Service provision in the NICU during the COVID-19 pandemic: South African Speech-Language Therapists' perspectives

By

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A dissertation submitted in fulfilment of the requirements for the degree

MA Speech-Language Pathology

In the Department of Speech-Language Pathology and Audiology

Faculty of Humanities

University of Pretoria

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February 2023

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I declare that this dissertation is my own original work. Where secondary material is used, this has been carefully acknowledged and referenced in accordance with the University of Pretoria's requirements.

I understand what plagiarism is and am aware of the University of Pretoria's policy in this regard.

DS Henning

_____ 29/01/2023

Signature **Date**

ACKNOWLEDGEMENTS

The first and foremost thanks goes to my Heavenly Father, for always providing everything I needed at the right moment to complete this project. Thank you, Father, for the graces and gifts that brought a simple idea to its fruition.

Secondly, thank you to Dr Esedra Krüger and Mrs Bhavani Pillay. Thank you for your guidance over the many months, for teaching me new skills and for seeing the potential in what was a small idea. I hope to be even a fraction of the therapists and innovators that you both are one day. Thank you to Professor Graham for the statistics and analysis of the data and for making this mammoth task much easier to tackle.

They say it takes a village to raise a child. I also believe it takes a village to see one through their studies, especially postgrad. Thank you to my village:

To Mom, Dad, and Danielle. You are not only my family, but my best friends. Thank you for supporting my dreams, for giving me the courage to pursue them, and for the opportunity to make a difference. I owe all that I am to you and the faith you have instilled in me.

To Annemarie, for helping me navigate the tapestry of thoughts and feelings over the last two years. Thank you for your prayers and direction, and for encouraging me to have faith in the process.

To Jennifer, Marion, Anthea, Elizabeth, my Church community, Rebecca, Alysha, the Speechie Master's ladies, and the CPD Committee, thank you for your love, prayers, and listening ears over the last 12 months.

To the SLTs who took the time to participate in this study, thank you for sharing your experiences and for adding to the growing body of research out there. Thank you for your selfless service during the COVID-19 pandemic.

And finally, to the Department of Speech-Language Pathology and Audiology, thank you for being a safe space to learn, grow, relearn, and evolve. Walking through the doors of the Department still gives me goosebumps, and it has been a dream come true to have studied and become a therapist under its roof.

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ABBREVIATIONS

AAP	American Academy of Pediatrics
ABM	Academy of Breastfeeding Medicine
ASHA	American Speech-Language-Hearing Association
BFHI	Baby Friendly Hospital Initiative
CDC	Centers for Disease Control and Prevention
COVID-19	Coronavirus disease
CPD	Continuing professional development
CVI	Content validity index
EBP	Evidence based practice
ECI	Early communication intervention
FASD	Foetal Alcohol Spectrum Disorder
HIE	Hypoxic-Ischaemic Encephalopathy
HPCSA	Health Professionals Council of South Africa
ICU	Intensive care unit
ILCA	International Lactation Consultant Association
IPC	Interprofessional collaboration
IPCP	Interprofessional collaborative practice

KMC	Kangaroo mother care
LMIC	Low- and middle-income countries
MDT	Multidisciplinary team
NICU	Neonatal intensive care unit
POPIA	Protection of personal information act
PPE	Personal protective equipment
SASLHA	South African Speech-Language-Hearing Association
SDGs	Sustainable Developmental Goals
SLP	Speech-language pathologist
SLT	Speech-language therapist
SPSS	Statistical Package for the Social Sciences
SSC	Skin-to-skin contact
VOICE programme	Values, opportunities, integration, control, and evaluation programme
WHO	World Health Organization

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ABSTRACT

Background: There is limited knowledge of how the COVID-19 pandemic impacted service provision in South African public and private Neonatal Intensive Care Units (NICUs), specifically from the perspective of speech-language therapists (SLTs), and how service provision has subsequently normalised since the easing of restrictions and transition from a pandemic to an endemic.

Objective: To describe a group of South African SLTs' perspectives of their service provision in the NICU before and during the initial lockdown period of the COVID-19 pandemic and subsequent easing of restrictions.

Method: A self-designed electronic survey was used to collect data. Twenty-seven speech-language therapists who worked in public and private NICUs at least one year prior to and during the COVID-19 pandemic were included. Nearly two thirds of the sample were ages 30-39 years old, and one third of the sample had 7-10 years of work experience.

