Speech and language therapy for burn injuries in South Africa: Knowledge and experience, evidence-based involvement, access, referral pathways, and training and education needs.

Daniela Mary Ferraris

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Supervisor: Alida de Beer

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DECLARATION

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# Abstract

Background: In South Africa (SA), there is a high incidence of burn injuries (BIs) which is a growing area of involvement and interest among South African speech and language therapists (SLTs). However, there is limited knowledge and experience among practising SLTs. This includes a poor understanding of the aetiology of BIs, the physical and psychosocial acute and long-term effects of BIs, and the specific role of SLTs in the assessment and management of BIs. This novel study is exploratory in nature due to limited existing evidence. Objectives: The study aimed to determine SLTs' knowledge and experience, referral pathways and SLT accessibility, the use of evidence-based practice (EBP), and education and training required to equip SLTs to work in the BI population. Method: A convergent mixed method design was utilised for this study in which quantitative and qualitative data were collected simultaneously. Two instruments were utilised for data collection: an online questionnaire aimed at SLTs practising in SA, and semi-structured interviews with heads of departments of burn units or wards caring for people with BIs in SA. The questionnaire yielded both quantitative and qualitative data, and the interviews yielded further qualitative data. Results: Results indicated limited knowledge and experience in BIs among SLTs in SA leading to a lack of awareness and involvement in this population. Despite a willingness from SLTs to work in this population, low levels of confidence and competence were described. Although there appeared to be established methods for referral and general accessibility to SLT, there was a lack of criteria for referral. This may due to a lack of education and training opportunities at undergraduate and postgraduate levels, and a lack of contextually relevant evidence and guidance. Conclusion: Due to the high incidence of burns in SA and the clinical relevance of SLT in this population, there is a need for undergraduate and post-graduate training and exposure to BIs in SLT. The assessment and management of BIs is contextually relevant in SA and should be included in the scope of practice with clear practice or competency guidelines from professional bodies. This will ensure adequate knowledge, experience, and awareness so that SLTs can confidently provide competent services to this population. The findings of this study will be useful in informing future planning and the provision of education and training. It may encourage awareness among SLTs of their role in burns and lead to research and the emergence of contextually relevant practice-based evidence.

*Keywords:* Speech and language therapy, burn injuries, South Africa

# Opsomming

Agtergrond: In Suid-Afrika (SA) is daar 'n hoë insidensie van brandwonde wat 'n groeiende area van belangstelling en betrokkenheid onder Suid-Afrikaanse Spraak-Taalterapeute (STTe) is. Daar is egter beperkte kennis en ervaring van brandwonde onder praktiserende STTe, insluitend swak begrip van die etiologie van brandwonde, die akute en lang-termyn fisiese en psigososiale impak van ernstige beserings, sowel as die spesifieke rol van STTe in die evaluasie en behandeling van brandwonde. Hierdie verkennende studie is die eerste van dié aard, gegewe die beperkte bestaande navorsing. Doelwitte: Die doel van hierdie studie was om die volgende te bepaal: STTe se kennis en ervaring van brandwonde, verwysingsbane en STT beskikbaarheid, gebruik van navorsing, en opleidingsgeleenthede wat benodig word om STTe te bemagtig om met die brandwonde populasie te werk. Metodologie: Die studie het 'n konvergente gemengde metodes navorsingsontwerp gevolg, waartydens kwantitatiewe en kwalitatiewe data insameling tegelyktydig plaasgevind het. Twee instrumente is gebruik om data te bekom: 'n aanlyn vraelys gemik op praktiserende STTe in SA, en semi-gestruktureerde onderhoude met die hoofde van brandwondeenhede of sale waar mense met brandwonde versorg word in SA. Die vraelys het beide kwantitatiewe en kwalitatiewe data ingewin, en die onderhoude het verdere kwalitatiewe data bekom. Resultate: Resultate dui op beperkte kennis en ervaring van brandwonde onder Suid-Afrikaanse STTe, wat tot 'n gebrek aan bewustheid en betrokkenheid in hierdie populasie lei. Ten spyte van STTe se gewilligheid om met hierdie populasie te werk, was daar lae vlakke van selfvertroue en bevoegdheid gerapporteer. Alhoewel daar gevestigde verwysingsbane en algemene toeganklikheid na STT gerapporteer is, was daar 'n gebrek aan verwysingskriteria. Hierdie bevindinge kan toegeskryf word aan gebrekkige opleidingsgeleenthede op voor- en nagraadse vlak, sowel as kontekstueel relevante bewyse en leiding. Gevolgtrekking: Gegewe die hoë insidensie van brandwonde in Suid-Afrika en due kliniese relevansie van STTe in hierdie populasie, is daar 'n behoefte aan voor- en nagraadse opleiding en blootstelling aan brandwonde as deel van STT. Die evaluasie en behandeling van brandwonde is kontekstueel relevant in Suid-Afrika en behoort by die omvang van praktyk ingesluit te word, met duidelike praktyk en bevoegdheidsriglyne. Dit sal voldoende kennis, ervaring, en bewustheid onder STTe sal kweek, en bevoegdheid met hierdie populasie bevorder. Die bevindinge van hierdie studies sal nuttig wees vir die toekomstige beplanning en aanbieding van opleidingsgeleenthede. Bevindinge kan ook bewustheid onder STTe van hul rol in brandwonde aanmoedig, en tot verdere navorsing en kontekstueelrelevante bewysgebaseerde praktyk lei.

*Sleutelwoorde:* Spraak-Taalterapeute, brandwonde, Suid-Afrika

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# List of abbreviations

**AAC** - Augmentative and alternative communication

**BI -** Burn injury

**DT** – Dietitian

**EBP -** Evidence-based practice

**FEES** - Fibroendoscopic evaluation of swallowing

**HOD -** Head of department

**HPSCA -** Health Professions Council of South Africa

**MDT -** Multidisciplinary team

**OT** – Occupational therapy/therapist

**PT** – Physiotherapy/physiotherapist

**QOL -** Quality of life

**RCSLT** – Royal College of Speech and Language Therapists

**ROM** – Range of motion/movement

**SA -** South Africa

**SLT –** Speech and language therapist/ Speech and language therapy

**SLTA -** Speech and language therapy and audiology

**TBSA -** Total body surface area

**VFSS** - Videofluoroscopic swallow study

**WHO** – World Health Organization

# Glossary

**Acute respiratory distress syndrome –** Severe inflammation from infection or injury which causes fluid build-up in the alveoli of the lungs leaving limited space for oxygen during respiration.

**Arc flash** – An arc flash is the light and heat produced as part of an arc fault. This is a type of electrical explosion that results from a connection through the air to the ground or another voltage phase in an electrical system.

**Atelectasis** – The collapse or closure of a lung resulting in reduced or absent gas exchange. It is usually unilateral, affecting part or all of one lung. It is a condition where the alveoli are deflated down to little or no volume, and are filled with liquid.

**Augmentative and alternative communication**– Referred to as AAC among SLTs, this includes all forms of communication such a gesture, picture communication, and writing (other than verbal speech) that can be used to express thoughts, needs, wants, and ideas.

**Burden of disease** – This is the impact of a health problem as measured by financial cost, mortality, and morbidity.

**Burn injury** – An injury to the skin or other organic tissue including the lungs primarily caused by heat, radiation, electricity, chemicals or liquids, or contact with hot surfaces. Respiratory damage resulting from smoke inhalation is also considered to be a burn.

**Chemical burn** (caustic burn) – This type of burn occurs when skin or tissue comes into contact with a caustic substance, such as an acid or a base, including strong acids, petroleum, and drain cleaners (lye).

**Cold burn** – Also called frostbite, cold burns cause damage to skin after prolonged exposure to freezing temperatures in cold climates or prolonged contact with cold objects.

**Contact burn** – A burn caused by touching a hot object such as the burner of a stove, a radiator, or grill.

**Contracture** – The shortening or hardening of skin, joints, ligaments, or tissues following an injury or condition causing reduced range of movement and rigidity. This prevents normal movement, resulting in loss of function and pain.

**Dysphagia** – Disordered swallow function leading to difficulties with eating, drinking, and saliva management.

**Electrical burn** – This type of burn occurs when high-energy current travel through the body due to contact with an electrical source. Injuries occur due to either the flow of current through the body, arc flash, or clothing that catches fire.

**Evidence-based practice** – The integration of clinical expertise, client values, and best available research evidence into the decision-making process for client care.

**Flame burn** – A burn that occurs due to direct or indirect exposure to a flame source, such as house fires.

**Flash burn** – This term refers to any burn injury caused by intense flashes of light, high voltage electric current, or strong thermal radiation.

**Inhalation injury** – Damage or burns to the respiratory tract or lung tissue from heat, smoke, or chemical irritants carried into the airway during inspiration.

**Liquid burn** – These occur due to direct exposure to hot liquids including water, oil, or chemicals.

**Mechanical ventilation** – A form of life support, where machine (a mechanical ventilator) takes over the work of breathing when a person is not able to breathe on their own.

**Odynophagia** – Pain on swallowing related to injury or oedema.

**Post-intensive Care Syndrome** – This comprises of impairments in cognition, psychological health, and physical functioning of an intensive care unit survivor.

**Scarring** – Disorganised or excessive collagen formation during wound healing following trauma that leads to a raised or movement-restrictive scar or mark.

**Range of motion -** The extent of movement of a joint or structure needed for functional use.

**Sloughing -** The shedding of damaged cells (e.g. mucosal cells following inhalation injury which can lead to obstruction of the airway).

**Splint -** A rigid or flexible device that maintains a displaced or movable body part in position, or to encourage and maintain an increased functional range of motion of the arms, legs, jaw or mouth.

**Trauma -** A physical injury that may result in wounds, damaged bones, or internal organ damage, which can also be a distressing or disturbing psychological experience that affects a person's ability to function and integrate into daily life.

# Chapter overview

**Introduction**

This chapter provides the reader with a brief summary of background information and the problem statement related to this research. The research question and objectives of the research study are also introduced.

**Chapter 1: Literature review**

This chapter provides a background of literature relating to the focus of this study, including an evaluation and interpretation of existing evidence.

**Chapter 2: Methodology**

In this chapter, the methodological approach implemented to conduct the research study is described. The overall aim of this study, materials, instrumentation, and data collection procedures, as well as ethical considerations, are discussed.

**Chapter 3: Results**

Results are described and displayed using figures and tables.

**Chapter 4: Discussion**

This chapter discusses the findings of this study and reflects upon findings in relation to the existing literature.

**Chapter 5: Conclusion**

This chapter summarises the findings of the study, discusses the study's limitations, and provides recommendations for future research.

**Bibliography**

A list of all sources cited in the study is provided.

**Addenda**

This section contains supplementary forms and documentation related to the study.

# Introduction

It is estimated that over one million people are burned each year in Africa and that 18% of hospital admissions are due to burn injuries (BIs) (Rode et al., 2011). BIs are a great burden in South Africa (SA) and are among the country's leading causes of disability and death (Albertyn et al., 2006). It is estimated that around 45 000 burn-related deaths occur in SA each year, with those who survive non-fatal BIs often left permanently disabled (Mock et al., 2008). Although a burn is an injury which occurs predominantly to the skin or other organic tissue and organs, the trauma of acquiring a BI can affect a person's ability to function and integrate into daily life due to devastating physical and psychological disability (Pearlman & Saakvitne, 1995; World Health Organization (WHO), 2008).

The complexity of BIs and the known sequelae requires a range of skilled professionals for optimal patient care. This has necessitated BI rehabilitation services that incorporate the input of a skilled multidisciplinary team (MDT) (Rode et al., 2011). Speech and language therapists (SLTs) have been introduced in some facilities as part of the MDT. This is because SLTs have expert knowledge in areas of the head, neck, and respiratory system and how they interact to facilitate communication and swallowing (Rumbach et al., 2016). However, the role of SLT in burn care is still emerging and poorly defined for the South African context due to limited evidence in the literature.

This study sought to determine the current knowledge and experience of SLTs in SA with regards to people with BIs; whether there is access to SLT, as well as established referral criteria and pathways; and what the training and education needs of SLTs are, in order to equip them to work with people with BIs. These topics were investigated by collecting information from SLTs and the head of departments (HODs) of burn units or facilities caring for people with BIs in SA to describe current service delivery in this population.

No other known study has described the role of SLT in BIs in SA, and there are no available contextually relevant guidelines for education and practice. This study will describe burn management within a South African context as it relates to the profession of SLT. The convergent methodological approach will be explained fully, and the results discussed in detail along with future recommendations for readying SLT in SA to work with people with BIs.

The findings from this study are significant in that they describe limited involvement of SLTs in burn management in SA, largely related to a lack of awareness of the role of SLT in treating BI, and limited knowledge on how to assess and manage a person with a BI, should their injury affect their communication or ability to swallow. The results describe areas within the profession of SLT that require education and training to better prepare SLTs to work in this growing population. It also suggests a need for national guidance and policy development that adequately defines the role of SLTs working with people with BIs.

# 1. Literature review

Globally, the incidence of BIs is in the leading types of trauma or injury along with motor vehicle accidents, falls, and interpersonal violence (Forjuoh, 2006; Makanga et al., 2017). According to the WHO (2018), 11 million burn injuries of all types occur annually worldwide, of which 180,000 are fatal. Most occur in low and low-to-middle income countries where there are severe inequalities, poor health care and education, high unemployment rates, and rapid population growth (Allorto et al., 2018; Peck & Pressman, 2013). According to the calculated gross national income (World Bank, 2017), SA is classified as an upper-middle-income country along with countries like Argentina, Iraq, Sri Lanka, and Thailand. However, despite SA not being a low- or low-to-middle income country, the burden of BIs is estimated to be as high as 1.6 million annually (Allorto et al., 2018; Mock et al., 2008). Due to a lack of data and up-to-date BI registers, the exact impact of burn mortality and trends is not available (Smolle et al., 2017). However, the number of BIs in SA each year is greater than the combined new incidence of tuberculosis and human immunodeficiency virus infections per year (Allorto et al., 2018; Cox et al., 2011; Rode et al., 2011).

Due to this high incidence, BIs have received increasing attention in SA over recent years as an awareness of this population increases through the development of burns societies; regular congresses; and the reported epidemiology of BIs and advances in burn management in SA (South African Burn Society, 2020). Interest is further generated by many medical research studies reporting the effects of BIs on organs and systems such as the lungs and skin. The functional sequelae of these injuries are less researched and reported, but are a growing interest in a particular professional group who have expert knowledge in the anatomy and physiology of the face, mouth, throat, and respiration, and the complex interactions between them as they relate to eating, drinking, and communication (Rumbach et al., 2016).

SLT involvement in BIs is slowly gaining traction for several reasons. One reason may be due to the effects of a BI on a person's ability to breathe, to communicate using speech and voice, to swallow food, liquids, and saliva; and to participate in activities of daily life (King et al., 2008; Rumbach et al., 2016). Another reason for increased SLT involvement could be due to the increasing awareness among working SLTs of people with BIs due to the high prevalence and presentation at hospitals or referral to SLT services. Despite some interest and involvement, limited involvement in this population among

SLT in SA may be due to no known undergraduate or post graduate training or local guidelines despite the high number of BIs in the country.

The high prevalence and the various aetiologies of BIs seen in SA are closely related to the socio-economic climate (Rode et al., 2014). SA is uniquely described as having a quadruple burden of disease which includes this type of trauma due to the large financial impact, and a high rate of morbidity and mortality (Essack, 2012). This means that BIs contribute extensively to death and disability in SA (Wall et al., 2018).

SA is a location vulnerable to carrying the burden of traumatic BIs for a host of reasons, including but not limited to poverty, violence, crime, and limited access to basic services and amenities contributing to disability (Forjuoh, 2006). The World Bank (2018) reported in a poverty and equity brief, that 55 per cent of South Africans live in poverty, and that SA has one of the world's highest levels of inequality. A report issued from the National Minimum Wage Panel (2016), suggested that up to as many as 6.7 million working people in SA earn less than R4000.00 per month despite the working poverty line which was estimated to be R4317.00 per month at the time. This shortage of income means that formal housing remains unaffordable to the lowest income households and could leave impoverished people vulnerable to criminal activity and violence, and force families to live in informal housing with inadequate resources for water, sanitation, and energy (Housing Development Agency, 2013; Socio-Economic Rights Institute of South Africa, 2018).

In the 2012, an informal settlement status report from the Housing Development Agency described South African informal settlements and access to services across a span of ten years (2001 to 2011). Services reported on included, amongst others, energy. In 2001, energy use in informal housing for lighting was reported as follows: the use of candles in 44% of households, electricity in 36% of households, paraffin in 19% of households, and other alternatives not described in 1% of households. Energy for heating, not including cooking, was reported as follows: paraffin in 42% of households, coal in 19% of households, wood in 17% of households, electricity in 16% of households, and other alternatives not described in 6% of households. Finally, for cooking purposes, 66% of households used paraffin, 18% used electricity, 7% used wood, and 5% and 4% used coal and other alternatives respectively. Ten years later in 2011, the report described a positive overall increase in the percentage of households with access to electricity for lighting, heating, and cooking, and reductions in other

dangerous modalities such as paraffin and wood or open fires that might lead to BIs. However, the findings which can be seen in Figure 1.1 exposed the high number of homes still using less than ideal or safe modes of energy for daily living which put people at high risk for BIs. Common causes of house fires include unattended candles, explosion of paraffin stoves and lamps, and uncontrolled wood or coal fires.

**Figure 1.1**

*Comparison of Energy Use for Lighting, Heating, and Cooking in South African Informal Housing According to the Census in 2001 and 2011.*
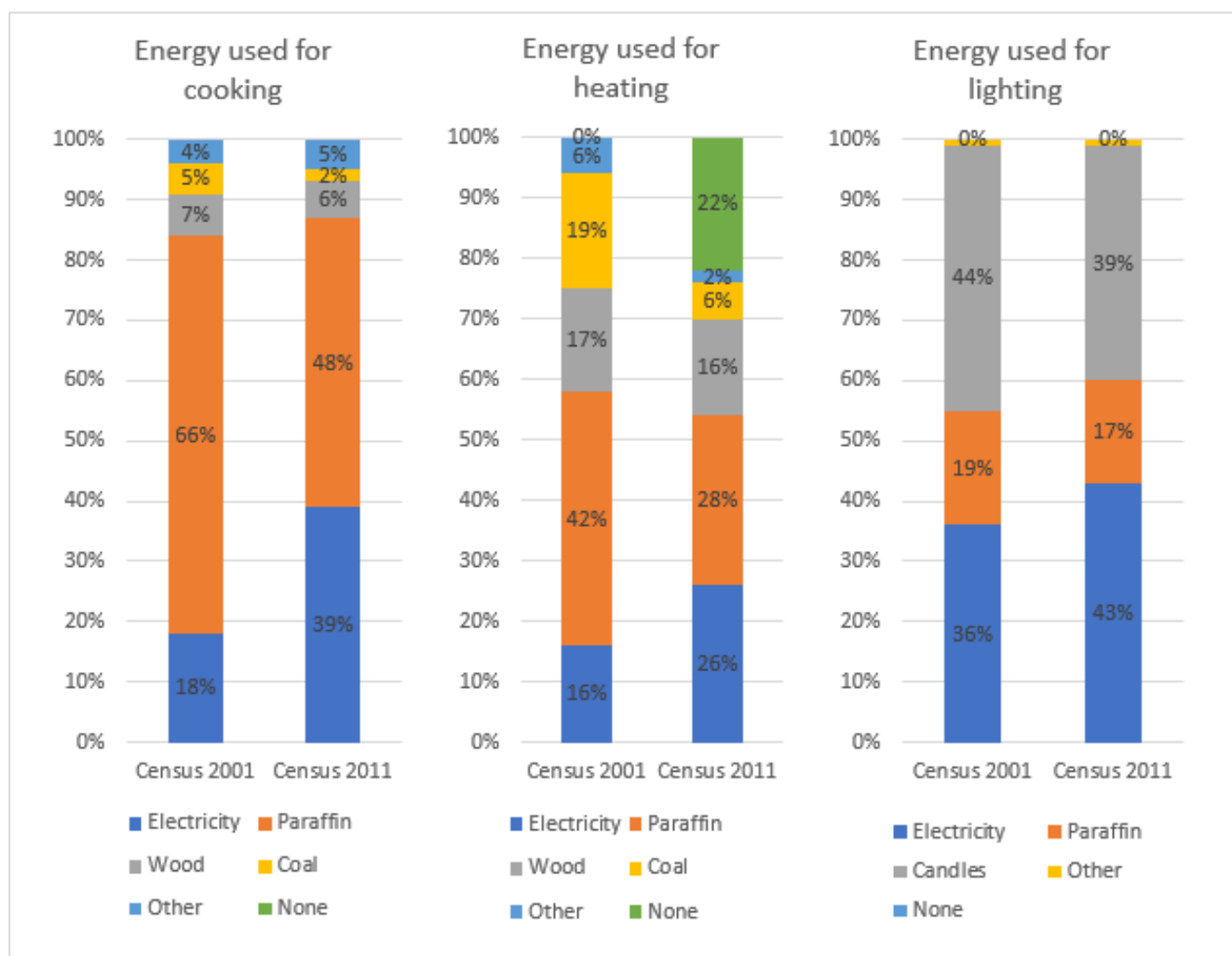


In addition to limited energy resources which place people at risk for severe BIs, families are forced to live in overcrowded informal housing and do not have easily accessible running water, ablutions, or

waste management. This places them at a higher risk of developing non-communicable and communicable diseases, as well as disability (Socio-Economic Rights Institute of South Africa, 2018). Furthermore, these conditions can contribute to limited resources and access to education, employment, and healthcare (National Department of Health, 2013). The association between all of these factors stems from poverty being both a cause and a consequence of disability, which results in what has been termed the "disability-poverty cycle" shown in Figure 1.2 (Grills et al., 2017).

**Figure 1.2**

*The Disability-Poverty Cycle (Grills et al., 2017).*



People with disabilities, such as those following BIs, are described as the world's largest minority group, making up 15% of the population according to The World Report on Disability (WHO, 2011). In SA, of the population of around 58 million people, 2 870 130 individuals (7.5%) have some form of disability and less than 1% of those are employed according to the last census (Statistics South Africa, 2011). According to the South African Social Service Association, in July 2020, 18 369 977 million people received social grants, of which 1 039 567 million were disability grants. These high numbers include people with BIs who are unable to return to work or school as a result of their injury. People

with underlying medical conditions are also included in this number, with conditions such as epilepsy, peripheral neuropathy, and physical and cognitive disabilities placing them at higher risk for BIs due to falling into fires and experiencing accidental burns (WHO, 2018). Therefore, unemployment, lack of education, and disability contribute to inaccessibility to basic human rights. This perpetuates limited awareness and access to resources, increasing levels of violence and injury, and more specifically to BIs, the heavy reliance on less than safe modes of energy for heat and light.

Additionally, as previously mentioned, poverty and lack of resources have been directly linked to increased crime rates and violence (Palmer, 2011). BIs secondary to assault are the most frequently reported causes of BI in adults in SA, where dangerous chemicals are easily accessible at affordable prices (WHO, 2018). An increasing number of people are falling victim to domestic, xenophobic, and conflict-related violence amongst groups than any other accidental BI (for example as seen in the recent increase in burning attacks on taxi drivers in SA) (Peck, 2012). This means that even though low socioeconomic levels and access limitations are leading to accidental BIs such as uncontrolled house fires, shack fires, or exploding paraffin stoves, an even larger contributor to BIs is people intentionally burning other people.

According to Rode et al. (2011), assault or violence-related BIs, including inhalation injuries, account for 37% of BIs. This is largely done by intentionally burning a person's body and face using hot water, acid, flammable chemicals, or fire. Following this is accident-related burns (such as scalds on hot surfaces) at 20% of cases, and shack fire-related burns at 15% of cases. To a lesser degree, 8% of cases are secondary to epilepsy (such as falling into fires or knocking over burners), 6% from electricity-related burns (such as accidental electrocution and cable theft), 5% from domestic stoves used for cooking, 5% are self-inflicted (such as para-suicide attempts such as self-immolation and ingestion of caustic substances), 2% are industrial and chemical-related (thus not violence-related), and approximately 2% are caused by other agents (such as contact burns or cold injuries) (Rode et al., 2011). Despite the sparse numbers found in SA, frostbite and radiation are responsible for a small portion of BIs as well (Weir et al., 2015). Depending on the type of BI and the severity of the burn itself, many people may require hospital admission and multidisciplinary attention. This is because BIs can be extremely severe, with damage extending beyond the skin.

The skin is the largest organ covering the entire human body which shows the most obvious effects of a BI, and is highly susceptible to injury due to its low threshold for injury or damage (Baker, O'Neill, Ginsburg & Li, 1992). The skin acts as a barrier, which is made up of various layers, networks of collagen, elastic fibres, blood vessels, and nerve endings. This barrier protects internal organs physically and immunologically, supports fluid homeostasis, allows for the exchange of gases, assists with thermoregulation, and allows for biomechanical movement of the body structures (Yousef & Sharma, 2018). These functions are not limited to the upper and lower limbs, and includes the face, neck, and respiratory and laryngeal mechanisms. Therefore, when the skin has been damaged, multiple complex bodily functions may become interrupted and require management (Jeschke et al., 2020).

A less obvious or visible area for injury is the lungs which are frequently susceptible to inhalation injury given the direct passage of hot air and gases into the airway through the nose and mouth (Spires et al., 2007). Along with pulmonary complications, inhalation injuries are a known independent risk factor for mortality, and cause up to 77% of deaths in people with BIs, mainly due to carbon monoxide poisoning (Colohan, 2010; Ryan et al., 1998). Immediately following inhalation injury, intubation and mechanical ventilation are often required as a result of respiratory distress (Walker et al., 2015). People with significant airway injury may have mucosal injury leading to pulmonary and airway oedema, acute respiratory distress syndrome, ventilator-associated pneumonia, and multiorgan failure which prolongs ICU stay and time on mechanical ventilation (Clayton et al., 2020; Jeschke et al., 2020).

Electrical injuries can also cause BIs, where the severity cannot fully be predicted based on the injury to the skin. These types of injuries are often associated with high morbidity and mortality and can occur as a result of lightning, and low- or high-voltage injury (Waldmann et al., 2018). According to Zemaitis et al. (2020), flash injuries are a type of electrical BI that cause superficial skin burns but no current passes through the body; whereas flame injuries can result if an arc flash ignites something in the environment. Lightning injuries, which have short, high-voltage energy, can flow through a person's body and cause damage to multiple organs. True electrical injuries involve an individual becoming part of an electrical circuit, where entry and exit wounds are often found. Depending on the voltage and duration of the high-energy current, internal organs and structures can be severely burned and damaged (Leibovici et al., 1995; Varghese et al., 1986). Neurological damage from electrical injuries can include acute cervical spinal cord injuries which frequently result in dysphagia and associated respiratory impairments (Chaw et al., 2012; Iruthayarajah et al., 2018).

In the early, acute stages of BIs, the severity of the injury is determined by the medical team and predictions can often be made on the level and type of care that a person will need. The considerations to be made may include the need for emergency procedures such as intubation, ventilation, scans or imaging; hydration and nutrition alternatives; and early excision of burned tissue (Albertyn et al., 2015). Due to the acute nature of a severe BI, BI management has generally been viewed as an emergency medical service rather than a complex, collaborative, and protracted multidisciplinary service across a continuum (Rode et al., 2015). Although people with severe BIs require immediate emergency care, the journey to recovery is long and multifaceted. People who suffer BIs will require holistic, specialized management across their changing levels of care from a diverse range of professionals, each with a niche skillset (Mock et al., 2009). The close collaboration of this team of professionals and the development of organised, person-specific goals is vitally important for functional recovery from BI (Al-Mousawi et al., 2009). This team of professionals has historically included anaesthetists and surgeons, nurses, physiotherapists (PTs), occupational therapists (OTs), dietitians (DTs), psychologists, and social workers, and more recently, SLTs (Al-Mousawi et al., 2009; Rumbach et al., 2016; Thornton & Battistel, 2001).

Studies from Williams and Baker (1992), Rumbach et al. (2016), and Vento-Wilson et al. (2015) suggest that SLTs working with people with BIs play a multifactorial role in both the acute and rehabilitation stages of recovery in BIs that stretch across various clinical domains. The clinical domains reported in these studies include: oropharyngeal dysphagia, voice and communication disorders as they relate to respiration and laryngeal competence following inhalation injury; intubation, tracheostomy and ventilation; neurological damage; and orofacial burns and contractures in light of the functional limitations they might have on communication (facial expression and speech production) and swallowing (oral structures and movements) (Rumbach et al., 2016; Vento-Wilson et al., 2015; Williams & Baker, 1992). Despite this, there appears to be limited involvement and guidance on an international scale from relevant professional bodies that specifies and details the role of the SLT in this population (Rumbach et al., 2016).

The European Burn Association's (2015) guidance on the management of BIs does not specifically describe the role of the SLT, but does stipulate that best practice in burn care is achieved using an MDT that meets regularly to assess patients' needs, set objectives, and plan treatment interventions. The guidance states that this team may include SLT. Apart from the traditional SLT managed areas

including swallowing and communication, the European Burn Association emphasise the role of the SLT to assist with facial contracture prevention as well as provide education, consultation, and instruction to the patient and family or caregivers (European Burn Association, 2015).

Guidelines from the Royal College of Speech and Language Therapists (RCSLT) (2011) in the United Kingdom, include BIs as part of tracheostomy competencies for SLTs. Tracheostomy assessment and management for BIs is one of the subsections. The areas of competency in the BI subsection include: knowledge of the risks of laryngeal trauma due to inhalation injury and the subsequent impact on tracheostomy weaning, voice, and swallowing; and the effect of neck burns on the method of tracheostomy tube insertion, type of tube, and stoma healing. Competencies in the RCSLT guideline also include: understanding the risks of dysphagia and patterns of recovery in people with BIs; the effects of BI on intubation, tracheostomy and ventilation requirements, and swallowing; the effects of frequent theatre interventions that interrupt the tracheostomy weaning process, and need for re-intubation for surgical debridement and skin grafting. Areas of capability include completing a case history which includes burn and tracheostomy specific information; adapting swallowing and communication assessments considering the BI, identifying clinical signs of inhalation injury at the bedside following cuff deflation and the use of speaking valves, and recognising laryngeal trauma due to inhalation injury which can be referred for fibroendoscopic evaluation of swallowing (FEES) (RCSLT, 2011).

Principles and guidelines for burn patient management for allied health professionals from the Australia and New Zealand Burn Association written by King et al. (2008), were adapted from OT and PT principles and guidelines with the inclusion of SLT. The SLT contributions were made by Clayton, Whitney, O'Loughlin, Crouch and Patterson, some of who later developed a guideline solely for SLTs working in BIs. The guideline developed by Clayton & Patterson (2011) for SLT services in BIs in Australia is comprehensive and thoroughly specifies knowledge requirements and roles of the SLT in burn management from a variety of information sources. This descriptive and specific guideline, based on standards of care as defined by Speech Pathology Australia, is the *Clinical Practice Guidelines: Speech Burn Patient Management for the NSW Statewide Burn Injury Service*. The guideline provides recommendations for assessment, management and additional roles of the SLT in BIs (King et al., 2008).

The areas of knowledge and expertise described in this guideline from King et al., in addition to the traditional areas, includes inhalation injury considerations in relation to voice, communication, tracheostomy, swallowing impairments, and orofacial burns (Rumbach et al., 2009). Generally, SLTs working with BIs are recommended to have an understanding of the impact of burn depth, intubation injury, inhalation injury, analgesia, splints/neck collars, dressings, and orofacial burns on the person's swallow and communication function (Carnaby-Mann et al., 2007; Clayton & Patterson, 2011). SLTs should also be knowledgeable regarding dressing change and pressure garment regimes; management of odynophagia (pain on swallowing); and medication administration (Clayton et al., 2010; Clayton & Patterson, 2011).

In terms of guidance on orofacial burns specifically, Clayton & Patterson (2011) recommend that SLTs have the knowledge and clinical skills to assess and manage these types of injuries. Areas of assessment include: orofacial and neck range of movement (ROM); risk for and presence of scar tissue and contractures; and risk for and presence of hypertrophic scar tissue (Clayton et al., 2009; Rumbach et al., 2009). SLTs are also required to identify oedema, grafting, and specific dressing materials, and understand the use and effects of pressure garments on the movements of the face and mouth (Clayton & Patterson, 2011). Additionally, SLTs must assess communicative ability via facial expression and risk for impairment, understand possible simultaneous injuries or co-morbidities like head injuries and cognitive impairments, and assess oral phase swallowing ability and risk for impairment (Clayton et al., 2009; Rumbach et al., 2009).

For management, the same guideline from Clayton and Patterson (2011) recommends SLTs to provide oropharyngeal and orofacial exercises which may overlap or support other BI exercises from the MDT, as well as prevent or minimise skin contracture and hypertrophic scarring using orofacial exercises (including passive, active, and active-assisted ROM). Provision of oral and nasal splints (including microstomia mouth splints and jaw ROM devices) is also included in this guideline, and SLTs should understand the contraindications for use (these should only be used five days post-grafting with consent from a consultant). Pressured massage in liaison with the OT / PT as per site-specific policy is also recommended (Edgar & Brereton, 2004; Rumbach et al., 2009). Additional roles to direct patient care include: counselling of the patient, family, and caregivers on therapy regimes; preparation of home programs (outpatient management); and discussing surgical management options of orofacial

contractures with the MDT such as mouth angle release, ectropion repair, lip eversion release, and pedicled flap construction (Clayton & Patterson, 2011; Edgar & Brereton, 2004; Rumbach et al., 2009).

No other guidance from other countries or professional bodies was found by the researcher. However, many of these discussed BI management domains overlap with the current regulations defining the scope of the profession of SLT from the Health Professions Council of South Africa (HPCSA) (2017). These overlapping domains include: assessing communication and swallowing disorders, including speech, language, voice, and cognition; instrumental assessments for swallowing and voice; and augmentative and alternative communication (AAC) options such as communication boards or assistive communication devices. Additional overlapping areas include counselling families and caregivers; MDT collaboration; health promotion and prevention; providing primary prevention information through awareness, literacy and access; policy development; conducting education and training; and participating in research. Although all of these domains form part of the most recent regulation from the HPCSA, there is no mention of tracheostomy, BIs, or orofacial scarring or contracture management; nor are there any population or clinical domain-specific guidelines that describe key differences and considerations to be made within the BI population which stretch beyond the traditional scope (HPCSA, 2017b). This could prove to be problematic, considering the uniqueness of BIs and the possible clinical challenges not found in other populations. As described in international guidelines, unique considerations that should be included might be the effects of scar tissue on function over time, contractures, the concept of skin grafts and skin movement, and knowledge of respiratory-related sequelae secondary to super-heated gas inhalation. Additional areas include knowledge of jaw opening and ROM normative data, as well as facial ROM, post-BI care, BI prevention and education, and advocacy for surgical procedures for a person with functional impairments following severe BI.

BI and scarring knowledge are relevant to the role of the SLT due to the possible functional consequences described previously. Scarring develops when the underlying connective tissue becomes disorganised, forming scars on the face or body that become raised, erythematous (red), pruritic (itchy), fibrous, and painful (Bayat et al., 2003; Bell et al., 1988). The severity of a BI is decided by the depth of a burn and the total body surface area (TBSA) that has been burned, which is described as a percentage and includes inhalation injury (Wallace, 1951). The depth of a burn is described as either or a combination of epidermal, superficial-partial thickness, deep-partial thickness or full thickness, and is based on the number of layers of skin and tissues that have been damaged (Devgan et al., 2006). This

can guide the management plan for medical and rehabilitation staff by determining which BIs are more likely to heal independently and with limited scarring (such as a superficial burn comparable to a sunburn) versus what is likely to scar and require rehabilitation or extensive medical management (Monstrey et al., 2008; Tiwari, 2012). Partial-thickness burns involving the epidermis and some of the dermis are characterized by moist redness and blistering (Douglas et al., 2017). These types of BIs to the face will require intervention such as wound care and maintaining orofacial ROM if lasting deficits are to be minimised, such as facial scarring and contractures (Clayton et al., 2015a). Full-thickness burns extend beyond the epidermal and dermal layers of the skin down to the fat which will scar or form contractures (Tiwari, 2012). These types of BIs are less painful because the nerves are destroyed, but require intensive rehabilitative management for years after injury, possibly accompanied by surgical management in order to preserve as much ROM, function, and aesthetics as possible (Clayton et al., 2015a). Full-thickness burns often lead to thick, rope-like scars known as hypertrophic scars on the face and neck, which can prevent neck movement, as well as opening and closing of the mouth or lips. These types of burns might also result in ectropion eye formation, and long-lasting psychosocial effects related to appearance and identity (Lakhani & Lakhani, 2018; Saadeldeen, 2009). BIs more severe than full-thickness burns, that involve the muscle and bone, are sometimes referred to as deep dermal burns, or fourth-degree burns, which often require management by amputation and may be fatal (Soto et al., 2013).

The additional element of a smoke inhalation injury is highly relevant to the role of the SLT (Clayton et al., 2020; Rumbach et al., 2011). According to Walker et al. (2015), during the inhalation of superheated gases and toxic products of combustion mainly consisting of carbon monoxide and hydrogen cyanide, the entire mucosal lining can be burned and become severely oedematous. This can result in thermal injury to the upper airway structures involved in communication, swallowing and breathing, and chemical injuries to the upper and lower respiratory tracts may occur (Carnaby-Mann et al., 2007; Walker et al., 2015). Inhalation injury often necessitates the need for intubation or tracheostomy, as well as mechanical ventilation due to inflammation, mucosal injury, and mucosal sloughing (atelectasis) which can lead to airway obstruction or acute respiratory distress (Sutton et al., 2017). Sequelae of inhalation injury may present as scarring, stricture, or stenosis of the supraglottic and subglottic airway, which could result in long term deficits in respiration, communication, and swallowing. It has been reported that these complications are up to 16 times more likely in people with

BIs with inhalation injury than those without (Clayton et al., 2020; Ogura et al., 2005; Walker et al., 2015).

