researcher in evaluating the effectiveness of the communication strategies used by SLIs in hospitals in communicating medical information.

6.1 Evaluation of the efficacy of communication strategies in communicating medical information based on the communicative competence model

The communicative competence model is a widely recognised framework for understanding and assessing language proficiency. This model emphasises the ability to use language in real-life communicative situations rather than solely focusing on knowledge of grammar and vocabulary. In evaluating the efficacy of communication strategies, the researcher observed various competencies in the model during SLI interactions with patients and healthcare professionals.

6.1.1 Grammatical competence

Grammatical competence is defined as knowledge of a language's rules and structures, as well as understanding and using the appropriate grammatical forms and structures to convey meaning accurately (Retnowaty, 2022). In applying this model, the researcher evaluated SLI's knowledge of syntax, morphology, and phonology. In SL, knowledge of phonology includes aspects such as signing space, handshape formation, palm orientation location, movement, and use of non-manual signals like body language and facial expressions (Van der Hustl, 2021). Morphology is the minimal yet meaning-bearing unit in a language, while syntax deals with the order of words and phrases in creating a meaningful sentence (Quer & Steinbach, 2019).

Most SLIs mastered the formation of handshapes such as "C" to represent catheters and "A" while paraphrasing anatomy, which showed phonological competence and successful use of the strategy. The mastery of productive skills was generally good, as evidenced by the use of fingerspelling during interpretation. We observed the application of mimes and imitation, which involved the use of non-manual markers like head tilting to explain the fixing of a cochlea implant and facial expressions to convey shortness of breath.

The appropriate use of signing spaces from the waist upwards demonstrates the morphological aspects of SL, aiding in the physical location of objects, people, and places, as well as the establishment of distinct morphemes. For instance, the application of word coinage in the word "hypertension" introduced a variation in the meaning of the intended information (high + pressure) depending on spatial consideration. That is, signing with high pressure away from the signer gave the literal meaning. However, in a hospital context, signing towards the signer emphasized sickness.

Understanding syntax entails using appropriate sentence structure. The English language applies Subject + Verb + Object (SVO) sentence structure (Cahyani, 2020). Signed languages, including KSL, use subject + object + verb (SOV) or object + subject + verb (OSV) in sentence structuring. For instance:

ME HOSPITAL COME// (DP2, 9/04/23) (*I have come to the hospital.*)

Observation revealed that sometimes SLIs did not strictly follow SL's syntax rules and would

When paraphrasing and giving explanations, I often use the English structure, also known as SVO. These differences had a negative impact on deaf patients' comprehension of information. The following present such instances:

Visit Nyayo House to check the progress of your disability card.

Generally, the SLIs demonstrated a shaky foundation in grammatical competence, having challenges with using phonology, morphology, and syntax (with some minor deviations in sentence structure). While some SLIs utilized medical terminology in sign language, they occasionally overused fingerspelling, which could suggest a deficiency in their understanding of medical signs. This implies that they require training to enhance their grammatical competence. Moreover, the limited use of structured expressions for concepts like time and location suggests a need for training or resources to enhance this aspect of SLIs' competence.

6.1.2 Sociolinguistic competence

Sociolinguistic competence involves the knowledge and skills needed to navigate different speech styles, registers, and dialects to communicate effectively and appropriately in various social situations (Muhamadjonovna, 2020). Observations of receptive and productive skills in SL inform discussions of sociolinguistic competence. The ability of SLIs to recognize various registers used within the hospital, including the eye clinic, laboratory, and dental clinics, is noteworthy. In addition, SLIs expressed appropriate use of hand variations: one- or two-handed, lexical variations about handshape movement, and appropriate production of signs. Words like "defibrillators," signed with a D handshape on one hand, and "anatomy," signed with an A handshape on both hands, demonstrated SLIs' ability to vary handshapes and produce signs appropriately.