Results: Speech-language therapists' presence was perceived to remain at 100 percent, and parental presence decreased to 77,8 percent. All participants reported an increase in the use of personal protective equipment (PPE) in the NICU. Interprofessional collaborative practice (IPCP) was perceived to decrease by 44,4 percent. The majority of participants perceived changes in their service provision and roles with the decrease of parents in the unit. Many

participants used innovative approaches such as tele-intervention to consult during this unprecedented time.

Conclusion: SLTs who rendered services in NICUs during this timeframe displayed resilience and innovation to overcome challenges posed by COVID-19. Findings from this study highlight the importance of IPCP and technological advances in the field of speech-language pathology, such as hybrid approaches to provide eHealth, tele-intervention and tele-lactation services.

Keywords: NICU, COVID-19 pandemic, speech-language pathologist, service provision, neonate, survey

Chapter One: Introduction

“One change leaves the way open for the introduction of others.”

– Niccolo Machiavelli

CHAPTER ONE: INTRODUCTION

1.1.Chapter one aim

The aim of this chapter is to introduce the reader to the Neonatal Intensive Care Unit (NICU), how it typically functions and the possible impact of COVID-19 on the inner and outer workings of NICUs across the globe, and the South African context. This chapter concludes with the problem statement and research question.

1.2.Background

The novel Coronavirus (COVID-19) wreaked havoc globally over the last three years, and NICUs were not without exception (Lemmon et al., 2020). The NICU is an environment that fosters interprofessional collaboration (IPC) and provides family-centred services that protect and care for high-risk infants (Maeda et al., 2020). Since the last 34 months, NICUs have had to undergo sudden, and sometimes severe, physical, and structural changes to keep high-risk neonates and staff safe and prevent further destruction caused by COVID-19 (Coutts et al., 2022; Mahoney et al., 2020; Murray & Swanson, 2020). Evidence is beginning to emerge on the long-term repercussions of COVID-19 (Balton et al., 2022; Mahoney at al., 2022). However, descriptions of the indirect consequences of these structural modifications and changes to service delivery that have taken place in the NICU for high-risk neonates is limited (Coutts et al., 2022).

The NICU is a structured and complex unit that provides multidisciplinary evidence-based care to high-risk neonates with a plethora of medical conditions and their families (Lissauer, 2015). Babies who are born preterm, with low birth weight, or with medical conditions such as Hypoxic-Ischaemic Encephalopathy (HIE) or Foetal Alcohol Spectrum Disorder (FASD) are some of the most common conditions found in South African NICUs (Ramokolo et al., 2019). The risk preterm birth poses to a neonate's neurological development, as well as increased risk of neonatal mortality has been well documented (Lissauer, 2015; the United Nations International Children's Emergency Fund [UNICEF] & the University of Pretoria, 2022). In low- and middle-income countries (LMICs), neonatal mortality rates increased during the COVID-19 pandemic (Ashish et al., 2020; Hedley et al., 2022). COVID-19 has burdened the infected

individual, their families, and healthcare systems as well as the professionals working in settings such as the NICU (Freeman-Sanders et al., 2020; Mahoney et al., 2020; Vavouraki, 2020). Of interest, is the professional practice of the speech-language therapist (SLT) in the NICU during the COVID-19 pandemic.

The role and value of the SLT in NICUs is well documented across literature (American Speech-Language-Hearing Association [ASHA], 2020). SLTs have an imperative role in the management of neonatal oropharyngeal dysphagia and communication disorders (South African Speech-Language-Hearing Association [SASLHA], 2018). Within the context of the NICU, SLTs are responsible for the assessment, diagnosis, and treatment of feeding complications secondary to a neonate's physiological or neurological condition. SLTs also provide caregiver coaching on somato-sensory stimulation and oral stimulation before feeding, breastfeeding, advise on feeding methods, such as oral or alternative methods, kangaroo mother care (KMC) practices, and communication stimulation (SASLHA, 2018; UNICEF, 2022). SLTs had to be at the forefront of the COVID-19 pandemic because of the direct complications that the virus had on the respiratory system and swallowing functions (Coutts, 2020). That which has not been documented, due to limited research available, is whether SLT services during a novel pandemic remained just as essential.