The management of respiration in BIs is a primary concern for medical staff as well as PTs and SLTs. Endotracheal intubation is considered a life-saving procedure in patients who are unable to maintain their own airway or respiratory status, and individuals with deep BIs that span between 30% and 40% TBSA with or without an inhalation injury (Watts et al., 2015). The relevance of endotracheal intubation for the SLT is that it is considered an invasive procedure with complications that are extensively reported in research. The insertion of an endotracheal tube into the mouth, passes down the trachea to below the level of the vocal cords, and has been associated with laryngeal trauma and deconditioning affecting voice, respiration, and swallowing functions (Cheung et al., 2013; Divatia et al., 2011). According to a study by Hamdan et al. (2007), the short term effects of endotracheal intubation include throat pain and loss of voice followed by hoarseness, throat clearing, and vocal fatigue. The long term effects of intubation have been reported to include post-extubation dysphagia, posterior glottic scarring, granuloma formation, tracheoesophageal fistulae, dislocation of arytenoid cartilages, and pressure on the recurrent laryngeal nerve impairing vocal fold mobility needed for voicing, airway protection, and safe swallowing (Casper et al., 2002; Colice et al., 1989; Lundy et al., 1998). These possible long-term effects are of significant importance to the SLT as they impact an individual's ability to safely resume eating and drinking and could places them at high risk for aspiration. In terms of communication, it is important to remember that when a person is intubated, they may be awake and trying to mouth words, but communication will only be possible through alternative methods like facial expressions, gestures, writing, or AAC depending on the person's neurological functioning and level of sedation (Batty, 2009). Should someone have a severely burned face, facial oedema, or burned and bandaged upper limbs, they will unlikely be able to communicate by gesturing, pointing to symbols, using facial expression, or writing. This inability to communicate during this critical time leads to loss of autonomy and disempowerment (Hess & Faarc, 2005). People are unable to make important decisions or provide consent relating to their management, or to tell staff that they are in pain or uncomfortable (Clayton et al., 2009; Rumbach et al., 2011). Therefore, restoring and advocating for communication through verbal means or multimodal communication is one of the roles of the SLT in BI management. By facilitating autonomy and empowering BI survivors to allow them to guide their own management and recovery process, quality of life (QOL) for individuals during the acute stages of a BI can be improved (ten Hoorn et al., 2016).

Should an individual be kept on prolonged intubation and ventilation, or have complex respiratory needs as is often found in the BI population, a tracheostomy may be indicated (Aggarwal et al., 2009). An insertion is made through the flesh of the neck, through the cartilaginous rings, and into the trachea. A tracheostomy tube is then inserted into the space below the level of the vocal folds (Engels et al., 2009). According to the *Tracheostomy Competency Framework* from the RCSLT (2019), the SLT plays a vital role in tracheostomy management and BIs, and is a key peer in decision making involving tube selection, tracheostomy weaning through cuff deflation protocols, inline speech valve trials for individuals on ventilation or pressure support, and speech valve trials and regimes for non-ventilated individuals. Additionally, the RCSLT framework outlines that SLTs can make recommendations regarding saliva management options, moisture and humidification options, swallowing assessments and recommendations (at bedside and with instrumental assessments), oral care recommendations, and alternative communication options (Clayton & Patterson, 2011; King et al., 2008).

The benefits of a tracheostomy tube include a decrease in ventilatory dead space and airway resistance, easier suctioning, reduced orolabial and laryngeal trauma, lower sedation requirements, increased mobility for rehabilitation and comfort, and increased ability to communicate and return to some oral intake, provided that the swallowing function is adequate (Engels et al., 2009; Pandian et al., 2014). Methods of establishing communication and oral intake include using specific tubes, cuff management, speech valves, leak speech, above the cuff vocalization, or finger occlusion if possible (McGrath et al., 2018; Morris et al., 2015). Despite the benefits of tracheostomy tubes, there are well-documented associated risks and participation restrictions as well. These include; prolonged mechanical ventilation or dependence if not able to wean; impaired gustatory and olfactory function due to neck breathing; and impaired upper airway sensation and secretion management leading to aspiration and a decreased cough reflex, which may be further complicated by the presence of a BI (Engels et al., 2009). Risks also include: laryngotracheal pathology including granulation, stenosis, supraglottic oedema and erythema; reduced vocal cord mobility (dysphonia) post decannulation; oral and pharyngeal dysphagia due to trauma or deconditioning; and the need for alternative nutrition and hydration (Aggarwal et al., 2009; Calland et al., 2014; Clayton et al., 2010; King et al., 2008; Lund et al., 1985; Saffle et al., 2002).

Although in some instances people can eat and drink orally, for some, eating and drinking will depend on the type of ventilation method described above, as well as possible sedation and associated dysphagia (Ward et al., 2001). The prevalence of dysphagia among the BI population is not well

reported, with only a few studies available. One study by Pavez and Martínez (2019) reported a prevalence of dysphagia in 27.7% of all patients admitted to a national burn centre in South America across varying severities of injuries and age groups over a 6 month period. Another study by Clayton et al. (2018) investigating dysphagia in older people following BI, reported a prevalence of 46.97% in people over 75 years old over a 4 year period (Clayton et al., 2018). Despite few studies describing prevalence, it is has been reported by DuBose et al. (2005), Rumbach et al. (2012), and Rumbach et al. (2011a), that dysphagia following BI is often protracted, leading to a delayed recommencement of oral intake. These delays, which lead to prolonged enteral nutrition, have been correlated with TBSA percentage, number of days on the ventilator, and number of days with a tracheostomy in situ. Once oral feeding is recommenced these studies also suggest a high likelihood of diet and fluid modification to minimise aspiration risk (DuBose et al., 2005; Rumbach et al., 2012; Rumbach et al., 2011b). Two studies from DuBose et al., (2005) and Ward et al., (2001) reported varying rates of ongoing dysphagia at the time of discharge ranging from 10% to 57.2% of people not managing their baseline consistencies of food and fluids by the time they go home. Additionally to dysphagia, lack of interest towards oral intake is also frequently reported in people with BIs, necessitating the continuance of alternative nutrition or supplementation (Ward et al., 2001). Some well-known negative effects of non-oral intake or limited oral intake which are relevant to the role of the SLT can include: disuse of the swallowing musculature leading to atrophy which can cause dysphagia, and reduction of sensation and sensitivity of the oral cavity, pharynx and larynx, which places individuals at risk of impaired saliva management and a delayed swallow trigger (Clayton et al., 2010; Ward et al., 2001).

A BI to the orofacial area can cause both acute and chronic restrictions in the oral stage of swallowing including ROM of the lips, cheeks, and jaw (Clayton & Kennedy, 2007b; Rumbach et al., 2009; Rumbach et al., 2011). These deficits can lead to anterior loss of a bolus, poor bolus manipulation, and reduced cohesion of the bolus (Clayton et al., 2009; Rumbach et al., 2011; Ward et al., 2001; Wust, 2006). Additionally, in a study by Rumbach et al. (2009), reduced mastication and inadequate tongue-to-palate contact was reported during videofluoroscopic swallow studies (VFSS) in people with orofacial BIs. However, as discussed previously, not all facial burns will result in thick scarring or contracture, as this is limited to deeper or more severe BIs – which become specifically significant to SLTs when they result in microstomia or impaired facial movement or function.

Microstomia is a common effect of severe facial BI (Maragakis & Garcia-Tempone, 1998). Microstomia refers to smaller than typically sized opening of the oral cavity, which can occur secondary to electrical, thermal, or chemical BIs (Mehra et al., 1998). This is of specific importance to SLTs due to possible poor lip closure, decreased ability for mastication, decreased tongue-to-palate contact, and reduced ability to open the mouth (Williams & Baker, 1992). According to Dijkstra et al. (2006), the normative functional ranges of the mouth for adults for eating, drinking, and speaking is vertical opening measures of approximately 40-50mm and horizontal opening measures or maximum interincisal opening of approximately 35mm. Anything less than 35mm is considered limiting and could lead to communication and eating impairments (Dijkstra et al., 2006). However, normative ranges vary between different populations and physiological features such as sex, age, and height (Gallagher et al., 2004; Mezitis et al., 1989). Microstomia can also lead to limited social interaction, often resulting in isolation, reduced nutritional intake, difficulty with denture insertion, and poor oral hygiene (Mehra et al., 1998; Mordjikian, 2002). In addition to microstomia, impairments in facial expression, mouth closure, eye closure, and nasal breathing can also lead to decreased effectiveness of communication and the ability to eat and drink (Ayhan et al., 2006; Bedard et al., 2003; Dougherty & Warden, 2003; Mehra et al., 1998; Mordjikian, 2002; Wust, 2006).

Preventing or reducing the severity of scarring and contracture of the face and neck is a primary role of SLT when it hinders communication or eating and drinking (Clayton & Patterson, 2011). Early intervention through passive stretching, the use of devices to improve jaw ROM or other alternatives such as tongue depressor sticks, and functional oral motor movement and stretching exercises can prevent scarring and reduce the functional limitation of contractures (Clayton et al., 2015a, 2015b). By preventing dysphagia, restoring a person's ability to maintain adequate oral intake, or to improve facial expression, might improve the QOL of people with BIs (Clayton & Patterson, 2011). However, even when a person is able to swallow safely enough to resume eating and drinking, people with severe BIs are at great risk for malnutrition and dehydration.

People with severe BIs can lose up to 25% of their total body mass after a severe BI due to the body's hypermetabolic response to the BI (Williams et al., 2009). This is characterised by hyperdynamic circulation of the vascular system and multiorgan dysfunction resulting in increased cardiac output up to 1.5 times higher than baseline, along with water and fluid depletion in only a few hours following more severe BIs (Nielson et al., 2017). This interruption in normal bodily function increases a person's

risk of infection and death if energy and protein requirements are not met through fluid resuscitation and nutrition (Williams et al., 2011). Therefore, even those who can continue or recommence eating or drinking orally will still be considered for nutrition and hydration supplementation by the MDT (DuBose et al., 2005; King et al., 2008). During the acute stages, a dietitian will be consulted regarding alternative feeding methods and the management of nutrition and hydration (Al-Mousawi et al., 2009). Short-term nasogastric tube (NGT) feeding is generally initiated as a starting point, however, this will be dependent on the patency of the airway and the extent of oedema in the upper airway (Ward et al., 2001). Should an individual require long-term feeding alternatives and be considered an appropriate candidate, they might be considered for the placement of a percutaneous endoscopic gastrostomy (PEG) or a radiologically inserted gastrostomy (RIG) tube which passes from the outside of the stomach through the skin directly into the stomach (Williams et al., 2011). All hydration and nutrition, as well as medication, can be delivered in these ways if needed – however, a total cessation of oral intake should be avoided if possible due to the profound effect thereof on QOL, acquired weakness, and desensitisation (Pearce & Duncan, 2002; Soar et al., 2020). It is the role of the SLT to establish if any oral intake is safe and to consult with the MDT regarding alternative modes of nutrition and hydration if requirements cannot be met orally (Ward et al., 2001).

Considering the many physical sequelae of BIs, there is currently limited research describing the psychological challenges related to facial BIs or BIs in general. Face-to-face communication, including facial expression and use of voice, holds unique information such as identity, age, sociocultural background, and emotions (McLean et al., 2015). Therefore, a change in the appearance or function of the mouth and face can be severely debilitating and can sometimes lead to an inability to participate. Although having a disability does not always prevent a person from participating, people with disabilities including BIs are often spurned and secluded from interactions and activities, which infringes on their basic rights as human beings and makes them a vulnerable population (WHO, 2008). Some studies have reported the specific long-term participation, psychosocial and mental health impact of facial BIs which describe sleep disturbances, post-traumatic stress disorders, depression, body image dissatisfaction or low self-esteem, social rejection, and stigma (Dalal et al., 2010; Fauerbach et al., 2000). In addition to these long-term psychosocial effects, scarring or disfigurement can negatively affect daily life and interactions such as mealtimes or social events by preventing people from going out with family or friends in private or public spaces. This isolation often leads to loss of income and relationships, and reduced likelihood of returning to areas of participation such as friend and family

circles, work, school, or activities of leisure due to the reduced ability to participate or engage in those settings as before (Kornhaber et al., 2014). This is relevant to the role of the SLT as management must aim to help people with BIs reintegrate back into their lives following injury, with the goals of improving or maintaining functioning, encouraging participation in daily living, minimising the lasting effects of BIs as much as possible, and making appropriate referrals to supportive services (Procter, 2010).

The need for SLT services within this vulnerable population has been described above, but there is no evidence to show that the large number of individuals who experience BI in SA each year are receiving management from SLTs, who have much expert knowledge to share. This may be due to many reasons, including but not limited, to a lack of knowledge, exposure, and experience to BIs among SLTs in training, poor referral pathways, and the uncertainty of SLT's role and involvement in this population due to a lack of defined scope of practise or practice guidelines. A lack of guidance from professional bodies may be due to the emerging nature of this population and a limited evidence base.

A unique study by Rumbach et al. (2016), described international practices and uncertainty of scope among SLTs working with BIs. The researchers examined the extent of the SLTs role within MDT burn care across 6 continents including Africa and found a world-wide degree of uncertainty surrounding SLT involvement in BIs. The services being provided by SLTs based on the international cohort of this particular study included the assessment and management of orofacial contractures, swallowing disorders including instrumental assessment, tracheostomy management, voice and speech disorder management, and AAC. It is important to note that SLTs in Africa were poorly represented in the cohort with only six participants (Rumbach et al., 2016). No involvement in the management of facial burns or orofacial contractures was reported by the African SLTs in their study. No further studies describing the current involvement of SLTs in SA specifically could be located. However, the study by Rumbach et al. (2016), and another by Williams & Baker (1992), recommended increased SLT involvement in BI management, and suggested that although orofacial contracture management is currently an OT and PT domain, that this area could be perhaps more effectively managed by SLTs with the appropriate experience, due to their knowledge of the anatomy and function required for the intricate movements found in speech production, facial expression, and eating and drinking. No known research has been done on the comfortability or willingness of SLTs to assume this role.

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A possible reason for a lack of awareness or knowledge leading to confusion about the functional role of the profession could be due to a lack of EBP. According to Babiker (2012), there is a discrepancy between what is recommended as EBP in the literature and what is provided by the healthcare professionals on a day-to-day basis. EBP is described as the thorough and sensible use of current best evidence available, combined with clinical expertise or experience and patient values (Titler, 2008). EBP is thought by some to be the gold standard when considering patient management, and the literature contributing to EBP doubles on average in less than 10 years. For practice to continue to be effective, information must be updated regularly through research and healthcare professionals must constantly be refreshing their knowledge base of best practice (Hess & Faarc, 2004). The lack of SLT involvement in BIs could likely result in a lack of contextually relevant, up-to-date EBP or research. It is predicted that less thought or consideration is placed on populations less encountered, such as BIs, as it may be time-consuming to find EBP guidelines when resources are few or when there is a lack of awareness of unique considerations that differ from known standard practices. Although particular diagnostic tools can help predict harm, it may be difficult to provide what is regarded as the standard of care when the recommended resources or tools are not easily available (Babiker, 2012). Examples of this could be the recommended use of VFSS or FEES to identify aspiration risk and describe dysphagia, which may not be easily available, or the cautious use of the Modified Evans Blue Dye Test (MEBDT) as a diagnostic tool in identifying aspiration risk in people with tracheostomies, despite its poor sensitivity (Fiorelli et al., 2017; Linhares Filho et al., 2019).

With regards to the referral criteria, successful referral pathways are an integral component of an efficient healthcare system (Rajman & Mahomed, 2019). Without these pathways, SLT involvement may be hindered. A South African study from Isobell et al. (2015), described system-related factors that could negatively affect access to services for patients as the absence of a structured referral pathway, the need for formal referrals, long referral processes, and unclear referral criteria (Isobell et al., 2015). It is suspected that due to a poor understanding of the role of SLTs among professionals, appropriate referrals will not be made to SLT services. In the study by Rumbach et al. (2016) investigating the international practices of SLTs in BIs, criteria described by their participants included one or a combination of the following: face and neck burns, inhalation injury, ingestion of chemicals, endotracheal tube placement for longer than 48 hours, presence of a tracheostomy tube, risk of oral contracture formation, and concerns regarding communication and swallowing. It is important to note that only one of the above criteria for referral was reported by the African participants in the study,

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namely concerns regarding communication or swallow, indicating that people who require SLT services are not being referred or screened (Rumbach et al., 2016). This single study indicated that inadequate understanding among SLT's of their own role in BI can also hinder referral pathways and clear referral criteria.

Complete burn care, starting with prevention through to outpatient rehabilitation, is a long and challenging process (Weir et al., 2015; Williams & Baker, 1992). Health professionals need to assist people with BIs holistically and should be able to effectively understand, assess, and manage individuals with BIs (Rode et al., 2015). Whilst it is recognised that the role of SLT within burn care is still emerging on an international scale, despite the burden of BIs on the country, SA is showing very little or under-reported involvement (Rumbach et al., 2016). There is minimal research on the SLT's involvement and no known South African research on this topic. This might be attributed to the poor awareness of the role of the SLT due to the lack of knowledge and experience, lack of exposure to BIs during formative years, limited education and training opportunities, or non-existent defined scope of practice for SLTs in SA.

Based on the need for SLT involvement in SA as described above, it is hypothesized that there is a lack of knowledge and understanding from both SLTs and the greater MDT on the role that should be played by the SLT in BIs. It is suspected that SLTs in SA have little knowledge and experience in working with people with BIs, and that there is a gap between the EBP and what is being done by SLTs. This is due to a lack of awareness and training, which has a ripple effect on gathering and implementing evidence-based research within this population. Furthermore, it is suspected that promoting, advocating, and training the MDT in the role of the SLT in BIs is lacking, which hinders the referral of people with BIs to SLT services. It is assumed that clinical leads and heads of department within BIs are not fully aware of the role that the SLT plays in BIs, nor are they aware of accessibility to SLTs or referral criteria and pathways. Finally, it is predicted that SLTs will require intensive training on BI specific domains to equip them to work in this population and to expand the scope of SLT in SA.

Based on the aforementioned hypotheses, the main aim in the current study was to answer the following questions: "What is the current knowledge and experience of SLTs in SA with regards to

people with BIs, is there access to SLTs as well as established referral criteria and pathways, and what are the training and education needs of SLTs that will equip them to work with people with BIs?"

In this study we aim to:

- Determine the knowledge and experience or current involvement of SLTs working in BIs in SA.
- Determine if EBP guidelines are being used by SLTs or referring teams in SA when assessing, managing, and referring individuals with BIs.
- Determine access to SLT services and describe referrals pathways and referral criteria to SLT services.
- Determine available and desired or required education and training opportunities for SLTs in SA to effectively work in the BI population.

## 2. Methodology

The methodology of this study will be presented in this chapter. This will include the research design; the research sample including the setting, method, selection criteria and sample size; the study materials and instrumentation used; the procedure followed including an expert review; management and analysis of the data; validity, reliability, and trustworthiness consideration; and ethical considerations.

### 2.1. Research design

A convergent mixed-method research design was used for this study. Mixed-method research is a method that involves collecting qualitative and quantitative data in parallel in a single study, then analysing the collected data once collection has been completed, and finally converging the data (Fetters et al., 2013). Mixed-methods research provides more comprehensive evidence than either quantitative or qualitative research alone because the researcher is not confined to the types of data collection associated with either of these two types of research. In mixed-method research, the researcher can use any data collection tools or methods found across either of these two groups (Creswell & Plano-Clark, 2011). When using a convergent mixed-method design, the researcher can merge, connect, or embed the collected data. In the current study, the researcher mixed the quantitative and qualitative data sets by merging them as seen in Figure 2.1. By converging the data in this study, the qualitative data support the quantitative data, and a more complete picture of the data collected can be drawn (Creswell & Plano-Clark, 2011; Östlund et al., 2011).

**Figure 2.1**

*Representation of how Quantitative and Qualitative Data are Merged When Mixing Data (Creswell & Plano-Clark, 2011).*
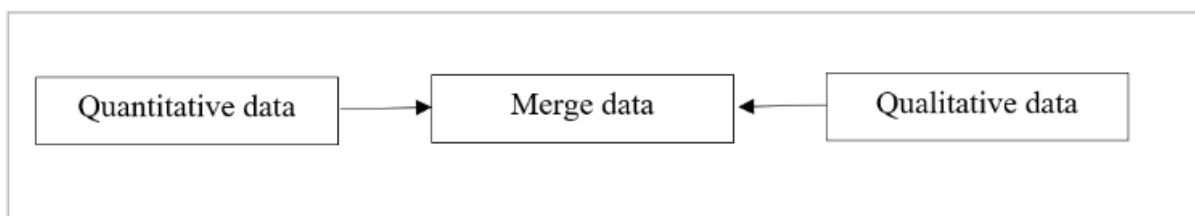
Quantitative and qualitative data collection was done in this study using an online questionnaire and semi-structured interviews, as a combination of closed-ended and open-ended questions complement the other's findings (Zohrabi, 2013). An online questionnaire was deemed appropriate as the research aimed to obtain information on SLT involvement in BIs from therapists dispersed across a larger geographic area, working in different facilities and levels of care. Using an online questionnaire had the following advantages: it allowed for large-scale data collection, widespread distribution to a large number of possible participants across a large geographical area in a time-efficient manner, and it was cost-efficient in that it required minimal funding to set up and distribute. However, the disadvantages of using an online questionnaire were that answers might have been inaccurate, some questions could have been misunderstood or ambiguous with no researcher present to explain or clarify, and there was a risk of a low-return rate as the questionnaire was sent out via email and posted on forums or discussion platforms (Zohrabi, 2013). In the current study, the questionnaire that was developed contained both quantitative, closed-ended questions and qualitative, open-ended questions making the questionnaire a mixed data collection tool rather than a purely quantitative tool.

Qualitative data collection was done using semi-structured interviews. This was considered appropriate for this study, seeing that doctor's, surgeon's or relevant heads of departments' lived experiences of BI and the role of the SLT was investigated (Hammarberg et al., 2016). Data was obtained using semi-structured interviews with the HODs that admit or manage individuals with BIs. Using semi-structured interviews is an effective way of utilising pre-determined, open-ended questions to prompt discussion. This method allowed the researcher to explore particular information or themes, without limiting participants to a predetermined set of answers. Additional advantages included good interpretive validity and a high response rate, minimisation of misunderstanding or ambiguous questions, and an increase in the quality of responses in terms of how much a participant elaborated (Zohrabi, 2013). This allowed the researcher to extract direct quotes from the personal perspectives of the participants, adding dimension to the overall findings (Smith & Osborn, 2007). Possible disadvantages of this method include the time consuming nature of the interviews and the data analysis process for open-ended questions, as well as concerns surrounding the anonymity of the participants (Zohrabi, 2013).

This study used a cross-sectional approach. This method is observational and analysed dominant features and responses in a specific population that was selected based on inclusion and exclusion criteria at a single point in time (Glasgow, 2005). The advantages of a cross-sectional approach include

cost- and time-effective data collection, description of characteristics or processes that exist in a group, and obtaining information about what is happening in a current population at a specific point in time. While this approach cannot be used to determine causal relationships, it can inspire further research by describing links between two concepts, such as the SLT and the management of the BI population, which can then be used as a tool to guide further experimental studies (Bless et al., 2013; Levin, 2006).

## 2.2. Research sample

### 2.2.1. Setting

This study was conducted in SA. On the 1st of April 2020, the HPCSA established that there was a total of 1272 SLTs and 1450 SLTAs (dually qualified speech and language therapists and audiologists) registered (HPCSA, 2020). However, SLTs in SA practise in various settings. These include, but are not limited to, the education sector, private clinics, acute hospital settings, audiology practices if qualified, long term rehabilitation settings, or specialised niche services, such as voice therapy or even BIs. South African hospitals, rehabilitation centres, and universities were contacted to participate in this study.

### 2.2.2. Sampling method

Convenience sampling was used to recruit SLTs to complete the online questionnaire. This type of sampling is a time- and cost-efficient method which entails choosing a convenient place where the researcher is assured of finding people to include in the study (Etikan et al., 2016). Convenience sampling was considered to be an appropriate sampling method for the questionnaire, as it involved selecting the most accessible participants (SLTs registered with the HPSCA).

Purposive sampling was used to obtain participants for the semi-structured interviews. Purposeful sampling is a technique widely used in qualitative research for the identification and selection of information-rich resources for the most effective use of limited resources (Bless et al., 2013). The researcher selects individuals with a specific set of characteristics, who possess information on a specific topic due to their knowledge or experience in the area under investigation (Etikan et al., 2016). Successful participants were then requested to provide any names and contact information of other possible participants working in BIs. This is known as snowball sampling (Palinkas et al., 2015), and was done due to the limited number of specialists in this field, and to ensure that the information

gathered was information-rich and obtained from relevant sources from varying locations and levels of care across SA.

### *2.2.3. Recruitment*

Participants were recruited using Facebook via South African SLT groups (namely the *South African Audiologists and Speech-Language Therapists* group and the *ST's, PT's, OT's, DT's and Audio's!* group). Participants were also recruited via email and Whatsapp groups. Chief members of SLT departments in various provinces and members of provincial SLT forums circulated the questionnaire via email and SLT Whatsapp groups on behalf of the researcher.

To recruit participants for the semi-structured interview, HODs of general surgery and burns of large tertiary academic hospitals in SA were contacted via email, Whatsapp, and South African medical Facebook groups (namely *South African Medical Doctors Community Service* group). Group members were asked if they work in BIs or could assist in identifying the relevant HODs of burn services across SA.

### *2.2.4. Selection criteria*

For the online questionnaire, participants were required to be qualified SLTs who obtained their degree from a South African university and who were registered with the HPCSA at the time of the study. This was to ensure that the study captured the experience and knowledge of South African SLTs. Ensuring that participants were trained in SA and excluding those who were not, prevented some variation of baseline knowledge obtained from undergraduate programs and prevented bias by showing a true representation of South African-based involvement and services. Registration with the HPCSA ensured that participants were adequately qualified and registered to provide specialist SLT input on the current research topic. Participants in this group were not required to currently be practising or consulting on the BI population, but were required to be working in a setting that would likely present with people with BIs, such as an acute or academic hospital, or acute rehabilitation setting. For this reason, SLTs working in schools, language, or early childhood practices, or providing clinic level care, were excluded due to the unlikelihood of contact with BIs, tracheostomies, ventilated patients, inhalation injures, and so forth. Individuals not proficient in English were excluded from the study. English is used academically in SA, and both the researcher and research assistant are proficient in English for the purposes of data collection and analysis. Participants were required to have completed their

undergraduate training as well as their mandatory 1 year of community service. This was done to ensure that all participants had no less than 12 months of working experience as the study aimed to investigate experience which is gained over time and exposure. Participants working in either the private or public sector were included in this study so the researcher could ensure that the sample participants were representative of the general population (Biau et al., 2008). Table 2.1 represents the inclusion and exclusion criteria for the questionnaire.

**Table 2.1**

*Inclusion and Exclusion Criteria for the Online Questionnaire for SLTs.*

| Inclusion criteria | Exclusion criteria |
|---|---|
| • Currently registered with the HPCSA <br> • Degree in SLT <br> • Qualification obtained from a South African University <br> • 1 or more years of practice since qualifying (completed community service year) <br> • Proficient in English <br> • Currently practising/working in SA in either private or public sectors <br> • Currently working in a hospital/acute/rehabilitation/university setting | • SLT degree obtained from an overseas institution <br> • Currently practising outside of SA <br> • Less than 1 year of working experience as an SLT <br> • SLTs working in schools or doing an early literacy or language therapy or working in any other non-acute/hospital/rehabilitation/university facility |

For the semi-structured interview, participants were required to be a HOD treating or overseeing burn management. This specific requirement was put in place to ensure that the participants had a holistic, experience-based, and detailed understanding of their department and patients, as well as an in-depth understanding of the risks and needs of the BI population ranging from admission, MDT involvement including therapies, and post-discharge management and pathways. This was not limited to only specialist burn units, but open to any department or level of facility admitting and managing burn injuries. SLTs were excluded from this group. Participants were required to currently be practising or consulting on the burns population to provide a current description of services. Individuals not proficient in English were excluded from the study. Table 2.2 represents the inclusion and exclusion criteria for the interview.

**Table 2.2**

*Inclusion and Exclusion Criteria for the Interview with HODs.*

| Inclusion criteria | Exclusion criteria |
|---|---|
| • Relevant HOD, or head of unit or ward, clinical lead of a burn facility or department treating burns (e.g. Clinical Burn Unit Manager, HOD of burns or surgery).<br>• Currently practising/working in SA in either private or public services.<br>• Proficient in English. | • SLTs.<br>• No experience in BIs. |

### 2.3. Sample size

Descriptive statistics were used in this study, therefore, no specific sample size for data collection was needed (Boddy, 2016). The sample collection took place over a four-week period starting on 7 January 2020. By the end of the fourth week, the total number of responses collected were analysed. Eighty-two responses were collected.

Based on the use of thematic analysis, no specific sample size was needed for the interviews either. However, as originally described by Creswell (1998), between 5 and 25 participants or interviews are recommended, but can vary once the researcher feels that data saturation is reached. What is required of qualitative data rather than the amount of samples is that samples describe most or all of the perceptions that might be important and avoid repetitive information (Mason, 2010; Palinkas et al., 2015). The sample size achieved by the researcher for the interviews in the current study was five participants, given that only a few doctors and surgeons in SA specialise in managing BIs. All five participants represented different provinces in South Africa and incidentally all worked in the public setting.

## 2.4. Study materials and instrumentation

### 2.4.1. Online questionnaire materials and instrumentation

A self-compiled online questionnaire was created using Google forms. The questionnaire was predominately quantitative in nature, asking yes/no questions, single-answer multiple-choice selection boxes, and multiple selection checkboxes. However, some questions that were qualitative in nature were included such as additional open-ended, short response questions for further elaboration.

The researcher utilized the procedure set out by Bakla et al. (2012), as outlined in Figure 2.2, to guide the questionnaire design and validation procedure. The process began with the researcher defining the topic of research. From the main topic of research, the four aims of the study were developed and the population in which the researcher investigated was defined. Following this, the data collection tool, the questionnaire, was developed with specific reference to the aims and existing literature supporting the aims. Once this was completed, the researcher tested the questionnaire in the form of an expert review (which will be described in the next section). The relevant corrections and additions suggested by the expert reviewer were completed before it was made available for participants to complete.

**Figure 2.2**

*Web-based Survey Design Process (Bakla et al., 2012)*
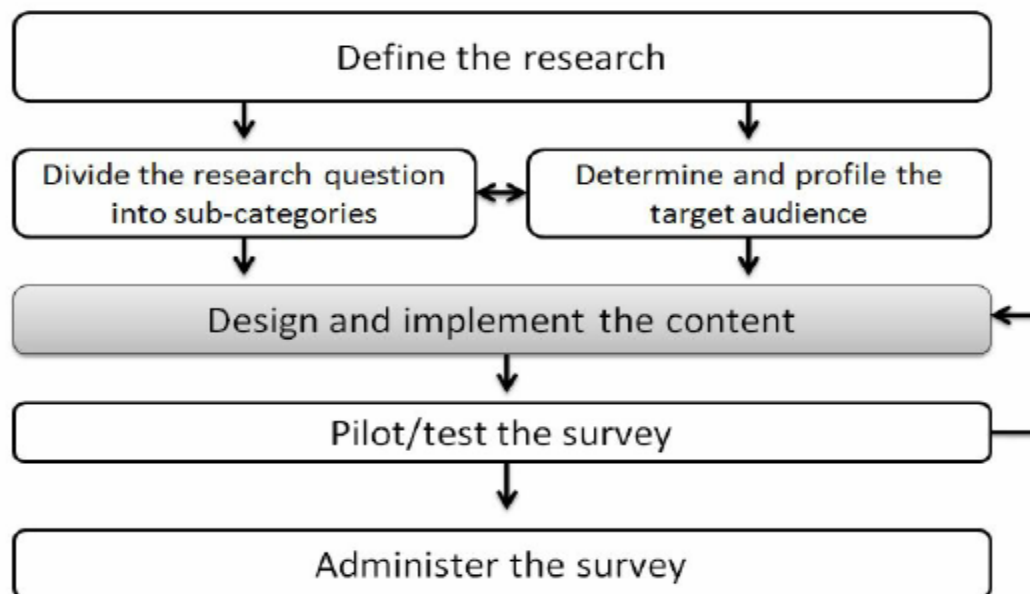
The research question was divided into aims based on various literature sources, and relevant questions were designed to address the objectives of the study. The complete questionnaire comprised of 15 sections and is attached as Addendum 1. The final online questionnaire included the following sections:

1. **Information of the study:** The first three sections, which can be seen in Table 2.3, provided an introduction to the study, described the purpose of the study, the researcher's objectives, and provided information on the risks and benefits of participation.

| **Table 2.3** | |
| --- | --- |
| *Summary of Online Questionnaire Sections 1 to 3* | |
| Section 1 | "Introduction to the study" |
| Section 2 | "What is the study about?" |
| Section 3 | "If you agree to participate you will be requested to…" "Will you benefit from taking part in this research?" "Are there any risks involved in your taking part in this research?" "Further information" including the contact information of the researcher |

2. **Consent and meeting criteria** (sections four to ten): These sections, which can be seen in Table 2.4, comprised a total of seven closed-ended questions that posed questions relating to the inclusion and exclusion criteria of the study. Establishing inclusion and exclusion criteria for participants is a standard requirement when conducting research. The inclusion criteria are the key features that must apply to all participants, and can include information on demographic, language, and experience. Exclusion criteria are features that possible participants might present with that could negatively affect the outcome of the study (Patino & Ferreira, 2018). Participants who answered "yes" to all questions were deemed suitable to participate in the study and were requested to provide informed consent before proceeding. Those who did not were unable to proceed with the study, and were redirected to a page thanking them and giving them an explanation on why they were unable to participate. The consent form is attached as Addendum 3.

**Table 2.4**

*Summary of Online Questionnaire Sections 4 to 10.*

| Section | Question | Answers |
|---|---|---|
| 4 | "Are you currently registered with the HPCSA (Health Professions Council of South Africa)?" | Yes/no |
| 5 | "Do you have a degree (undergraduate) in speech and language therapy from a South African university?" | Yes/no |
| 6 | "Are you currently practising as a speech and language therapist in SA?" | Yes/no |
| 7 | "Are you currently working in/for a hospital/acute/rehab setting, or university/academic setting in paediatrics or adults?" | Yes/no |
| 8 | "Are you proficient in English (reading and writing)?" | Yes/no |
| 9 | "Have you completed at least 12 months of work as a speech and language therapist since qualifying? This includes a community service year." | Yes/no |
| 10 | "I confirm that I am over 18 years old, have read and understood the above explanation about the study, have answered the questions as truthfully as possible, and agree to participate in this study. I also understand that my participation in this study is strictly voluntary." | Yes/no |

3. **Biographical information** (section 11): This section comprised of four questions as seen in Table 2.5 (one short answer question, two multiple answer checkbox questions, and one multiple choice question), which collected biographical information from participants about their specific qualifications, years of experience, and place of work. This information was collected so the researcher could establish trends of practice or involvement and experience relating to this information – for example, to determine if more participants working in public tertiary level care are exposed to BIs.

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**Table 2.5**

*Summary of Online Questionnaire Section 11*

| Question | Answers |
|---|---|
| "What speech and language therapy qualifications do you hold? (Undergraduate and post-graduate)" | Open-ended |
| "University from which your undergraduate and postgraduate degree/s were obtained?" | Closed list of 6 multiple checkbox options |
| "Years of practice since qualifying? (include your community service year)" | Range estimates of years (e.g. 1 to 3 years) |
| "Current job setting? (You can select more than 1)" | Closed list of 4 multiple checkbox options and an "other" open-ended option |

4. **Experience and practices** (section 12): This section posed questions pertaining to the first research aim of the study which can be seen in Table 2.6. Research involves the study of a specific subject, individual, or group of people, societies, or objects to explore new information and gain an understanding of the subject matter. This process frequently requires an understanding of experiences and knowledge which provides a deeper understanding of phenomena (Brannen, 2005). In descriptive research, experiences will be directly reflected in the study findings (Kamal et al., 2013). Therefore, in the current study, the researcher asked 17 closed-ended questions (11 multiple choice questions and eight multiple answer checkbox questions) about experiences with BIs, presence of BIs at work, facilities available for BIs, screening practices, perceived SLT areas of involvement, perceived aetiologies of BIs, and confidence in assessing and managing individuals with BIs. This information was important to the study, as it gave the researcher insight into the general involvement and experience of working with BIs, as well as possible reasons for lack of service provision in the population, such as reduced of confidence or lack of patient screening services in this population.

**Table 2.6**

*Summary of Online Questionnaire Section 12*

| Question | Answers |
|---|---|
| "As a speech and language therapist (SLT) have you ever seen a patient with a burn injury before?" | Yes/no |
| "Does your current place of work admit or manage individuals with burn injuries?" | Yes/no/not sure |
| "What type of facility is/are there for burn injuries people where you work?" | Closed list of 4 options and a "not sure" option |
| "Have you or your team ever received a referral for a person with a burn injury?" | Yes/no/not sure |
| "At work, do you typically screen your wards/sections to determine if there are any patients who require SLT services generally?" | Yes/no |
| "If you do screen the wards/sections, do you screen all wards or only selected wards/sections?" | Closed list of 3 options |
| "Do you ever screen individuals with burn injuries/wards that care for individuals with burn injuries?" | Yes/no |
| "From your experience or knowledge, which types of burn injuries would be seen by SLT? Please select as many as you see fit" | Closed list of 8 multiple checkbox options and a "not sure" option |
| "For which clinical domains do you think SLTs would be involved in burn injuries?" | Closed list of 8 multiple checkbox options and an "other" open-ended option |
| "For which additional domains would SLTs be involved in burn injuries?" | Closed list of 10 multiple checkbox options |
| "Do you understand, and do you feel confident that you could ASSESS all relevant areas with specific reference to literature in this population whether | Yes/no/somewhat |

| | |
|---|---|
| you have seen someone with burns or if you were to receive a referral? In other words, are you aware of when and how to ASSESS this specific population, do you know the expected comes of specific burns injuries, and could you fully ASSESS the burn injured population including instrumental assessment?" | |
| "If you answered 'yes', why is this?" | Closed list of 2 options and an "other" open-ended option |
| "If you answered 'no' or 'somewhat', why is this?" | Closed list of 5 options and an "other" open-ended option |
| "Do you understand, and do you feel confident that you could MANAGE all relevant areas with specific reference to literature in this population whether you have seen someone with burns or if you were to receive a referral? In other words, are you aware of when and how to intervene in this specific population, do you know the expected comes of specific burns injuries, and could you fully MANAGE the burn injured population?" | Yes/no/somewhat |
| "If you answered 'yes', why is this?" | Closed list of 2 options and an "other" open-ended option |
| "If you answered 'no' or 'somewhat', why is this?" | Closed list of 5 options and an "other" open-ended option |
| "Which area's following a burn injury specifically, do you NOT feel confident in?" | Closed list of 18 multiple checkbox options |

5. **Evidence-based practice (EBP)** (section 13): This section asked questions pertaining to the second research aim of the study and comprised of six closed-ended questions regarding EBP, which can be seen in Table 2.7 (4 multiple choice and 2 multiple answer checkbox questions). According to Babiker (2012), there is a mismatch between what is recommended as EBP and what is done by the health care providers. A possible reason for this incongruence could be because healthcare professionals are challenged with ever-changing varieties of patients with different diagnoses and considerations (Babiker, 2012). EBP refers to using the evidence available to inform the aetiology, diagnosis, management, and prognosis of patients from illness. This includes both the evidence to use or not to use a particular diagnostic tool or therapy for a particular patient, and helps clinicians to predict whether a treatment will do more good than harm (Sackett et al., 1996). EBP is the thorough and sensible use of current best evidence in conjunction with clinical expertise and patient values to guide health care decisions (Titler, 2008). On average, research evidence relevant to EBP doubles in less than 10 years, and for practice to be effective, information must be updated regularly (Bernstein Ratner, 2006; Hess & Faarc, 2004). Therefore, in the current study, the researcher asked questions about the use of guidelines or protocols, the use of literature and research, and the attendance or existence of any training programs or continuous professional development opportunities in the area of BIs. This information was important in determining if therapists were using generalised or specific evidence and protocols specific to BI when assessing and managing patients, and to determine the type of evidence being used. Additionally, this provided information on whether SLTs are using population-specific evidence or guidelines within a specific population which may or may not be beneficial or harmful to patients.