The application of avoidance was appropriate and successful to some extent in consideration of politeness conventions, for example, during sex-related topics. When SP2K felt awkward discussing reproductive concerns, he avoided mentioning some terms that he felt uncomfortable signing:

I am not comfortable discussing sexually related issues with someone of an opposite sex. I prefer not to interpret in such cases. (SP2K-5/04/23)

However, communication was a bit compromised by SLIs avoiding signing some information that was considered very critical to the patient's health. Moreover, when SLIs avoided digging into the patients' beliefs, choosing to respect cultural norms, communicative competence was observed:

Religious issues are sensitive to an individual, therefore when my patient mentioned that her faith doesn't permit

taking of food such as poultry, meat and fish, I had to exclude mentioning of such. (SP5M- 11/04/23)

Understanding of sociolinguistic nuances should be strengthened so that SLIs are able to fully adapt their communication style to different hospital settings. So further training on this aspect of language would be beneficial.

6.1.3 Discourse competence

According to Thompson (2020), discourse competence refers to the ability to understand and produce coherent and cohesive stretches of language organized to create meaningful discourse. The research focused on aspects of discourse competence in SL, including the application of referencing, substitution, collocation, inflection of verbs, use of topic transition markers, accuracy in the production of information, and information itself.

We ensured accuracy in the discussed medical information by using fingerspelling and providing explanations for the terms. SLIs fingerspell terms such as borborygmi, epistaxis, amniotic fluid, endometriosis, and lochia, and provide explanations for terms like caesarean section (CS) and CT scan. Furthermore, through fingerspelling and explanations, SLIs achieved discourse cohesion. This was because the two strategies, fingerspelling and explanations, enabled SLIs to give clear information through repetition of complex medical terms and emphasise more through explanations.

Referencing among SLIs promotes discourse coherence. McKee (2017) defines referring in SL as a linguistic and gestural strategy used to establish and maintain reference to people, objects, locations, or concepts within a signed conversation or discourse. This study achieved referencing by using spatial referencing to locate objects, people, and places. Signing the same word either on the left or right side of the signer created a difference in communication. For instance, the signing space of these two terms, *myocardial* and *myocardial infarction*, distinguished the two conditions. However, production accuracy relied more on the signer's active hand.

When the SLIs lacked consistency, cohesion suffered. For example, when SP2K felt uncomfortable interpreting issues regarding sexual health, the use of avoidance disrupted the flow of information. SLIs also employed indexing, an aspect of referencing that involves using specific handshapes or movements to refer to specific individuals or objects, such as handshapes "D" to refer to defibrillators and "C" to refer to catheters. SLIs established these hand shapes to represent terms that lacked a sign equivalent in the given discourse, thereby maintaining coherence.

In order to maintain the flow of discourse, word coinage was used, which often involved simplifying a medical term by using collocation. Collocation refers to the habitual and natural pairing or co-occurrence of words or lexical items in a language (Langer & Schulder, 2020). The table below displays the terms that underwent coining.

Table: Medical terms and signs coined

S/No	Medical term	Sign created
1.	myocardial infarction	<i>sign for heart attack</i>
2.	hypertension	<i>High + pressure</i>
3.	ventilators	<i>Breathing machine</i>
4.	defibrillators	<i>Handshape "D" in circular motion placed close to the heart.</i>
5.	catheters	<i>Handshape "C" on both hands, while the active on top and oriented upwards</i>
6.	anatomy	<i>Handshape "A" same movement as sign for body.</i>

In the study, SLIs were able to use more than one word to provide meaning to some scientific terminologies during interpretation. For example, using "high + pressure" in explaining "*hypertension*" was effective, though not exact. However, the strategy was not always effective, as it sometimes led to miscommunication, such as when a SLI used the term "heart problem" to refer to "myocardial infarction." Despite its closeness to meaning, it did not accurately describe the patient's urgent medical condition.