Pre-COVID-19, the public healthcare system in South Africa was under-resourced, under-serviced and overcrowded, with SLTs only being able to serve a limited portion of the population (Coutts, 2020). Models of service delivery in the public healthcare setting mainly constitute of in-patients seen by the SLT and other health care professionals daily, and out-patients seen for one-on-one individual therapy, group therapy, or for weekly or monthly clinic follow-ups (Huber et al., 2021). IPC was a common, evidence-based practice (EBP) prior to the pandemic. The benefits of IPC are extensive, in that it has a direct impact on the quality of care provided; decreases adverse events and lowers mortality rates; improves health care providers' confidence in their capabilities and skills, and supports role release and transfer; betters communication with all team members, and improved healthcare protocols and policies to be more holistic, assessments and tools to be reassessed, and more recent practices and learnings to be implemented (Fernandes et al., 2021). Additional models of

service delivery may include community outreach, depending on the healthcare facility itself (Huber et al., 2021). The state of the South African healthcare system was exacerbated, with the pandemic further burdening the under-resourced environments many health care professionals have had to work in (Balton et al., 2022; Maphumulo & Bhengu, 2019). The South African healthcare system was severely impacted both physically, psychosocially, and financially by this pandemic (Mbunge, 2020; Tessema et al., 2021). However, a positive has been the emergence and relatively feasible and effective implementation of tele-intervention, tele-medicine, telehealth or eHealth, and tele-lactation (Caporali et al., 2020; Rabe, 2022). While not currently being applied via an online platform, the values, opportunities, integration, control, and evaluation (VOICE) programme in NICUs has proven to better empower parents to neonates in NICUs in their decision-making and confidence as primary caregivers of their children (van den Hoogen et al., 2021). A novel programme such as this may have been useful via online platforms during the strict structural and personal changes that had to occur in NICUs during this time. Therefore, it is important to understand the perspectives and lived experiences of the health care workers, specifically SLTs, who were employed during this time of crisis. In so doing, these practices and learnings could be implemented to support the South African healthcare system and working experiences of all primary and allied health care professionals, both currently moving forward and in future times of crisis.

In March 2020, South Africa was put on Alert Level IV, with the entire country having to take a multitude of precautionary measures to minimise the transmission of COVID-19, with adherence to strict guidelines such as social distancing, the use of personal protective equipment (PPE) in all public spaces, restricting unnecessary gatherings of people, transport restrictions, and nationwide curfews (Freeman-Sanders et al., 2020). Many of these restrictions were implemented globally across Intensive Care Units (ICUs) and NICUs (Erdeve et al., 2020; Mahoney et al., 2020; Murray & Swanson, 2020; Vavourki et al., 2020). A cross-sectional survey of NICUs across the United States of America aimed to determine the impact of restrictions on parental presence in NICUs related to COVID-19 (Mahoney et al., 2020). The results indicated policy changes in hospitals, which began as early as 3 February 2020. These policy changes included limiting parental presence in labour wards and NICUs, either

completely or partially, and not permitting parents to be present during NICU grand rounds (Mahoney et al., 2020). The rationale for such policy changes was to prevent the transmission of the virus from a potentially COVID-19 positive mother or caregiver to infant, and to prevent the outbreak of common respiratory infections in NICUs (Saiman et al., 2020), but these practices may have had negative consequences for SLT service delivery.

Maternal presence in the NICU has a multitude of positive effects, namely improved medical stability of the infant, enhanced neurodevelopment, reduced maternal stress, and improved caregiver-infant attachment and caregiver-infant interactions (Bergman et al., 2019; UNICEF, 2022). Restricting or reducing the caregiver access to at-risk neonates further adds to the cascading effects of prematurity and its myriad of medical complications (Erdei & Liu, 2020). Additionally, restricting parental presence in the NICU has direct consequences on the feeding and breastfeeding outcomes for both the caregiver and their infant (American Academy of Pediatrics [AAP], 2020; Ahmad et al., 2021; Coutts et al., 2022). Interestingly, one study found that only 69-74% of hospitals surveyed in their cross-sectional study allowed the expression of maternal breast milk in their NICUs during the COVID-19 pandemic (Ahmad et al., 2021). Research demonstrates that positive COVID-19 infection and breastmilk feeding of infants are not contraindicated, and therefore breastfeeding and the use of breastmilk during the pandemic were still recommended, aligning with the Baby Friendly Hospital Initiative [BFHI] (World Health Organization [WHO], 2020; UNICEF, 2020); the United States Centres for Disease Control and Prevention [CDC)], 2020a), the Academy of Breastfeeding Medicine [ABM], 2020; the International Lactation Consultant Association [ILCA], 2020; Sokou et al., 2022). Due to the high risk of vertical transmission between mother and infant, hospitals had various differing protocols and stricter rules, which therefore impacted mothers and other allied health care professionals being able to access the NICU (Asadi et al., 2019; Coutts et al., 2022). The impact of these changes on service delivery in the NICU, specifically that of the SLT, is unknown. These domains are within the scope of practice of the SLT; therefore, COVID-19 policies may have changed the service provision of SLTs in NICUs, warranting further investigation.