**Table 2.7**

*Summary of Online Questionnaire Section 13*

| Question | Answers |
|---|---|
| "Are you aware of any evidence-based guidelines or protocols for SLTs in burn injuries?" | Yes/no |
| "Do you make use of up to date literature and protocols when assessing and managing individuals?" | Yes/no |
| "Do you make use of up to date literature and protocols when assessing and managing individuals with burn injuries?" | Yes/no/I have not seen someone with a BI before |
| "What types of literature do you make use of?" | Closed list of 6 multiple |

| | checkbox options and an "other" open-ended option |
|---|---|
| "Have you attended any continuing professional development (CPD) days or courses/ training events specifically on or including burn-related injuries?" | Yes/no |
| "Where did you complete this?" | Closed list of 8 multiple checkbox options and an "I have not" option |

6. **Referral pathways and access to SLT** (section 14): This section asked questions pertaining to the third research aim of the study and comprised of 8 closed-ended questions (7 multiple choice questions and 1 multiple answer checkbox question) and 3 open-ended questions for participants to provide further explanation. These questions can be seen in Table 2.8. Referrals are a communication process with the aim of directing a patient to an appropriate specialist for advice, assessment, or management, and are an integral component of a successful healthcare system (Rajman & Mahomed, 2019). Effective referral systems lead to more time and cost-effective, sustainable treatment services. Inappropriate, delayed, or unsuccessful referrals can lead to adverse patient outcomes and reduced safety (Bradley et al., 2015). The process of making a referral has been recognised as being problematic and stressful. As revealed in a South African study on access barriers to inpatient and outpatient treatment, system-related factors that affect access to services for people who need it included: the absence of a structured referral pathway, the need for formal referrals, long referral processes, and unclear referral criteria (Isobell et al., 2015). Therefore, the questions in this section investigated established referral pathways, access to SLT services, perceived awareness of referral criteria, and timing of referrals when another professional wants to refer a patient. The researcher wanted to gain information on whether there are adequate referral pathways in place that are well known within facilities that aid the successful referral of appropriate individuals with BIs to SLT services. Thus, the questions in this section aimed to determine if pathways, referral procedure, and criteria, and the role of the SLT is generally unknown, indicating that there may be a need for greater SLT involvement in these areas within burns management.

**Table 2.8**

*Summary of Online Questionnaire Section 14*

| Question | Answers |
|---|---|
| "Do you have an established referral pathway within your facility for speech therapy referrals generally?" | Yes/no |
| "What referral pathways are in place?" | Closed list of 8 multiple checkbox options and an "other" open-ended option |
| "Is there an established referral pathway accessible to professionals to refer? (including therapies and other staff)" | Yes/no |
| "If a healthcare professional from any ward or department would like to request a consult/send a referral to speech & language therapy for any patient who they felt required the service, would this patient have access to an SLT?" | Yes/no |
| "Do you think that healthcare professionals working in the burn unit/centre/ward or with people with burn injuries know WHEN to refer someone for SLT? (e.g. timing and criteria for referral)" | Yes/no/not sure |
| "If you answered 'yes', can you please describe or list the criteria currently being used or known by healthcare professionals specifically for this population? (e.g. difficulty swallowing)" | Open-ended |
| "If you answered 'no', can you provide a reason for why you believe this might be?" | Open-ended |
| "Have you or another SLT provided healthcare professionals with training regarding the criteria for referring individuals with burn injuries specifically?" | Yes/no |
| Do you think healthcare professionals other than SLTs would be open to receiving information or education on the SLT role in burn injuries?" | Yes/no |
| "Do you think that the healthcare professionals working in the burn unit/centre/ward or with patients who have burn injuries know HOW to refer individuals for SLT? (e.g. contact numbers, referral forms etc)" | Yes/no/ sometimes/not sure |
| "If you answered 'no', can you provide a reason for why you believe this might be?" | Open-ended |

7. **Education and training** (section 15): This final section pertaining to the fourth research aim of the study comprised of 8 closed-ended questions (6 multiple choice questions and 2 multiple answer checkbox questions), and 1 open-ended question, which can be seen in Table 2.9. These questions aimed to identify some thoughts and opinions around BIs and the relevance of SLT involvement in BIs. These questions investigated the participants understanding of the role of the SLT in relation to national health goals and the quadruple burden of disease, opinions on readiness to manage individuals with BIs, willingness to investigate BIs at work, and the willingness to be upskilled and possibly conduct or contribute towards research in this population in the future. This study aimed to investigate the role of the SLT in BIs in relation to national health goals because there has been a shift from a problem-centred health system to a goal-directed health system, which focuses more directly on meaningful outcomes and puts emphasis on prevention, meaningful activities, advance directives, and personal development. There is a push towards meeting health-related goals as this could both improve quality of care, and can make health care less mechanical and more person-centred (Mold, 2017). The researcher felt that this information, along with a better understanding of overall willingness to become involved in BI, would provide invaluable supplementary insights into the perceptions around expanding the role of the SLT in SA – which could lead to greater involvement in burns management in the future.

**Table 2.9**

*Summary of Online Questionnaire Section 15*

| Question | Answers |
|---|---|
| "Do you think that SLT involvement in individuals with burn injuries is relevant specifically within the South African context?" | Yes/no/not sure |
| "Based on your previous answer, are you aware of the following? (you may select more than one)" | Closed list of 4 multiple checkbox options |
| "Do you think it would be a good idea for SLTs to determine if there is, in fact, a burns population at their place of work should they be uncertain, and to investigate increasing the awareness of SLT in burns and offer their services?" | Yes/no |
| "Which of the following opportunities/resources would you make use of or recommend? You may choose as many as you like" | Closed list of 6 multiple checkbox options and an "other" open-ended option |

| | |
|---|---|
| "Would you be interested in conducting research in the burns population at some stage, considering there is limited research relating to this population and SLT?" | Yes/no/maybe |

### 2.4.2. *Semi-structured interview materials and instrumentation*

In the qualitative section of the study, a semi-structured interview schedule was created and used to guide the in-depth interviews. This is attached as Addendum 2. The interview guide consisted of fourteen questions, 9 open-ended questions, and 5 closed-ended questions. The main themes investigated were the involvement of SLT in BIs; any evidence-based research being used when assessing and managing BI patients; protocols being used when referring to SLT; and accessibility, referral pathways, and criteria for individuals to be referred to SLT. The collected qualitative data was coded and then trends were drawn in line with the aims of the study.

Questions one, two, and three related to the qualifications held by the participant and information on the current role and type of facility the participant work at. Question four focused on describing the general MDT involvement at the facility. Question five and six aimed at obtaining information pertaining to referrals being made to SLT and the reasons behind that. Question seven explored the availability or access to SLT services at the hospital as a whole. Questions eight to ten aimed to investigate referral criteria and pathways of service. Questions 11 and 12 looked to obtain information on SLT's current involvement in the burn wards/units, as well as SLT presence in the MDT. Finally, questions 13 and 14 investigated if any protocols or guidelines were being used when referring patients to SLT.

| **Table 2.10** |
|---|
| *Representation Semi-Structured Interview Guide.* |
| Can you tell me about your qualifications? |
| Can you explain your current role/job description? |
| Can you describe the facility that you work in/lead? (private vs. public, unit/centre etc.) |
| Can you tell me about the MDT professionals who would be involved with the burn injured patients at your facilities |
| Have you referred an individual with burns to SLT before? |

| |
|---|
| Can you recall the reason why? Can you explain? |
| Is there a SLT service at or close to the facility/ is there access to SLT at this facility? |
| In your opinion, what do you know to be reason for referring an individual with burns to SLT? |
| Do you have a referral method for referring patients to SLT? |
| Can you describe how you would refer a patient to SLT |
| Have you commonly seen any SLTs in the ward/screening patients in the ward? |
| Do you/your department engage in MDT education and training? Can you describe further? |
| Do you/your department make use of SLT services based on any research, policies, guidelines, or outcome measures? |
| Can you explain further? |

The interview guide was composed in English only. No participants that were identified happened to speak different languages other than English, therefore no participants were excluded from the study. This may be attributed to English being a widely spoken language in SA and the language of instruction in educational institutes and most universities.

### 2.5. Study procedure

#### 2.5.1. *Expert review*

An expert review was conducted for the online questionnaire. Experts are able to discern questions that have a likelihood to result in problems with data quality (Olson, 2010). The expert review in this study aimed to eliminate ambiguous questions, to ensure that the length of the questionnaire would not take too long for participants to complete, to determine if the questionnaire was accessible and convenient to use, and to comment on the overall completeness of the survey. The review was completed by an external SLT with more than 10 years of clinical experience, which included experience as an SLT in BIs working at a tertiary academic hospital in SA. The expert matched the inclusion criteria for the participant group completing the online questionnaire. Due to the limited number of South African SLTs with experience in BIs, only one individual was included in the expert review. One other SLT was approached to expertly review the questionnaire but declined.

The expert reviewer conducted an individual review of the questionnaire and determined whether any questionnaire items were problematic or incomplete. The reviewer was requested to go through each question and to mark if a potential problem was perceived with the item. The reviewer was encouraged to write specific notes about the suspected problem or to indicate any suggested additions. No other specific instructions were provided to the SLT conducting the expert review, except for a short description of overall questionnaire goals. After conducting the review, the feedback was considered. The feedback included recommendations for wording changes and adding more response options to some questions. The expert reviewer indicated that the questionnaire was of an appropriate length and indicated that the questions were clear, easy to read, and neither too formal nor informal. No ambiguous questions were identified, and one recommendation was made to include an additional question which the expert reviewer felt would add dimension to the questionnaire findings. The changes made to the questionnaire are presented in Tables 2.11 and 2.12 below.

**Table 2.11**

*Recommended Word Changes for the Questionnaire From the Expert Reviewer*

| Original question | Recommended modifications |
|---|---|
| "Is there an established referral pathway accessible to professionals to refer? (including **therapies** and other staff)" | "Is there an established referral pathway accessible to professionals to refer? (including **therapists** and other staff)" |
| "Do you think that SLT involvement **in** individuals with burn injuries is relevant specifically within the South African context?" | "Do you think that SLT involvement **with** individuals with burn injuries is relevant specifically within the South African context?" |

**Table 2.12**

*Recommended Inclusions/Modifications for the Questionnaire From the Expert Reviewer*

| Original question | Recommended modifications |
|---|---|
| "Do you think that the healthcare professionals working in the burn unit/centre/ward or with patients who have burn injuries know HOW to refer individuals for SLT? i.e. contact numbers, referral form, etc"<br><br>☐ Yes<br>☐ No<br>☐ Sometimes | "Do you think that the healthcare professionals working in the burn unit/centre/ward or with patients who have burn injuries know HOW to refer individuals for SLT? i.e. contact numbers, referral form, etc"<br><br>☐ Yes<br>☐ No<br>☐ Sometimes<br>☐ **<u>I am not sure</u>** |
| "Do you think that healthcare professionals working in the burn unit/centre/ward or with people with burn injuries know WHEN to refer someone for SLT? i.e. timing and criteria for referral"<br><br>☐ Yes<br>☐ No<br>☐ Sometimes | "Do you think that healthcare professionals working in the burn unit/centre/ward or with people with burn injuries know WHEN to refer someone for SLT? i.e. timing and criteria for referral"<br><br>☐ Yes<br>☐ No<br>☐ Sometimes<br>☐ **<u>I am not sure</u>** |
| "Do you think that SLT involvement in individuals with burn injuries is relevant specifically within the South African context?"<br><br>☐ Yes<br>☐ No | "Do you think that SLT involvement in individuals with burn injuries is relevant specifically within the South African context?"<br><br>☐ Yes<br>☐ No<br>☐ **<u>I am not sure</u>** |
| "Do you think that South African SLTs are equipped to assess and manage individuals with burn injuries?"<br><br>☐ Yes<br>☐ No | "Do you think that South African SLTs are equipped to assess and manage individuals with burn injuries?"<br><br>☐ Yes<br>☐ No<br>☐ **<u>I am not sure</u>** |

| The expert reviewer suggested including a question asking SLTs if they would be willing to work in burns and why. This came from her own experience of therapists being unwilling to work in burns due to subjective perceptions of the population or unit such as smells, wounds, and the general environment. | Two additional questions were added:<br><br>**Closed-ended question: "Would you be willing to work in the burn unit/with the burn injured population?"**<br><br>☐ **Yes**<br>☐ **No**<br>☐ **Maybe**<br><br>**Open-ended question: "Can you please provide a reason for your previous answer. You may express any thoughts or feelings that you may have."** |
| --- | --- |

### 2.5.2. *Data collection procedure*

The data collection for both sections of this study was done over a period of approximately 8 months (29th of August 2019 – 11th April 2020).

The questionnaires were sent out on the 7th of January 2020 and open for participants to complete until the 7th of February 2020. If participants were interested in completing the questionnaire, they were able to click on the provided link and read the study information to determine if they matched the inclusion criteria before starting the questionnaire. Participants completed the consent form and questionnaire online. The consent form is attached as Addendum 3. The researcher encouraged ongoing participation by sending emails to remind prospective participants to complete the questionnaire. This was repeated weekly until the end of the data collection period. At this point, the results were collated and exported from Google Forms to Microsoft Excel. The analysis was then completed on Microsoft Excel by the researcher.

Interviews were the HODs conducted telephonically for the 5 participants, as this was the most convenient method chosen by all of the participants. Participants also requested that the interviews be done during working hours. For this reason, a research assistant was employed to conduct the interviews. On the 29th of August 2019, the first interview appointment was made and conducted on the 10th of October 2019. Before commencing with the interviews, the consent letter was read to each

participant to which they provided verbal consent. The interview informed consent form is attached as Addendum 4. Participants were also informed about the aims of the study at this time. Each interview lasted approximately 30 minutes and a semi-structured interview schedule was used to guide each interview. Each interview was audio-recorded with the consent to allow the research assistant to transcribe the interviews verbatim for data analysis. A pen and paper were used during the interviews for notetaking of important aspects mentioned. This was done so the research assistant could return to any interesting responses during the interview.

At the end of each interview, the participants were asked if they could identify other participants who met the inclusion criteria for the study, who might be interested in participating. The final interview was conducted on 11 April 2020. Following this, the interviews were transcribed (Addendum 7), analysed for common trends and themes, and coded onto a spreadsheet. This will be described further in the data analysis section.

## 2.6. Data management

All questionnaire responses were recorded directly on Google Forms under password protection to which only the researcher had access. Once the information was exported to an Excel spreadsheet and descriptive statistics completed, this too was only accessible by the researcher using a password to gain access. No identifying information was collected from the participants, therefore, anonymity was ensured.

All semi-structured interview were audio-recorded with permission and stored under password protection to which only the researcher and research assistant had access. All transcribed interviews were saved as Word documents on a password-protected laptop and were also backed up on Google Drive under password protection. Upon completion of all interviews and transcriptions, all audio-recordings were permanently deleted. All hard copy data will be kept at the Division of Speech-Language & Hearing Therapy at Stellenbosch University for 5 years and then destroyed by shredding.

### 2.7. Data analysis

Data from the online questionnaire was organised according to the sub-aims of the study, then exported from Google Forms to a Microsoft Excel spreadsheet (Addendum 6). Participants who did not meet the inclusion criteria were removed from the exported data on the Microsoft Excel sheet. The data was tabulated and analysed by the researcher. Graphical representations were constructed in the form of tables and graphs and open-ended responses were recorded on a Word document for qualitative analysis which will be elaborated on below.

The qualitative data collected from the semi-structured interviews were analysed by the research assistant according to themes that arose during the interviews. Once the data was collected, it was transcribed into a Microsoft Word document. The open-ended responses from the online questionnaires discussed above were transcribed and analyses in the same manner. Coding in this study aimed to identify combinations of categories to find patterns in SLT's knowledge and experience, the use of evidence-based research, and processes or behaviours of SLTs, to gather information from different sources, and to compare these features regarding SLTs and the management of BIs (Saldana, 2015).

An inductive approach to coding was used in the current study. According to Linneberg & Korsgaard (2019), this type of coding allows codes to develop directly from the data by using responses from the participants themselves. In this way the codes remain close to the raw data (Linneberg & Korsgaard, 2019). This type of coding was deemed suitable due to the explorative nature of the current study and as a means of providing a truthful representation of the participants responses.

Three cycles or levels of coding were used to code all qualitative data. The first cycle was informant-centric where the researcher identified a larger set of codes from the raw data response based on what each response was 'about' (Linneberg & Korsgaard, 2019). This gave the researcher a good overview of each response. An example of this is provided below.

**Table 2.13**

*Example of Level 1 Coding Completed For Qualitative Data Analysis*

| Semi-structured interview question: How would you refer someone for SLT? | |
|---|---|
| Participant responses | Codes |
| P1: *"So, there would be screening, but mostly would be referral..."*<br>P2: *"Mmm ya, we contact them directly and ask for a consultation…We WhatsApp them or call them directly or the department."*<br>P3: *"We've got a form that we fill in, and we've got an intern that will phone, or the registrar will phone. They will then come out and assess the patient."*<br>P4: *"We have a WhatsApp group…"*<br>P5: *"Normally we write the referral, or we call them."* | Contact SLT for referral<br>Referral basis<br>Telephone/verbal referrals<br>WhatsApp group/referrals<br>Referral form<br>SLT screening |

Following this, the researcher moved from basic descriptive codes into a more researcher-centric second cycle of coding to develop subthemes (Linneberg & Korsgaard, 2019). This is where codes were grouped due to similarities or overarching subthemes related to the current study aims as described above.

**Table 2.14**

*Example of Level 2 Coding Completed For Qualitative Data Analysis*

| Codes | Subthemes |
|---|---|
| Contact SLT for referral<br>Referral basis | Referral basis |
| Telephone referrals<br>WhatsApp group/referrals<br>Referral form | SLT screening |
| SLT screening | Acceptable methods of referral |

Finally, in the third cycle or level of coding, also known as axial coding, the recurring refined level 2 codes were further grouped into main overarching themes based on the current study's aims. These recurring themes will be described in the discussion section (Hahn, 2008).

**Table 2.15**

*Example of Level 3 Coding Completed For Qualitative Data Analysis*

| Subthemes | These for discussion (sub-aims) |
|---|---|
| Referral basis | Referral pathways and access to SLT services |
| SLT screening | |
| Acceptable methods of referral | |

## 2.8. Validity of quantitative findings

The validity of a research instrument assesses the extent to which the instrument measures what it is designed to measure (Robson, 2011). High quality instruments or data collection tools are crucial because the findings of the study will be drawn from the information gained using the tools. Therefore, it is imperative that the data and instruments be validated (Zohrabi, 2013).

### 2.8.1. Content validity

According to Zohrabi (2013), this type of validity ensures that the different elements, skills, and behaviours of the study are effectively measured. To this end, the research instruments could be reviewed by experts in the field of research (Zohrabi, 2013). To ensure content validity in the current study, the online questionnaire was expertly reviewed by an independent SLT with experience in working with individuals with BIs. The expert reviewer was able to make changes and recommendations to ensure that all questions in the questionnaire were relevant, well-phrased, and focused on the main research aims of the study.

### 2.8.2. Internal validity

Internal validity ensures that the research findings are compatible with reality and that the researcher measures what the study aims to measure (Zohrabi, 2013). Instrumentation bias was countered by making use of an expert reviewer to ensure that the questionnaire was designed appropriately and encompassed all relevant areas being investigated (Zohrabi, 2013). By reducing researcher bias, the internal validity of the questionnaire was increased.

### *2.8.3. External validity*

External validity is concerned with the applicability of the findings from the current study in other settings or subjects. In other words, it looks to ensure that the findings are generalisable to other measures, people, and settings (Steckler & McLeroy, 2008). To ensure external validity in this study, the researcher obtained participants from different provinces across SA and sought to collect data from participants in both the private and public sectors through specific sampling approaches. This ensured that the study findings were representative of a range of different participants with varying levels of experience, different undergraduate and postgraduate training, and different occupational contexts within SA.

## 2.9. Reliability of quantitative findings

High reliability ensures that the study does, in fact, measure the research question in a highly accurate and consistent manner (Bless et al., 2013).

### *2.9.1. External reliability*

External reliability refers to the replicability of the study. If a study has high external reliability, another researcher will be able to replicate the study and collect similar results as the original study. External reliability was increased by the researcher clearly describing the participants and the criteria for inclusion or exclusion. The online questionnaire was described in full and reviewed by an expert in the field of research. Additionally, the method of data collection and analysis of the questionnaire results was clearly described. All questionnaires were completed online, and findings collated using a uniform process (Zohrabi, 2013). The results from the close-ended questions were presented using figures and percentage (descriptive statistics) while the open-ended responses were analysed by means of descriptive and thematic interpretations. The researcher did this by identifying the main themes and subthemes in the participant's responses and then describing these themes.

### *2.9.2. Internal reliability*

Internal reliability refers to the consistency of collecting, analysing and interpreting the data. Thus, internal reliability is reached when another researcher analyses the data collected again and has similar findings (Zohrabi, 2013). In this study the researcher increased internal reliability by using a research assistant with experience in collecting and analysing qualitative data. The research assistant verified or

confirmed the semi-structured interview schedule and procedure and confirmed the coding outcomes with the researcher throughout. The study supervisor also assisted by confirming results and procedures. Mechanically recording data also increased the internal reliability. All interviews were audio-recorded, transcribed by the research assistant, and stored safely. This allowed for reanalysis or replication of the data in future (Zohrabi, 2013).

### 2.10. Trustworthiness of qualitative findings

To ensure reliability in qualitative research, examination of trustworthiness is crucial (Seale, 2002). Although the tests and measures used to establish the validity and reliability of quantitative research cannot be applied to qualitative research, there are alternative criteria for demonstrating rigour within qualitative research namely truth value, consistency, confirmability, and applicability (Lincoln & Guba, 1985).

Truth value recognizes that multiple realities exist. Truth value will be obtained in the current study by the researcher clearly and accurately presenting the participants' unique perspectives. This means that the researcher understands that each participant has their own, personal perspective, thus the entire range and diversity of perspectives needs to be reflected in the study. Participants' views and experiences must be communicated authentically (which will be done by including quotations from participants) (Bless, Higson-Smith, & Sithole, 2013).

Consistency relates to the 'trustworthiness' of a study which is comparable to internal and external reliability and would allow another researcher to obtain similar findings if repeated (Zohrabi, 2013). Consistency is achieved when the methods have been fully described and the researcher's decisions are clear and transparent. To achieve consistency in the current study, the participants and the two data collection tools and procedures were described in full (semi-structured interviews and online questionnaire). Audio-recording were also collected for future analysis by another researcher (Yoon, Starr, Perkins, Bloom, & Sie, 2006; Zohrabi, 2013).

Confirmability (neutrality) is comparable to the concept of validity (Krefting, 1991). It centres on acknowledging the fact that interaction with the researcher under the selected methodology by the

researcher, can lead to findings that are linked to the researchers aims, beliefs and perspectives (researcher bias) (Zohrabi, 2013). Confirmability was obtained in the current study by using an independent research assistant to conduct and transcribe all interviews and having the researcher confirm all transcriptions against the audio-recordings for likeness. This ensured that all responses were a true reflection of each participant and reduced researcher bias or leading a participant to a desired option.

Applicability is achieved when consideration is given to whether findings can be applied to other contexts, settings or groups and is similar to the concept of external validity (Zohrabi, 2013). In the current study, applicability to the South African context was achieved by ensuring that all participants were working in SA at the time of data collection. The participants were representative of different provinces across SA. Participants from across SA were sought after to ensure that the results were representative of the country and applicable to different contexts e.g. level of healthcare, varying provinces, and public versus private healthcare.

Overall, trustworthiness of the qualitative research in this study was achieved by describing the context of this study, describing the sample and sampling procedures, triangulation (whereby different methods and perspectives help produce a more comprehensive set of findings), methodological verification (having other researchers verify the appropriateness of the methodology), ensuring data saturation (the data must reflect the full range and depth of the topic), and the inclusion of exact quotations given by participants (Bless et al., 2013).

## 2.11. Ethical considerations

Permission to conduct this study was obtained from the Health Research Ethics Committee of Stellenbosch University, the Division of Speech-Language and Hearing Therapy at Stellenbosch University (Addendum 5). Consent for the online questionnaire was included in the first section of the questionnaire (Addendum 1). The purpose of the study, the study aims, and the procedure was explained before asking participants to consent, and autonomy to decline participation was offered. The study information and consent form is attached as Addendum 3.

The semi-structured interview participants were read the consent form over the telephone prior to commencing the interview. They were provided with information on the research topic, the rationale for the study, the procedure, and what would be required of them. The participants then provided verbal consent before the commencement of the interviews. The participants being interviewed were also asked to consent to the interview being audio-recorded for transcription at a later stage. The informed consent stipulated that all identifying information and audio-recordings would be anonymized and would not be available to any person apart from the researcher and the research assistant for validity testing (Addendum 4).

No participants were forced to take part or harmed during this study, and all were entitled to withdraw from the study at any time without repercussions. The participants' rights, dignity, and anonymity were respected at all times throughout the study process. All collected data and information remained password protected on a laptop and using Google Docs. This information was only accessible to the researcher and research assistant. The results of the study and full transcripts will be made available to the participants and the public on request. These have been excluded from the study to ensure anonymity.

This chapter discussed the cross-sectional mixed-method designs used in this study, including the study sample, setting, specific method, and procedure followed, inclusion and exclusion criteria, and sample size; the study materials and instrumentation used; management and analysis of the data; the validity, reliability and trustworthiness consideration; and finally the ethical considerations. There was a focus on the collection of both quantitative and qualitative data of which the findings will be discussed in the results section to follow.

# 3. Results

This current study sought to determine the role of the SLT in the assessment and management of people with BIs in SA. This was done by investigating the knowledge and experience of SLTs, the use of evidence-based practice (EBP), existing referral pathways and access to SLT, and the desired training and education needs relating to the BIs that could better prepare South African SLTs to work in this population. A convergent, mixed-method research design including quantitative and qualitative data was used for this study. Quantitative and qualitative data were collected simultaneously and analysed separately. The qualitative data was used to support and enrich the quantitative data.

For the questionnaire completed by SLTs, responses were collected from a total of 82 participants. Only 70 met the inclusion criteria, therefore, 12 responses were subsequently excluded. Reasons for exclusion from the study included the following: one participant did not hold a South African undergraduate degree in SLT, two participants were not currently practising SLTs in SA, three participants were not currently working in the specified clinical area or level of care as described in the inclusion criteria, and six participants had not yet completed their mandatory community service year. For the semi-structured interview with HODs, the researcher initially aimed to conduct five interviews. Ten potential interview candidates were contacted, and 5 were successfully recruited and interviewed between September 2019 and April 2020.

## 3.1. Results from online questionnaires completed by SLTs

### 3.1.1. Biographical information

Participants recruited for the quantitative section of the study had a variety of undergraduate and postgraduate qualifications. All 70 participants had undergraduate degrees in SLT (n=51) or SLTA (n=19), as per the inclusion criteria. In terms of post-graduate qualifications, 19 participants held master's degrees in SLT, and one dually qualified participant held a master's degree in Audiology.

The universities where the participants obtained their undergraduate and post-graduate degrees included the University of Stellenbosch (US) (n=19), the University of Cape Town (UCT) (n=18), the University of Pretoria (UP) (n=16), the University of the Witwatersrand (WITS) (n=15), the University of KwaZulu-Natal (UKZN) (n=11), and Sefako Makgatho Health Sciences University (SMU) (n=2),

formally known as the Medical University of South Africa (MEDUNSA). The distribution of qualification by university is shown in Figure 3.1.

**Figure 3.1**

*Distribution of Undergraduate and Postgraduate Qualification by University Among the SLT Group.*
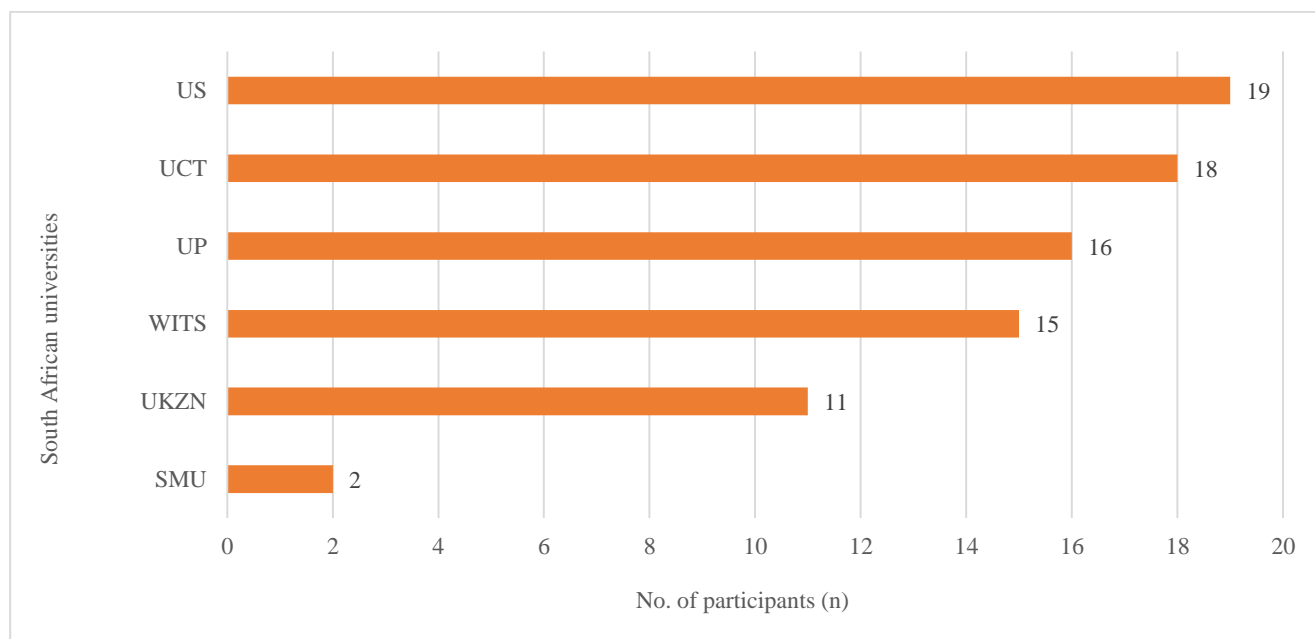


Participants had varying years of experience ranging from 1 year to >20 years as shown in Figure 3.2. This included one year of mandatory community service, if applicable at the time of qualifying. The mean number of years of experience among participants was approximately 5.25 years. The largest group, making up 31.43% (n=22) of the participants in the study, had between 1 and 3 years of experience. Followed by 30% (n=21) with 3 to 5 years, 17.14% (n=12) with 5 to 7 years, and 10% (n=7) with 7 to 10 years. A few participants had more years of experience with 5.71% (n=4) reporting 10 to 15 years of experience, and 4.29% (n=3) reporting 15 to 20 years. One participant had more than 20 years of experience making up the final 1.43%.

**Figure 3.2**

*Distribution of Participants' Years of Experience Working as an SLT.*
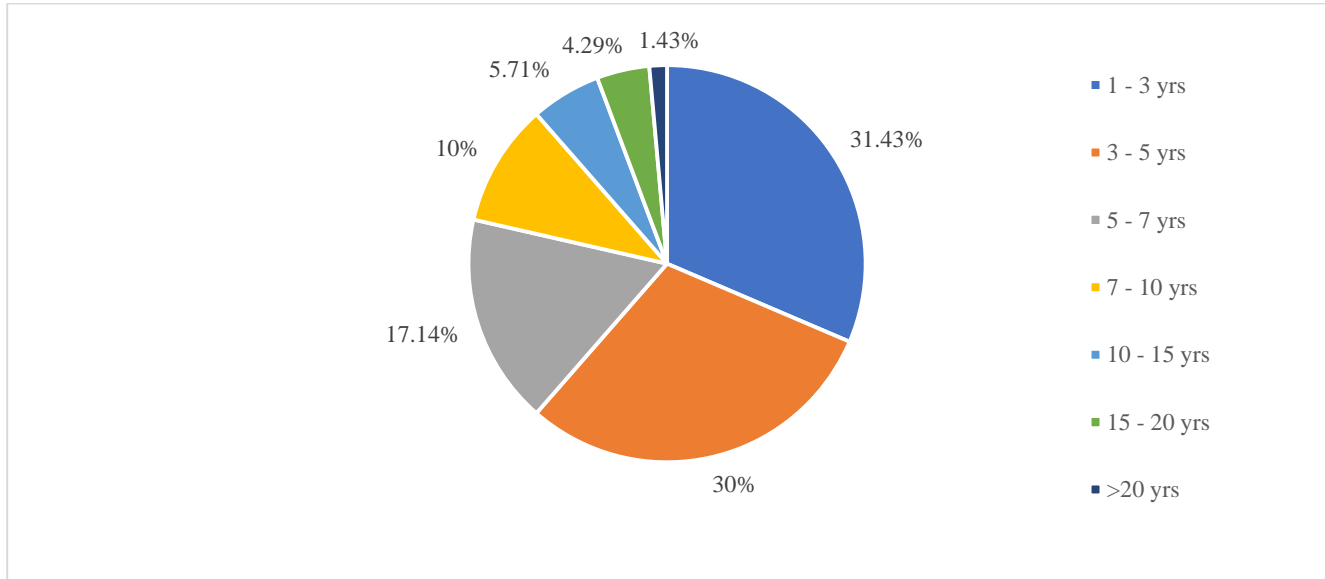


In terms of vocational setting, which can be seen in Figure 3.3, 50% (n=35) of the participants indicated that they worked at a private hospital or rehabilitation center. A further 28.6% (n=20) reported working in tertiary (academic hospital) settings, 27.1% (n=19) in a district or regional hospital or rehabilitation setting, and 5.7% (n=4) at a university. Eight participants indicated that they worked across more than one setting.

**Figure 3.3**

*Distribution of Current Vocational Setting Among Participants.*
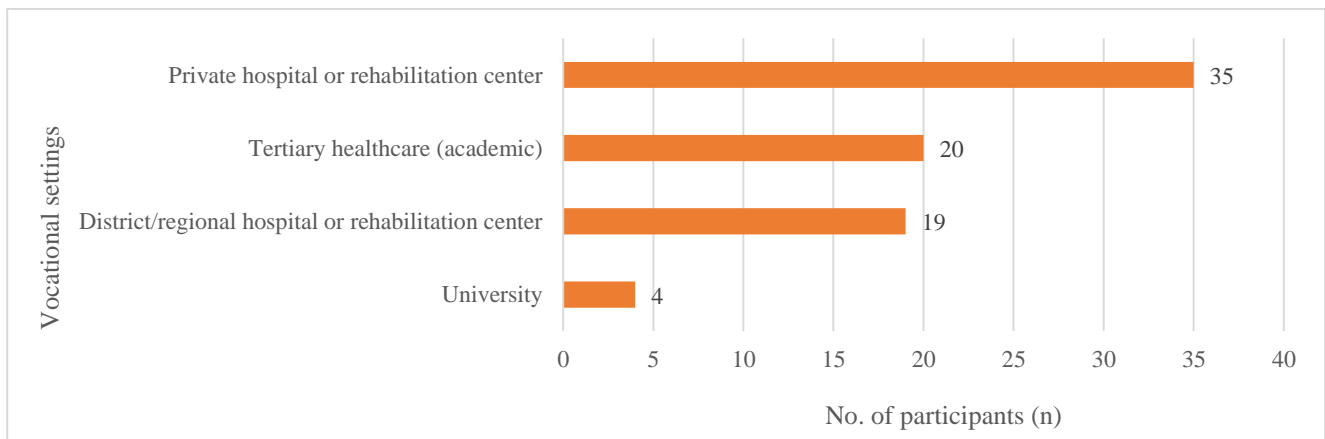
### *3.1.2. Knowledge and experience*

The first aim of this study was to determine the knowledge and experience or current involvement of SLTs working in BIs. In terms of experience, 68.6% (n=48) of participants reported having seen a patient with a BI, and 62.9% (n=44) of participants indicated that they or their team have received a referral for a person with a BI before. Thirty per cent (n=21) indicated that they had not received a referral of this nature, and 7.1% (n=5) were unsure if they had.

Regarding the current involvement and burns at their facilities, 74.3% (n=52) of participants confirmed that their facility admits or manages individuals with BIs, 14.3% (n=10) said they do not have BIs at their work, and 11.4% (n=8) were unsure. When asked about the type of facilities for BIs at their current settings, most indicated that there is no dedicated BI area, or that admission was to a general ward. This was reported by 55.7% (n=39) of participants. Some indicated that they have a burn ward with a 21.4% (n=15) response rate, and 10% (n=7) reported having a specialist burn unit. The remaining 12.9% (n=9) of participants were not sure. This is represented in Figure 3.4.