SLIs also used topic transition markers. Topic transition markers, also known as discourse markers or discourse connectors, are linguistic devices or phrases used to signal a change or shift in the topic or focus of a

conversation or discourse. They serve as important cues for listeners or readers, indicating a shift in subject matter, introducing new information, or changing the direction of the discussion (Krebs et al., 2020). We made the observation through the use of varied body positions, such as leaning forward and backward, to contrast information. For example, healthcare professionals observed SLIs pausing during interpretation to indicate to deaf patients how to respond to their inquiries. Besides, the triadic setting involved the use of appropriate turn-taking to add to the achievement of discourse competence.

The use of verb inflection illustrated another aspect of discourse competence. Verb inflection is defined by

Hoffmeister and Wilbur (2017) as the modification or alteration of a verb form to indicate various grammatical features, such as tense, aspect, mood, person, number, and gender. In this study, the participants inflected verbs by pointing with their index fingers. For instance, when signing "give" or "tell," SLIs pointed towards healthcare professionals. When signing "help," the SLI moved towards deaf patients, creating the "help you" meaning. Generally, SLIs achieved a commendable level of discourse coherence through referencing techniques and topic transition markers.

6.1.4 Strategic competence

Nurmatova and Ismoilova (2021) define strategic competence as the ability of an individual to compensate for a communication breakdown and also to effectively use communication strategies, which encompasses the knowledge and skills needed to manage and adapt communication in various contexts to achieve successful interaction. When SLIs encountered communication challenges, they used communication strategies such as fingerspelling, word coinage, lexical simplification, mimes, and imitation to compensate for communication breakdown.

The competence of SLIs in using these communication strategies contributed to the effectiveness of communication encounters. For instance, due to the scientific nature and complexity of medical terminologies, the use of word coinage, where SLIs could give a certain word a sign and use it within that context, was successful. We coined words like "breathing machine" to symbolize "ventilators," "handshape(C)" to symbolize "catheters," and "high+ pressure" to symbolize "myocardial infarction."

The study scrutinized various facets of strategic proficiency in sign language interpretation, with a particular emphasis on the utilization of non-manual markings like head tilting during the explanation of a cochlea implant's fixation, and precision in spatial relationships, such as the production of words like "defibrillators" (signed with a D handshape) and "anatomy" (signed with an A handshape). SLIs also demonstrated a strong comprehension of structured expressions, a common aspect of sign language interpretation, as demonstrated by their use of mime and imitation as communication strategies. For instance, when recounting a patient experiencing shortness of breath and unfamiliar with the signs for this symptom, SLIs were able to overcome the communication challenges they encountered.

Throughout the interpretation process, SLIs demonstrated appropriate use of non-manual markings such as facial expressions and body movements, as these markers embed SL. However, while fingerspelling contributes to effective communication to some extent, it also reveals a lack of competence in some SLIs who tend to use it more frequently. While a few SLIs displayed versatility and accepted levels of fingerspelling, others

heavily relied on fingerspelling for most words, indicating their struggle and incomplete mastery of the language.

Only a few SLIs utilised structured expressions, using specific handshapes, movements, and spatial relationships to represent concepts such as time, location, possession, and relationships between people and objects. For example, the researcher observed SLIs using a specific handshape and movement to demonstrate personal initiative by deaf patients in following prescribed medications. Moreover, some SLIs were successful in using structured expressions to convey the time frame when a given condition started. For example, they signed the past tense backward and the future tense away from the signer. In a statement like:

When did you become sick? (HP4,09/04/23)

In order to interpret this information, the SLI needed to sign "TIME WHAT YOU BECOME SICK?" and then point backwards after indicating the time. The use of these non-manual markers aided in understanding conversations and promoted effective communication in areas of actual or potential breakdown because sign language is a visual-gestural language that relies on body movement, gestures, and facial expressions to convey meaning. Generally, SLIs displayed a fairly resourceful approach, employing various strategies like fingerspelling, word coinage, and mimes to address communication challenges. Yet while some SLIs successfully used avoidance strategies to navigate sensitive topics, others encountered communication breakdowns. As a result, training and practice are critical for identifying and using strategies for handling sensitive information.