By integrating multiple perspectives and clinical skills, it may be possible to overcome the many complexities SLTs face in the NICU. Predicaments documented to have occurred in the provision of neonatal family-centred care during the last 34 months are disturbed NICU culture, relations and service delivery, adverse effects of PPE on communication between team members, fear of personal and familial safety, ethical concerns, compassion fatigue and grief, decrease in job satisfaction, burnout, and depersonalisation (Carter et al., 2021; Klingenberg et al., 2021; Omidi et al., 2022). An Indonesian study determined the effect of COVID-19 on nurses' chronic stress before the pandemic, at the onset of the pandemic, and in the new normalcy of the pandemic (Zakia et al., 2022). Increased stress levels during the COVID-19 pandemic were found to have negatively impacted nurses' caseloads, work safety, and interpersonal relationships. This may not be unique to medical professionals, and allied health care professionals may have had similar experiences. A suggested positive finding of the pandemic is the increased levels of resilience, creativity, a sense of purpose of healthcare workers, stronger leadership, and communication skills between multiple levels of the healthcare system and in IPC practices (IPCPs), as well as an increased focus on technology and online service delivery models (Aughterson et al., 2021; Balton et al., 2022). Determining and understanding the perspectives of SLTs who worked in the NICU during COVID-19, will lead to deeper insight into the role of the SLT in the NICU during a crisis and might demonstrate the need for SLT services in the NICU; inform future decision-making regarding neonatal intervention and family-centred care, and identify gaps in research and training for undergraduate SLTs.

1.3.Research question

Because of the impact COVID-19 has had on the NICU and service delivery, it is imperative to gather the perspectives of those who work at the frontline of the SLT profession in the NICU. Therefore, the following research question was formulated: What are the perspectives of a group of South African SLTs regarding their service provision in the NICU during the COVID-19 pandemic?

1.4.Outline of chapters

CHAPTER ONE	Introduction to the research topic and relevant literature, problem statement and research question, and terminology used in the dissertation
CHAPTER TWO	Research methodology
CHAPTER THREE	Article submitted to the Neonatal Network Journal
CHAPTER FOUR	Contributions, limitations, implications, and conclusion

1.5.Clarification of terminology used in dissertation

The term, “COVID-19 pandemic” is used in this dissertation refers to the period from March 2020 – December 2021 where the infection levels, personal risks, deaths, and COVID-19 protocols were at their highest. Although COVID-19 is still on-going and now moving from a pandemic to an endemic, due to the nature of how the virus changes, the term pandemic is used throughout (Ioannidis, 2022). Discussion points relating to moving beyond the COVID-19 pandemic also follows the transition from pandemic to endemic.

Chapter Two: Method

“Madness in method, that is genius.” – Frank Herbert

CHAPTER TWO: METHOD

2. Chapter two aim

The aim of this chapter is to detail the method of this research study. This chapter will outline the main aim of the study, ethical considerations, all aspects relating to participants and criteria, the data collection instrument, pilot study, data collection, and will conclude with a brief discussion of reliability and validity.