**Figure 3.4**

*Distribution of Type of Facilities for BIs at Various Vocational Settings.*



55
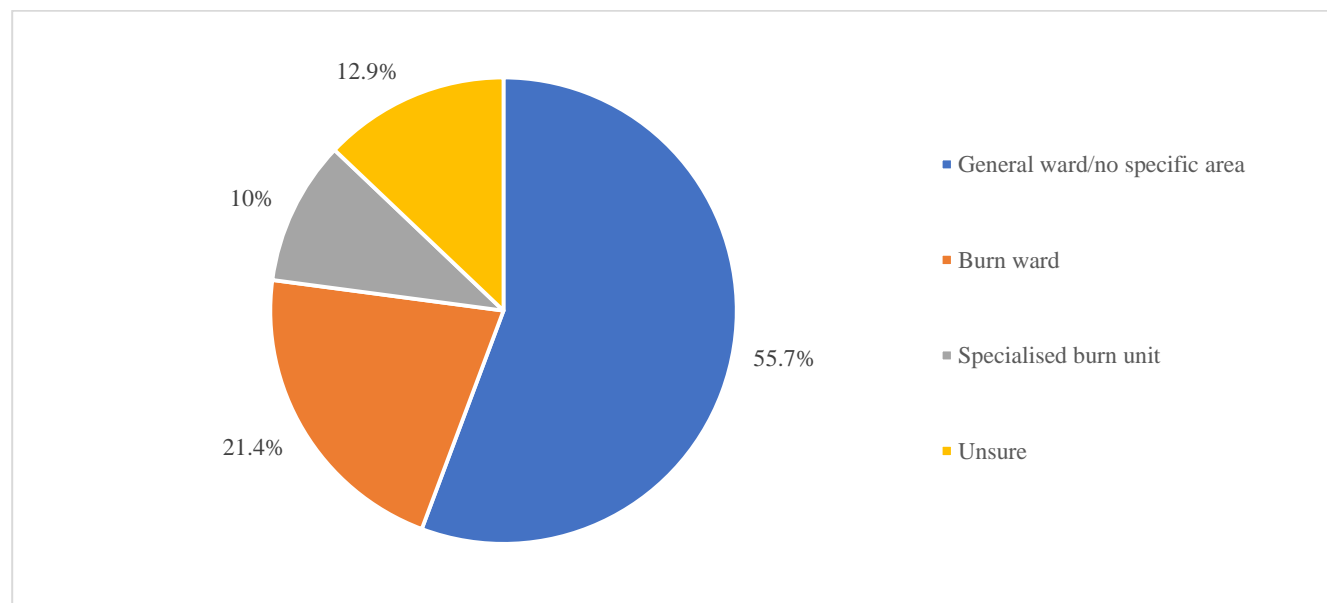
Participants were then asked about their ward screening practices in general, across patient populations, and not pertaining specifically to BIs. For general ward screening, 35.7% (n = 25) of participants reported that they or their team regularly screen wards at work as a method of picking up referrals. The remaining participants, 64.3% (n=45), reported that they do not screen wards for patients and rely on referrals alone. Among those participants who reported screening wards in general, 52% (n=13) screened all wards, and 44% (n=11) only screened wards carrying common caseloads. One participant (4%) initially indicated that they or their team screened wards, but when asked whether all or some wards are screened, changed their mind to say they do not screen any wards. When asked about ward screening practices relating to BIs specifically, which includes any person with a BI in a burn unit or not, 20% (n=14) of the total participants (n=70) reported screening people with BIs. The abovementioned screening practices can be seen in Figure 3.5.

**Figure 3.5**

*Distribution of Participants who Screen Wards, and Those From This Group who Screen People With BIs Specifically.*
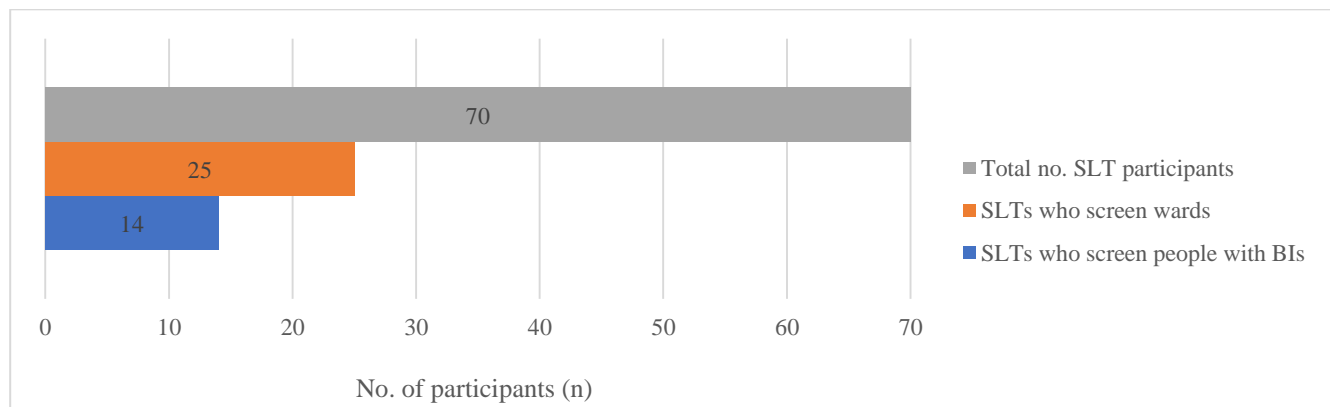


Regarding the types of BIs that would be seen by SLT where participants could select more than one option, the most frequently reported BI that participants felt would require SLT is shown in Figure 3.6 – with 82.9% (n=58) indicating inhalation burns, followed by ingestion burns with an 81.4% (n=57) response rate, flame burns with a 67.1% (n=47) response rate, and liquid burns with a 58.6% (n=41) response rate. Less frequently reported BIs included electrical burns with a 45.7% (n=32) response rate, followed by contact burns with 31.4% (n=22), flash burns with 25.7% (n=18), and cold burns with a 17.1% (n=12) response rate, while 24.3% (n=17) were uncertain of the types of BIs they would expect to see.

**Figure 3.6**

*Types of BIs Seen by SLT Based on Knowledge and Experience*
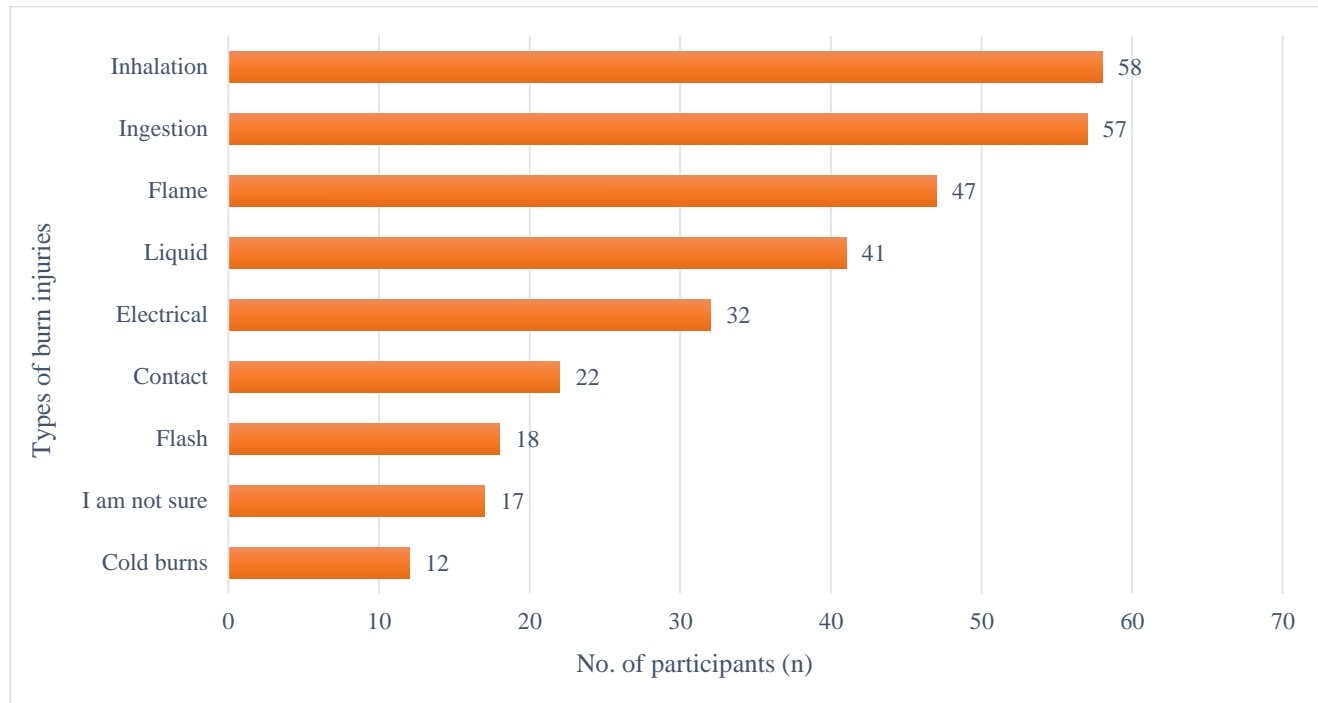


Regarding the clinical domains participants felt could be prevalent among people with BIs shown in Figure 3.7, the most frequently reported was dysphagia (including bedside and instrumental assessments) with a 100% (n=70) response rate, followed by tracheostomy and ventilation at 95.7% (n=67), facial burns and scarring or contractures at 90% (n=63), voice at 85.7% (n=60), and speech with an 80% (n=56) response rate. Less frequently reported domains included cognitive-communication disorders (CCD) with a 30% (n=21) response rate, followed by language at 28.6% (n=20), and fluency at 18.6% (n=13). One participant (1.4%) (n=1) included an additional option of AAC in their response.

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**Figure 3.7**

*Clinical Domains That Participants Thought Would Require SLT Involvement*
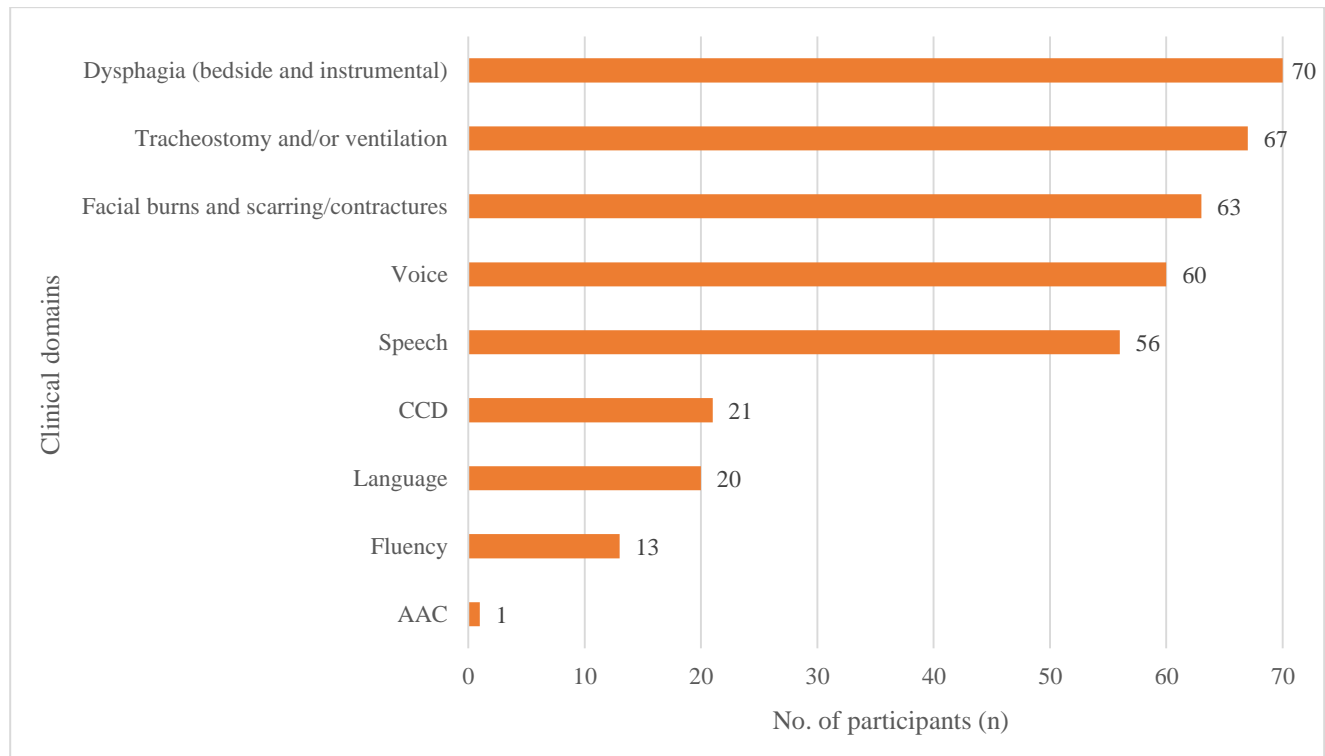


When participants were asked about additional domains and roles of the SLT in BIs, the most important seemed to be expanding the scope of SLT services with an 87.1% (n=61) response rate, and patient and caregiver education and training with an 85.7% (n=60) response rate. Many participants regarded the interdisciplinary team and MDT training and education and research as important areas of involvement or responsibility, which was shown by an equal response rate of 72.9% (n=51) for both. Other areas also felt to be important included support groups for people with BIs with a 70% (n=49) response rate, protocol and guideline development with a 67.1% (n=47) response rate, screening with a 65.7% (n=46) response rate, and patient advocacy with a 57.1% (n=40) response rate. Less than half of the participants identified the importance of burn prevention and promotion, and oral splinting which received lower response rates of 47.1% (n=33) and 32.9% (n=23) respectively. The distribution of additional domains and roles are shown in Figure 3.8.

**Figure 3.8**

*Additional Clinical Domains and Roles Participants Thought Would Require SLT Involvement*
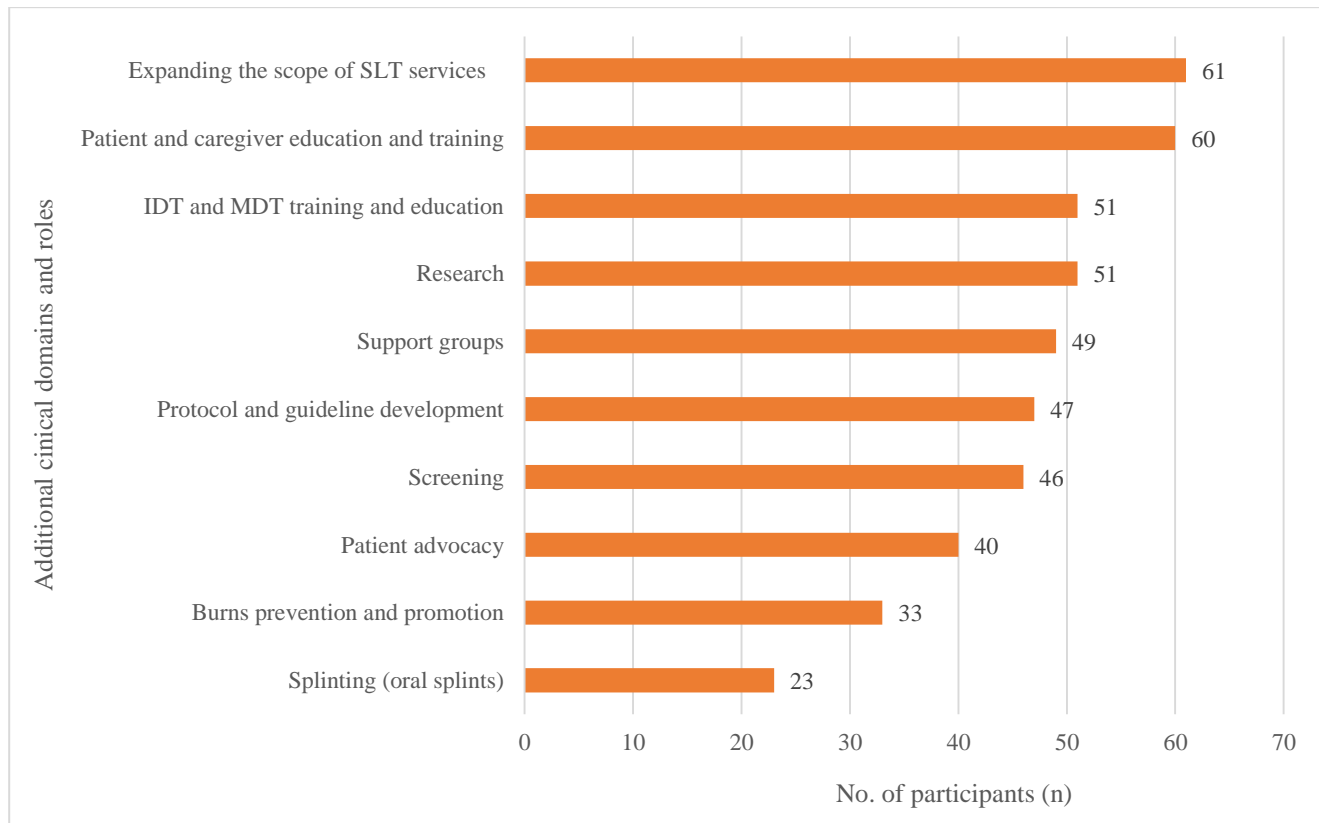


Furthermore, participants were asked whether they felt that they understood and felt confident in their ability to assess all relevant areas, with specific reference to literature in the BI population, regardless of whether they had seen someone with a BI before. In other words, whether they would be aware of *when* and *how* to assess someone with a BI, and whether they could fully assess a person with a BI, including performing VFSS or FEES. Only 17.1% (n=12) participants indicated 'yes', while 45.7% (n=32) said 'somewhat', and 37.2% (n=26) said 'no'. Of the 17% (n=12) of participants who said 'yes', 58.3% (n=7) indicated that they draw on EBP and research specifically surrounding BIs when approaching assessments in BIs, while 33.3% (n=4) reported that assessment was no different to assessing individuals without BIs. One participant (8.3%) initially answered 'yes' when asked about confidence levels, but then reported a lack of understanding of their role when asked to provide their reasoning.

Of the participants who said 'no' or 'somewhat' (n=58), 34.5% (n=20) attributed this to a lack of training or knowledge in this population, 25.9% (n=15) did not fully understand their role in assessing people with BIs, 15.5% (n=9) did not receive referrals to see people with BIs, 3.45% (n=2) were unsure if people with burns are admitted to their facility, and 3.45% (n=2) did not know that BIs was a clinical area that SLTs work in. One participant (1.7%) did not provide a reason. The remaining 9 participants (15.5%) selected 'other', with some of their reasons including:

- Limited opportunity and exposure to people with BIs

    P6: *"I have seen one patient with a burn injury before (during my community service year)".*
    P23: *"I have little and few experiences with burns."*

- Lack of skills and confidence to treat this population specifically and holistically

    P16: *"I do not know the specific outcomes for different burn injuries."*
    P24: *"My knowledge of burns… is not adequate to assess and treat this population."*

- Limited access to EBP literature or training opportunities

    P48: *"Assessed based on peer learning and self-teaching; not necessarily sure if it's based on literature."*
    P61: *"I have received minimal independent training. There are also a limited number of courses/workshops to up-skill in this area."*
    P62: *"It was not covered in our undergraduate programme."*

Similarly to the assessment, participants were then asked about their understanding and confidence in their ability to manage all relevant areas, with specific reference to literature within the BI population, regardless of having treated someone with a BI before. Here, 18.6% (n=13) said 'yes', while 37.1% (n=26) said 'somewhat', and 44.3% (n=31) said 'no'. Of the 18.6% (n=13) of participants who said 'yes', 30.8% (n=4) attributed this to the fact that they believe there is no difference between managing individuals with or without BIs, while 61.5% (n=8) reported that they drew on specific EBP and research when managing individuals with BIs, and 7.7% (n=1) reported that they go on experience from working in the burn unit. One participant added that while they manage people with BIs in a similar way to those without, they do make adaptations, and are guided by notes and requests made by the doctors and MDT.

Of the rest of the participants who said 'no' or 'somewhat" (n=57), 45.6% (n=26) indicated that they had no training or knowledge in the BI population, 19.3% (n=11) said they do not receive referrals to see people with BIs, and 19.3% (n=11) said they do not fully understand their role in managing individuals with BIs. One participant (1.8%) reported that they did not know BIs was an area in which SLTs could work, and one other (1.8%) reported that they were unsure if people with BIs are managed at their facility. Some participants (n=7) provided another answer with an open-ended response. Some of their responses included:

- Limited knowledge of burns due to a lack of knowledge and experience

  P4: *"...exposure...is needed"*

  P22: *"My knowledge of the general management of burns (prognosis, surgery, etc.) is limited."*

- Inability to provide complete and holistic treatment to individuals with BIs

  P16: *"I could manage the population to some degree."*

  P67: *"I have limited training in all the aspects of treatment involved to holistically treat a burns patient."*

- Lack of training and education opportunities

  P61: *"... a limited number of courses/workshops to up-skill in this area."*

Finally, participants were asked to indicate which specific areas relating to assessment and management in BIs they felt they lacked confidence, indicating a need for greater knowledge and experience. This is shown in Figure 3.9, ranging from the least amount of confidence to the most amount of confidence. The majority of participants indicated the main areas to be facial burns and scarring or contractures, and splinting (oral splints), with response rates of 74.3% (n=52) and 70% (n=49) respectively. Approximately a third of participants also lacked confidence in protocol and guideline development with a 38.6% (n=27) response rate; screening, and tracheostomy and ventilated patients, both of which had a 35.7% (n=25) response rate; and patient and caregiver education and training with a 32.9% (n=23) response rate. Following this, fewer participants indicated a lack of confidence in areas including: conducting or contributing to research, interdisciplinary and MDT training and education, and expanding the scope of SLT services, all of which had equal response rates

of 27.1% (n=19). Additional areas, including burn prevention and promotions also had fewer responses at 24.3% (n=17), as well as dysphagia, including instrumental assessment, at 22.9% (n=16). The areas in which participants appeared to feel the most confident, where they felt they did not need additional education, training, or experience included support groups with an 18.6% (n=13) response rate, dysphagia bedside assessment with a 14.3% (n=10) response rate, voice and patient advocacy both with 12.9% (n=9) response rates, speech with 5.7% (n=4), fluency with 4.3% (n=3), and both language and CCD with 2.9% (n=2) response rates.

**Figure 3.9**

*Areas Selected by SLTs as the Domains in Which They Have the Least Amount of Confidence*
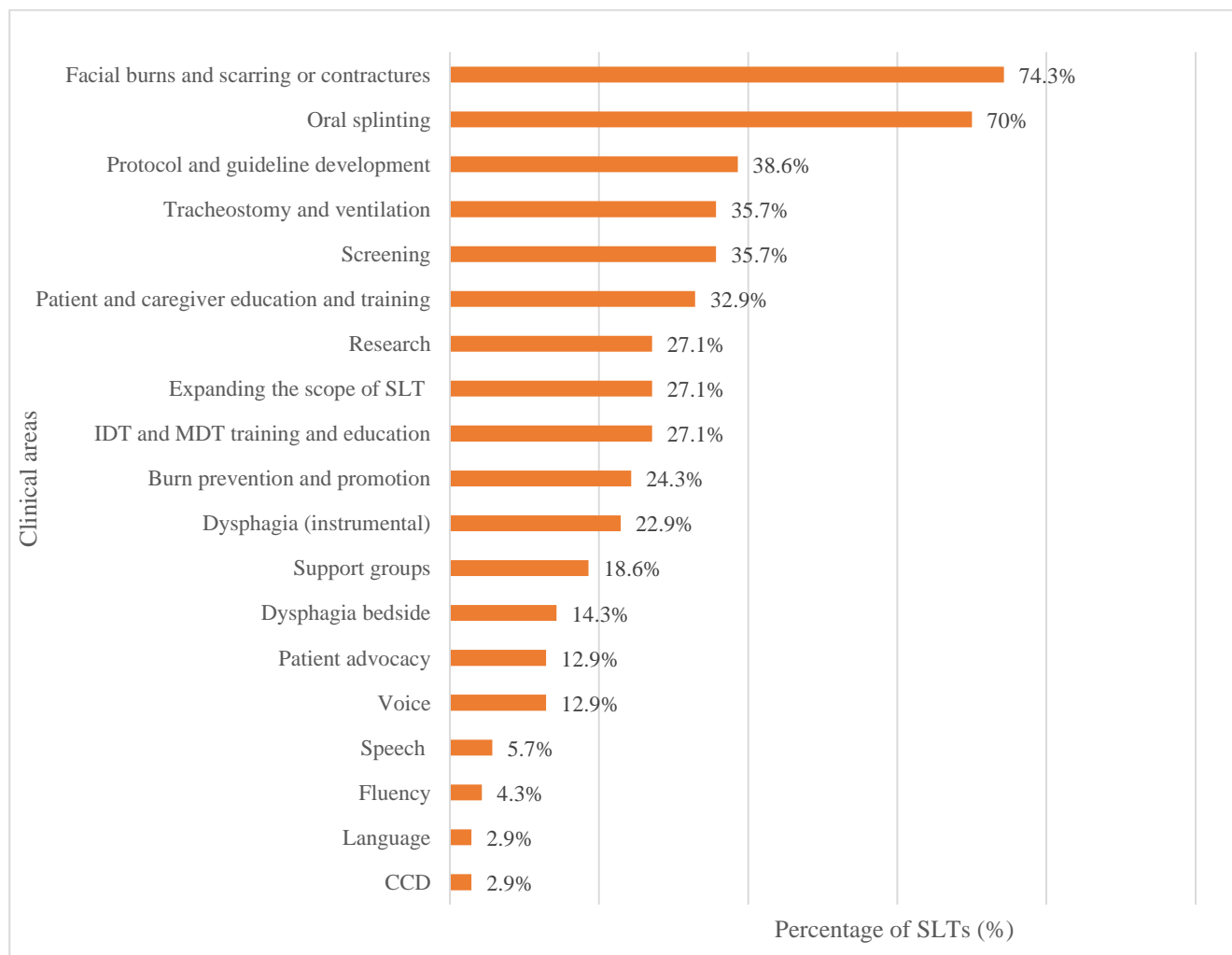
### 3.1.3. Evidence-based practice (EBP)

The second aim of this study was to determine if EBP and research are being used by SLTs working in BIs in SA. However, the researcher also asked participants if they make use of EBP in general. Eighty-three per cent (n=58) of participants indicated that they made use of up-to-date EBP and protocols when assessing and managing individuals in general practice, not specific to BIs.

In terms of EBP for SLTs pertaining specifically to BIs, only 21.4% of all participants (n=15) reported that they were aware of any EBP guidelines or protocols for SLT in this population. Following this, 28.6% (n=20) of participants reported making use of any up-to-date EBP and protocols when assessing and managing individuals with BIs, and 34.3% (n=24) indicated not using these resources, while 37.1% (n=26) reported that they had not seen someone with BIs before.

From those participants who indicated using up-to-date literature and protocols when working with someone with a BI (n=20), 75% (n=15) reported using literature or research on BIs specifically, followed by the use of site-specific policies developed at work, and international policies on MDT/SLT intervention which were both reported by 45% (n=9) of participants. Following this to a lesser degree, undergraduate training materials and knowledge, postgraduate training materials and knowledge materials (including masters and CPD), and national policies on MDT/SLT intervention were each reported by 25% (n=5) participants. Participants were also given the opportunity to provide another response where six indicated that they use information gained through training, short courses on burns, and assistance from peers.

Participants were asked to indicate if they had attended any CPD events or courses and training on BIs, where 14% (n=10) indicated that they had. Most courses and training were accessed at work by 80% (n=8) of participants, followed by 50% (n=5) at a burn unit (where some participants work) and 10% (n=1) at a congress, training site, and online. No participants received training at university, at CPD events, or overseas.

### 3.1.4. Referral pathways and access

The third aim of this study was to determine access to SLT services, and to describe referrals pathways and criteria being used by healthcare professionals when referring making general and BI referrals to SLT. Participants were asked to indicate whether there is access to SLT services at their place of work,

where all but one participant (98.6%, n=69) reported that if an individual would be referred to SLT, there would be access. It was unclear why one participant reported a lack of access, however, it could be due to a lack of expertise or that he or she works predominantly as an audiologist. Participants were then asked to indicate whether they have established referral pathways at their place of work for all people requiring SLT, to which 98.6% (n=69) indicated 'yes'. Again, it is unclear as to why one participant (n=1) reported no established referral pathway, but this could be for a similar reason as speculated above.

When asked about acceptable modes of referral, most participants reported that they accepted telephonic referrals. This was reported by 75.7% (n=53) of participants. In addition to this, verbal (face-to-face) referrals were accepted by 72.9% (n=51), referrals via the WhatsApp instant messaging application were accepted by 68.6% (n=48), and paper-based referrals using referral forms were accepted by 65.7% (n=46) of participants. Referrals were also accepted or collected during ward rounds by 47.1% (n=33) of participants, email referrals were accepted by 42.9% (n=30) of participants, and 30% (n=21) accepted text message referrals. A couple of participants (2.9%) accepted whiteboard referrals and 2.9% (n=2) also made us of Signapps, a mobile phone application, similar to Whatsapp, designed for use among medical professionals for sending referrals containing confidential identifying patient information.

Participants were then asked if they think healthcare professionals working in BIs know *how* to refer to SLT using the accepted referral methods. Less than half of the participants, 45.7% (n=32), said 'yes', 27.1% (n=19) said 'somewhat', and 2.9% (n=2) said 'no', while 24.3% (n=17) said 'I am not sure'. The two participants who said 'no' reported that there was limited training in BIs, and they were not involved with BIs at all.

Participants were also asked if they thought healthcare professionals working in BIs know *when* to refer a person with BIs to SLT, in terms of timing and criteria, for example. The majority of participants, which made up 48.6% (n=34) of participants, said 'no', 41.4% (n=29) said they were 'unsure', and only 10% (n=7) said 'yes'. The participants who answered 'yes', indicating that they believed that professionals *do* know when to refer, were asked to describe or list the criteria currently being used for the BI population. Participants felt that healthcare professionals knew to refer if people had any communication difficulties including voice, speech, or language impairments. This included

regressed or delayed communication in children, CCD, developmental delays, and anyone suspected to have a hearing loss. People with signs of dysphagia would also be referred, as well as those with reduced oral intake, facial burns, inhalation injury, individuals post-extubation if intubation was prolonged (longer than 48 hours), and anyone with a tracheostomy or intubation tube in situ who is awake and trying to communicate. Some of the participants' responses can be seen below.

> P32: *"Voice pathology, dysphagia, presence of facial burns, presence of tracheostomy tube, oral ventilation (while the patient is awake and alert)."*
>
> P57: *"1. Inhalation burns 2. Difficulty swallowing 3. Poor intelligibility 3. Reduced intake 4. Poor voice quality."*
>
> P60: *"Patients with facial burns… with feeding and/or swallowing difficulties… with speech and/or language difficulties."*

The participants who did *not* think that professionals know when to refer people with BIs to SLT were asked to provide a short explanation. This was done in order for the researcher to gain greater insight into why SLTs believe they do not receive referrals for people with BIs. Three main themes or reasons were drawn from 38 responses, which included a poor understanding of the role and scope of the SLT, as well as role confusion between other healthcare professionals (OT, PT, dietitians), presumed patient priorities, and symptomatic referrals being completed for dysphagia only. Some of these responses can be seen below.

- Poor understanding of the role and scope of the SLT

> P16: *"Many professionals do not understand the role of SLT… often confused regarding the scope of practice i.e. assume that dietitians assess dysphagia."*
>
> P67: *"Limited referrals of patients with burn wounds is indicative of little knowledge of other professionals about when to refer to SLT."*
>
> P70: *"Limited awareness of SLT role and responsibilities, SLTs themselves are not usually sure."*

- Presumed patient priorities

P36: *"Priorities may vary for health professionals and an SLT might be the last one on the list. SLT is not a known role player amongst other professionals."*

- Symptomatic referrals

P43: *"People are only aware when there is a significant impact like dysphagia."*

Finally, participants were asked if they or their teams had provided training for healthcare professionals on how and when to refer a person with a BI to SLT. Only 17% (n=12) of participants had provided healthcare professionals with training on this. However, 98.6% (n=69) felt that healthcare professionals other than SLTs would be open to receiving information or education on the SLT role in BIs.

### 3.1.5. Education and training

The fourth aim of the study was to determine currently available and desired or required education and training opportunities for SLTs in SA, specific to BIs. In addition to this, the researcher aimed to determine participants' willingness to work with BIs, to be involved in research, and to develop services that expand the scope of SLT in SA to include BIs. This was achieved by determining the participants' perceptions and awareness of the need for SLT services for people with BIs in SA. The researcher also sought to explore perceptions of readiness to work with BIs among SLTs based on current training and knowledge. Participants were able to indicate the type of training opportunities they would find most useful and were able to provide their thoughts on working in this population.

The large majority, 91.4% (n=64) of participants, agreed that SLT involvement in the BI population is contextually relevant in SA, while 8.6% (n=6) were uncertain. No participants felt SLT involvement to be irrelevant in SA. Regarding SLT awareness of the need for SLT services in BI management in SA, 61.4% (n=43) of participants reported awareness of the incidence of BIs, followed by 47.1% (n=33) who reported awareness of national health goals. A further 35.7% (n=25) reported awareness of BIs in relation to the quadruple burden of disease, and 22.9% (n=16) reported awareness of the incidents of deaths related to BIs in SA.

Most participants did not feel that South African SLTs are equipped to assess and manage people with BIs. This was reported by 65.7% (n=46) of participants, while 12.9% (n=9) felt that SLTs are equipped.

The remaining 21.4% (n=15) of participants reported being unsure. However, willingness to work with people with BIs was reported by 70% (n=49) of participants, and 27.1% (n=19) said 'maybe'. Only 2.9% (n=2) indicated that they would not be willing to do this. Some insights into these responses were provided by the participants. The main aim of this question was to establish if SLTs would be willing to work in burns and to explore the reasons for not wanting to do so. Themes that were identified from those who were willing were the inclusion of BIs as part of the scope of SLT in SA, education and training needs, and the rewarding nature of working in this population.

- Inclusion of BIs in the scope of SLT in SA
  P24: *"I think it is an important area within our scope of practice…especially important considering our context in SA, where we have a high incidence of burn injuries especially in the paediatric population."*
  P35: *"It should be part of the scope of practice."*

- Training and education needs
  P36: *"I'm curious and eager to expand my professional experience."*
  P69: *"I would like to further my knowledge about the SLTs role on burns."*

- The rewarding nature of working with people with BIs
  P14: *"I think it's an interesting area to work in, that can be rewarding and specialized."*
  P47: *"I have previously worked in a burn unit and found it both challenging and rewarding and learnt a lot."*

Participants who indicated that they might be willing to work with people with BIs were also able to provide a personal rationale for this. The researcher sought to explore the factors that led participants to decide on their level of willingness. In other words, to establish whether participants expressed a willingness, provided certain criteria could be met, or whether there were any independent reasons for a lack of willingness, such as lack of interest in the population. Themes in the responses included training and education needs (increasing knowledge and experience), lack of experience, the emotional nature of working with people with BI and the burns environment, lack of confidence, and staffing shortages. Some of the responses can be seen below.

- Training and education needs (increasing knowledge and experience)

    P3: *"If I were to gain more knowledge and experience, I would be willing to work in the burn unit."*

    P37: *"It is a daunting field where I feel SA SLT's are undertrained."*

- Lack of experience

    P44: *"I haven't done enough of it to know whether it would be of interest to me."*

    P49: *"...not sure as to whether I would be willing to work in a burns unit as I have no experience of working with any burn victims."*

- Emotional nature of working in burns and the burns environment

    P43: *"I don't know if I would be able to cope emotionally."*

    P45: *"The suffering of a patient with burns is severe... ı would struggle from a personal perspective."*

- Lack of confidence

    P49: *"I do not have much confidence."*

    P50: *"If ... I felt confident I'd consider it."*

- Staffing concerns

    P17: *"...if we weren't so short-staffed at our hospital."*

Lastly, the two participants who indicated that they would not be willing to work with the burns population also provided reasons for this. One participant reported that the environment would be too emotional to work in, and the second participant simply explained that BIs are not currently an area of interest.

The next question focused on investigating participants' interests in training and education, and their preferences for this. Participants were also asked about their willingness to identify any people with BIs at their places of work, and if they would consider or be interested in conducting research in this population.

All participants (n=70) felt that identifying people with BIs at work should be a priority for SLTs. All participants (n=70) also indicated that if made available, they would utilise any opportunities to increase their knowledge and experience in BIs as it relates to the role and scope of SLTs in SA. In terms of the types of training and resources, most participants preferred CPD events or courses with a 92.2% (n=65) response rate. Secondary to this, 85.7% (n=60) preferred hands-on training at a burn unit or facility that cares for people with BIs. Some participants preferred online CPD with a 78.6% (n=55) response rate, an undergraduate module or day course for students or newly qualified SLTs with a 74.3% (n=52) response rate, and journal articles on this topic with a 70% (n=49) response rate. Around half of the participants preferred congresses or conferences as an option with a 52.9% (n=37) response rate and, one participant (1.4%) preferred in-service training to be completed by another member of staff on BIs during teaching or team CPD. The preferences of participants are represented below in Figure 3.10.