6.2 Evaluation of the efficacy of communication strategies in communicating medical information based on a meaning-based model

The focus of the meaning-based model (Russell, 2005) is on cognitive and linguistic aspects of sign language interpretation. It emphasises the importance of conveying the intended meaning rather than a word-for-word interpretation. This section analyses the communication strategies employed by SLIs in Kenyan hospitals using the meaning-based model. The model comprises five distinct steps:

- i. Examining of contextual factors;
- ii. Comprehending source language;
- iii. Applying contextual and linguistic schemas;
- iv. Formulating equivalent messages; and
- v. Producing target language interpretation.

6.2.1 Examining contextual factors

The researcher considered how SLIs conveyed the accurate and intended meaning of a communication interaction. Context played a key role during interpretation, and SLIs had to continuously examine the varying contexts created by various departments in the

hospitals. The use of the word coinage, for example, was highly dependent on the context of the discussion. A coined sign that is effective in one context might be entirely inappropriate in another.

6.2.2 Comprehending source language

The use of paraphrasing and the provision of explanations as communication strategies were effective in achieving intended meanings in communicating medical information. Paraphrasing involves rewording or restating information using different words or sentence structures while still conveying the same meaning as the original text (Roe & Perkins, 2022). The hospital settings in which SLIs worked exposed them to situations where healthcare professionals used complex jargon. Interpreting all the information provided by healthcare professionals would be time-consuming and generally unattainable. SLIs, therefore, used paraphrasing to reduce time constraints and only relay meaning in the conversation. Only two SLIs, SP1K and SP3K, were well-versed in paraphrasing. The SLIs used the following terms in their discourses:

- i. *CBC- complete blood count* – SP1K told the patient that a component of her blood was to be tested as a whole.
- ii. *Hyperglycemia and hypoglycemia* – that required DP2M to undertake glucose test. SP3K had to reword glucose with sugar level test for him to understand the laboratory test that was required.
- iii. *Myocardiac* – SP3K used heart muscle.
- iv. *Prostaglandin cream* – a medical cream used to ripen the cervix before induction.
- v. *Lochia* – blood loss following birth.

Paraphrasing was majorly aided by the fact that SLIs had to first have a good understanding of the source language, which was mostly English, and then formulate an equivalent message in the explanation given.

6.3.3 Applying contextual and linguistic schemas

Fluency and accuracy in the information interpreted necessitate syntactic and semantic knowledge, both of which are aspects of grammatical competence. These schemas involve integrating cultural experiences and linguistic knowledge to formulate an equivalent message in sign language. Through the application of mimes and imitations, the SLI demonstrated their abilities to consider contextual and linguistic schemas such as cultural experiences in communication and linguistic competence in effectively communicating. When a patient reported experiencing shortness of breath but was unfamiliar with the specific sign, the SLI effectively mimicked labored breathing to convey the intended meaning. The SLI's ability to consider both cultural schemas (understanding nonverbal communication) and linguistic knowledge (knowing the concept to convey) is evident in this action.

6.3.4 Formulating equivalent messages

Fluency and accuracy in the interpreted information were dependent on the SLI's syntactic and semantic knowledge, which are aspects of grammatical competence. Through effective paraphrasing and explanations (see Section 10.2.2 above), SLIs were able to formulate messages in sign language that conveyed the intended meaning of medical information.