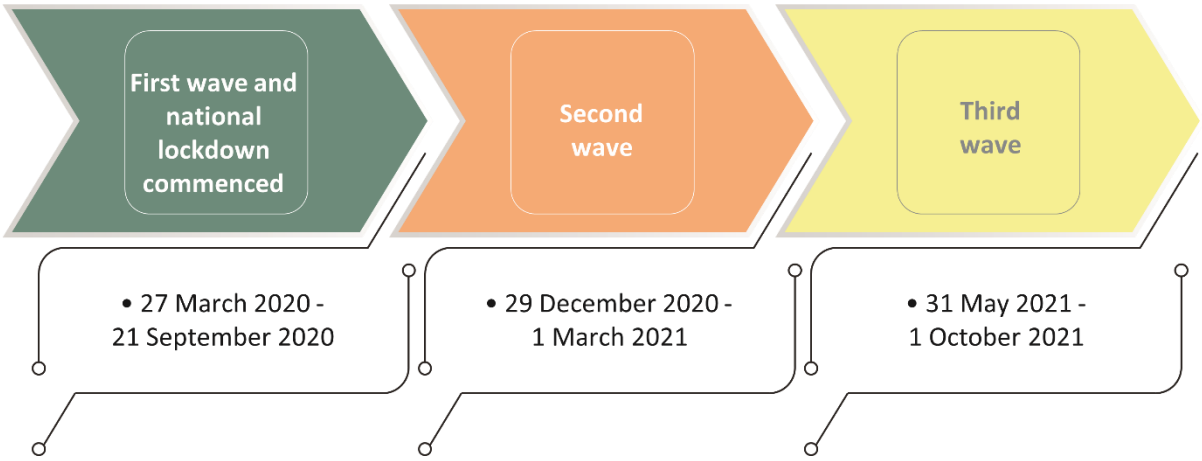
2.1.Research aim

To describe a group of South African SLTs' perspectives of their service provision in the NICU before and during the initial lockdown period of the COVID-19 pandemic and subsequent easing of restrictions.

2.2.Research design

This research study was a predominantly quantitative study using a descriptive research design. An online survey was used with integrated questions that rendered quantitative and qualitative data, with both elements complimenting and validating the other (Plano Clark & Ivankova, 2016). A descriptive research design with comparative questions and elements enabled the researcher to compare and contrast the variables and interpersonal and intra-personal phenomena that were explored across points in time, specifically prior to the COVID-19 pandemic, and the initial lockdown period followed by the subsequent second and third waves, as depicted in Figure 1 (Jassat et al., 2022). The qualitative element of the online survey explored perspectives of the research participants with the aim to understand the themes or phenomena that emerged as a result (Brink et al., 2018).

FIGURE 1: Timeline depicting the three COVID-19 waves in South Africa from 2020 – 2021



(Jassat et al., 2022)

2.3.Study setting

This was a South African study that used an online survey to collect data across South Africa. Table 1 summarises the study population, sampling method, sample size, participant selection criteria, and procedures for participant selection. Thereafter, detailed information on data collection procedures and statistical analysis of the data are provided.

TABLE 1: Summary of the study population, sampling method, sample size, and participant selection criteria

Criteria	Description
STUDY POPULATION	SLTs who worked in private and public NICUs across South Africa prior to 2019 and worked during the initial nationwide lockdown and subsequent easing of restrictions during the years 2020, 2021 and even 2022.
SAMPLING METHOD	Non-probability purposive or judgmental sampling was used to recruit willing participants. This type of sampling was based on the researcher's judgement of the participant's experience or knowledge of the phenomena being studied (Etikan & Bala, 2017). Additionally, snowball sampling was employed, whereby eligible participants shared the research study with other individuals who were potentially eligible to participate (Morgan, 2019).
SAMPLE SIZE	Forty-two participants responded to the online survey, however, 15 of those responses were incomplete and were excluded from the study. The sample that participated in data collection was therefore 27. This enabled the researcher to analyse the data and draw adequate conclusions (Brink et al., 2018). A power analysis was conducted with a statistician to determine what the power of the statistical test should be for a sample size of 27.
PARTICIPANT SELECTION CRITERIA & RATIONALE	In order to accurately compare and contrast how the pandemic impacted service provision from the perspectives of SLTs, specific inclusion criteria were stipulated: ● South African SLTs with more than three years of working experience in the NICU. This was done so that the sample had enough prior experience to note how service provision was before the pandemic, and how it changed during. The hypothesis was that the more the years of experience, the greater perceived change there may have been. ● Participants who were employed at least one year prior to the pandemic were included, so as to ensure they were not SLTs who had come straight from their undergraduate training but had one formal year of full-time working experience in NICUs. ● Participants who worked in private or public NICUs in South Africa during the initial nationwide lockdown and subsequent easing of restrictions were included. This was to determine if there were significant differences and changes in service provision across the public and private healthcare sectors in South Africa. ● Participants who had access to electronic devices, internet connection and time in their personal capacity to participate in data collection were necessary. This was required as the survey was not paper-based, and participants were not going to be supplemented for their data usages.
PROCEDURE FOR PARTICIPANT SELECTION	Participants who have more than three years of working experience in the NICU were invited to participate in the study through advertising on a professional association and social media platforms. Using social media had the advantage of accessing participants on a wide scale and not through direct contact, in accordance with POPIA (2020). The advertisement was in the form of an infographic and stipulated the inclusion criteria. This ensured that participants had experience working in the NICU prior to the COVID-19 pandemic (before or during 2019) and were able to share their experiences of changed service delivery and provision.