**Figure 3.10**

*Preferred Types of Education and Training Opportunities in BIs for SLTs.*
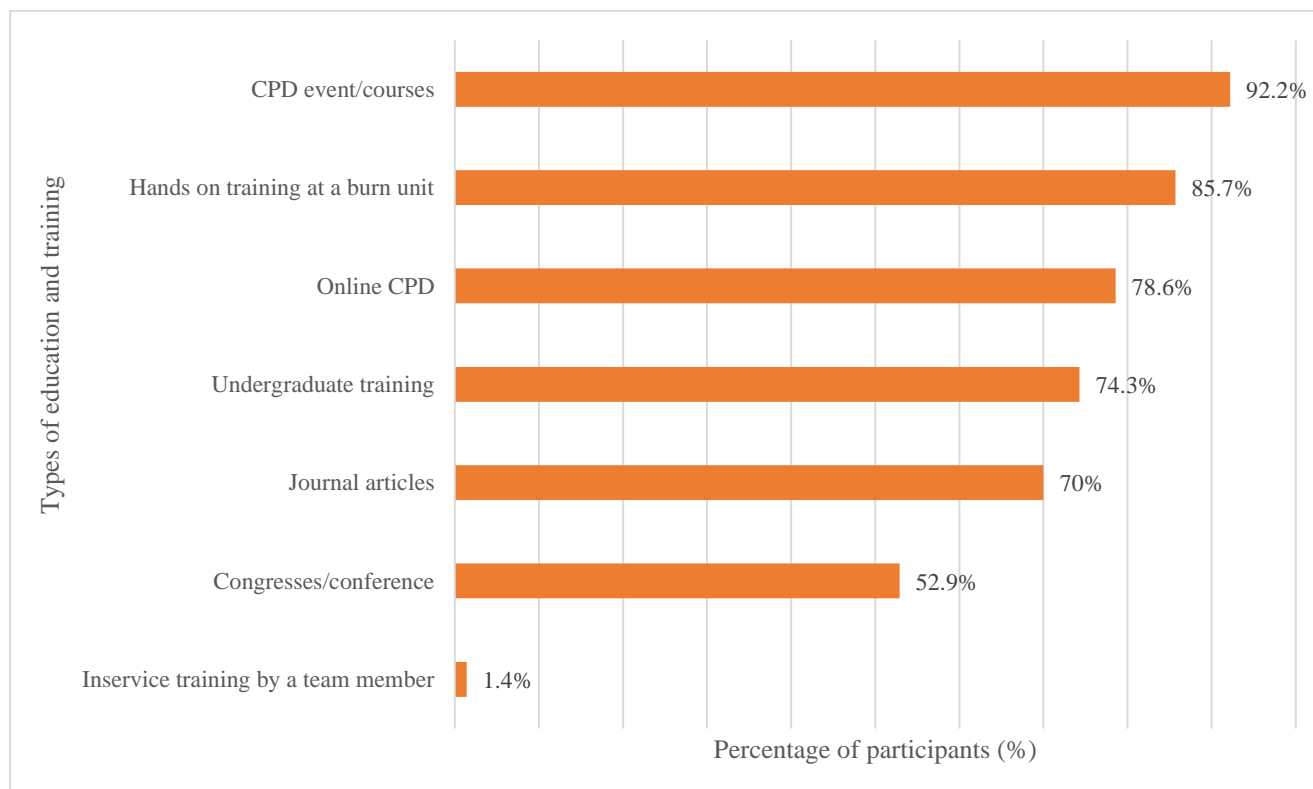
Lastly, participants were asked about their interest in conducting research within the BI population at some stage in the future. This question was important to include considering there is limited research and EBP relating to this population and SLT in SA, lack of formalised scope of practice guidelines, and lack of training opportunities. Almost half of the participants indicated that they would be interested, with a response rate of 45.7% (n=32), followed by 28.6% (n=20) who said they might be interested, and 25.7% (n=18) who said they would not be interested.

### 3.2. Results from interviews with HODs

Five semi-structured interviews were conducted with doctors who lead or head up departments that manage people with BIs in SA (HODs). Table 3.1 shows the relevant participant information including designation, qualification, years of experience, and type of facility. Years of experience ranged from 6 years to 40 years, with an average of 21 years of work experience. Each participant represented a different province or service in SA, and participants worked across both paediatric and adult burn services. Participants' place and province of work were not included in the information to maintain confidentiality and anonymity.

The main aim and objectives of the current study were used as the overarching themes in the data. Codes, subthemes and themes emerged during the semi-structured interviews using open-ended questions. A summary of the list of themes, subthemes, and codes, as well as some samples of responses obtained during the interviews, have been attached as Addendum 7.

**Table 3.1**

*Participant Information From the Semi-Structured Interviews*

| PARTICIPANTS | DESIGNATION | QUALIFICATION | WORK EXPERIENCE | LEVEL OF CARE AT CURRENT PLACE OF WORK |
|---|---|---|---|---|
| **P1** | Head of acute care surgery unit | MBBCH; FCSSA | 20 years; 5 years 6 months in burns | Tertiary hospital (public) |
| **P2** | Head of burn services | MBCHB; General surgeon | 17 years | Tertiary hospital (public) |
| **P3** | Head of the burn unit | MBCHB; college degree in plastic surgery, Master's degree in plastic surgery, PhD in plastic surgery | 20 years in plastics and burns | Tertiary hospital (public) |
| **P4** | Head of plastic surgery and the burn unit | MBCHB; Master's degree in plastic surgery, wounds management course | 40 years of work; 34 years in burns and plastic | Tertiary hospital (public) |
| **P5** | Medical officer in paediatric surgery overseeing burn injuries | MBCHB | 6 years; 3 years in paediatric burns | Tertiary hospital (public) |

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### *3.2.1.  Knowledge regarding the SLTs role/reason for referral*

The first theme that emerged from the interviews was the participants' knowledge regarding the role of the SLT in BIs or reasons for referral that would fall into the scope of SLT. This emerged when participants were asked if they had referred a person with a BI to SLT, and why they would refer someone with a BI to SLT. Four of the 5 participants had referred a person with a BI before. They described several reasons for which they would do this. Most would refer predominantly for suspected dysphagia, those who have been extubated following ventilation, and those who have facial burns, specifically to the mouth. One participant mentioned that a referral would be made for suspected vocal cord oedema and postoperative hoarseness (voice quality). There was no mention of tracheostomy care, communication or AAC, or associated polytrauma requiring SLT involvement such as head injuries or strokes leading to or following the event which caused the BI. Another participant also added that they would refer a person with high-voltage electrical burns, but the reason for this was not expanded on.

### *3.2.2.  Referral pathways and access to SLT*

#### 3.2.2.1.  MDT members and access to SLTs

Following discussion regarding the role of SLT, participants were asked about the members of their MDT and the availability or accessibility of SLT services at their places of work. This was done to establish the general availability of SLTs in facilities across SA (but not staffing levels specifically). All participants used an MDT approach which consisted of varying professions, including but not limited to medical and nursing staff, OT, PT, DT, SLT, psychological services, SW, and ward staff who are all involved to varying degrees across facilities. However, during the interview some participants added that SLTs are not regular or permanent members of the MDT in burns and only attend if consulted, are not involved in BIs, or are not on the unit or ward at all. Despite this, there was reported access to SLT in general, should a patient be referred for whatever reason at each facility. One participant reported that they have a dedicated SLT at their facility, but the others reported accessibility on a referral basis only.

#### 3.2.2.2.  Referral pathways

In terms of referral pathways, the researcher sought to determine the mode of referral being used to refer to SLT in BIs. This was done to establish whether pathways are in place, which could play an important role in access to services. All five participants reported that they have established referral

pathways and identified at least 2 successful methods of referring people with BIs to SLT. The most frequent methods reported were telephonic referrals and instant message referrals on WhatsApp, followed by the completion of referral forms, and face-to-face verbal referrals.

### 3.2.2.3. Presence of SLT

From this, further discussion and subthemes were identified regarding the presence of SLTs. The researcher wanted to investigate if SLTs are regularly seen on the ward or with people with BIs on other wards for any relevant reason such as screening, acknowledging, or accepting referrals, seeing patients, or attending ward rounds or teaching. Participants explained that they do not regularly see SLTs assessing or managing people with BIs, or performing general screening in the ward or unit unless requested by a member of the MDT. Short staffing among SLTs was identified as a relevant reason for this. However, one participant reported regular presence in the unit, regular ward screening, and attendance of MDT meetings by a dedicated SLT.

### 3.2.2.4. Reported preference for SLT services

Participants expanded on their previous responses by expressing their preference for having greater SLT involvement in the ward or unit with the rest of the MDT. The participants expressed positive feelings towards improving their engagement with, and knowledge of SLTs, in this population –which might increase their confidence and willingness to get involved on a more regular and long-term basis.

### 3.2.2.5. Perceived lack of interest or willingness

The preference to have greater SLT involvement led to another theme that described a perceived lack of interest or willingness among SLTs to work with people with BIs. Participants explained that it seemed to them as though SLTs are avoidant or scared to see people with severe BIs. The participants explained that this could be because of the BI environment or lack of understanding of their role as SLTs in this population. It was acknowledged that this field might be highly emotional for some to work in and that widespread reduced staffing capacity could make it difficult for SLTs to prioritise BIs in addition to existing heavy caseloads.

### *3.2.3.* *Use of EBP*

It was sought to determine if the participants or their teams made use of any specific EBP or guideline, research, or policies when referring to SLT, or if they have an SLT protocol that is being used for people with BIs. Two participants reported that their local SLTs had conducted some research and developed site-specific protocols from the literature, from which they assessed and managed people with BIs. One participant reported that they had a standard referral policy for high voltage electrical burns, but this was not expanded on. The remaining participants did not report making use of any EBP or guidelines when referring people with BIs to SLT or when considering management plans. They were also unsure if SLTs at their facilities were using any guidelines or EBP.

### *3.2.4.* *Education and training*

While conducting the interviews, the theme of barriers towards education and training among SLT from a medical perspective emerged. Specifically, participants noted a lack of SLT knowledge, competence, and confidence in BIs, and the need for undergraduate and postgraduate training for SLTs. From this, the researcher went on to enquire about current MDT engagement and education or training currently available. This was useful as it explored opinions and suggestions for education and training that might improve knowledge and understanding of the needs of people with BIs among SLTs, and likely increase SLT involvement.

#### 3.2.4.1. **SLT knowledge, competence, and confidence**

In terms of SLT knowledge, competence, and confidence, most of the participants felt that SLTs have insufficient knowledge and training in BIs which negatively impacts their competence and confidence. It was suggested that the possible lack of understanding of BIs and the long-term sequelae among SLTs could be due to a lack of education and training at an undergraduate level. It was also reported that this might be exacerbated by a lack of postgraduate training opportunities and exposure. One participant explained that BIs can cause life-long disabilities that require long-term intervention which includes SLT. This aspect of BI management was felt to be poorly understood or overlooked by SLTs. Another participant felt strongly that SLTs should be involved in facial burns and contracture management and should be producing oral splints to prevent or manage microstomia and oral contractures. One participant was not sure as to why SLTs would be involved with BIs at all, showing an inconsistent awareness of SLT involvement at opposite ends of the spectrum.

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### 3.2.4.2. MDT interactions and engagements

Participants indicated that hands-on teaching and MDT upskilling frequently occurs in the ward or unit during ward rounds and interdisciplinary contact. Participants also described weekly MDT interactions and education during planned teaching sessions, or CPD days or events where various members are encouraged to present. Journal clubs and journal sharing opportunities were also reported. Although one participant reported that the dedicated SLT at their facility participated in journal presentations and another reported weekly SLT attendance at MDT meetings, ward rounds, conferences, and training days, the rest did not. One participant explained that SLT is excluded from events or not considered when planning for this population, because the MDT does not understand the role or reasons for SLT involvement.

The results of the study indicate that there is limited knowledge and experience in BIs among SLTs in SA leading to a lack of awareness and involvement. This finding was supported by the findings from interviews with HODs who described a lack of SLT services and perceived poor understanding of the population. Despite a reported willingness from the SLT group to work in this population, the opposite was reported by the HOD group, who felt that SLTs lack interest in BIs, as demonstrated by their lack of involvement or engagement with people with BIs and the MDT. In terms of referrals to SLT, both the SLT and HOD groups reported established pathways and the same acceptable referral methods. However, there appeared to be discrepancies between the referral criteria known and accepted by SLTs and the criteria being used by HODs when referring to SLT.

Low levels of confidence and competence in assessing and managing BIs was found among the SLT group. SLTs described limited education and training opportunities, as well as limited contextually relevant EBP or guidance for this population as reasons for this. This finding was supported by the HOD group who felt that SLTs have insufficient knowledge and role awareness which could affect confidence and competence levels and that SLTs do not demonstrate a thorough understanding of the long-term effects of a BI and how this could implicate their role. Although limited education and training opportunities were identified among the SLT group in terms of undergraduate and postgraduate training, the HOD group highlighted various opportunities for SLTs to increase their knowledge and experience in the ward or unit. Additional factors that were highlighted by the SLTs were reduced staffing and the perceived emotional strain that might be experienced when working with people with BIs. The HOD group supported this finding and agreed that SLTs in SA are limited, and

that attending training may not be feasible, although desirable. Both groups agreed that training starting as early as undergraduate level is required. The findings of this study, as well as their implications, will be discussed in the next chapter.

# 4. Discussion

The diversity and complexity of BIs requires a diverse range of skills, which has led to specialised burn rehabilitation services that incorporate the collaborative skills of various healthcare professionals including SLTs (Rode et al., 2011). The SLT's role in view of the functional limitations BIs pose to communication and swallowing are highlighted in some protocols around the world (Rumbach et al., 2016). Despite some reports within the literature, the role of the SLT in BIs is still in the early stages of development in SA. Therefore, the current study aimed to explore the current knowledge and experience of SLTs in SA with regards to people with BIs, access to SLT services, and referral criteria and pathways when referring someone with a BI to SLT. The study also explored the desired training and education needs that could better prepare South African SLTs to work in burns. The following chapter presents a discussion of the results according to the sub-aims of the study described in Chapter 1.

## 4.1. Knowledge and experience

In this study, knowledge and experience were found to be limited among SLTs in SA across varying years of working experience. Overall, this may be due to the unfamiliar features of the population which are unique to BIs, and the low-profile status of BIs in SA as described by participants in this study. The BI population introduces new areas of knowledge to the scope of SLT which are not currently considered in swallowing or communication in other populations. These areas are suggested to include: knowledge of BIs including the aetiology and thickness of a burn, the presence of inhalation injury, and the likely sequelae of a BI on a person's functioning which may require SLT service (Williams & Baker, 1992). These sequelae or functional deficits unique to BIs may include: dysphagia or dysphonia secondary to burn or inhalation injury where the mucosal lining or structures of the oral cavity or upper airway are damaged; intubation, tracheostomy and ventilator requirements due to inhalation injury and associated respiratory complication unique to BIs; and limited neck, facial, and oral ROM due to BI which may result in scarring and contracture of these structures responsible for eating, drinking, and communicating. This includes articulation and facial expression (Clayton et al., 2020; Clayton & Patterson, 2011). In addition to the abovementioned areas of knowledge, there are additional areas of assessment and management not common in other SLT populations such as facial burns – which includes assessing the BI and understanding associated normative ROM and maximal intercisal opening measurements, orofacial exercises (including passive, active, and active-assisted

ROM), oral splinting (microstomia mouth splints and jaw ROM devices), pressure massage for scar management (in liaison with the OT and PT), and the knowledge of indications and contraindications for the use of specific management options (Edgar & Brereton, 2004; Rumbach et al., 2009).

A lack of consensus or knowledge on the types of BIs that would likely require SLT service, or the clinical areas relevant to SLT that might result from BIs, was noted in the findings. Interesting examples of this from the results included: fewer than expected numbers of SLTs indicating that flame burns would be responsible for injuries that might require SLT service; and higher than ideal numbers indicating that they would likely see people with cold injuries. Although cold injuries, otherwise known as frostbite, are responsible for small numbers of BIs in SA, these are unlikely to require SLT expertise (Rode et al., 2014), whereas thermal injuries such as flame and liquid or chemical burns, which account for the majority of BIs and death in SA, often result in facial and inhalation injuries that are relevant to the role of SLT (Weir et al., 2015). Another possible example of lack of knowledge and experience was inferred by a single response highlighting the use of AAC in the BI population. This may be accredited to the fact that the researcher did not include this as a set option in the questionnaire which could have skewed this result. Limited knowledge and experience were supported by the views of the interviewees who agreed that that SLTs are not aware of their role in this population, as seen in their lack of involvement.

In the findings of the current study, some felt that no difference existed between the assessment and management of people with BIs and people in other populations. Participants explained that they would use their undergraduate knowledge or existing knowledge from other population to assess and manage people with BIs. Although this might prove effective in some clinical domains such as AAC and bedside dysphagia assessment, it will not be sufficient in providing care in the BI-specific domains such as facial burns, for example. Despite this, it was also noted that when SLTs were asked to comment on their confidence in specific areas of BI management, that SLTs reported lacking the knowledge and skills required to confidently assess and manage people with BIs, particularly in the areas of facial burns and oral splinting. These results are contradictory, because if SLTs felt that people with BIs could be assessed and managed without any additional considerations (thus in the same way one might assess a person who had had a stroke, for example), then they should not be reporting low levels of confidence in burn-specific domains. These findings indicate that SLTs have insufficient knowledge and experience in some clinical areas specific to BIs that will require additional education

and training. It might also indicate that SLTs do not fully understand their role in BIs, or that SLTs are possibly unaware of what they do not know. It should be noted, however, that many SLTs in this study showed an awareness of the gaps in their knowledge and the associated clinical limitations thereof.

Although low levels of confidence were reported for facial burns and oral splinting, it was also reported that the responsibility of oral splinting does not or should not fall within the scope of SLT, alongside established domains such as dysphagia, voice, speech, and tracheostomy management. One reason could be that splinting of any kind has not formed part of the SLT scope of practice in SA before and is usually associated with the OT profession (Rumbach et al., 2016). This could also be due to lack of guidance or role clarification for SLTs working in BIs in SA, according to the latest regulations for SLT scope of practice (HPCSA, 2017b). In the international study by Rumbach et al. (2016), African SLTs reported no involvement in orofacial contracture management, unlike other continents where SLT contributed significantly to this area along with the MDT. Interestingly, OTs and PTs from the Rumbach et al. (2016) study reported a desire for increased SLT involvement in this specific area, as it was felt this might be more effectively managed by SLTs with the necessary relevant knowledge and experience. Although OTs and PTs were not interviewed in the current study, the HODs that were interviewed reported a desire to include SLTs in BI management. It is possible that with the appropriate training and education, hands-on experience, and a clearly defined role that is carefully decided on by the MDT, SLTs in SA could employ highly effective management strategies for orofacial burns and contractures as they relate to swallowing and communication.

Burn promotion and prevention were also categorised as an area outside of the scope of SLT in the findings of this study. This again could be due to fact that role development in BIs for SLTs is still in the early stages, as well as SLTs' limited knowledge and experience, and lack of education and training. However, according to the regulations for the profession of SLT in SA, it is, in fact, the role and responsibility of SLT to engage in prevention and promotion activities relating to communication and swallowing. This includes but is not limited to: presenting primary prevention information to high-risk groups; advocating prevention through community awareness; improving health literacy, facilitating access to services, and participating in policy development (HPCSA, 2017b). It is likely that, because SLTs in SA are not fully aware of their role in BIs, they would not consider this to be an area of involvement yet. The area of promotion and prevention will be important to consider when planning education and training for SLTs in BIs. Based on this study's finding, SLTs currently do not

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have adequate knowledge to provide prevention and promotion services to this population, nor are they aware that this would form part of their role as in other populations, for example, stroke prevention or breastfeeding awareness.

A recurring theme that emerged in this study was the lack of undergraduate training in BIs as a cause for limited knowledge and experience. Currently, in SA, there is no known undergraduate theoretical training or exposure to BIs during formative years or clinical placements. The findings suggested that this may be due to BIs often being considered a specialist area, BI management not being taught in undergraduate programs (mostly due to the unique features of the population described above), and full clinical and community curricula (Schoonees et al., 2017).

Undergraduate programs aim to equip future SLTs and newly qualified therapists with the tools and skillsets to manage traditionally common populations, such as stroke, which have well-established practice guidelines and a relatively large evidence base (Brady et al., 2016; HPCSA, 2017b). Undergraduate programs and lecturers also aim to equip students with the ability to use clinical reasoning and apply foundational knowledge to other populations or complex cases (Schoonees et al., 2017). However, it is possible that by excluding low profile populations in the early education of SLTs, there could be a complete lack of awareness of the SLT's role and subsequent involvement therein, which was reported by many participants in this study. However, undergraduate programs are carefully planned to encompass all the necessary theory and practical experience modules expected of South African SLTs, as outlined by the HPCSA (HPCSA, 2017b). Understandably, this may leave limited time for additional or 'special populations' like BIs and few clinical experience opportunities. There may also be an assumed lack of awareness and knowledge among SLT lecturers, supervisors, and seniors at placement sites, however, this has not yet been researched. Unless the role of SLT in BIs is more widely known and practised, and senior SLTs or lecturers at academic institutions have clinical experience in BIs, there is unlikely to be successful implementation of theory modules or appropriate clinical supervision for students due to a lack of knowledge and experience. The expectation that students will receive undergraduate training in all populations, including BIs, with all the possible eventualities, is not realistic. However, by completely excluding a highly contextually relevant population in SA from undergraduate training modules, many people with BIs will not benefit from SLT services. Providing students with a base of knowledge in contextually relevant populations such as BIs, which contribute to a large portion of national traumas, could facilitate recall of information and

general awareness of their role in BIs, should they find themselves in a facility with BIs or be referred someone with a BI during their careers.

Lack of post-graduate education and training opportunities were also consistently highlighted in the findings of this study. Post-graduate opportunities are generally offered in the form of continuing professional development (CPD) activities in SA, which can include traditional learning experiences such as attending conferences and workshops, as well as structured courses and audits of practices or groups of professionals at work (HPCSA, 2017a). Currently, there are minimal training courses, journal articles, or hands-on training opportunities specific to BIs for SLTs in SA. A possible reason for this could again be related to the lack of a defined role or scope and awareness and involvement of SLTs in BIs. However, this could also possibly be attributed to the CPD system itself.

In SA, the CPD system is regulated by the HPCSA who requires all health professionals, including SLTs and SLTAs, to commit to lifelong, consistent learning. The CPD system exists to assist healthcare professionals with updating and developing their knowledge, skillset, and ethical attitudes that support competent practice. The system is clearly outlined and modulated using a points system based on trust that all therapists must maintain on a biennial basis to maintain their right to practice. CPD providers or presenters are encouraged to offer learning activities to acquire new or updated knowledge, improve competence, and improving the performance of the healthcare professionals with an end benefit to the patient. An important request which is highlighted in CPD guidance in the spirit of best practice is that "CPD should address the emerging health needs and be relevant to the health priorities of the country" (HPCSA, 2017a, p. 2).

CPD events or opportunities are often used by providers as a means of generating an income. Therefore, mandatory maintenance of CPD points comes at a lifelong cost in fees and possibly time off from work for attendees. For this reason, SLTs are given the freedom to obtain points in any way they choose. Some generalist approaches to this include subscription to monthly electronic journal articles. Articles cover a variety of topics and populations across both paediatric and adult groups and provide the reader with CPD points once read. Unfortunately, the topics or populations included do not always encompass the vast variety of specialities and populations within the profession, often lack specificity to individual areas of practice, and do not consistently address emerging needs and health priorities of the country. Some healthcare professionals may use this approach as a cost and time-efficient way of accumulating the required points, despite the content being of little relevance to them. Due to limited

evidence to support practice in BIs for SLTs, and the lack of contextually relevant literature for the South African population, it is unlikely that SLTs in SA will develop professionally in the area of BIs through this approach.

Another approach to CPD is the presentation or attendance of study days or courses on a given topic or population (HPCSA, 2017a). These types of education and training events can be time-consuming to develop, and therefore, costly to attend. CPD events can often be targeted at common populations or in new technologies that have the ability to service broad or common populations. These types of events have the potential to attract larger audiences. This may not be the case for niche, low-profile, or newly emerging areas within the profession such a BIs where fewer SLTs are interested or involved, where there is little awareness of the SLT's role, or where there is a lack of clearly defined scope and supporting evidence. Currently in SA, and supported by the findings of this study, there are few SLTs with the adequate knowledge and experience required to successfully provide CPD events to SLTs in the area of BIs. It might also prove challenging to increase awareness and interest in BIs, and to encourage attendance of BI-related events. Undergraduate education and training modules or days may be an appropriate method of increasing knowledge, awareness, and experience that could lead to highly effective SLT service delivery in this population. Another possible method of encouraging regular upkeep of knowledge and skills through CPD could be facilitated by lead or chief SLTs who might consider including protected or ring-fenced time for staff to complete CPD activities during working hours. This would grant SLTs time to focus the content of their learning on their current area of practice and engage in service development, conduct audits, improve service delivery, review and develop site-specific guidelines for practice, and contribute to the development of the profession as required by the HPCSA (HPCSA, 2017b). On a similar note, site-specific or national policy development regarding SLT in BIs in SA could highlight roles and responsibilities which are currently vague. If roles were clearly defined, there may be an increase in knowledge, awareness, and involvement in this population. This could be developed using EBP by MDTs or a group of SLTs who share a common interest in BIs in SA.

In terms of experience working in BIs, few SLTs reported experience in this population. Although many in this study reported having seen a person with a BI during their career, this does not necessarily infer that they are experienced. Experience is built through the expansion of in-depth knowledge and repeated practice of skills over many years working as an SLT. There are many possible reasons for

lack of experience in BIs. Firstly, a lack of exposure, education, and training for SLTs will not likely yield large numbers of SLTs working in this population. Secondly, the findings of this study suggest that even at facilities where there are information-rich, specialist burn units, only a single dedicated SLT may be allocated to service these areas or wards. This was based on the concept of continuity of care through maintaining one consistent relationship between the ward staff and the SLT. This model may allow an SLTs with a specific interest in an area, to focus their effort and clinical development in that area primarily, and to be fully engaged with the population, consult up-to-date evidence, execute projects, and develop service delivery strategies. While there are benefits to this approach, encouraging the rotation of therapists through different specialities could promote a wide range of knowledge, experience, and specialist skill development. This approach may also reduce stasis in the team and allow more therapists to gain experience in varying populations, and contribute new ideas and EBP. Rotation may also offer a chance for staff who have worked in a speciality for many years to develop experience in other areas and could lead to a more flexible and multi-skilled workforce with an understanding of others' roles, departments, and challenges (Campion et al., 1994; Ho et al., 2009). While both approaches have merit, by having single therapists allocated to certain specialities like BIs on a long-term basis, other staff may not have the opportunity to expand or gain in-depth knowledge and skills. This could be exacerbated by older, more experienced SLTs who have established their areas of interest and want to maintain those roles, rather than rotate between clinical areas.

Hands-on experience at a burn unit or facility that manages people with BIs is another opportunity for SLTs to expand their knowledge and experience. From the findings, there appear to be many, regular MDT opportunities in BIs to which SLTs are invited, such as ward rounds and joint learning opportunities, and the desire to have greater SLT involvement from the participant pool was noted. This finding was in keeping with findings from another study where MDT members working in BIs reported that they would like to see more involvement from SLTs (Rumbach et al., 2016). However, staff shortages and capacity were highlighted in the current study as limiting factors in this regard and will be discussed in the next section of the discussion.

### 4.2. Referral pathways and access to SLT

In this study, referral pathways were investigated to gain information on whether referral procedures and criteria facilitated appropriate referrals to SLT for people with BIs, or cause hindrances and lack of involvement of SLT. This is because the process of making a referral has been recognised as being

problematic and stressful due to the absence of structured referral pathways, and unclear referral criteria (Isobell et al., 2015). The results of the Isobell et al. (2015) study showed that the majority of participating SLTs did not feel that healthcare professionals knew *how* to refer people with BIs to SLT. This was disproven in the current study when SLTs and HODs reported the same methods of referral to SLT services, indicating that healthcare professionals are aware of *how* to contact SLTs if deemed necessary. Perhaps the SLTs in the current study attributed a lack of referrals to a lack of knowledge on methods of referral by healthcare professionals, rather than a shared poor understanding of appropriate criteria among both SLTs and healthcare professionals.

Most SLTs admittedly relied on referrals and did not conduct ward screening, but also reported that healthcare professionals do not know *when* to refer in terms of criteria. Although both groups described some common criteria for referral to SLT such as dysphagia, voice disorders, and orofacial burns, some common reasons for referral did not appear to be common knowledge among the groups. These included the presence of tracheostomy and ventilation, communication impairments or AAC requirements, and the consideration of any associated polytrauma or conditions such as head injuries or spinal cord injuries which can result from traumatic BIs (for example, a fall from a ladder post electrical burn causing a head or neck injury).

Efficient referral pathways and communication in healthcare systems are an integral part of directing people to specialist services (Rajman & Mahomed, 2019). If there is a mismatch between the referral criteria known by the SLT and that of referring healthcare professionals, it is unlikely that a 'referral only' policy, which is adopted by many SLTs in this study, will result in appropriate referrals. If healthcare professionals are assumed to be unaware of the role of SLT or when to refer someone with a BI to SLT, then SLTs cannot expect appropriate referrals to be made. It has been shown that effective referral systems lead to time and cost-effective, sustainable healthcare services that avoid inappropriate, delayed, or unsuccessful referrals to specialist service (Bradley et al., 2015). Therefore, it is suspected that, with a well-defined scope of practice and the relevant knowledge and education, SLTs could improve referral pathways and define specific referral criteria for people with BIs. These specific referral criteria could be disseminated to burn units or teams caring for people with BIs which might, in turn, increase the number of appropriate referrals to SLT, and improve patient care.

Although there appeared to be general access to SLT services across almost all parts of SA in this study, staffing numbers and capacity were not directly investigated. However, with a documented ratio of approximately 1 SLT or SLTA to 21 600 people in SA, limited human resource is a known, widespread problem in the profession (HPCSA, 2020; Pillay et al., 2020; Statistics South Africa, 2019). Some participants in this study from larger tertiary and district level facilities, housing many beds, reported having only 1 or 2 SLTs servicing the whole hospital. Due to heavy caseloads and limited clinical capacity, prioritisation of common populations or SLT diagnoses may be necessary among SLTs. Examples of this might include the prioritisation of people with dysphagia or people who have had strokes. High patient loads could leave little or no time for additional responsibilities, and might also prevent practices such as attending education or training, developing services in new or 'special' populations like BIs, consulting EBP, or conducting ward screening to identify possible patients.

## 4.3. EBP

Due to the lack of SLT involvement in BIs in SA, there is limited local guidance and EBP. This means that SLTs working with people with BIs need to rely on limited international guidance or their own practice-based evidence which may be in short supply considering the small numbers of SLTs working in burns, as found in this study. Recommendations or guidelines may not be easily generalised in SA due to a lack of resources and contextual differences or considerations (Schoonees et al., 2017). Some examples of recommendations that may not be easily replicated include the use of instrumental swallowing assessments, such as FEES; the manufacturing of oral splints; the use of jaw and mouth opening mobility devices, such as the Therabite; or the use of speaking valves such as the Passy-Muir Valve for tracheostomy weaning and communication. This could explain why some SLTs in this study reported not making use of EBP related to BIs, or EBP in general, and likely use their knowledge based on other populations. Another possibility for the lack of EBP presented by Babiker (2012) could be that SLTs are constantly faced with large numbers of patients with different diagnoses and are unable to stay well informed on the latest EBP due to time and resource constraints. Therefore, healthcare professionals provide services different to what is deemed to be the gold standard of care which may not benefit the patient and could cause harm (Babiker, 2012). This suggests that there is a need for contextually relevant research and guidance in assessing and managing BIs. These resources could be developed by SLTs as practised-based evidence within a South African context that utilises existing literature. A positive finding in the study was that some SLTs working in BIs have already investigated their role, and collated site-specific guidelines for practice. However, this was done by only a small

number of SLTs, which could be due to the perceived small number of BIs needing SLT based on referrals, limited staffing, lack of awareness of the SLT's role, or varying prioritisation of tasks and caseload by teams.

## 4.4. Education and training

Overall, the findings of the study related to education and training showed that SLTs would like to increase their knowledge and experience in BIs. Most participants agreed that this population is important within a South African context and that this is highly relevant to the profession of SLT. It was also reported that BIs should be specifically included in the official scope of practice and training for SLTs in SA and should be supported by clearly defined responsibilities or guidelines. This was supported by the views of the HODs who felt that people with BIs could greatly benefit from SLT involvement and that some areas might be better managed by appropriately trained SLTs.

Despite the high cost of attending CPD events in SA, participants in this study reported a desire for training and education in this population and would attend CPD opportunities related to BIs if made available. Many participants also indicated a desire to attend conferences or congresses, both of which are available and presented at least biennially by national and international burn associations such as the South African Burn Society, the Pan African Burn Society, and the International Society for Burn Injuries. Healthcare professionals are encouraged to not only attend these events, but to present research or projects related to any aspect of BIs such as medical management, wound care, epidemiology, nutrition, rehabilitation, or education on BIs. Doctors or surgeons, nurses, therapists, social workers or any other members of the burn team are encouraged to present BI information (http://www.panafricanburns.org/).

Hands-on training at a BI unit was also a preferred type of education and training, which is available in SA, according to the HODs in this study. It is likely that SLTs are not aware of these opportunities due to the emerging nature of the population in SLT, and the additional overlay of lack of awareness, staff shortages or clinical capacity to attend events or conduct research, and poor communication among healthcare professionals regarding learning opportunities. However, these findings suggest that South African SLTs who are willing to invest themselves into expanding their own knowledge in BIs and the scope of the profession, could provide highly effective SLT services to people with BIs in order to

show measurable improvements in patient outcomes, and to contribute to the knowledge of others SLTs.

In terms of research or projects, the findings showed that many SLT would be willing to participate in and conduct their own research or practice-based evidence that is contextually relevant to SA using existing EBP and literature. This is a positive finding, because there is only a small existing pool of literature regarding this population as found by the researcher, meaning there is potential for this emerging population to be thoroughly investigated and researched by SLTs in SA that could lead to well-defined areas of practice for SLTs that are based on relevant and up-to-date evidence.

It can be appreciated that not all SLTs would be willing to or want to work with people with BIs as found in this study. While this consideration was not directly investigated, participants reported concerns surrounding their ability to cope emotionally with the severe nature of BIs themselves, as well as the environment in which BIs are cared for. Generally, exposure to wounds, blood, or suffering from pain is not commonplace in most clinical areas of the SLT profession, as many of the populations seen by SLT include populations that are 'less medical'. These might include groups such as paediatric populations with developmental or speech and language delays, congenital or childhood eating and drinking difficulties, or hearing impairments affecting communication. In adults, these populations might include progressive degenerative disorders like dementia, strokes, or head injuries where rehabilitation is functional rather than related to the physical injury itself, as with BIs. For this reason there might be some reluctance to engage in burn-specific domains such as scar management, contracture preventions through oral splinting, passive and active range management, and advocacy for surgical contracture release. The willingness of SLTs to work in this population requires further investigation in future studies.

BIs can be unfamiliar and the environment intimidating for SLTs, and other therapists, as reported in this study. People with BIs suffer from extreme pain, which is managed as efficiently as possible, may be mechanically ventilated or rely on other supportive equipment, and covered in multiple dressings and bandages around their heads, faces, and bodies. Most will experience painful dressing changes or procedures in the ward, and regular theatre visits for debridement and skin grafting. Physical rehabilitation of BIs can also be extremely painful, and the long length of stay of people with severe BI can lead to long-term debilitating conditions such as post-intensive care syndrome, critical care

myopathy, and cognitive, psychological, and physical impairment (Mehlhorn et al., 2014). These complexities found in the BI population further support the need for in-depth knowledge and experience among SLTs to ensure a holistic understanding of how a BI can be life-changing, and to equip SLTs with the appropriate skills to provide person-centred care.

It was interesting to note that many participants in the study were not aware of their role as it relates to national health goals or did not understand how trauma, including BIs, forms one of the quadruple burdens of disease in SA. Despite the many efforts of universities and lecturers to shift away from a diagnosis-based model of care with the introduction of person-centred approaches such as the International Classification of Functioning, Disability and Health, there might be a persisting lack of education or understanding among SLTs as to where they fit in the health system. Their understanding of how allied health professional are a part of the system striving to achieve national health goals and reduced the quadruple burden of disease might also be lacking (WHO, 2002). Public healthcare needs to align itself with the needs and priorities of the nation. Perhaps SLTs focus too much on certain clinical populations and diagnostic management, rather than on other areas within the scope of the profession. SLT responsibilities such as patient advocacy, and prevention and promotion can affect change and reduce the burden of disease. These, among others, are described by the HPCSA as roles pertaining to the scope of SLT in SA. It is important to mention that prevention and promotion activities are described in a general sense, for example; promotion of cessation of smoking, wearing a seat belt and helmet, practising road safety, and stroke prevention (HPCSA, 2017b). Therefore, this might also include topics such as basic fire safety, basic wound or burn care for minor BIs, and electricity or energy safety in the home. It is possible that SLTs do not feel that these areas of education and training for patients and caregivers are relevant to their scope, and thus do not consider this their responsibility. This an incorrect perception, as the promotion of health and prevention of illness falls within the scope of all healthcare professionals.

Overall, SLTs reported a foundational lack of knowledge and experience at both undergraduate and postgraduate levels. This has led to a reduced awareness of the SLT's role in BI, formulation of contextually appropriate role descriptors, a lack of SLT involvement which affects referral pathways, and minimal service development or research in this population. Despite low levels of confidence in the assessment and management of people with BIs, the majority of SLTs in this study showed a willingness to work with people with BIs, provided they received the appropriate education and

training. The current study also showed that some experience and training opportunities are available to those few SLTs who work at sites with specialised burns services. However, there are limited other known opportunities available to the general population of SLTs. Other considerations from the findings affecting SLT involvement in BIs included reduced staffing levels and clinical capacity, possible misconceptions among the greater MDT on the role of SLT in burns, and the reluctance of some SLTs to work with people with BIs and in the burns environment.

## 4.5. Clinical implications

From the findings of this study, it became evident that there is limited involvement of SLTs in burn management, and a lack of awareness of their role in BIs. This is likely due to BIs being a relatively new area of clinical practice and an apparent lack of education and training, which results in a low level of awareness, knowledge, and experience among SLTs. It was also noted that there is limited contextually relevant evidence or official scope of practice regarding the provision of assessment and management to the BI population. The willingness of SLTs to join burn MDTs was well-reported and supported by the desire from HODs to have SLTs as members of the team. This was, however, hindered by a lack of confidence to effectively serve this population based on knowledge and experience, as well as other systemic factors, such as staffing issues.

In practice, SLTs may receive referrals or work at facilities that treat people with severe BIs. Therefore, they need to be knowledgeable regarding all common and unique clinical implications relating to BIs as described in this study, and disseminate this information to teams working with BIs to improve referral pathways.

SLTs and SLT students need to develop and expand their knowledge and experience in BIs. This can be achieved in various ways. Undergraduate and postgraduate educational and training opportunities relating to BIs for South African SLTs need to be developed. CPD opportunities and hands-on training could be facilitated by burn units or wards caring for people with BIs as a way of providing theoretical knowledge and practical case studies. Additional topics such a policy development, prevention and promotion, and research design could be included.

Student SLTs should be exposed theoretically and clinically to the BI population as a means of developing awareness of their role, as well as improving their knowledge and experience. This could be

achieved by providing training for academics and lecturers regarding the BI population and unique clinical domains, such a facial burns, inhalation injuries, and contracture management. Guest speakers such as doctors or SLTs experienced in BI could facilitate these training opportunities as well. Academics and lecturers could also develop modules based on international guidelines from other universities and health systems that are not dependent on context and resources, but rather on general BI information and theory. Many of these are up-to-date, available online as published work, and have been published by SLTs and burns MDTs.

Additionally, it would be helpful for people who have suffered severe BIs affecting their communication, breathing, swallowing, and QOL or psychosocial wellbeing as it related to these areas, to speak to students or participate in focus groups. This could aid in developing a deeper understanding among SLTs of the all-inclusive effects of BIs on a person's life, as well as the different stages of recovery based on lived experiences. Many burns survivors advocate for those with severe BIs and are members of burns societies and charities across SA, who engage in regular burns education and support.