6.3.5 Producing target language interpretation

Some communication strategies, such as fingerspelling, word coinage, and lexical simplification, although useful, never conveyed the exact meaning communicated, and some of the gestures or signs coined did not well represent given terminologies. We attributed this to SLIs' inability to comprehend medical terminologies in their source language (scientific terminology). For instance, by signing "catheters" using the handshape "C" on both hands while the active is on top and oriented upwards, signing "borborygmi" as a growling sound and fingerspelling "contraction" did not bring clarity to the intended meaning. Word coinage required the ability to adapt. Different interpreters might have coined a given concept differently, perhaps leading to ambiguity or variation in meaning. Additionally, fingerspelling only serves to clarify the meaning of the term to interlocutors, rather than achieving the intended meaning during communication interactions.

The communication strategies employed by SLIs demonstrated strengths in conveying intended meaning, particularly when considering contextual factors and applying cultural and linguistic schemas. Paraphrasing, explanations, mimes, and effective use of grammatical structures all contributed to the successful communication of medical information.

However, limitations were also identified. Fingerspelling, word coinage, and lexical simplification, while useful strategies, could not always capture the full complexity of medical terminology. Additionally, SLIs' incomplete knowledge of medical terminology in both English and sign language sometimes hindered meaning transfer.

The communication strategies used by SLIs achieved a moderate level of efficacy in conveying medical information. While they demonstrated resourcefulness and adaptability, further training and resources specifically focused on medical terminology are crucial to ensuring clear and comprehensive communication between healthcare professionals, deaf patients, and their families in Kenyan hospitals.

6.4 Analyzing and discussing the effectiveness of communication strategies employed by SLIs

Models of communicative competence and meaning-based communication were used to look at how well the

six SLIs at Mbagathi Hospital and KNH were able to communicate. Effective communication strategies should involve using language accurately and appropriately, adapting language use to fit the social context, structuring language coherently and logically, and using communication strategies to achieve communicative goals. Furthermore, the goal of effective communication strategies should be to establish mutual understanding among interlocutors by encoding messages in a comprehensible manner for the recipient and decoding them in a manner that aligns with the sender's intended meaning.

The evaluation of SLIs' proficiency emphasised the importance of grammatical competence, sociolinguistic competence, discourse competence, and strategic competence to ensure effective and accurate communication of medical information. Based on the communicative competence model, SLIs largely demonstrated appropriate and successful application of communication strategies, such as forming handshapes like "A," representing "anatomy," and demonstrating productive skills by fingerspelling words like "CT Scan," "endometriosis," and "lochia." In addition to following cultural norms, SLIs were able to recognise different registers, such as the difference between dental clinics and lab rooms, and used the right hand movements and word changes to communicate. Observations showed that SLIs were able to adjust their signing style and adapt to different situations, thereby effectively utilising avoidance (as shown in Section 10.1.2 above) and demonstrating communicative competence.

SLIs further utilized strategies such as fingerspelling, explanations, and repetition of complex medical terms to ensure accuracy and cohesion in communication. Most of the communication strategies employed by SLIs facilitated effective communication. However, we also observed limitations in their usage. There were instances where SLIs did not strictly adhere to syntactic rules and used English sentence structures while paraphrasing, thus distorting information. We observed miscommunication, especially when word coinage led to variations in meaning, particularly in the term "myocardial infarction." We found that while strategies like fingerspelling, word coinage, and lexical simplification were useful, they did not always accurately convey the intended meaning.

Depending on the context and the prevailing circumstances, these strategies may facilitate communication, but they also run the risk of causing miscommunication or incomplete communication, which could negatively impact the patient's quality of care. Therefore, training SLIs on effective communication strategies that prioritise the patient's needs and ensure the achievement of communication goals is crucial.

7. SUMMARY OF FINDINGS

The study evaluated the communication strategies

that SLIs used and their efficaciousness in communicating medical information, guided by the communicative competence model and the meaning-based model. In terms of the communicative competence model, the evaluation focused on different types of competence. SLIs demonstrated grammatical competence through excellent mastery of syntax, morphology, and phonology. This was evident in how they successfully used strategies such as finger spelling, hand shape formation, and non-manual markers like facial expressions and body language. However, SLIs sometimes deviated from SL's strict syntax rules and used English sentence structure when paraphrasing, resulting in inaccurate meaning.