2.4.Description of participants

Table 2 describes the characteristics of the 27 participants included in data-collection.

TABLE 2: Participant characteristics *(n = 27)*

		Participants response (n = 27) N (%)
AGE		
	18-29	9 (33,3)
	30-39	17 (63)
	40-49	1 (3,7)
	50-59	0 (0)
	60 and over	0 (0)
YEARS OF EXPERIENCE WORKING AS AN SLP		
	0-3 years	3 (11,1)
	4-6 years	7 (25,9)
	7-10 years	9 (33,3)
	11-15 years	7 (25,9)
	16-20 years	1 (3,7)
	+21 years	0 (0)
PROVINCE OF EMPLOYMENT		
	Eastern Cape	3 (11,1)
	Free State	2 (7,4)
	Gauteng	15 (55,6)
	KwaZulu Natal	2 (7,4)
	Limpopo	0 (0)
	Mpumalanga	2 (7,4)
	North West	1 (3,7)
	Northern Cape	1 (3,7)
	Western Cape	1 (3,7)
SECTOR OF EMPLOYMENT		
	Private	12 (44,4)
	Public	13 (48,1)
	Academic	2 (7,4)
GEOGRAPHIC SETTING		
	Urban	19 (70,4)
	Suburban	7 (25,9)
	Rural	1 (3,7)
YEARS OF EXPERIENCE WORKING IN THE NICU		
	3-5 years	11 (40,7)
	6-10 years	12 (44,4)
	11 – 15 years	3 (11,1)
	16 – 20 years	1 (3,7)
	+21 years	0 (0)

A large proportion of the sample were between the ages of 30-39 years old (63%) and had 7-10 years of work experience as an SLT (33,3%). The majority of the sample were employed in Gauteng (55,6%), with the remaining 44,4% of the sample spanning across the rest of South Africa, except for Limpopo province. Less than half worked in the public sector (48,1%). The most prominent geographic setting was urban (70,4%). Less than half of participants had 6-10 years of work experience in the NICU (44,4%).

2.5.Data collection

2.5.1. Materials and apparatus

A self-designed online survey (Appendix A) was used to collect demographic and background information of the participants, and to describe the sample of SLTs' perspectives of NICU service provision before the COVID-19 pandemic, during the initial lockdown and during subsequent easing of restrictions. The online survey was an appropriate research tool for accessing a population over a wide geographical area, which the researcher may not have access to with a paper-based survey. Additional benefits are that surveys can gather data that is quantitative and qualitative in nature and can provide in-depth understandings of novel issues (Braun et al., 2021). The online survey was compiled using Qualtrics software Version 6.17, a platform supported by the University of Pretoria. The researcher worked closely with a statistician to refine the online survey and answer the research question. The survey utilised questions from previously published research (Adams et al., 2021; Ahmad et al., 2021; ASHA, 2005; Chadd et al., 2021; Garfield et al., 2021; Kearney et al., 2021; Mahoney et al., 2020; Omidi, 2022; Pineda et al., 2019, Rossetti, 2001; SASLHA, 2018). The 27-item survey comprised of four sections. Table 3 presents the sections in the survey, the tool used to gather data, and descriptions of each section.