SLTs who have access to local burn units or wards could approach burns MDTs and conduct or request short training sessions on referral criteria, or type of services and frequency of support that could be offered. In return, MDTs can be invited to present information to SLT teams on the effects of severe BIs to the face and airway. This could help guide SLTs in developing their own site-specific criteria and management protocols along with the MDT. SLTs could look to develop their own practice-based evidence in this new population, which has much room for development.

Furthermore, it is important to develop adequate referral pathways and support networks for SLTs, to assist SLTs in providing optimal intervention to people with BIs. There are many platforms on social media where thoughts and suggestions could be requested. Many of these groups are general SLT groups, but there are specific groups for BIs where advice and contact information of relevant professionals are available. Creating a platform for South African SLTs working in BIs could be beneficial in sharing EBP and will provide SLTs with a space to pose questions or challenging cases anonymously for comment or support.

Some SLTs form part of burn societies. These SLTs should be encouraged to invite interested SLTs to education and learning opportunities related to BIs, such as congresses or training days, and to increase the awareness of BIs in SA through social media. Opportunities like congresses will allow SLTs to grow their knowledge of BIs and to present their projects and research to like-minded healthcare professionals. SLTs appear to be are grossly underrepresented in this regard, based on the findings of this study.

SLT teams around SA should encourage clinical exposure or rotations through specialized areas like BIs, in order for a greater number of SLTs to grow in skill and confidence, and to expand the scope of SLT in BI management. Those already working with BIs should provide training to their teams, and develop CPD study days or online training and webinars for those interested in learning about their role in BIs. Additionally, SLT teams who have access to BI wards and units, but are not servicing them for lack of knowledge and experience, should invite more experienced SLTs from neighbouring burns services to conduct joint learning and teaching events.

Site-specific and national policy and guidance frameworks should be developed by professional bodies, along with experience national and international stakeholders, and SLTs on the ground already working with people with BIs. These SLTs may have invaluable insights into the needs and challenges of this population. This could assist in the planning of education and training for students, post-graduates, and lecturers, and should provide clear guidance on the scope, roles, and responsibilities of the SLT working with BIs in SA.

### 4.6. Limitations and recommendations

Limitations of this study included the small sample size of participants in the semi-structured interviews. This limited the opportunity to greater explore the perceptions of HODs on the role of SLTs in BIs more widely across facilities or hospitals in SA, or to extend the findings to other HODs working in BIs. All participants in the semi-structured interviews also represented only public healthcare. This could be a limitation of the study as it does not account for the perspectives or practices being carried out in the private healthcare settings in this population. However, it is worthwhile to note that during the recruitment process it was found that the need for burns services in SA lies predominantly in the public setting, hence why healthcare professional with the niche skill set to serve this population work in public health. Additionally, the interview process was time consuming

and participants were difficult to recruit due to a poor response rate, despite multiple attempts to contact them. A quantitative research approach among medical professionals, in the form of questionnaires presented at information-rich environments such as congresses, may yield larger response rates and provide the researcher with greater or more valuable data.

In terms of the online questionnaire, the nature of the questionnaire limited the ability of the researcher to correlate or understand certain responses from the participants. This could be because the researcher could not control the quality of the open-ended responses provided by the participants or encourage participants to provide additional responses. Another possible limitation noted by the researcher was the uneven distribution of years of experience among participants, with two-thirds having between 1 and 5 years of experience. This could be due to the recruitment method used, which was predominately through Facebook and WhatsApp groups (social media). This may have skewed the results by highlighting the perceptions of SLTs with fewer years of working experience. A recommendation could be to contact possible participants with more years of experience using more traditional recruitment methods, such as via telephone or email, or to purposefully recruit participants across different levels of experience.

The lack of research and data regarding the SLT role in BIs in SA made this study exploratory in nature. Future research could potentially focus on specific details of assessment and management in this population, such as facial burns and inhalation injuries and the management thereof, specifically in the South African context. The study mostly made use of descriptive statistics, and more associations between findings would have been helpful to explore the perceptions of participants. Another limitation of this study was the time available to conduct the study. As this study was completed in partial fulfilment for a Master's degree, it was time-bound and could not be done over an extended period.

For future research, it is also recommended to receive input from the BI population. Input from this population on their perceptions regarding SLT intervention, or the difficulties experienced during the various stages of recovery, will provide the perspective needed to initiate interest in this population among SLTs. It could also improve the quality of care offered or provided to this population. Furthermore, it could help to determine the need for SLT intervention and to identify if people with BIs are aware of SLT services and benefits thereof. In terms of education and training, this patient-reported information could be considered when planning contextually appropriate resources.

Investigating the perceptions of other members of the MDT, such as OTs, could also assist in defining and developing the role of SLT. SLTs should collaborate with OTs to learn about oral splinting. OTs are highly skilled in manufacturing splints and garments to assist in maintaining ROM and managing scars from BIs. This could be a worthwhile collaboration and addition to the skill set of SLTs in BIs. Another area not investigated in the current study, which could be included in future, is scar massage of facial burns, as well as the use of pressure garments.

Another recommendation for future research would be to receive more in-depth input from SLTs who are currently working with people with BIs, to determine what their perceptions and recommendations are for SLTs to work in this area. Their perceptions would be contextually relevant to the SA population and will contribute to practice-based evidence.

# 5. Conclusion

This study explored the current role of SLTs in BIs in SA and confirmed that SLTs in SA lack BI-specific knowledge and experience to effectively assess and manage this population. This was demonstrated by a lack of holistic awareness of the role of the SLT in BI management, which resulted in reports of limited exposure and involvement with this population from both participant groups. Poor knowledge of BIs and the possible complex sequelae negatively impacted the clinical confidence among SLTs in this study. This lack of knowledge and experience was further exacerbated by a lack of both undergraduate and postgraduate education and training opportunities.

Overall, a willingness among SLTs to work in this population and to contribute to research and guidelines was identified. However, the current limited involvement in BIs was perceived as a lack of interest by the HOD group. Despite this, HODs expressed the desire to have SLTs as regular members of the burns MDT on a permanent basis, and the valuable contributions that SLTs could bring to the lives of people with BIs were acknowledged.

Effective methods of referral were evident in this study, demonstrating that healthcare professionals know the steps to follow should they wish to request a consultation. However, poor consistency of referral criteria was found between the groups, which could lead to lack of referral to specialist services such as SLT, as well as poorer patient outcomes. It was also identified that SLTs likely assume that other healthcare professions are fully aware of their specific referral criteria, but conduct little teaching to ensure this due to their own uncertainty of their role.

This study also found that BI-specific EBP is not commonly consulted by SLTs working with people with BIs or by HODs when considering management or relevant referrals. Many SLTs even suggested that BIs should be managed without any special consideration of unique areas, such as facial burns, inhalation injuries, and the management of resultant scarring or contractures that could affect communication and swallowing. This further demonstrated a lack of role awareness. However, some SLTs were reported to have collated the limited research on BIs into site-specific guidance for SLT involvement, which is promising. Apart from this, it was found that no clear policy or guidelines for training of SLTs studying towards a degree in SLT, or practice guidelines for those already working, exists in SA, despite the large population of people with BIs described in SA.

Despite limited opportunities for training and education reported by SLTs in this study, many opportunities to engage in learning in the ward setting were described by HODs, who welcomed SLT attendance to ward rounds, meetings and joint learning sessions. However, staff shortages and limited resources were found to be limiting factors for most SLTs, as well as large existing caseloads.

Although the role of SLTs in BIs is still in its infancy in SA and throughout the world, the high prevalence of this type of trauma and clinical presentation of people with severe BIs in SA necessitates an expansion of the role to include BIs. However, without developing clinical competence and a BI skillset through education and training, SLTs will be less likely to work in this population – which would come at a great cost to individuals with BIs who would not benefit from the unique skills that could be offered by SLT in preventing both acute and long-term deficits.

It is recommended that professional bodies developed BI-specific guidelines for practice within a South African context. This could increase undergraduate and postgraduate knowledge and exposure to BIs, which could equip highly competent SLTs with the skills to provide effective, person-centred services to people with BIs, and to contribute to contextually relevant EBP. All SLTs working in relevant settings should seek to become BI-competent. The findings of this study will be useful in informing future educational and training opportunities as a first step to facilitate and develop BI competency among SLTs in SA.

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# 7. List of addenda

**Addendum 1:** Online questionnaire for SLTs

**Addendum 2:** Semi-structured interview schedule for HODs

**Addendum 3:** Informed consent form – Online questionnaire for SLTs

**Addendum 4:** Informed consent form – Semi-structured interview HODs

**Addendum 5:** Ethical approval notice from Stellenbosch University's Health Research Ethics Committee (HREC)

**Addendum 6:** Raw data- Online questionnaires for SLTs

**Addendum 7:** Themes, Subthemes, Codes, and Samples of Participant Responses from the Semi-Structured Interviews

**Addendum 1: Online questionnaire** for SLTs

# SPEECH-LANGUAGE THERAPY FOR BURN INJURIES IN SOUTH AFRICA: KNOWLEDGE AND EXPERIENCE, EVIDENCE-BASED INVOLVEMENT, REFERRAL PATHWAYS, AND TRAINING AND EDUCATION NEEDS

I would like to thank you for taking part in this study. Your participation is entirely voluntary and you are free to decline to participate or to stop completing the questionnaire at any time, even if you have agreed to take part initially. However, once you have submitted your completed questionnaire online, you will no longer be able to withdraw your responses.

## Information about this study

### What is the study about?

This study is being conducted by the primary researcher, Daniela Ferraris, for the purposes of fulfillment of a Master's degree in speech and language therapy through the University of Stellenbosch.

The main focus of this study is to determine the current practices of SLT's working in South Africa with individuals with burn injuries, and to determine if these practices are evidence based or drawn from existing guidelines and protocols. Additionally, I aim to investigate what the current perceived need for SLT in burn injuries is from the perspective of clinical heads of burn units/centers/wards such as doctors and surgeons (non-SLT staff), what the level of accessibility to SLT services is, and what the referral pathways and criteria are.

There will be 2 participant groups. Group 1 will be made up of South African trained Speech-language therapists currently practicing in SA in a hospital, clinic setting or rehab setting. The second group will be made up of clinical leads or heads of department of units or ward who admit and treat individuals with burn injuries. Only group 1 will be completing this online questionnaire, whereas group 2 will be participating in semi-structured interviews.

***PLEASE NOTE: Speech-language Therapist: you need to be working in a hospital/acute/rehab, or university/academic facility to participate***

During this questionnaire you will be asked a series of open and closed ended questions pertaining to you experience in working with burn injuries, any evidence-based research that you make use of if any, what your referral criteria would be for seeing a burn injured patient, what your referral pathways are for health professional to make referrals to you, and any ideas for training on this area that you might have.

### If you agree to participate you will be requested to...

Complete the online questionnaire which will ask approximately 30 questions of you. The majority of the questions will require a yes or no response where others may ask you to select relevant answers or provide a short, typed description. The entire questionnaire should take you approximately 10 minutes to complete.

Will you benefit from taking part in this research?

There are no direct benefits for participating in this study however it is a hope that individuals with burn injuries who require SLT services will benefit from the findings of this study which requires your participation.

Are there any risks involved in your taking part in this research?

During the online survey you will not be asked to provide identifying information such as your name and email address. All information that you provide will be kept confidentially in a password safe database for the purpose of the study.
As a participant, you should be aware that the online survey is not being run from a "secure" https server of the kind typically used to handle credit card transactions, so there is a small possibility that responses could be viewed by unauthorized third parties (e.g., computer hackers).

Further information:

Should you have any further enquiries before consenting to participate in this study or if you would like to receive a copy of the study information and consent form, you can contact the principal investigator of this study, Daniela Ferraris at 16442334@sun.ac.za.

This study has been approved by the Health Research Ethics Committee at Stellenbosch University. The study will be conducted according to the ethical guidelines and principles of the international Declaration of Helsinki, and the Department of Health Ethics in Health Research: Principles, Processes and Studies (2015).

You can contact the Health Research Ethics Committee at +2721 938 9677/9819 if there is anything that concerns you about how this study is being conducted, or if you have a complaint.

# Participant information
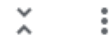
Are you currently registered with the HPCSA? *

○ Yes

○ No

Do you have a degree (undergraduate) in Speech-language therapy from a South African university? *

○ Yes

○ No

Are you currently practicing as a speech-language therapist in South Africa? *

○ Yes

○ No

Are you currently working in/for a hospital/acute/rehab setting, or university/academic setting in *
paediatrics or adults?

○ Yes

○ No

Are you proficient in English (reading and writing)? *

○ Yes

○ No

Have you completed at least 12 months of work as a speech-language therapist since *
qualifying? This includes a community service year.

○ Yes

○ No

○ I qualified before community service was implemented

I confirm that I am over 18 years old, have read and understood the above explanation about the *
study, have answered the questions as truthfully as possible, and agree to participate in this
study. I also understand that my participation in this study is strictly voluntary.

○ Yes

○ No

# Biographical Information

Qualifications (Undergraduate and post-graduate) *

Long answer text

University from which your undergraduate and postgraduate degree/s were obtained if relevant *

☐ University of Stellenbosch

☐ University of Capetown

☐ University of Pretoria

☐ University of the Witwatersrand

☐ Sefako Makgatho Health Sciences University (Previously MEDUNSA)

☐ University of KwaZulu Natal

Years of practice since qualifying (include your community service year) *

○ 1 - 3 years

○ 3 - 5 years

○ 5 - 7 years

○ 7 - 10 years

○ 10 - 15 years

○ 15 - 20 years

○ >20 years

Type of job setting (current) (You can select more than 1) *

☐ District/regional hospital or rehabilitation center

☐ Tertiary healthcare (academic)

☐ Private hospital or rehabilitation centre

☐ University

# Knowledge and experience

As a speech-language therapist (SLT) have you ever seen a patient with a burn injury before? *

○ Yes

○ No

---

Does your current place of work admit or manage individuals with burn injuries *

○ Yes

○ No

○ I am not sure

---

What type of facility is/are there for burn injuries people where you work? *

○ Burn Ward

○ Burn Center

○ Specialist Burn Unit

○ No specific area, patient are admitted to general wards (i.e. medical, surgical, trauma etc)

○ I am not sure

---

Have you or your team ever received a referral for a person with a burn injury? *

○ Yes

○ No

○ I am not sure

---

At work, do you typically screen your wards/sections to determine if there are any patients who *
require SLT services generally?

○ Yes

○ No, I only see patients on referral/request by another healthcare professional

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If you do screen the wards/sections, do you screen all wards or only selected wards/sections? *

◯ All wards are screened by myself/my team

◯ Only wards carrying common caseload patients are screened

◯ I/my team do not screen wards

Do you ever screen individuals with burn injuries/wards that care for individuals with burn injuries? *

◯ Yes

◯ No

From your experience or knowledge, which types of burn injuries would be seen by SLT? Please select as many as you see fit *

☐ Flame

☐ Electrical

☐ Flash

☐ Liquid

☐ Contact

☐ Ingestion

☐ Inhalation

☐ Cold burns

☐ I am not sure

For which clinical domains do you think SLTs would be involved in burn injuries? *

- [ ] Speech

- [ ] Language

- [ ] Cognitive-communication

- [ ] Voice

- [ ] Fluency

- [ ] Dysphagia (bedside assessment and instrumental assessment)

- [ ] Tracheostomy and/or ventilation

- [ ] Facial burns and scarring/contractures

- [ ] Other...

For which additional domains would SLTs be involved in burn injuries? *

- [ ] Burn prevention and promotion

- [ ] Screening

- [ ] Patient and caregiver education and training

- [ ] Support groups

- [ ] Patient advocacy

- [ ] Splinting (oral splints)

- [ ] Research (contributing to evidence-based research/conducting research)

- [ ] Protocol and guideline development

- [ ] Inter and multidisciplinary training and education

- [ ] Expanding the scope of SLT services (e.g. based on the need and national health goals)

Do you understand and do you feel confident that you could ASSESS all relevant areas with specific reference to literature in this population whether you have seen someone with burns or if you were to receive a referral? In other words, are you aware of when and how to ASSESS this specific population, do you know the expected comes of specific burns injuries and could you fully ASSESS the burn injured population including instrumental assessment? *

○ Yes

○ No

○ Somewhat

---

If you answered 'yes', why is this?

☐ It's no different to assessing individuals without burn injuries

☐ I draw on evidence-based research specifically surrounding burn injuries

☐ Other...

---

If you answered 'no' or 'somewhat', why is this?

○ I don't fully understand my role in assessing individuals with burn injuries

○ I have no training or knowledge in this population

○ I didn't realise it was an area in which SLTs could work

○ I don't receive referrals to see individuals in this population

○ I am unsure if there are individual with burn injuries who are admitted to/cared for the facility where I work

○ Other...

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Do you understand and do you feel confident that you could MANAGE all relevant areas with    *
specific reference to literature in this population whether you have seen someone with burns or
if you were to receive a referral?. In other words, are you aware of when and how to intervene in
this specific population, do you know the expected comes of specific burns injuries and could
you fully MANAGE the burn injured population?

○ Yes

○ No

○ Somewhat

---

If you answered 'yes', why is this?

☐ It's no different to managing individuals without burn injuries

☐ I draw on evidence-based research specifically surrounding burn injuries

☐ Other...

---

If you answered 'no' or 'somewhat', why is this?

○ I don't fully understand my role in managing individuals with burn injuries

○ I have no training or knowledge in this population

○ I didn't realise it was an area in which SLTs could work

○ I don't receive referrals to see individuals in this population

○ I am unsure if there are individual with burn injuries who are admitted to/cared for the facility where I work

○ Other...

Which area's following a burn injury specifically, do you NOT feel confident in? *

☐ Speech

☐ Language

☐ Cognitive commmunication deficits

☐ Voice

☐ Fluency

☐ Dysphagia (Bedside assessment)

☐ Dysphagia (Instrumental assessment - Videofluoroscopy and FEES)

☐ Tracheostomy and ventilation

☐ Facial burns and scarring/contractures

☐ Burn prevention and promotion

☐ Screening burns

☐ Patient and caregiver education and training for burns

☐ Support groups

☐ Patient advocacy

☐ Splinting (oral splints)

☐ Research (contributing to evidence-based research/conducting research)

☐ Protocol and guideline development

☐ Inter and multidisciplinary training and education

☐ Expanding the scope of SLT services (e.g. based on the need and national health goals)

# Evidence-based practice

Are you aware of any evidence-based guidelines or protocols for SLTs in burn injuries *

○ Yes

○ No

Do you make use of up to date literature and protocols when assessing and managing individuals? *

○ Yes

○ No

Do you make use of up to date literature and protocols when assessing and managing individuals with burn injuries? *

○ Yes

○ No

○ I have not seen someone with burn injuries

What types of literature do you make use of? *

☐ Research on burn injuries

☐ National policies on MDT/SLT intervention

☐ International policies on MDT/SLT intervention

☐ Site specific policies

☐ Undergraduate training and knowledge materials

☐ Postgraduate training and knowledge materials (incl. masters and CPD)

☐ Other...

Have you attended any CPD days or courses/ training events specifically on or including burn related injuries? *

○ Yes

○ No

Where did you complete this? *

☐ At a burn unit

☐ At a congress

☐ At a University

☐ At a training site

☐ Online

☐ CDP event help privately

☐ Overseas

☐ At work

☐ I haven't

# Referral Pathways and Access ⌄ ⋮

Do you have an established referral pathway within your facility for Speech therapy referrals generally? *

○ Yes

○ No

What referral pathways are in place? *

☐ Paper based referrals

☐ Electronic referrals e.g. email

☐ WhatsApp referral system

☐ Verbal referrals (face-to-face)

☐ Whiteboard/notice board referrals

☐ Ward round attendance where referrals are picked up

☐ Text message (SMS)

☐ Telephonic

☐ Other...

Is there an established referral pathway accessible to professionals to refer? (including therapists and other staff) *

○ Yes

○ No

If a healthcare professional from any ward or department would like to request a consult/send a referral to Speech & language therapy for any patient who they felt required the service, would this patient have access to an SLT? *

○ Yes

○ No

Do you think that healthcare professionals working in the burn unit/center/ward or with people   *
with burn injuries know WHEN to refer someone for SLT?  i.e. timing and criteria for referral

○ Yes

○ No

○ I am not sure

---

If you answered 'yes', can you please describe or list the criteria currently being used or known by
healthcare professionals specifically for this population (e.g. difficulty swallowing)

Long answer text

---

If you answered 'no', can you provide a reason for why you believe this might be.

Long answer text

---

Have you or another SLT provided healthcare professionals with training regarding the criteria   *
for referring individuals with burn injuries specifically?

○ Yes

○ No

---

Do you think healthcare professionals other than SLTs would be open to receiving information or   *
education on the SLT role in burn injuries?

○ Yes

○ No

---

If you answered 'no', can you provide a reason for why you believe this might be.

Long answer text

---

# Education and training

Do you think that SLT involvement in individuals with burn injuries is relevant specifically within the South African context? *

○ Yes

○ No

○ I am not sure

Based on your previous answer, are you aware of the following? (you may select more than one) *

☐ The incidence of burn injuries in South Africa

☐ The incidence of deaths related to burn injuries in South Africa

☐ Burn injuries with regard to the Quadruple burden of disease in South Africa

☐ National health goals

Do you think that South African SLT are equipped to assess and manage individuals with burn injuries? *

○ Yes

○ No

○ I am not sure

Would you be willing to work in the burn unit/with the burn injures population? *

○ Yes

○ No

○ Maybe

Can you please provide a reason for your previous answer. You may express any thoughts or feelings that you may have.

Long answer text

---

Do you think it would be a good idea for SLTs to determine if there is in fact a burns population at their place of work should they be uncertain, and to investigate increasing the awareness of SLT in burns and offer their services?

○ Yes

○ No

---

If given the opportunity to increase your knowledge of burn injuries and the role of the SLT, *
would you participate?

○ Yes

○ No

---

Which of the following opportunities/resources would you make use of or recommend? You may *
choose as many as you like

☐ Journal articles on this topic

☐ CPD events (courses)

☐ Online CPD

☐ Attending congresses/conferences

☐ Hands on training at a burn unit or at a facility that treats people with burn injuries

☐ Undergraduate module/day course for students to increase awareness of newly qualified SLTs

☐ Other...

Would you be interested in conducting research within the burns population at some stage, considering there is limited research relating to this population and SLT? *

◯ Yes

◯ No

◯ Maybe

# Thank you for completing this questionnaire.

If you did not get to complete the questionnaire and have been redirected to this page after providing only your participation information, then unfortunately you did not meet the inclusion requirements to participate in this study. However, I would like to thank you for your time.

Please make sure that you click 'submit' whether you were able to complete the study or not.

**Addendum 2: Semi-structured interview schedule for HODs**

**TITLE OF RESEARCH STUDY:** SPEECH AND LANGUAGE THERAPY FOR BURN INJURIES IN SOUTH AFRICA: KNOWLEDGE AND EXPERIENCE, EVIDENCE-BASED INVOLVEMENT, ACCESS, REFERRAL PATHWAYS AND TRAINING AND EDUCATION NEEDS.

| **Opening** |
| --- |
| <ul><li>Greeting and introductions.</li><li>Recap on the purpose of the interview: The purpose of this study is to determine the knowledge and experience, evidence-based involvement, access, referral pathways, and training and education need of SLTs working in burn injuries in South Africa. The study will collect information for two groups of participants. You are part of a group of 5 heads of department of burn units or departments that manage burn injuries.</li><li>The interview should take approximately 30 minutes.</li><li>You are free to withdraw from the interview at any point.</li><li>Are you comfortable with this interview being recorded so that your responses can be typed out after this interview?</li><li>Do you have any questions before I start?</li></ul><br>The research will briefly explain the topics that will be investigated during the interview |
| **Body** |
| **Biographical information**<ul><li>Qualifications</li><li>Current place of work/department, level of care</li><li>Years of experience</li></ul> |
| **Knowledge and experience**<br>Examples of questions:<ul><li>Can you tell me about the MDT professionals who would be involved with the burn injured patients at your facilities?</li><li>Have you referred an individual with burns to SLT before?</li><li>Can you recall the reason why? Can you explain?</li><li>In your opinion, what do you know to be reason for referring an individual with burns to</li></ul> |

SLT?

- Have you commonly seen any SLTs in the ward/screening patients in the ward?

- Do you/your department engage in MDT education and training? Can you describe further?

**Access**

Examples of questions:

- Is there a SLT service at or close to the facility/ is there access to SLT at this facility?

**Referral pathways**

Examples of questions:

- Do you have a referral method for referring patients to SLT?

- Can you describe how you would refer a patient to SLT?

**Evidence based involvement/practice**

Examples of questions:

- Do you/your department make use of SLT services based on any research, policies, guidelines or outcome measures?

**Training and education**

Examples of questions:

- Is there a need for undergraduate training?

- Do you think SLTs in SA are equipped?

| **Closing** |
|:---:|

Is there anything else you would like to add regarding this topic of the questions asked?

Do you know of any other professionals in a similar position to you working in burns who might be able to participate in this study?

Thank him/her for his/her time.

I have really learned a lot.

Goodbye.

**Addendum 3: Informed consent form – Online questionnaire for SLTs**

### PARTICIPANT INFORMATION LEAFLET AND INFORMED CONSENT FORM: ONLINE QUESTIONNAIRE

**TITLE OF RESEARCH STUDY:** SPEECH-LANGUAGE THERAPY FOR BURN INJURIES IN SOUTH AFRICA: KNOWLEDGE AND EXPERIENCE, EVIDENCE-BASED INVOLVEMENT, ACCESS, REFERRAL PATHWAYS AND TRAINING AND EDUCATION NEEDS.

We would like to invite you to take part in a research project which involves the completion of an online questionnaire. Your participation is **entirely voluntary,** and you are free to decline to participate or to stop completing the questionnaire at any time, even if you have agreed to take part initially. However, once you have submitted your completed questionnaire online, you will no longer be able to withdraw your responses as there will be no way of linking your responses back to you.

### What is the study about?

As part of a master's thesis, the focus of this study is to determine the knowledge and experience, evidence-based involvement or practises, access to SLT, referral pathways, and training and education needs of SLT's working in South Africa with individuals with burn injuries. The researcher aims to supplement these findings by investigating the opinions and perspectives of clinical heads of burn units/centres/wards such as doctors and surgeons (non-SLT staff).

There will be 2 participant groups. Group 1 (quantitative data collection participant group) will be made up of South African trained Speech-language therapists (SLT) currently practicing in SA. The second group (qualitative data collection participant group) will be made up of clinical leads or heads of department of units or wards who admit and treat individuals with burn injuries. Only the quantitative data collection participant group (SLTs) will be completing an online questionnaire, whereas the qualitative data collection participant group (Heads of departments managing burns) will be participating in semi-structured interviews. I hope to recruit up to 80 participants and 5 participants respectively.

When completing the online questionnaire as part of the quantitative data collection participant group (SLTs), you will be asked a series of open and closed ended questions pertaining to you experience in working with burn injuries, any evidence-based research that you make use of, what your referral criteria would be for seeing a burn injured patient, what your referral pathways are for health professional to make referrals to you, and any ideas for training on this area that you might have.

**Why are you being asked to participate?**
You are being asked to participate in this study as you meet the following inclusion and exclusion criteria for the quantitative data collection participant group (SLTs) as outlined below:

| Inclusion criteria | Exclusion criteria |
|---|---|
| • Current HPCSA registration<br>• Degree in speech-language therapy<br>• Qualification obtained from a South Africa University | • Speech-language therapy degree obtained from an overseas institution<br>• Currently practicing outside of South Africa<br>• Less than 1 year of working experience as an SLT |

| | |
|---|---|
| • 1 or more years of practice since qualifying (completed community service year)<br>• Proficient in English<br>• Currently practicing/working in South Africa in either private or public sectors<br>• Currently working in a hospital/acute/rehab/university sector job | • SLT's working in schools or doing an early literacy or language therapy or working in any other non-acute/hospital/rehab/university facility |

**If you agree to participate you will be requested to…**
Complete the online questionnaire which will ask approximately 30 questions of you. The majority of the questions will require a yes or no response where others may ask you to select relevant answers or provide a short, typed description. The entire questionnaire should take you approximately 10 to 12 minutes to complete.

**Will you benefit from taking part in this research?**
There are no direct benefits for participating in this study. However, it is a hope that individuals with burn injuries who require SLT services will benefit from the findings of this study which requires your participation.

**Are there any risks involved in your taking part in this research?**
During the online questionnaire you will be asked to provide identifying information such as your name and email address. All personal information will be kept confidentially in a password safe database and anonymised for the purpose of the study.

As a participant you should be aware that the online survey is not being run from a "secure" https server of the kind typically used to handle credit card transactions, so there is a small possibility that responses could be viewed by unauthorized third parties (e.g., computer hackers).

Should you have any further enquires before consenting to participate in this study you can contact the Principal Investigator of this study, Daniela Ferraris at +447388569423/16442334@sun.ac.za.

This study has been approved by the **Health Research Ethics Committee at Stellenbosch University.** The study will be conducted according to the ethical guidelines and principles of the international Declaration of Helsinki, and the Department of Health Ethics in Health Research: Principles, Processes and Studies (2015).

You can contact the Health Research Ethics Committee at 021 938 9677/9819 if you have any concerns about how this study is being conducted, or if you have a complaint.  You will receive a copy of this information and consent form via email for you to keep safe.


**At the start of the questionnaire, you will be asked to confirm qualifying information for participation. By starting the questionnaire, you are confirming that you are over 18 years old, have read and understood the above explanation about the study, and agree to participate. You also understand that your participation in this study is completely voluntary.**

**Addendum 4: Informed consent form – Semi-structured interview for HODs**

## PARTICIPANT INFORMATION LEAFLET AND INFORMED CONSENT FORM: INTERVIEW

| TITLE OF RESEARCH PROJECT: | |
|---|---|
| SPEECH-LANGUAGE THERAPY FOR BURN INJURIES IN SOUTH AFRICA: KNOWLEDGE AND EXPERIENCE, EVIDENCE-BASED INVOLVEMENT, ACCESS, REFERRAL PATHWAYS, AND TRAINING AND EDUCATION NEEDS. | |
| **DETAILS OF PRINCIPAL INVESTIGATOR (PI):** | |
| **Title, first name, surname:** Miss Daniela Ferraris | **Ethics reference number:** S19/06/108 |
| **Full postal address:** PO Box 6627 Weltevreden Park, 1715 | **PI Contact number:** +447388569423 |

We would like to invite you to take part in a research project. Please take some time to read the information presented here, which will explain the details of this project. Please ask the study staff or doctor any questions about any part of this project that you do not fully understand. It is very important that you are completely satisfied that you clearly understand what this research entails and how you could be involved. Also, your participation is **entirely voluntary,** and you are free to decline to participate. In other words, you may choose to take part, or you may choose not to take part. Nothing bad will come of it if you say no: it will not affect you negatively in any way whatsoever. Refusal to participate will involve no penalty or loss of benefits or reduction in the level of care to which you are otherwise entitled to. You are also free to withdraw from the study at any point, even if you do agree to take part initially.

This study has been approved by the **Health Research Ethics Committee at Stellenbosch University.** The study will be conducted according to the ethical guidelines and principles of the international Declaration of Helsinki, the South African Guidelines for Good Clinical Practice (2006), the Medical Research Council (MRC) Ethical Guidelines for Research (2002), and the Department of Health Ethics in Health Research: Principles, Processes and Studies (2015).

### What is this research study all about?
As part of a master's thesis the focus of this study is to determine the knowledge and experience, evidence-based involvement or practises, access to SLT, referral pathways, and training and education needs of SLT's working in South Africa with individuals with burn injuries. The researcher aims to supplement these findings by investigating the opinions and perspectives of clinical heads of burn units/centres/wards such as doctors and surgeons (non-SLT staff).

There will be 2 participant groups. Group 1 (quantitative data collection participant group) will be made up of South African trained Speech-language therapists (SLT) currently practicing in SA. The second group (qualitative data collection participant group) will be made up of clinical leads or heads of department of units or wards who admit and treat individuals with burn injuries. The quantitative data collection participant group (SLTs) will be completing an online questionnaire, whereas the qualitative data collection participant

group (Heads of departments managing burns) will be participating in semi-structured interviews. I hope to recruit up to 80 participants and 5 participants respectively.

You will be participating in a semi-structured interview with an independent Speech-language Therapist (SLT). During the interview the themes that will be discussed will cover; biographical information, designation, qualification, and work experience; knowledge on the role of the SLT in burn injuries, understanding of the criteria for referral of a person with a burn injury for SLT services, accessibility to SLT services at your facility; and recommendations for training and education.

A semi-structured interview setup allows the interviewer to ask open ended questions that allow you as the participant to talk about the topic in a dynamic and descriptive way that is not confined to a set of rigid questions, but also allows the interviewer to probe certain topics for greater insight.

With your consent, the interviewer will audio-record the entire interview to ensure that all information is captured holistically. All recordings will then be transcribed after each interview and analysed by the primary researcher.

**Why do we invite you to participate?**
You are being asked to participate in this study as you meet the following inclusion and exclusion criteria for the qualitative data collection participant group as outlined below:

| Inclusion criteria | Exclusion criteria |
| --- | --- |
| • Relevant head of department, unit, or ward, clinical lead of a burn facility or department treating burns (e.g. Clinical Burn Unit Manager, Head of Department of a burns unit) <br> • Currently practicing/working in South Africa in either private or public services <br> • Proficient in English | • Speech-language therapist <br> • No experience in BIs |

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**Will you benefit from taking part in this research?**
The interview will be scheduled during a time that is most convenient for you. Should you be able to participate in a face-to-face interview, refreshments will be provided by the researcher. There are no direct monetary benefits for participating in this study. However, it is the hope that individuals with burn injuries who require SLT services will benefit from the findings of this study which requires your participation.

**Are there any risks involved in your taking part in this research?**
During the interview you will be asked to provide identifying information such as your name and email address. All personal information will not be including in the findings of this study. All participants will be anonymised, and all recordings and transcriptions of

interviews will be kept in a password protected database. Only the researcher and the independent SLT will have access to this information

Should you have any further enquires before consenting to participate in this study you can contact the Principal Investigator of this study, Daniela Ferraris at +447288569423/daniferrarisslp@gmail.com.

This study has been approved by the **Health Research Ethics Committee at Stellenbosch University.** The study will be conducted according to the ethical guidelines and principles of the international Declaration of Helsinki, and the Department of Health Ethics in Health Research: Principles, Processes and Studies (2015).

You can phone the Health Research Ethics Committee at 021 938 9677/9819 if there still is something that concerns you about how this study is being conducted, or if you have a complaint. You will receive a copy of this information and consent form via email for you to keep safe.

**Declaration by participant**

By signing below, I ..................................................... agree to take part in a research study entitled *SPEECH-LANGUAGE THERAPY FOR BURN INJURIES IN SOUTH AFRICA: KNOWLEDGE AND EXPERIENCE, EVIDENCE-BASED INVOLVEMENT, ACCESS, REFERRAL PATHWAYS, AND TRAINING AND EDUCATION NEEDS.*

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I declare that:

- I have read this information and consent form, or it was read to me, and it is written in a language in which I am fluent and with which I am comfortable.
- I have had a chance to ask questions and I am satisfied that all my questions have been answered.
- I understand that taking part in this study is **voluntary,** and I have not been pressurised to take part.
- I consent to my interview will be audio-recorded and transcribed for the purposes of this research study only
- I may choose to leave the study at any time and nothing bad will come of it – I will not be penalised or prejudiced in any way.
- I may be asked to leave the study before it has finished, if the study doctor or researcher feels it is in my best interests, or if I do not follow the study plan that we have agreed on.

Signed at (*place*) ................................................... on (*date*) ..................... 20__.

..................................................
**Signature of participant**

..................................................
**Signature of SLT interviewer**

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## Declaration by investigator

I (*name*) ................................................................. declare that:

- I explained the information in this document in a simple and clear manner to ..........................................
- I encouraged him/her to ask questions and took enough time to answer them.
- I am satisfied that he/she completely understands all aspects of the research, as discussed above.
- I did/did not use an interpreter. (*If an interpreter is used then the interpreter must sign the declaration below.*)

Signed at (*place*) ................................................... on (*date*) ..................... 20__.

..................................................
**Signature of investigator**

..................................................
**Signature of witness**

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## Addendum 5: Ethical approval notice from Stellenbosch University's Health Research Ethics Committee (HREC)



**Approval Notice**

**New Application**

05/08/2019

**Project ID :**10417

**HREC Reference #** S19/06/108

**Title:** Speech and language therapy for burn injuries in South Africa: Experience, evidence-based involvement and referral pathways  .

Dear Miss Daniela Ferraris

The **New Application** received on  23/06/2019 19:15 was reviewed by members of **Health Research Ethics Committee** via **expedited** review procedures on 05/08/2019 and was approved.

Please note the following information about your approved research protocol:

**Approval date:- 05 August 2019**

   **Expiry date:- 04 August 2020**

Please remember to use your Project ID 10417 and Ethics Reference Number S19/06/108 on any documents or correspondence with the HREC concerning your research protocol.

Please note that the HREC has the prerogative and authority to ask further questions, seek additional information, require further modifications, or monitor the conduct of your research and the consent process.

**After Ethical Review**

Translation of the informed consent document(s) to the language(s) applicable to your study participants should now be submitted to the HREC.

Please note you can submit your progress report through the online ethics application process, available at: Links Application Form Direct Link  and the application should be submitted to the HREC before the year has expired. Please see *Forms and Instructions* on our HREC website (www.sun.ac.za/healthresearchethics) for guidance on how to submit a progress report.

The HREC will then consider the continuation of the project for a  further year (if necessary). Annually a number of projects may be selected randomly for an external audit.

**Provincial and City of Cape Town Approval**

Please note that for research at a primary or secondary healthcare facility, permission must still be obtained from the relevant authorities (Western Cape Departement of Health and/or City Health) to conduct the research as stated in the protocol. Please consult the Western Cape Government website for access to the online Health Research Approval Process, see: https://www.westerncape.gov.za/general-publication/health-research-approval-process. Research that will be conducted at any tertiary academic institution requires approval from the relevant hospital manager. Ethics approval is required BEFORE approval can be obtained from these health authorities.

We wish you the best as you conduct your research.

For standard HREC forms and instructions, please visit: Forms and Instructions on our HREC website https://applyethics.sun.ac.za/ProjectView/Index/10417

If you have any questions or need further assistance, please contact the HREC office at 021 938 9677.