SLIs demonstrated sociolinguistic competence in recognizing registers and employing appropriate hand variations, lexical variations, and politeness conventions. They also respected cultural norms and avoided delving into patients' beliefs when necessary, displaying communicative competence. The application of strategies such as referencing, substitution, collocation, and topic transition markers demonstrated discourse competence, ensuring accurate information production and fostering cohesive communication. However, accuracy in production relied more on the signer's active hand, and inconsistency could disrupt cohesion. Although the word coinage is generally effective, it can sometimes lead to miscommunication when the coined term does not accurately describe the medical condition.

SLIs successfully employed strategies such as word coinage, lexical simplification, paraphrasing, mime, imitation, providing explanations, avoidance, and message abandonment. These strategies helped overcome challenges and contributed to the effectiveness of communication encounters. However, some SLIs' use of fingerspelling revealed a lack of competence, and only a few used structured expressions.

In the evaluation based on the meaning-based model, the focus was on conveying accurate and intended meaning. Paraphrasing, explaining, mimes, and imitations were effective communication strategies for conveying accurate meanings in medical information. However, fingerspelling, word coinage, and lexical simplification, although useful, did not always convey the exact meaning intended. The gestures or signs coined sometimes lacked representation of the given terminologies, and fingerspelling only informed interlocutors of the term without conveying its meaning.

Overall, the evaluation highlighted the effectiveness of various communication strategies employed by SLIs in conveying medical information. The evaluation also underscored the significance of taking into account both the linguistic and cognitive elements of sign language interpretation to guarantee the accurate and intended interpretation.

The communication strategies used by SLIs were evaluated, and the skills that stood out as strengths were: grammatical competence (SLIs had a fair grasp of syntax, morphology, and phonology, as shown by their use of

fingerspelling, handshape formation, and non-manual markers); sociolinguistic competence (SLIs understood communication registers well, adapted hand and lexical variations, and respected cultural norms during interpretation); and discourse competence (SLIs partly effectively used referencing, substitution, collocation, and topic transition markers to make sure information flowed and made sense).

The areas of competencies that emerged to need strengthening included the potential inaccuracies during paraphrasing arising from deviation from syntax rules; inconsistency in signing, as information production relied heavily on the active signing hand, which disrupted the flow and coherence of discourse; the overuse of fingerspelling by some SLIs and the underutilization of structured expressions by others; and the limited knowledge of medical terminology in both English and sign language, which hindered meaning transfer during interpretation. To improve SLIs' ability to deliver critical medical information to deaf patients in Kenyan hospitals, we need targeted interventions that focus on grammatical accuracy, strategic use of communication strategies, and enhanced medical terminology knowledge.

8. CONCLUSION

Effective communication is a crucial factor in ensuring access to proper healthcare services for deaf patients. The researcher's motivation to conduct this study in a hospital setting stems from the importance of healthcare to humanity and its inherent right for every individual (Khan et al., 2022). Finding out how well SLIs can communicate in hospitals has helped us understand the levels of communication skills that are needed for good communication and to avoid situations where healthcare services aren't provided properly. The study found that the efficacy of communication strategies used by SLIs in the two hospitals was barely satisfactory.

9. THE STUDY'S RECOMMENDATIONS

The study's findings demonstrate the importance of communication competence among SLIs, particularly in hospital settings. The researcher makes the following recommendations:

- i. The concerned authority may consider identifying training needs for SLIs since the study has highlighted the need for targeted training programs focused on medical terminology, communication strategies (particularly effective use of word coinage, paraphrasing, and explanations), and cultural competency.
- ii. Explore and use technology-assisted communication tools in healthcare settings; investigating the potential benefits of such tools could provide alternative or supplementary communication options for deaf patients and healthcare professionals.

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