TABLE 3: Description of the four sections in the online survey

Section Name	Description	Rationale for inclusion
SECTION A: DEMOGRAPHIC INFORMATION (6 QUESTIONS)	Closed-ended multiple choice questions were used to collect information about the participants' age, years of experience working as an SLT, current province and sector of employment, geographic setting, and years of experience in the NICU.	All qualified SLTs with more than three years of working experience would be at least 25 years old. In order to account for the changes in perspectives across the two timelines, SLTs need more than three years of experience. Therefore, more options were added to include SLTs who have been practicing for longer. Different hospitals across the different provinces may have had varying COVID-19 protocols and policies, which would affect the service provision of SLTs working in the NICUs in those hospitals. Only private and public healthcare settings were included to account for the broad south African healthcare context. Geographic settings and contexts may also impact the perspectives of and quality of service provision for the SLTs. Years of experience working in the NICU would impact the perspectives of service provision and how it has changed during COVID-19.
SECTION B: COMPARING SERVICE PROVISION PRIOR TO AND DURING THE COVID-19 PANDEMIC, INITIAL LOCKDOWN & SUBSEQUENT EASING OF RESTRICTIONS (18 QUESTIONS)	Closed-ended multiple choice questions were used to compare the number of patients, caregivers and MDT members in the NICU before and during the COVID-19 pandemic, as well as compared roles and responsibilities, PPE used, feeding and rooming policies, and overall individual hospital service provision.	These questions were self-compiled based on the job description and roles and responsibilities of SLTs established in literature.
SECTION C: OVERALL PERCEPTIONS OF SERVICE PROVISION PRE-COVID-19 & POST COVID-19 (2 QUESTIONS)	Two Likert scales were used to compare and contrast the level of agreement of participants in terms of *their Clinical practice/Service provision* (preparedness; confidence in abilities; knowledge/experience; skills, and communication); *Infrastructure* (PPE; policy changes; restrictions, and workplace support); and *Job satisfaction* (personal accomplishment; compassion fatigue; burnout, and quality of life).	Level of preparedness in terms of theoretical knowledge, skills and experience all have an impact on the perspectives of SLTs and how their service delivery has changed prior to and during the COVID-19 pandemic. Ascribing competence may have indications for future training and research for SLTs providing services in NICUs in South Africa.
SECTION D: OPEN-ENDED QUESTIONS (4 QUESTIONS)	Four short open-ended questions were asked to gather qualitative data and to provide the participants with an opportunity to elaborate on any of the MCQ or rating scale questions.	Open-ended questions were created based off all the above-mentioned questions to gather more descriptive and qualitative data, and thus expand on the quantitative data collected.

Questions were presented in a structured and fixed order for all participants (Braun et al., 2021). Advantages of using an online survey are the time and cost efficiency and wide access

to potential participants, however, it is known that surveys have low response rates (Leedy & Ormrod, 2015).

2.6.Procedure for data collection

The researcher contacted a professional association, SASLHA, to request permission to advertise the study via their database. Consent for them to advertise the study on their emailing service was obtained (Appendix B) in accordance with POPIA (2020). The social media platforms, "South African Audiologists and Speech-Language Therapists" (Appendix C), "Allied health in South Africa!" (Appendix D) and "iThemba Neonatal Therapy" (Appendix E) provided permission to advertise the research study on their platforms and to recruit potential participants. An advertisement in the form of an infographic of the research study (Appendix F) and the link to the online survey was sent out via these platforms after receiving ethical clearance from the University of Pretoria Faculty of Humanities Research Ethics Committee (Appendix G).

Informed consent and an outline of the aim of the research study was inserted on the landing site of the survey (Appendix H). Participants were asked to provide their consent, after which they were able to proceed to the online survey. Participants had to answer three mandatory questions, for which the desired response was "Yes," to ensure that only participants who met all the inclusion criteria were given access to the survey questions:

1. Do you have at least three years of work experience in the NICU?
2. Are you a speech-language therapist (SLT) who worked in the NICU at least one year prior to the COVID-19 pandemic?
3. Did you work as an SLT in the NICU during the COVID-19 pandemic?

The online survey remained open from 25 June – 9 September 2022. Once the survey was closed, the data collected on Qualtrics was exported into the Statistical Package for Social Sciences (SPSS) software Version 28 Data Document format.

2.7.Pilot study

A small pilot study was conducted with an experienced SLT, who is also a staff member at the Department of Speech-Language Pathology and Audiology at the University of Pretoria. The aim of the pilot study was to determine the quality of the questions asked, to ensure clarity of the wording used, and to identify and correct any ambiguity in the survey. The participant completed the pilot survey in electronic format and provided feedback on the quality and format of the questions. This participant's data was not included in the data main collection nor in the analyses and description of results. Minor changes regarding spelling and grammar were noticed and amended. Once the survey was loaded onto Qualtrics, a qualified SLT read the survey for ease of completion, survey flow, and for final grammatical checks.

2.8.Data management and analysis

Data were captured on SPSS and were analysed by an experienced statistician. Prior to the launch of the survey, the researcher met with the statistician on several occasions to discuss the survey questions as well as the appropriate statistical tests to run on the data. Descriptive and inferential statistics were conducted on the quantitative data. Qualitative data were analysed using content analysis (Krippendorff, 2019). Correlations on data were run but were found not to be statistically significant. For the frequencies, to investigate whether the responses of "urban" and "suburban and rural" and "public" versus "private" differed (for items with single or multiple responses options), the independent two-sample z-tests for proportions were run. The quantitative and qualitative data were valuable to explore the sample's lived experiences, perspectives, and behaviours. Both types of data yielded results that were valid and reliable (Terry et al., 2017).