Please note that for research at a primary or secondary healthcare facility, permission must still be obtained from the relevant authorities (Western Cape Departement of Health and/or City Health) to conduct the research as stated in the protocol. Please consult the Western Cape Government website for access to the online Health Research Approval Process, see: https://www.westerncape.gov.za/general-publication/health-research-approval-process. Research that will be conducted at any tertiary academic institution requires approval from the relevant hospital manager. Ethics approval is required BEFORE approval can be obtained from these health authorities.

We wish you the best as you conduct your research.

For standard HREC forms and instructions, please visit: Forms and Instructions on our HREC website https://applyethics.sun.ac.za/ProjectView/Index/10417

If you have any questions or need further assistance, please contact the HREC office at 021 938 9677.

Yours sincerely,

Mrs. Melody Shana

Coordinator

HREC1

*National Health Research Ethics Council (NHREC) Registration Number:*

*REC-130408-012 (HREC1)•REC-230208-010 (HREC2)*

*Federal Wide Assurance Number: 00001372*
*Office of Human Research Protections (OHRP) Institutional Review Board (IRB) Number:*
*IRB0005240 (HREC1)•IRB0005239 (HREC2)*

*The Health Research Ethics Committee (HREC) complies with the SA National Health Act No. 61 of 2003 as it pertains to health research. The HREC abides by the ethical norms and principles for research, established by the World Medical Association (2013). Declaration of Helsinki: Ethical Principles for Medical Research Involving Human Subjects;the South African Department of Health (2006). Guidelines for Good Practice in the Conduct of Clinical Trials with Human Participants in South Africa (2nd edition); as well as the Department of Health (2015). Ethics in Health Research: Principles, Processes andStructures (2nd edition).*

*The Health Research Ethics Committee reviews research involving human subjects conducted or supported by the Department of Health and Human Services, or other federal departments or agencies that apply the Federal Policy for the Protection of Human Subjects to such research (United States Code of Federal Regulations Title 45 Part 46); and/or clinical investigations regulated by the Food and Drug Administration (FDA) of the Department of Health and Human Services.*

# Addendum 6: Raw data – Online questionnaire for SLTs

| Participant no. | Are you currently registered with the HPCSA? | Do you have a degree (undergraduate) in Speech-language therapy from a South African university? | Are you currently practicing as a speech-language therapist in South Africa? | Are you currently working in/for a hospital/acute/rehab setting, or university/academic setting in paediatrics or adults? | Are you proficient in English (reading and writing)? | Have you completed at least 12 months of work as a speech-language therapist since qualifying? This includes a community service year. | I confirm that I am over 18 years old, have read and understood the above explanation about the study, have answered the questions as truthfully as possible, and agree to participate in this study. I also understand that my participation in this study is strictly voluntary. | Qualifications (Undergraduate and post-graduate) |
|---|---|---|---|---|---|---|---|---|
| 1 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | BA Language and CultureBspeech |
| 2 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | BA Humanities, B in Speech, langu |
| 3 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Bachelors in Speech language path |
| 4 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | B A Speech and hearing therapy |
| 5 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Undergraduate |
| 6 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | BSc. Speech-Language Pathology |
| 7 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Undergraduate |
| 8 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | BA (Speech & Hearing Therapy) |
| 9 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | BSc Speech Language Pathology |
| 10 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Master |
| 11 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | B. Speech, Language, and Hearing |
| 12 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | BA speech and hearing therapy; MA |
| 13 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | B Speech-Language and Hearing T |
| 14 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | B in Speech, Language and Hearin |
| 15 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Speech-Language Therapist |
| 16 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Bachelor of science (Human life sc |
| 17 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | post-graduate |
| 18 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | B. Communication Pathology; M. C |
| 19 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | BSc Speech-Language Pathology; |
| 20 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Masters in Speech therapy |
| 21 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | BSc Speech-Language Pathology ( |
| 22 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | BSc Speech and language patholo |
| 23 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | BSc. Speech - Language Pathology |
| 24 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Undergraduate |
| 25 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Undergraduate |
| 26 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | BA speech and hearing therapyln p |
| 27 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | BA (speech and hearing therapy) |
| 28 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Undergraduate B Of Speech Thera |
| 29 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | BComm Path: SLP |
| 30 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | B. Speech-Language and Hearing T |
| 31 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Masters degree in Speech Languag |
| 32 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | B. Speech Therapy and Audiology I |
| 33 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Undergraduate |
| 34 | Yes | Yes | Yes | Yes | Yes | I qualified before commu | Yes | B Speech Pathology and Audiology |
| 35 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | BSpeech- Language Therapy and E |
| 36 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | BA Speech Pathology and Audiolog |
| 37 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | B. Communication Pathology: Spee |
| 38 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | BA. Communication pathology: Spe |
| 39 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | B. Speech Language Pathology |
| 40 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | B speech language therapy |
| 41 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | B comm. Pathology - SLP |
| 42 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Honours SLP |
| 43 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Post-graduate |
| 44 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | B.Comm.Path. (UP); Diploma Pallia |
| 45 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | BSC SLP UCT and MA SLP WITS |
| 46 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | BCommunication Pathology |
| 47 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | B in Speech-Language and Hearing |
| 48 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | BSc Speech-language Pathology |
| 49 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | BA Speech Pathology and Audiolog |
| 50 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Bsc speech language therapy |
| 51 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | BA (Speech and Hearing Therapy) |
| 52 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | BSc Speech and Language Patholo |
| 53 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | B speech language pathology |
| 54 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | B.CommunicationPathology & M.A. |
| 55 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | B Communication Pathology |
| 56 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Under grad |
| 57 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | B Speech - Language and Hearing |
| 58 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Undergraduate |
| 59 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Undergraduate - BSc Speech Lang |
| 60 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Bachelor of communication patholo |
| 61 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | BA Speech and Hearing Therapy (V |
| 62 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Bachelor of Speech-Language Path |
| 63 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | BA speech therapy and audiology |
| 64 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Undergraduate |
| 65 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | BA Speech and Hearing Therapy |
| 66 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | BSpeech-Language PathologyMAS |
| 67 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | BA Speech and Hearing Therapy |
| 68 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Bachelor of Speech-Language and |
| 69 | Yes | Yes | Yes | Yes | Yes | I qualified before commu | Yes | BSc (Logopaedics) + M(ECI) |
| 70 | Yes | Yes | Yes | Yes | Yes | Yes | Yes | B SLP UKZN |

| Audio additionally? | M. SLT | M.Audio | Dual degrees | University from which your undergraduate and postgraduate degree/s were obtained if relevant | Years of practice since qualifying (include your community service year) | Type of job setting (current) (You can select more than 1) | More than 1 selection | As a speech-language therapist (SLT) have you ever seen a patient with a burn injury before? |
|---|---|---|---|---|---|---|---|---|
| Yes | yes | no | no | University of Stellenbosch, University of P | 3 - 5 years | Private hospital or rehabilitation centre | | No |
| Yes | no | no | no | University of Stellenbosch | 3 - 5 years | District/regional hospital or rehabilitation center | | No |
| Yes | no | no | yes | Sefako Makgatho Health Sciences Unive | 3 - 5 years | Tertiary healthcare (academic) | | Yes |
| Yes | no | no | yes | University of the Witwatersrand | 5 - 7 years | Private hospital or rehabilitation centre | | No |
| No | no | no | no | University of Stellenbosch | 3 - 5 years | Private hospital or rehabilitation centre | rehabilitation centre | Yes |
| No | yes | no | no | University of Capetown, University of Pre | 5 - 7 years | Tertiary healthcare (academic) | Private hospital or re | Yes |
| No | no | no | no | University of Capetown | 3 - 5 years | Private hospital or rehabilitation centre | | No |
| Yes | no | no | yes | University of the Witwatersrand | 7 - 10 years | Private hospital or rehabilitation centre | | No |
| No | no | no | no | University of Capetown | 3 - 5 years | District/regional hospital or rehabilitation center | | Yes |
| No | yes | no | no | University of KwaZulu Natal | 10 - 15 years | District/regional hospital or rehabilitation center | | Yes |
| Yes | yes | no | no | University of Stellenbosch | 3 - 5 years | Private hospital or rehabilitation centre | University | Yes |
| Yes | no | yes | yes | University of the Witwatersrand | 7 - 10 years | District/regional hospital or rehabilitation center | | Yes |
| Yes | no | no | no | University of Stellenbosch | 3 - 5 years | District/regional hospital or rehabilitation center | | No |
| Yes | no | no | no | University of Stellenbosch | 5 - 7 years | Tertiary healthcare (academic) | University | Yes |
| No | no | no | no | University of Pretoria | 5 - 7 years | Tertiary healthcare (academic) | | Yes |
| Yes | yes | no | no | University of Stellenbosch, University of K | 7 - 10 years | Tertiary healthcare (academic) | | Yes |
| No | yes | no | no | University of Stellenbosch | 1 - 3 years | District/regional hospital or rehabilitation center | | No |
| No | yes | no | no | University of Pretoria | 7 - 10 years | Tertiary healthcare (academic) | | Yes |
| No | yes | no | no | University of Capetown, University of Pre | 3 - 5 years | Tertiary healthcare (academic) | | No |
| No | yes | no | no | University of Capetown | 1 - 3 years | Private hospital or rehabilitation centre | | Yes |
| No | yes | no | no | University of Capetown, University of Pre | 7 - 10 years | District/regional hospital or rehabilitation center | Private hospital or re | Yes |
| No | no | no | no | University of Capetown | 3 - 5 years | District/regional hospital or rehabilitation center | | Yes |
| No | no | no | no | University of Capetown | 1 - 3 years | Tertiary healthcare (academic) | | Yes |
| No | no | no | yes | University of the Witwatersrand | 1 - 3 years | Private hospital or rehabilitation centre | | Yes |
| No | no | no | no | University of KwaZulu Natal | 5 - 7 years | Tertiary healthcare (academic) | | Yes |
| Yes | no | no | yes | University of the Witwatersrand | 1 - 3 years | Tertiary healthcare (academic) | | Yes |
| Yes | no | no | yes | University of the Witwatersrand | 3 - 5 years | Private hospital or rehabilitation centre | | Yes |
| No | no | no | no | University of Stellenbosch | 5 - 7 years | District/regional hospital or rehabilitation center | | Yes |
| No | no | no | no | University of Pretoria | 5 - 7 years | Private hospital or rehabilitation centre | | No |
| Yes | no | no | no | University of Stellenbosch | 3 - 5 years | District/regional hospital or rehabilitation center | | Yes |
| No | yes | no | no | University of Pretoria | 7 - 10 years | Tertiary healthcare (academic) | | Yes |
| Yes | no | no | yes | University of Stellenbosch | 15 - 20 years | Private hospital or rehabilitation centre | | No |
| No | no | no | no | University of Stellenbosch | 1 - 3 years | Tertiary healthcare (academic) | | Yes |
| Yes | no | no | yes | University of Stellenbosch | 15 - 20 years | District/regional hospital or rehabilitation center | | Yes |
| Yes | no | no | yes | University of Stellenbosch, University of C | 1 - 3 years | District/regional hospital or rehabilitation center | | No |
| Yes | no | no | yes | University of the Witwatersrand | 3 - 5 years | Private hospital or rehabilitation centre | | Yes |
| No | no | no | no | University of Pretoria | 1 - 3 years | Tertiary healthcare (academic) | | Yes |

| No | no | no | no | University of Pretoria | 1 - 3 years | District/regional hospital or rehabilitation center | | Yes |
|---|---|---|---|---|---|---|---|---|
| No | no | no | no | University of KwaZulu Natal | 1 - 3 years | Tertiary healthcare (academic) | | Yes |
| No | no | no | no | University of Stellenbosch | 7 - 10 years | Tertiary healthcare (academic) | | Yes |
| No | no | no | no | University of KwaZulu Natal | 3 - 5 years | Private hospital or rehabilitation centre | | Yes |
| No | no | no | no | University of Capetown | 5 - 7 years | Private hospital or rehabilitation centre | | Yes |
| No | yes | no | yes | University of the Witwatersrand | 5 - 7 years | Private hospital or rehabilitation centre | | Yes |
| No | no | no | no | University of Capetown, University of Pre | 3 - 5 years | Tertiary healthcare (academic) | Private hospital or re | No |
| No | yes | no | no | University of Capetown, University of the | 10 - 15 years | Private hospital or rehabilitation centre | | Yes |
| No | no | no | no | University of Pretoria | 5 - 7 years | Private hospital or rehabilitation centre | | Yes |
| Yes | no | no | no | University of Stellenbosch | 1 - 3 years | Private hospital or rehabilitation centre | | Yes |
| No | no | no | no | University of Capetown | 1 - 3 years | District/regional hospital or rehabilitation center | | No |
| Yes | no | no | yes | University of the Witwatersrand | 1 - 3 years | District/regional hospital or rehabilitation center | | No |
| No | no | no | no | University of Capetown | 1 - 3 years | Private hospital or rehabilitation centre | | Yes |
| Yes | yes | no | yes | University of the Witwatersrand | 3 - 5 years | Private hospital or rehabilitation centre | | Yes |
| No | no | no | no | University of Capetown | 3 - 5 years | Private hospital or rehabilitation centre | | Yes |
| No | no | no | no | University of KwaZulu Natal | 1 - 3 years | Private hospital or rehabilitation centre | | Yes |
| No | yes | no | no | University of Pretoria | 3 - 5 years | Private hospital or rehabilitation centre | | No |
| No | no | no | no | University of Pretoria | 15 - 20 years | Private hospital or rehabilitation centre | | No |
| No | no | no | no | University of Capetown | 1 - 3 years | Tertiary healthcare (academic) | | Yes |
| Yes | yes | no | no | University of Stellenbosch, University of K | 7 - 10 years | Private hospital or rehabilitation centre | | No |
| No | no | no | no | University of Stellenbosch | 3 - 5 years | District/regional hospital or rehabilitation center | Private hospital or re | No |
| No | yes | no | no | University of Capetown, University of Kwa | 10 - 15 years | District/regional hospital or rehabilitation center | | Yes |
| No | no | no | no | University of KwaZulu Natal | 10 - 15 years | Tertiary healthcare (academic) | | Yes |
| Yes | no | no | yes | University of the Witwatersrand | 5 - 7 years | District/regional hospital or rehabilitation center | Private hospital or re | No |
| Yes | no | no | yes | Sefako Makgatho Health Sciences Unive | 3 - 5 years | Private hospital or rehabilitation centre | | No |
| Yes | no | no | yes | University of the Witwatersrand | 1 - 3 years | Private hospital or rehabilitation centre | | Yes |
| No | no | no | no | University of KwaZulu Natal | 1 - 3 years | Tertiary healthcare (academic) | | Yes |
| Yes | no | no | yes | University of the Witwatersrand | 1 - 3 years | District/regional hospital or rehabilitation center | | No |
| No | yes | no | no | University of Pretoria | 1 - 3 years | Private hospital or rehabilitation centre | | Yes |
| Yes | no | no | yes | University of the Witwatersrand | 1 - 3 years | Tertiary healthcare (academic) | | No |
| Yes | no | no | no | University of Stellenbosch | 3 - 5 years | Private hospital or rehabilitation centre | | Yes |
| No | yes | no | no | University of Capetown, University of Pre | >20 years | University | | Yes |
| No | no | no | no | University of KwaZulu Natal | 1 - 3 years | Private hospital or rehabilitation centre | University | Yes |

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| Does your current place of work admit or manage individuals with burn injuries | What type of facility is/are there for burn injuries people where you work? | Have you or your team ever received a referral for a person with a burn injury? | At work, do you typically screen your wards/sections to determine if there are any patients who require SLT services generally? | If you do screen the wards/sections, do you screen all wards or only selected wards/sections? | Do you ever screen individuals with burn injuries/wards that care for individuals with burn injuries? |
|---|---|---|---|---|---|
| Yes | No specific area, patient are admitted to gen | Yes | No, I only see patients on referral/request by | I/my team do not screen wards | No |
| Yes | No specific area, patient are admitted to gen | No | No, I only see patients on referral/request by | I/my team do not screen wards | No |
| Yes | Burn Ward | Yes | Yes | All wards are screened by myself/my team | No |
| Yes | No specific area, patient are admitted to gen | No | No, I only see patients on referral/request by | I/my team do not screen wards | No |
| Yes | No specific area, patient are admitted to gen | Yes | Yes | All wards are screened by myself/my team | No |
| Yes | Burn Ward | Yes | No, I only see patients on referral/request by | I/my team do not screen wards | No |
| No | No specific area, patient are admitted to gen | No | Yes | All wards are screened by myself/my team | No |
| Yes | No specific area, patient are admitted to gen | No | Yes | Only wards carrying common caseload patien | No |
| Yes | Burn Ward | Yes | Yes | All wards are screened by myself/my team | Yes |
| Yes | Specialist Burn Unit | Yes | No, I only see patients on referral/request by | Only wards carrying common caseload patien | No |
| I am not sure | I am not sure | Yes | Yes | All wards are screened by myself/my team | Yes |
| Yes | No specific area, patient are admitted to gen | Yes | Yes | Only wards carrying common caseload patien | Yes |
| No | I am not sure | No | No, I only see patients on referral/request by | I/my team do not screen wards | No |
| Yes | Specialist Burn Unit | Yes | No, I only see patients on referral/request by | I/my team do not screen wards | No |
| Yes | No specific area, patient are admitted to gen | Yes | Yes | Only wards carrying common caseload patien | No |
| Yes | Burn Ward | Yes | Yes | Only wards carrying common caseload patien | Yes |
| Yes | No specific area, patient are admitted to gen | No | No, I only see patients on referral/request by | I/my team do not screen wards | No |
| Yes | Specialist Burn Unit | Yes | No, I only see patients on referral/request by | I/my team do not screen wards | No |
| Yes | Burn Ward | I am not sure | No, I only see patients on referral/request by | I/my team do not screen wards | No |
| Yes | Specialist Burn Unit | Yes | No, I only see patients on referral/request by | I/my team do not screen wards | No |
| Yes | No specific area, patient are admitted to gen | Yes | Yes | All wards are screened by myself/my team | Yes |
| I am not sure | I am not sure | I am not sure | No, I only see patients on referral/request by | I/my team do not screen wards | No |
| Yes | No specific area, patient are admitted to gen | Yes | Yes | Only wards carrying common caseload patien | Yes |
| No | No specific area, patient are admitted to gen | No | Yes | All wards are screened by myself/my team | Yes |
| Yes | Specialist Burn Unit | Yes | No, I only see patients on referral/request by | I/my team do not screen wards | No |
| Yes | No specific area, patient are admitted to gen | Yes | Yes | Only wards carrying common caseload patien | Yes |
| I am not sure | I am not sure | Yes | No, I only see patients on referral/request by | I/my team do not screen wards | No |
| Yes | No specific area, patient are admitted to gen | Yes | No, I only see patients on referral/request by | I/my team do not screen wards | No |
| Yes | No specific area, patient are admitted to gen | No | No, I only see patients on referral/request by | I/my team do not screen wards | No |
| Yes | No specific area, patient are admitted to gen | Yes | Yes | I/my team do not screen wards | No |
| Yes | Specialist Burn Unit | Yes | Yes | All wards are screened by myself/my team | Yes |
| Yes | No specific area, patient are admitted to gen | No | No, I only see patients on referral/request by | I/my team do not screen wards | No |
| Yes | No specific area, patient are admitted to gen | I am not sure | No, I only see patients on referral/request by | I/my team do not screen wards | No |
| Yes | No specific area, patient are admitted to gen | Yes | No, I only see patients on referral/request by | I/my team do not screen wards | No |
| No | I am not sure | No | Yes | Only wards carrying common caseload patien | No |
| I am not sure | I am not sure | No | No, I only see patients on referral/request by | I/my team do not screen wards | No |
| No | Burn Ward | No | No, I only see patients on referral/request by | I/my team do not screen wards | No |

| | | | | | |
|---|---|---|---|---|---|
| Yes | No specific area, patient are admitted to gen | Yes | No, I only see patients on referral/request by | I/my team do not screen wards | No |
| Yes | No specific area, patient are admitted to gen | Yes | Yes | All wards are screened by myself/my team | No |
| Yes | Burn Ward | Yes | No, I only see patients on referral/request by | I/my team do not screen wards | Yes |
| I am not sure | I am not sure | No | Yes | All wards are screened by myself/my team | No |
| I am not sure | No specific area, patient are admitted to gen | Yes | No, I only see patients on referral/request by | I/my team do not screen wards | No |
| Yes | No specific area, patient are admitted to gen | Yes | No, I only see patients on referral/request by | I/my team do not screen wards | Yes |
| Yes | Burn Ward | I am not sure | No, I only see patients on referral/request by | Only wards carrying common caseload patien | No |
| Yes | No specific area, patient are admitted to gen | Yes | No, I only see patients on referral/request by | I/my team do not screen wards | No |
| Yes | No specific area, patient are admitted to gen | Yes | No, I only see patients on referral/request by | I/my team do not screen wards | No |
| No | Burn Ward | Yes | No, I only see patients on referral/request by | I/my team do not screen wards | No |
| Yes | No specific area, patient are admitted to gen | No | No, I only see patients on referral/request by | I/my team do not screen wards | No |
| No | No specific area, patient are admitted to gen | Yes | Yes | Only wards carrying common caseload patien | No |
| Yes | No specific area, patient are admitted to gen | Yes | No, I only see patients on referral/request by | I/my team do not screen wards | No |
| I am not sure | No specific area, patient are admitted to gen | No | No, I only see patients on referral/request by | I/my team do not screen wards | No |
| No | I am not sure | No | No, I only see patients on referral/request by | I/my team do not screen wards | No |
| Yes | No specific area, patient are admitted to gen | Yes | No, I only see patients on referral/request by | I/my team do not screen wards | No |
| Yes | No specific area, patient are admitted to gen | No | No, I only see patients on referral/request by | I/my team do not screen wards | No |
| No | I am not sure | No | Yes | All wards are screened by myself/my team | No |
| Yes | Burn Ward | Yes | Yes | Only wards carrying common caseload patien | Yes |
| No | No specific area, patient are admitted to gen | I am not sure | Yes | All wards are screened by myself/my team | No |
| Yes | No specific area, patient are admitted to gen | No | No, I only see patients on referral/request by | I/my team do not screen wards | No |
| Yes | Burn Ward | Yes | No, I only see patients on referral/request by | I/my team do not screen wards | No |
| Yes | Burn Ward | Yes | Yes | Only wards carrying common caseload patien | Yes |
| Yes | No specific area, patient are admitted to gen | Yes | No, I only see patients on referral/request by | I/my team do not screen wards | No |
| Yes | No specific area, patient are admitted to gen | No | No, I only see patients on referral/request by | I/my team do not screen wards | No |
| Yes | No specific area, patient are admitted to gen | Yes | No, I only see patients on referral/request by | I/my team do not screen wards | No |
| Yes | Specialist Burn Unit | Yes | Yes | All wards are screened by myself/my team | No |
| Yes | No specific area, patient are admitted to gen | Yes | No, I only see patients on referral/request by | Only wards carrying common caseload patien | Yes |
| Yes | No specific area, patient are admitted to gen | Yes | No, I only see patients on referral/request by | I/my team do not screen wards | No |
| Yes | Burn Ward | No | No, I only see patients on referral/request by | I/my team do not screen wards | No |
| Yes | No specific area, patient are admitted to gen | Yes | No, I only see patients on referral/request by | I/my team do not screen wards | No |
| Yes | Burn Ward | Yes | Yes | Only wards carrying common caseload patien | No |
| I am not sure | Burn Ward | Yes | No, I only see patients on referral/request by | I/my team do not screen wards | No |

| From your experience or knowledge, which types of burn injuries would be seen by SLT? Please select as many as you see fit | For which clinical domains do you think SLTs would be involved in burn injuries? | For which additional domains would SLTs be involved in burn injuries? | Do you understand and do you feel confident that you could ASSESS all relevant areas with specific reference to literature in this population whether you have seen someone with burns or if you were to receive a referral? |
|---|---|---|---|
| Ingestion, Inhalation, I am not sure | Speech, Voice, Dysphagia (bedside assessmen | Burn prevention and promotion, Screening, | Somewhat |
| Flame, Ingestion, Inhalation | Voice, Dysphagia (bedside assessment and inst | Burn prevention and promotion, Screening, | No |
| Flame, Liquid, Ingestion, Inhalation | Speech, Language, Voice, Dysphagia (bedside | Patient and caregiver education and training | Somewhat |
| I am not sure | Speech, Dysphagia (bedside assessment and in | Research (contributing to evidence-based re | No |
| Flame, Electrical, Liquid, Ingestion, Inhalation | Speech, Voice, Dysphagia (bedside assessmen | Burn prevention and promotion, Screening, | Somewhat |
| Ingestion, Inhalation | Speech, Language, Cognitive-communication, V | Burn prevention and promotion, Screening, | Somewhat |
| Electrical, Liquid, Ingestion, Inhalation | Speech, Language, Cognitive-communication, V | Support groups | Somewhat |
| I am not sure | Speech, Voice, Dysphagia (bedside assessmen | Patient and caregiver education and training | Somewhat |
| Flame, Liquid, Ingestion, Inhalation | Dysphagia (bedside assessment and instrument | Burn prevention and promotion, Screening, | Yes |
| I am not sure | Speech, Voice, Dysphagia (bedside assessmen | Burn prevention and promotion, Screening, | Yes |
| Ingestion, Inhalation, I am not sure | Speech, Dysphagia (bedside assessment and in | Screening, Patient and caregiver education | No |
| I am not sure | Speech, Language, Cognitive-communication, V | Burn prevention and promotion, Screening, | No |
| Flame, Flash, Liquid, Contact, Ingestion, Inha | Speech, Voice, Dysphagia (bedside assessmen | Burn prevention and promotion, Screening, | No |
| Flame, Electrical, Flash, Liquid, Contact, Inge | Speech, Language, Cognitive-communication, V | Patient and caregiver education and training | Yes |
| Liquid, Ingestion, Inhalation | Speech, Cognitive-communication, Voice, Fluen | Burn prevention and promotion, Screening, | Somewhat |
| Flame, Electrical, Liquid, Ingestion, Inhalation | Voice, Dysphagia (bedside assessment and inst | Burn prevention and promotion, Screening, | No |
| Electrical, Liquid, Ingestion, Inhalation | Voice, Dysphagia (bedside assessment and inst | Screening | Somewhat |
| Ingestion, Inhalation | Voice, Dysphagia (bedside assessment and inst | Screening, Patient and caregiver education | Somewhat |
| I am not sure | Speech, Voice, Dysphagia (bedside assessmen | Burn prevention and promotion, Screening, | No |
| Flame, Electrical, Flash, Liquid, Contact, Inge | Language, Voice, Dysphagia (bedside assessm | Patient and caregiver education and training | Somewhat |
| Flame, Electrical, Liquid, Contact, Ingestion, | Speech, Language, Cognitive-communication, V | Burn prevention and promotion, Screening, | Yes |
| Electrical, Liquid, Ingestion, Inhalation | Speech, Dysphagia (bedside assessment and in | Patient and caregiver education and training | Somewhat |
| Flame, Electrical, Liquid, Ingestion, Inhalation | Speech, Voice, Dysphagia (bedside assessmen | Burn prevention and promotion, Screening, | Somewhat |
| Flame, Ingestion, Inhalation | Voice, Dysphagia (bedside assessment and inst | Burn prevention and promotion, Screening, | No |
| Flame, Electrical, Liquid, Ingestion, Inhalation | Speech, Language, Voice, Dysphagia (bedside | Burn prevention and promotion, Screening, | Yes |
| Flame, Electrical, Flash, Liquid, Contact, Inge | Speech, Language, Cognitive-communication, V | Burn prevention and promotion, Screening, | No |
| Flame, Electrical, Ingestion | Speech, Language, Voice, Dysphagia (bedside | Patient and caregiver education and training | Yes |
| Flame, Ingestion, Inhalation | Speech, Voice, Dysphagia (bedside assessmen | Screening, Patient and caregiver education | No |
| Flame, Electrical, Flash, Liquid, Contact, Inge | Voice, Dysphagia (bedside assessment and inst | Research (contributing to evidence-based re | Yes |
| Flame, Electrical, Liquid, Ingestion, Inhalation | Voice, Dysphagia (bedside assessment and inst | Patient and caregiver education and training | No |
| Flame, Electrical, Flash, Liquid, Contact, Inge | Speech, Voice, Dysphagia (bedside assessmen | Burn prevention and promotion, Screening, | Yes |
| Flash, Liquid, Ingestion, Inhalation, I am not s | Speech, Voice, Fluency, Dysphagia (bedside as | Screening | No |
| Flame, Electrical, Liquid, Contact, Ingestion, | Speech, Language, Cognitive-communication, V | Screening, Patient and caregiver education | No |
| Ingestion, Inhalation, I am not sure | Speech, Voice, Dysphagia (bedside assessmen | Patient and caregiver education and training | Somewhat |
| Flame, Electrical, Ingestion, Inhalation | Speech, Voice, Dysphagia (bedside assessmen | Patient and caregiver education and training | No |
| I am not sure | Speech, Language, Cognitive-communication, V | Burn prevention and promotion, Patient and | No |
| Flame, Inhalation | Speech, Voice, Dysphagia (bedside assessmen | Screening, Patient and caregiver education | Somewhat |

| | | | |
|---|---|---|---|
| Flame, Liquid, Contact, Ingestion, Inhalation | Voice, Dysphagia (bedside assessment and inst | Patient and caregiver education and training | Somewhat |
| Flame, Flash, Contact | Speech, Dysphagia (bedside assessment and in | Screening, Patient and caregiver education | Somewhat |
| Flame, Electrical, Liquid, Ingestion, Inhalation | Speech, Language, Cognitive-communication, V | Burn prevention and promotion, Screening, | Yes |
| Flame, Liquid, Ingestion, Inhalation, I am not | Speech, Voice, Fluency, Dysphagia (bedside as | Burn prevention and promotion, Screening, | No |
| Flame, Liquid, Ingestion, Inhalation | Speech, Dysphagia (bedside assessment and in | Patient and caregiver education and training | Somewhat |
| Flame, Liquid, Ingestion, Inhalation | Speech, Voice, Dysphagia (bedside assessmen | Inter and multidisciplinary training and educa | Somewhat |
| Flame, Ingestion, Inhalation | Dysphagia (bedside assessment and instrument | Patient and caregiver education and training | No |
| Flame, Electrical, Liquid, Contact, Ingestion, | Speech, Fluency, Dysphagia (bedside assessme | Screening, Patient advocacy, Research (cor | Yes |
| Flame, Flash, Liquid, Ingestion, Inhalation | Speech, Language, Cognitive-communication, V | Patient and caregiver education and training | Somewhat |
| Flame, Electrical, Flash, Liquid, Contact, Inge | Speech, Language, Voice, Dysphagia (bedside | Screening, Patient and caregiver education | Somewhat |
| Ingestion, Inhalation | Voice, Dysphagia (bedside assessment and inst | Patient and caregiver education and training | Somewhat |
| I am not sure | Speech, Dysphagia (bedside assessment and in | Burn prevention and promotion, Patient and | No |
| Flame, Electrical, Flash, Liquid, Contact, Inge | Speech, Voice, Dysphagia (bedside assessmen | Screening, Patient and caregiver education | Somewhat |
| Flame, Electrical, Flash, Liquid, Ingestion, Inh | Speech, Cognitive-communication, Voice, Dysp | Burn prevention and promotion, Screening, | Somewhat |
| Flame, Liquid, Ingestion, Inhalation | Speech, Cognitive-communication, Voice, Dysp | Burn prevention and promotion, Screening, | No |
| Flame, Electrical, Flash, Liquid, Contact, Inge | Voice, Dysphagia (bedside assessment and inst | Patient and caregiver education and training | No |
| Ingestion, Inhalation, I am not sure | Speech, Voice, Dysphagia (bedside assessmen | Screening, Patient and caregiver education | No |
| Flame, Electrical, Liquid, Contact, Ingestion, | Speech, Cognitive-communication, Voice, Dysp | Screening, Patient and caregiver education | No |
| Flame, Liquid, Inhalation | Voice, Dysphagia (bedside assessment and inst | Burn prevention and promotion, Screening, | Yes |
| Flame, Electrical, Liquid, Ingestion, Inhalation | Speech, Voice, Dysphagia (bedside assessmen | Screening, Patient and caregiver education | No |
| I am not sure | Speech, Cognitive-communication, Voice, Dysp | Burn prevention and promotion, Screening, | Somewhat |
| Flame, Electrical, Flash, Liquid, Contact, Inge | Speech, Language, Cognitive-communication, V | Burn prevention and promotion, Screening, | Somewhat |
| Flame, Electrical, Contact, Ingestion, Inhalati | Speech, Language, Cognitive-communication, V | Burn prevention and promotion, Screening, | Somewhat |
| Flame, Ingestion, Inhalation | Speech, Voice, Dysphagia (bedside assessmen | Patient and caregiver education and training | Somewhat |
| Flame, Contact, Ingestion, I am not sure | Speech, Language, Dysphagia (bedside assess | Burn prevention and promotion, Screening, | No |
| Flame, Liquid, Ingestion, Inhalation | Speech, Voice, Dysphagia (bedside assessmen | Screening, Patient and caregiver education | Somewhat |
| Flame, Electrical, Ingestion, Inhalation | Speech, Language, Cognitive-communication, V | Burn prevention and promotion, Screening, | Yes |
| I am not sure | Speech, Cognitive-communication, Voice, Dysp | Burn prevention and promotion, Screening, | Somewhat |
| Flame, Electrical, Flash, Liquid, Contact, Inge | Speech, Voice, Dysphagia (bedside assessmen | Screening, Patient and caregiver education | Somewhat |
| Flame, Electrical, Flash, Liquid, Contact, Inge | Speech, Cognitive-communication, Voice, Dysp | Burn prevention and promotion, Screening, | No |
| Flame, Electrical, Flash, Liquid, Contact, Inge | Speech, Voice, Dysphagia (bedside assessmen | Burn prevention and promotion, Screening, | Somewhat |
| Ingestion, Inhalation | Speech, Voice, Dysphagia (bedside assessmen | Burn prevention and promotion, Patient and | No |
| Electrical, Flash, Liquid, Contact, Inhalation | Speech, Language, Cognitive-communication, V | Patient and caregiver education and training | Somewhat |

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| If you answered 'yes', why is this? | If you answered 'no' or 'somewhat', why is this? | Do you understand and do you feel confident that you could MANAGE all relevant areas with specific reference to literature in this population whether you have seen someone with burns or if you were to receive a referral? | If you answered 'yes', why is this? | If you answered 'no' or 'somewhat', why is this? | Which area's following a burn injury specifically, do you NOT feel confident in? |
|---|---|---|---|---|---|
| | I don't receive referrals to see indi | Somewhat | | I don't receive referrals to see indi | Facial burns and scarring/contractures, B |
| | I have no training or knowledge in | No | | I have no training or knowledge in | Dysphagia (Bedside assessment), Dysph |
| | There is a specific clinician in the t | No | | More literature and exposure to tra | Tracheostomy and ventilation |
| | I have no training or knowledge in | No | | I have no training or knowledge in | Facial burns and scarring/contractures, B |
| | I have seen one patient with a bur | No | | I don't receive referrals to see indi | Facial burns and scarring/contractures, S |
| | I don't fully understand my role in | Somewhat | | I don't fully understand my role in | Facial burns and scarring/contractures, S |
| | I don't fully understand my role in | No | | I don't fully understand my role in | Tracheostomy and ventilation |
| | I don't receive referrals to see indi | Somewhat | | I don't receive referrals to see indi | Facial burns and scarring/contractures, R |
| It's no different to assessing individuals without burn injurie | I have no training or knowledge in | No | | I have no training or knowledge in | Tracheostomy and ventilation, Facial burr |
| It's no different to asse | I have no training or knowledge in | Somewhat | | I have no training or knowledge in | Voice, Tracheostomy and ventilation, Scr |
| | I have no training or knowledge in | No | | I have no training or knowledge in | Speech, Dysphagia (Bedside assessmen |
| | I am unsure if there are individual | Yes | It's no different to man | | Dysphagia (Instrumental assessment - Vi |
| | I have no training or knowledge in | No | | I have no training or knowledge in | Voice, Dysphagia (Instrumental assessme |
| I draw on evidence-based research specifically surroundin | | Yes | I draw on evidence-ba | | Facial burns and scarring/contractures, S |
| | I do not know the specific outcome | Somewhat | | I could manage the population to s | Facial burns and scarring/contractures, P |
| | I don't fully understand my role in | No | | I have no training or knowledge in | Facial burns and scarring/contractures, S |
| | | No | | I don't receive referrals to see indi | Facial burns and scarring/contractures, B |
| | I don't fully understand my role in | Somewhat | | I don't fully understand my role in | Facial burns and scarring/contractures, S |
| | I have no training or knowledge in | No | | I have no training or knowledge in | Speech, Dysphagia (Bedside assessmen |
| I often treat it similarly | Treat them as similar to other pati | Yes | It's no different to man | | Burn prevention and promotion, Patient a |
| It's no different to assessing individuals without burn injurie | | Somewhat | | My knowledge on burns is self-lear | Dysphagia (Instrumental assessment - Vi |
| | I have little and few experiences w | No | | Lacking in training and knowledge | Voice, Screening burns, Patient and care |
| | My knowledge on burns within the | Somewhat | | I don't fully understand my role in | Tracheostomy and ventilation, Facial burr |
| | I have no training or knowledge in | No | | I have no training or knowledge in | Facial burns and scarring/contractures, P |
| I draw on evidence-bas | | Yes | I draw on evidence-ba | | Splinting (oral splints) |
| | I don't fully understand my role in | No | | I have no training or knowledge in | Facial burns and scarring/contractures |
| | I don't fully understand my role in | No | | I don't fully understand my role in | Dysphagia (Bedside assessment), Dysph |
| | I have no training or knowledge in | No | | I have no training or knowledge in | Tracheostomy and ventilation, Facial burr |
| It's no different to assessing individuals without burn injurie | | Somewhat | | I don't receive referrals to see indi | Facial burns and scarring/contractures, S |
| | I don't fully understand my role in | No | | I don't fully understand my role in | Dysphagia (Bedside assessment), Dysph |
| I draw on evidence-based research specifically surroundin | | Yes | I draw on evidence-ba | | Dysphagia (Instrumental assessment - Vi |
| | I don't receive referrals to see indi | No | | I don't receive referrals to see indi | Tracheostomy and ventilation, Facial burr |
| | I don't fully understand my role in | No | | I don't fully understand my role in | Tracheostomy and ventilation, Facial burr |
| | I don't receive referrals to see indi | Somewhat | | I don't receive referrals to see indi | Tracheostomy and ventilation, Facial burr |
| | I have no training or knowledge in | Somewhat | | I have no training or knowledge in | Voice, Dysphagia (Instrumental assessme |
| | I don't receive referrals to see indi | No | | I don't receive referrals to see indi | Dysphagia (Instrumental assessment - Vi |
| | I don't receive referrals to see indi | Somewhat | | I don't receive referrals to see indi | Facial burns and scarring/contractures, B |

| | I have no training or knowledge in | Somewhat | | I have no training or knowledge in | Voice, Facial burns and scarring/contract |
| | I don't fully understand my role in | Somewhat | | I have no training or knowledge in | Facial burns and scarring/contractures, B |
| I draw on evidence-based research specifically surroundin | | Yes | I draw on evidence-ba | | Facial burns and scarring/contractures, S |
| | I have no training or knowledge in | No | | I have no training or knowledge in | Speech, Voice, Fluency, Dysphagia (Bed |
| | I have no training or knowledge in | No | | I have no training or knowledge in | Voice, Dysphagia (Bedside assessment), |
| | I have no training or knowledge in | Somewhat | | I have no training or knowledge in | Screening burns, Patient and caregiver ed |
| | I have no training or knowledge in | No | | I have no training or knowledge in | Facial burns and scarring/contractures, S |
| I draw on evidence-based research specifically surroundin | | Yes | I draw on evidence-ba | | Fluency, Facial burns and scarring/contra |
| | Assessed based on peer learning | Yes | From experience throu | | Splinting (oral splints) |
| | I am not aware of any specific guil | Yes | It's no different to man | | Splinting (oral splints) |
| It's no different to asse | I don't receive referrals to see indi | Somewhat | | I don't fully understand my role in | Voice, Expanding the scope of SLT servic |
| | I have no training or knowledge in | No | | I have no training or knowledge in | Facial burns and scarring/contractures, S |
| | I am unsure if there are individual | Somewhat | | I am unsure if there are individual | Dysphagia (Bedside assessment), Trache |
| | I don't receive referrals to see indi | Somewhat | | I don't receive referrals to see indi | Burn prevention and promotion, Screenin |
| | I don't fully understand my role in | No | | I have no training or knowledge in | Tracheostomy and ventilation, Facial burr |
| | I didn't realise it was an area in wh | Yes | It's no different to man | | Tracheostomy and ventilation, Splinting (c |
| | I have no training or knowledge in | No | | I have no training or knowledge in | Dysphagia (Instrumental assessment - Vi |
| | I have no training or knowledge in | No | | I have no training or knowledge in | Facial burns and scarring/contractures, B |
| I draw on evidence-based research specifically surroundin | | Yes | I draw on evidence-ba | | Facial burns and scarring/contractures |
| | I have no training or knowledge in | No | | I have no training or knowledge in | Facial burns and scarring/contractures, P |
| | I don't receive referrals to see indi | Somewhat | | I don't receive referrals to see indi | Splinting (oral splints) |
| | I have received minimal indepen | Somewhat | | I have received minimal indedpen | Tracheostomy and ventilation, Facial burr |
| | I am able to treat them to the best | Yes | I draw on evidence-ba | | Facial burns and scarring/contractures, P |
| | I don't fully understand my role in | Somewhat | | I don't fully understand my role in | Language, Cognitive commmunication de |
| | I didn't realise it was an area in wh | No | | I didn't realise it was an area in wh | Language, Cognitive commmunication de |
| | I have no training or knowledge in | Somewhat | | I have no training or knowledge in | Facial burns and scarring/contractures, S |
| I draw on evidence-based research specifically surroundin | | Yes | I draw on evidence-ba | | Facial burns and scarring/contractures, B |
| | I have limited experience with bur | Somewhat | | I have limited training in all the asp | Facial burns and scarring/contractures, S |
| | Limited exposure to patients with b | No | | Limited exposure to patients with b | Facial burns and scarring/contractures, S |
| | I have no training or knowledge in | No | | I have no training or knowledge in | Speech, Voice, Dysphagia (Bedside asse |
| | I don't fully understand my role in | Somewhat | | I don't fully understand my role in | Tracheostomy and ventilation, Facial burr |
| | I don't fully understand my role in | Somewhat | | I have no training or knowledge in | Tracheostomy and ventilation, Facial burr |
| | I don't fully understand my role in | Somewhat | | I don't fully understand my role in | Dysphagia (Instrumental assessment - Vi |

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| Are you aware of any evidence-based guidelines or protocols for SLTs in burn injuries? | Do you make use of up to date literature and protocols when assessing and managing individuals? | Do you make use of up to date literature and protocols when assessing and managing individuals with burn injuries? | What types of literature do you make use of? | Have you attended any CPD days or courses/ training events specifically on or including burn related injuries? | Where did you complete this? | Do you have an established referral pathway within your facility for Speech therapy referrals generally? | What referral pathways are in place? |
|---|---|---|---|---|---|---|---|
| No | Yes | I have not seen someon | Research on burn injuries, Postgraduate train | No | I haven't | Yes | Paper based referrals, Electronic |
| No | Yes | I have not seen someon | National policies on MDT/SLT intervention, U | No | I haven't | Yes | Paper based referrals, Electronic |
| Yes | Yes | Yes | Research on burn injuries | Yes | At work | Yes | Paper based referrals, WhatsApp |
| No | Yes | I have not seen someon | Research on burn injuries | No | I haven't | Yes | WhatsApp referral system, Verba |
| No | Yes | I have not seen someon | National policies on MDT/SLT intervention, In | No | I haven't | Yes | Electronic referrals e.g. email, Ve |
| No | Yes | Yes | Undergraduate training and knowledge mater | No | I haven't | Yes | Paper based referrals, Electronic |
| No | Yes | I have not seen someon | Postgraduate training and knowledge materia | No | I haven't | Yes | Electronic referrals e.g. email, Te |
| No | Yes | I have not seen someon | Research on burn injuries, International polici | No | I haven't | Yes | Paper based referrals, WhatsApp |
| No | No | No | Undergraduate training and knowledge mater | No | At work | Yes | WhatsApp referral system, Verba |
| No | No | No | Undergraduate training and knowledge mater | No | I haven't | Yes | Paper based referrals |
| No | Yes | No | I've seen 1 client with burns, used general dys | No | I haven't | Yes | Paper based referrals, Verbal ref |
| No | No | No | International policies on MDT/SLT intervention | No | I haven't | Yes | Paper based referrals, Verbal ref |
| No | Yes | I have not seen someon | I haven't treated individuals with burns. | No | I haven't | Yes | Paper based referrals, Electronic |
| Yes | Yes | Yes | Research on burn injuries, International polici | No | I haven't | Yes | Paper based referrals, Electronic |
| No | Yes | No | Site specific policies, Undergraduate training | No | I haven't | Yes | Paper based referrals, Electronic |
| No | Yes | No | I attended a short course on burns | Yes | At a burn unit | Yes | Paper based referrals, Electronic |
| No | Yes | I have not seen someon | Undergraduate training and knowledge mater | No | I haven't | Yes | Electronic referrals e.g. email |
| Yes | Yes | Yes | Research on burn injuries, Site specific policie | No | I haven't | Yes | Paper based referrals, Ward rou |
| No | No | No | I have no experience, knowledge or training in | No | I haven't | Yes | Paper based referrals, Electronic |
| No | Yes | Yes | International policies on MDT/SLT intervention | No | I haven't | Yes | WhatsApp referral system, Verba |
| No | Yes | No | Research on burn injuries, Site specific policie | No | I haven't | Yes | Verbal referrals (face-to-face), Te |
| No | Yes | No | Undergraduate training and knowledge mater | No | I haven't | Yes | Paper based referrals, WhatsApp |
| Yes | No | No | National policies on MDT/SLT intervention, U | Yes | At work | Yes | Paper based referrals, WhatsApp |
| No | Yes | Yes | Undergraduate training and knowledge mater | No | I haven't | Yes | WhatsApp referral system, Verba |
| Yes | Yes | Yes | Research on burn injuries, National policies o | Yes | At a burn unit | Yes | Paper based referrals, WhatsApp |
| No | Yes | Yes | Research on burn injuries, National policies o | Yes | At work | Yes | Paper based referrals, WhatsApp |
| No | Yes | No | Research on burn injuries | No | I haven't | Yes | WhatsApp referral system, Verba |
| No | Yes | I have not seen someon | Undergraduate training and knowledge mater | No | I haven't | Yes | Paper based referrals, WhatsApp |
| No | Yes | Yes | Research on burn injuries, National policies o | No | I haven't | Yes | Electronic referrals e.g. email, Ve |
| No | Yes | I have not seen someon | Undergraduate training and knowledge mater | No | I haven't | Yes | Paper based referrals, Verbal ref |
| Yes | Yes | Yes | Research on burn injuries, International polici | Yes | At a congress | Yes | Paper based referrals, WhatsApp |
| No | Yes | I have not seen someon | Research on burn injuries, National policies o | No | I haven't | Yes | Paper based referrals, Electronic |
| Yes | Yes | I have not seen someon | Research on burn injuries, Undergraduate tra | No | I haven't | Yes | Paper based referrals, Electronic |
| No | Yes | No | Undergraduate training and knowledge mater | No | I haven't | Yes | Paper based referrals, Electronic |
| No | Yes | I have not seen someon | Research on burn injuries, National policies o | No | I haven't | Yes | Paper based referrals, WhatsApp |
| Yes | Yes | No | Research on burn injuries | No | I haven't | Yes | Electronic referrals e.g. email, W |
| Yes | No | No | Undergraduate training and knowledge mater | No | I haven't | No | Paper based referrals, Electronic |

| No | No | No | Research on burn injuries, National policies o | No | I haven't | Yes | Paper based referrals |
| Yes | No | Yes | Undergraduate training and knowledge mater | No | At a training s | Yes | Paper based referrals, WhatsApp |
| No | Yes | Yes | Postgraduate training and knowledge materia | No | I haven't | Yes | Paper based referrals, Electronic |
| No | Yes | I have not seen someon | International policies on MDT/SLT intervention | No | I haven't | Yes | Verbal referrals (face-to-face) |
| No | Yes | No | Undergraduate training and knowledge mater | No | I haven't | Yes | WhatsApp referral system, Verba |
| No | Yes | No | Research on burn injuries, National policies o | No | I haven't | Yes | Paper based referrals, Electronic |
| No | Yes | I have not seen someon | Research on burn injuries | No | I haven't | Yes | Paper based referrals, Electronic |
| No | Yes | Yes | Research on burn injuries, Postgraduate train | No | I haven't | Yes | Paper based referrals, WhatsApp |
| No | No | No | National policies on MDT/SLT intervention, Si | Yes | At a burn unit | Yes | WhatsApp referral system, Verba |
| No | Yes | Yes | Research on burn injuries, Undergraduate tra | No | I haven't | Yes | Paper based referrals, Electronic |
| No | Yes | I have not seen someon | Undergraduate training and knowledge mater | No | I haven't | Yes | Paper based referrals, WhatsApp |
| No | Yes | I have not seen someon | Site specific policies | No | I haven't | Yes | Paper based referrals, WhatsApp |
| No | Yes | No | Research on burn injuries | No | I haven't | Yes | Paper based referrals, WhatsApp |
| No | Yes | I have not seen someon | Research on burn injuries, National policies o | Yes | At a burn unit | Yes | Electronic referrals e.g. email, W |
| No | Yes | I have not seen someon | International policies on MDT/SLT intervention | No | I haven't | Yes | Electronic referrals e.g. email, W |
| No | No | No | Undergraduate training and knowledge mater | No | I haven't | Yes | Telephonic |
| No | Yes | I have not seen someon | Research on burn injuries, National policies o | No | I haven't | Yes | WhatsApp referral system, Verba |
| No | Yes | I have not seen someon | Research on burn injuries, Undergraduate tra | No | I haven't | Yes | Electronic referrals e.g. email, W |
| Yes | Yes | Yes | Research on burn injuries, Site specific policie | No | I haven't | Yes | Paper based referrals, WhatsApp |
| No | Yes | I have not seen someon | Research on burn injuries, Undergraduate tra | No | I haven't | Yes | Paper based referrals, Electronic |
| No | Yes | I have not seen someon | Site specific policies | No | I haven't | Yes | Paper based referrals, WhatsApp |
| Yes | Yes | Yes | Research on burn injuries, International polici | Yes | At work | Yes | Paper based referrals, WhatsApp |
| No | No | No | Research on burn injuries, National policies o | No | Online | Yes | Paper based referrals, WhatsApp |
| No | Yes | I have not seen someon | International policies on MDT/SLT intervention | No | I haven't | Yes | Verbal referrals (face-to-face), Te |
| No | Yes | No | Undergraduate training and knowledge mater | No | I haven't | Yes | WhatsApp referral system |
| No | Yes | No | Undergraduate training and knowledge mater | No | I haven't | Yes | Electronic referrals e.g. email, W |
| Yes | Yes | Yes | Research on burn injuries, Site specific policie | Yes | At work | Yes | Paper based referrals, WhatsApp |
| No | Yes | I have not seen someon | Research on burn injuries, Undergraduate tra | No | I haven't | Yes | WhatsApp referral system |
| No | Yes | Yes | Research on burn injuries, National policies o | No | I haven't | Yes | Electronic referrals e.g. email, W |
| No | Yes | I have not seen someon | Research on burn injuries, National policies o | No | I haven't | Yes | Paper based referrals, WhatsApp |
| No | Yes | Yes | Research on burn injuries, National policies o | No | I haven't | Yes | Paper based referrals, Electronic |
| No | Yes | Yes | Research on burn injuries, Site specific policie | No | I haven't | Yes | Paper based referrals, Electronic |
| Yes | No | No | Research on burn injuries | No | I haven't | Yes | Paper based referrals, Electronic |

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| Is there an established referral pathway accessible to professionals to refer? (including therapists and other staff) | If a healthcare professional from any ward or department would like to request a consult/send a referral to Speech & language therapy for any patient who they felt required the service, would this patient have access to an SLT? | Do you think that healthcare professionals working in the burn unit/center/ward or with people with burn injuries know WHEN to refer someone for SLT? | If you answered 'yes', can you please describe or list the criteria currently being used or known by healthcare professionals specifically for this population | If you answered 'no', can you provide a reason for why you believe this might be. | Have you or another SLT provided healthcare professionals with training regarding the criteria for referring individuals with burn injuries specifically? |
|---|---|---|---|---|---|
| Yes | Yes | No | | No advocacy for burns patients for an SLT, unle | No |
| Yes | Yes | I am not sure | | | No |
| Yes | Yes | I am not sure | | | No |
| Yes | Yes | I am not sure | | | No |
| Yes | Yes | No | | Not a lot of people fully understand the role / sc | No |
| Yes | Yes | I am not sure | | | No |
| Yes | Yes | No | | No awareness | No |
| Yes | Yes | No | | There is generally poor knowledge of SLT scop | No |
| Yes | Yes | No | | I haven't made any requests regarding burns ref | No |
| Yes | Yes | I am not sure | | | No |
| Yes | Yes | I am not sure | | | No |
| Yes | Yes | I am not sure | | | No |
| Yes | Yes | I am not sure | | I don't have experience in this field. | No |
| Yes | Yes | I am not sure | | Our 2020 operational goals include developing | Yes |
| Yes | Yes | No | | Many professionals do not understand the role | No |
| Yes | Yes | I am not sure | | | No |
| Yes | Yes | I am not sure | | | No |
| Yes | Yes | No | | Lack of awareness of new staff (constantly rota | Yes |
| Yes | Yes | No | | There is very little awareness of the role of SLT | No |
| Yes | Yes | No | | Poor understanding of SLT role | No |
| Yes | Yes | Yes | Difficulty swallowing; regressed communication/ speech skills; cognitive-linguis | | No |
| Yes | Yes | I am not sure | | | No |
| Yes | Yes | No | | In my experience, speech therapy services are | No |
| Yes | Yes | No | | Many don't understand our role in general, let al | Yes |
| Yes | Yes | Yes | Communication and swallow | | Yes |
| Yes | Yes | No | | They don't understand the role of the st in burns | Yes |
| Yes | Yes | No | | Unsure as to our role with burns patients and th | No |
| Yes | Yes | No | | Some professionals are still not sure about the | No |
| Yes | Yes | No | | I work in small private/ family hospitals who wou | No |
| Yes | Yes | I am not sure | | | No |
| Yes | Yes | Yes | Voice pathology Dysphagia Presence of facial burnsPresence of tracheostom | | Yes |
| Yes | Yes | No | | Dont see out role? | No |
| Yes | Yes | No | | They do not understand the scope of a SLT | No |
| Yes | Yes | I am not sure | | | No |
| Yes | Yes | No | | I don't think the role of a SLT in the Burn Victims | No |
| Yes | Yes | I am not sure | | I am not sure our hospital deals with burns patie | No |
| Option 3 | No | No | | Limited training in the field | No |

| Yes | Yes | I am not sure | | | No |
|---|---|---|---|---|---|
| Yes | Yes | No | | Lack of information regarding our role in SLT | Yes |
| Yes | Yes | Yes | | | Yes |
| No | Yes | I am not sure | | | No |
| Yes | Yes | No | | People are only aware when there is significant | No |
| Yes | Yes | No | | Education and knowedge regarding our role as | No |
| Yes | Yes | I am not sure | | I have no experience with the staff in this ward | No |
| Yes | Yes | No | | Don't always realize that it's in our scope and w | No |
| Yes | Yes | No | | Often referred too late or not at all when they sh | Yes |
| Yes | Yes | No | | With ward handovers specific guidelines for refe | Yes |
| Yes | Yes | I am not sure | | | No |
| Yes | Yes | I am not sure | | | No |
| Yes | Yes | I am not sure | | | No |
| Yes | Yes | I am not sure | | | No |
| Yes | Yes | No | | They do not know how we could help these pati | No |
| Yes | Yes | No | | | Yes |
| Yes | Yes | No | | Lack of knowledge | No |
| Yes | Yes | I am not sure | | | No |
| Yes | Yes | Yes | 1. Inhalation burns 2. Difficulty swallowing 3. Poor intelligibility 3. Reduced inta | | No |
| Yes | Yes | I am not sure | | | No |
| Yes | Yes | I am not sure | | | No |
| Yes | Yes | Yes | Patients with Facial burnsPatients with feeding and/or swallowing difficultiesPa | | Yes |
| Yes | Yes | No | | Our Doctors in burns don't usually work with spe | No |
| Yes | Yes | I am not sure | | | No |
| Yes | Yes | No | | SLT role not that well known. | No |
| Yes | Yes | No | | Others don't know the purpose of SLT in burns | No |
| Yes | Yes | I am not sure | | | No |
| Yes | Yes | Yes | Voice, dysarthria, dysphagia | | No |
| Yes | Yes | No | | Limited referrals of patients with burn wounds is | No |
| Yes | Yes | No | | I do not think that many professions are aware | No |
| Yes | Yes | I am not sure | | | No |
| Yes | Yes | I am not sure | | They refer symptomatic ally. | No |
| Yes | Yes | No | | Limited awareness of SLT role and responsibilit | No |

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| Do you think healthcare professionals other than SLTs would be open to receiving information or education on the SLT role in burn injuries? | Do you think that the healthcare professionals working in the burn unit/center/ward or with patients who have burn injuries know HOW to refer individuals for SLT? | If you answered 'no', can you provide a reason for why you believe this might be. | Do you think that SLT involvement in individuals with burn injuries is relevant specifically within the South African context? | Based on your previous answer, are you aware of the following? (you may select more than one) | Do you think that South African SLT are equipped to assess and manage individuals with burn injuries? | Would you be willing to work in the burn unit/with the burn injures population? |
|---|---|---|---|---|---|---|
| Yes | Yes | | Yes | National health goals | I am not sure | Yes |
| Yes | I am not sure | | I am not sure | The incidence of burn injuries in South A | No | Maybe |
| Yes | Sometimes | | Yes | The incidence of burn injuries in South A | No | Yes |
| Yes | I am not sure | | Yes | National health goals | No | Yes |
| Yes | I am not sure | | Yes | National health goals | I am not sure | Maybe |
| Yes | Yes | | Yes | The incidence of burn injuries in South A | No | Yes |
| Yes | No | | Yes | The incidence of burn injuries in South A | Yes | No |
| Yes | I am not sure | | Yes | The incidence of burn injuries in South A | No | Yes |
| Yes | Yes | | Yes | The incidence of burn injuries in South A | No | Yes |
| Yes | Yes | | Yes | The incidence of burn injuries in South A | Yes | Yes |
| Yes | I am not sure | | I am not sure | National health goals | No | Yes |
| Yes | Yes | | I am not sure | Burn injuries with regard to the Quadrupl | No | Yes |
| Yes | I am not sure | I am not working in any are | Yes | The incidence of burn injuries in South A | No | Yes |
| Yes | Yes | | Yes | National health goals | I am not sure | Yes |
| Yes | Yes | | Yes | The incidence of burn injuries in South A | No | Yes |
| Yes | Yes | | Yes | Burn injuries with regard to the Quadrupl | No | Maybe |
| Yes | Yes | | I am not sure | National health goals | I am not sure | Yes |
| Yes | Sometimes | | Yes | The incidence of burn injuries in South A | No | Yes |
| Yes | Yes | | I am not sure | National health goals | No | Maybe |
| Yes | Yes | | Yes | The incidence of burn injuries in South A | No | Yes |
| Yes | Yes | | Yes | The incidence of burn injuries in South A | No | Maybe |
| Yes | Sometimes | | Yes | National health goals | Yes | Yes |
| Yes | Sometimes | | Yes | The incidence of burn injuries in South A | No | Yes |
| Yes | Sometimes | | Yes | National health goals | Yes | Yes |
| Yes | Yes | | Yes | The incidence of burn injuries in South A | Yes | Yes |
| Yes | Yes | | Yes | The incidence of burn injuries in South A | No | Yes |
| Yes | Sometimes | | Yes | The incidence of burn injuries in South A | No | Yes |
| Yes | I am not sure | | Yes | National health goals | No | Yes |
| No | Yes | | Yes | National health goals | I am not sure | Yes |
| Yes | I am not sure | | Yes | National health goals | I am not sure | Maybe |
| Yes | Yes | | Yes | The incidence of burn injuries in South A | No | Yes |
| Yes | Yes | | Yes | The incidence of burn injuries in South A | I am not sure | Yes |
| Yes | Yes | | Yes | The incidence of burn injuries in South A | No | Yes |
| Yes | I am not sure | | Yes | National health goals | I am not sure | Yes |
| Yes | Yes | | Yes | The incidence of burn injuries in South A | No | Yes |
| Yes | I am not sure | | Yes | The incidence of burn injuries in South A | No | Maybe |
| Yes | No | Limited training in the field | Yes | The incidence of burn injuries in South A | Yes | Yes |

| Yes | Sometimes | | Yes | The incidence of burn injuries in South A | No | No |
| Yes | Sometimes | | Yes | National health goals | No | Yes |
| Yes | Yes | | Yes | The incidence of burn injuries in South A | Yes | Yes |
| Yes | I am not sure | | Yes | The incidence of burn injuries in South A | No | Yes |
| Yes | Sometimes | | Yes | Burn injuries with regard to the Quadrupl | No | Maybe |
| Yes | I am not sure | | Yes | National health goals | No | Maybe |
| Yes | I am not sure | | Yes | The incidence of burn injuries in South A | No | Maybe |
| Yes | Yes | | Yes | Burn injuries with regard to the Quadrupl | No | Yes |
| Yes | Sometimes | | Yes | The incidence of burn injuries in South A | No | Yes |
| Yes | Yes | | Yes | The incidence of burn injuries in South A | Yes | Yes |
| Yes | Yes | | Yes | The incidence of burn injuries in South A | I am not sure | Maybe |
| Yes | I am not sure | | Yes | The incidence of burn injuries in South A | No | Maybe |
| Yes | Yes | | Yes | The incidence of burn injuries in South A | I am not sure | Yes |
| Yes | Sometimes | | Yes | The incidence of burn injuries in South A | No | Yes |
| Yes | Sometimes | | Yes | Burn injuries with regard to the Quadrupl | I am not sure | Yes |
| Yes | Yes | | Yes | Burn injuries with regard to the Quadrupl | I am not sure | Maybe |
| Yes | I am not sure | | I am not sure | National health goals | No | Maybe |
| Yes | I am not sure | | Yes | The incidence of burn injuries in South A | No | Maybe |
| Yes | Yes | | Yes | The incidence of burn injuries in South A | No | Yes |
| Yes | Yes | | Yes | The incidence of burn injuries in South A | No | Maybe |
| Yes | Sometimes | | Yes | National health goals | I am not sure | Yes |
| Yes | Yes | | Yes | Burn injuries with regard to the Quadrupl | No | Yes |
| Yes | Sometimes | | Yes | The incidence of burn injuries in South A | No | Maybe |
| Yes | I am not sure | | Yes | National health goals | No | Maybe |
| Yes | Sometimes | | Yes | The incidence of burn injuries in South A | No | Yes |
| Yes | Yes | | Yes | National health goals | I am not sure | Yes |
| Yes | Yes | | Yes | The incidence of burn injuries in South A | Yes | Yes |
| Yes | Sometimes | | Yes | The incidence of burn injuries in Quadrupl | No | Yes |
| Yes | Yes | | Yes | The incidence of burn injuries in South A | No | Yes |
| Yes | Yes | | Yes | The incidence of burn injuries in South A | No | Yes |
| Yes | Sometimes | | Yes | The incidence of burn injuries in South A | No | Yes |
| Yes | Sometimes | | Yes | National health goals | I am not sure | Maybe |
| Yes | Sometimes | | Yes | The incidence of burn injuries in South A | No | Yes |

| Can you please provide a reason for your previous answer. You may express any thoughts or feelings that you may have. | Do you think it would be a good idea for SLTs to determine if there is in fact a burns population at their place of work should they be uncertain, and to investigate increasing the awareness of SLT in burns and offer their services? | If given the opportunity to increase your knowledge of burn injuries and the role of the SLT, would you participate? | Which of the following opportunities/resources would you make use of or recommend? You may choose as many as you like | Would you be interested in conducting research within the burns population at some stage, considering there is limited research relating to this population and SLT? |
|---|---|---|---|---|
| Always willing to learn / expand the | Yes | Yes | Journal articles on this topic, CPD eve | Maybe |
| If I were to gain more knowledge a | Yes | Yes | Journal articles on this topic, CPD eve | No |
| The number of burns patients incre | Yes | Yes | Journal articles on this topic, CPD eve | Yes |
| It would be so rewarding to work w | Yes | Yes | CPD events (courses), Online CPD, H | No |
| Perhaps. I really enjoy my current | Yes | Yes | Journal articles on this topic, CPD eve | Yes |
| I feel that there is a need for a ST | Yes | Yes | CPD events (courses), Online CPD, A | Maybe |
| May be quite an emotional environ | Yes | Yes | CPD events (courses), Hands on train | Yes |
| The need for therapy is there and | Yes | Yes | Journal articles on this topic, CPD eve | Yes |
| Working with this population wasn' | Yes | Yes | CPD events (courses), Online CPD, U | Maybe |
| Prevent structural abnormalities du | Yes | Yes | CPD events (courses), Hands on train | Yes |
| I would see it as part of my scope | Yes | Yes | Journal articles on this topic, CPD eve | Yes |
| | Yes | Yes | Journal articles on this topic, CPD eve | Maybe |
| I think it's an interesting area to wo | Yes | Yes | Journal articles on this topic, CPD eve | Maybe |
| It is an area of SLT practice that n | Yes | Yes | Journal articles on this topic, CPD eve | Yes |
| If it falls with in my scope of practi | Yes | Yes | Journal articles on this topic, CPD eve | Yes |
| If I had sufficient training in this are | Yes | Yes | CPD events (courses), Hands on train | No |
| | Yes | Yes | CPD events (courses), Attending con | Yes |
| It is a highly relevant scope of prac | Yes | Yes | CPD events (courses), Online CPD, H | Yes |
| I would if I received adequate train | Yes | Yes | CPD events (courses), Online CPD, H | No |
| I do currently work with the burns | Yes | Yes | Journal articles on this topic, CPD eve | Maybe |
| If I were to work in a specified bur | Yes | Yes | Journal articles on this topic, CPD eve | Yes |
| I'd be willing/eager to fulfill a servic | Yes | Yes | Journal articles on this topic, Online C | No |
| I think it is an important area within | Yes | Yes | Journal articles on this topic, CPD eve | Yes |
| I feel additional courses would be | Yes | Yes | CPD events (courses), Online CPD, A | No |
| I currently work in the paediatric bu | Yes | Yes | Journal articles on this topic, CPD eve | Yes |
| It is an important area for SLTs to | Yes | Yes | Journal articles on this topic, CPD eve | Yes |
| I have worked with a few burns pa | Yes | Yes | CPD events (courses), Hands on train | Yes |
| The country is overpopulated and | Yes | Yes | CPD events (courses), Attending con | No |
| I would be willing to see this popul | Yes | Yes | Journal articles on this topic, CPD eve | Yes |
| Not experienced | Yes | Yes | Journal articles on this topic, CPD eve | Yes |
| It falls within the scope of practice | Yes | Yes | Journal articles on this topic, CPD eve | No |
| | Yes | Yes | Journal articles on this topic, CPD eve | No |
| I think it can be rewarding to see t | Yes | Yes | Journal articles on this topic, CPD eve | Yes |
| It should be part of scope of practi | Yes | Yes | Journal articles on this topic, CPD eve | Maybe |
| Personally I'm curious and eager t | Yes | Yes | Journal articles on this topic, CPD eve | Maybe |
| It is a daunting field where I feel S | Yes | Yes | CPD events (courses), Online CPD, H | Maybe |
| I think SLP's have a valuable role | Yes | Yes | Journal articles on this topic, CPD eve | Yes |

| | | | | |
|---|---|---|---|---|
| It's not my area of interest | Yes | No | Online CPD, Hands on training at a bu | No |
| Interesting field | Yes | Yes | Journal articles on this topic, CPD eve | Maybe |
| | Yes | Yes | Journal articles on this topic, CPD eve | Yes |
| As speech therapists, our services | Yes | Yes | Journal articles on this topic, CPD eve | Yes |
| I dont know if I would be able to co | Yes | Yes | Journal articles on this topic, CPD eve | Maybe |
| I havent done enough of it to know | Yes | Yes | Journal articles on this topic, CPD eve | Maybe |
| The suffering of a patient with burn | Yes | Yes | Journal articles on this topic, CPD eve | No |
| I think we have a role and would n | Yes | Yes | Journal articles on this topic, CPD eve | Maybe |
| I have previously worked in a burn | Yes | Yes | Journal articles on this topic, CPD eve | Yes |
| Because it's a major reoccurring e | Yes | Yes | Journal articles on this topic, CPD eve | Yes |
| I am not sure as to whether I woul | Yes | Yes | Journal articles on this topic, CPD eve | Maybe |
| If my knowledge and experience w | Yes | Yes | Hands on training at a burn unit or at a | No |
| I enjoy working with all scopes, an | Yes | Yes | CPD events (courses), Attending cong | Yes |
| Working with patients who have su | Yes | Yes | Journal articles on this topic, CPD eve | Yes |
| | Yes | Yes | Journal articles on this topic, CPD eve | Maybe |
| | Yes | Yes | Online CPD | No |
| If I had the training I wouldn't mind | Yes | Yes | Journal articles on this topic, CPD eve | No |
| | Yes | Yes | Journal articles on this topic, CPD eve | No |
| I work at Kimberley Hospital. Most | Yes | Yes | Journal articles on this topic, CPD eve | Yes |
| | Yes | Yes | Journal articles on this topic, CPD eve | Maybe |
| I'm always keen to learn more and | Yes | Yes | Journal articles on this topic, CPD eve | Maybe |
| SLTs need to be confident and cor | Yes | Yes | Journal articles on this topic, CPD eve | Yes |
| The smell is rather nauseating and | Yes | Yes | CPD events (courses), Online CPD, A | No |
| | Yes | Yes | Journal articles on this topic, CPD eve | No |
| All individuals deserve to quality he | Yes | Yes | Journal articles on this topic, CPD eve | Yes |
| I definitely would like to expand my | Yes | Yes | CPD events (courses), Attending cong | Yes |
| | Yes | Yes | Journal articles on this topic, CPD eve | Yes |
| It's a crucial population to treat and | Yes | Yes | CPD events (courses), Hands on train | Maybe |
| I believe that patients with burn wo | Yes | Yes | Journal articles on this topic, CPD eve | No |
| I would be interested in learning ar | Yes | Yes | Journal articles on this topic, CPD eve | Yes |
| I would like to further my knowledg | Yes | Yes | Journal articles on this topic, CPD eve | Maybe |
| Not sure I will 'stomach' the severe | Yes | Yes | Journal articles on this topic, CPD eve | Yes |
| I enjoy working with paeds, irrespe | Yes | Yes | Undergraduate module/day course fo | Maybe |

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**Addendum 7: Themes, Subthemes, Codes, and Samples of Participant Responses From the Semi-Structured Interviews**

| THEMES | SUBTHEMES | CODES | SAMPLES OF PARTICIPANT RESPONSES |
|---|---|---|---|
| Knowledge and experience | Knowledge of role of SLT based on experience/ reason for referring | SLT assessment and management for facial, mouth, and inhalation burns<br><br>Dysphagia assessment<br><br>Timing of extubation<br><br>Polytrauma (stroke, head injury)<br><br>Intubated<br><br>Dysphagia<br><br>Odynophagia<br><br>Functional purposes of facial muscles<br><br>Contractures in the facial area<br><br>Post-extubation<br><br>Functional abnormalities<br><br>Nasogastric tube (NGT)<br><br>Inhalation burns<br><br>Oesophageal problems<br><br>Loss of tissue<br><br>Difficulty swallowing<br><br>Difficulty forming a bolus<br><br>High-voltage electrical injury | P1: *"… any facial burns, any patient with who is has been intubated, any patient with high voltage electrical injury and any patient with any form of dysphagia or odynophagia."*<br><br>P3: *"Yes, we have… the most common referral would be patients… who we suspect have swallowing problems… post-extubation, patients with laryngeal oedema, and… swollen vocal cords, post-operative hoarseness."*<br><br>P4: *"… we refer to SLT to assess if the patient is able to swallow and eat properly… post-extubation… inhalation burns also, the SLT must be involved."* |

| Referral pathways and access | MDT members | Physiotherapy | P1: *"All of the professions. Physios, OT, dieticians, speech therapists, social workers…"* |
| --- | --- | --- | --- |
| | | Occupational therapy | P2: *"SLT they don't really commit to being a permanent part of the MDT."* |
| | | Dietetics | |
| | | Social work | P3: *"We haven't had speech therapy students join yet…"* |
| | | Pharmacy | |
| | | Psychology | P5: *"So we involve OT and physio… I have actually never seen a speech therapist."* |
| | | Speech therapy | |
| | | Cleaners | |
| | | Surgeons | |
| | | Nurses | |
| | Availability/ accessibility | Dedicated SLT in the burn unit | P1: *"We have a dedicated SLT... She is not there all the time but easily accessible."* |
| | | SLT availability at the facility | |
| | | Easily accessible | P3: *"Yes, but only on a consultation basis."* |
| | | Only on a referral basis | P5: *"Yes, there is access at both hospitals."* |
| | Accepted referrals | Contact SLT for referral | P4: *"We have a WhatsApp group…"* |
| | | Referral basis only | P5: *"Normally we write the referral, or we call them."* |
| | | Telephone referrals | |
| | | WhatsApp referrals | |
| | | Verbal referrals | |
| | | Referral form | |
| | | SLT screens the ward | |

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| | Presence of SLT (current) | Shortage of SLT services<br><br>Come on a need basis<br><br>SLT not always in the burn unit<br><br>Screening in the ward<br><br>Presence in MDT meetings<br><br>No SLT presence or engagement | P1: *"There would be screening…"*<br><br>P2: *"If they're not referred, they don't come… at all."*<br><br>P3: *"… probably at least, twice a month."*<br><br>P4: *"No, because of the shortage of uh… SLT."*<br><br>P5: *"No. Never."* |
|---|---|---|---|
| | Reported preference for SLT (future) | Preference for regular SLT visits | P2: *"… they are not as engaged as I would like them to be… on a regular and ongoing basis instead of I've seen the patient, I've given them exercises and that's that."*<br><br>P3: *"I'd like them to be more actively involved."* |
| | Perceived lack of interest or willingness | Emotional nature of burns<br><br>Avoidance of burns population<br><br>Lack of staffing | P1: *"It's high intensity for HCP, emotionally."*<br><br>P2: *"All sorts of therapy people (therapists) are scared of burns and don't want to do it."*<br><br>P2: *"I think there's maybe 2 or 3 therapists in a 900-bed hospital and… they can't give their time to burns."* |
| Use of EBP | | Protocol set up by SLT<br><br>Knowledge of physician/surgeon<br><br>No official protocol<br><br>SLT research on referral criteria | P1: *"Absolutely! The one SLT researched the criteria and we used that as a protocol."*<br><br>P2: *"No, not really."*<br><br>P3: *"We don't have an official protocol."* |

| Education and training | SLT knowledge, competency, and confidence | Not well taught in undergrad and postgrad<br>Encourage exposure in undergrad and postgrad<br>Lack of confidence<br>More education<br>Splinting | P1: *"It isn't well taught in undergrad and postgrad."*<br>P2: *"I think burns should feature and take a bigger role in undergraduate and postgraduate SLT training."*<br>P4: *"I think that they need more education, they definitely need more education."*<br>P4: *"I think that SLT should have ways of producing the splint that is necessary for the mouth splinting"* |
|---|---|---|---|
| | MDT training currently occurring or available | Weekly<br>Rotational formal / informal<br>MDT weekly meetings<br>Ward rounds<br>Informal training during ward rounds<br>Training days focused on burns by each discipline<br>Journal presentation<br>Article SLT related to burns<br>Planned conference for training | P1: *"there would be teaching rounds and grand rounds where all the MDT members attend and teach each other on patients."*<br>P2: *"… weekly MDT round…"*<br>P4: *"Every Wednesday… every member will have a, uh, opportunity to present a journal."*<br>P5: *"we planned to have a burns conference this year…"* |

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| | The increasing involvement of SLT in burns | SLTs could be more actively involved<br><br>Awareness of the needs of people with burns | P2: *"It's my impression that they don't understand that the problem is permanent… For example, we will refer full-thickness burns including around the mouth to them. They will come see the patient once or twice, give them exercises and then discharge them from SLT, which in my opinion is not appropriate."*<br><br>P4: *"Not all SLT are aware of the needs of burn patients."* |
|---|---|---|---|