2.9.Validity and reliability

Content validity was improved by having two local experts in the field, an SLT who is a professor emeritus and an SLT with a doctorate in philosophy, rate the online survey. This exercise yielded a CVI score of 1, and deemed acceptable to prove content validity (Yusoff, 2019).

Spearman correlations were run for each Likert-scale item as well as the ordinal variable "How many years of experience do you have working as an SLP". The Likert-scale items were also used to conduct reliability (Cronbach's alpha). Cronbach's alpha values were above 0,6 thereby rendering the research instrument reliable (Daud et al., 2018). The researcher also aimed to achieve data triangulation by incorporating quantitative and qualitative research methods to gather data, thus methodological triangulation was achieved (Campbell et al., 2020).

2.10.Ethical considerations

Before commencing with data collection, ethical clearance was obtained in order to protect the researcher and the research participants. The researcher aimed to uphold the following ethical principles throughout the duration of this research study (Beauchamp & Childress, 2013; Department of Health, 2015).

2.10.1. Autonomy

Participation throughout the duration of this research study was voluntary, and participants had the right to withdraw from the study at any given time (Beauchamp & Childress, 1989; Brink et al., 2018). The participants were provided with this information prior to data collection and were ensured that their privacy would be protected and respected in accordance with the Protection of Personal Information Act [POPIA] (South African Government, 2020). The online survey was completed anonymously, as no identifying information was gathered. All IP addressed were discarded after the data were downloaded and before the document was sent to the statistician for analysis. All the information gathered was kept confidential.

2.10.2. Non-maleficence and beneficence

The researcher was mindful not to cause distress or harm when referring to working conditions and periods where participants may have feared for their lives. The researcher aimed to not inconvenience the participants when they were completing the online survey,

therefore sought to compile a survey that would take no longer than 20 minutes to complete (Brink et al., 2018). There were no more than minimal perceived risks associated with this study, however, the researcher remained cognisant that questions pertaining to the COVID-19 pandemic may have been traumatic for some participants. In order to minimise psychological risks, the researcher aimed to include questions pertaining to the work environment as far as possible and avoided asking questions of a personal nature.

2.10.3. Informed consent

The researcher was mindful to ask participants to volunteer themselves in their personal capacity to participate in the study (Brink et al., 2018). The information letter and informed consent were provided at the beginning of data collection and described how data would be collected, where it would be stored, and who would have access to the data (POPIA, 2020). The questions from the online survey were only displayed once the participants had clicked on the option that indicated consent. No identifying information collected was disclosed, as a numerical code was maintained throughout the duration and completion of this research study (POPIA, 2020). Participants were also informed that all data obtained would be stored by the University of Pretoria online on the University of Pretoria Data Repository and in hard copy at the Department of Speech-Language Pathology and Audiology, room 2-11, for a minimum of 15 years post completion of the study. Additionally, participants were informed that data collected may be used in future research.

Chapter Three: Research article

"The quality of the article should be its greatest achievement."
– Thomas Dewer 1st Baron Dewer

CHAPTER THREE: RESEARCH ARTICLE

3. Chapter three

This article was submitted the Neonatal Network journal in December 2022 (Appendix I). the formatting and style of the article differ to that of the dissertation in order to adhere to the journal's guidelines. American English is used throughout the article as it was submitted to an American journal. The reference list was compiled using AMA referencing guidelines, as requested by the journal.

Service Provision in the Neonatal Intensive Care Unit During a Recent Time of Crisis: Speech-Language Pathologists' Perspectives

ABSTRACT

Purpose: To describe speech-language pathologists' perspectives of their service provision in the NICU before and during the COVID-19 pandemic.

Design: A self-designed electronic survey was used to collect data.

Sample: Twenty-seven speech-language pathologists who worked in public and private NICUs at least one year prior to and during the COVID-19 pandemic were included. Nearly two thirds of the sample were ages 30-39 years old, and one third of the sample had 7-10 years of work experience.

Results: Speech-language pathologists' presence was perceived to remain at 100 percent, and parental presence decreased to 77,8 percent. All participants reported an increase in the use of personal protective equipment in the NICU. Interprofessional collaborative practice was perceived to decrease by 44,4 percent. The majority of participants perceived changes in their

service provision and roles with the decrease of parents in the unit. Many participants used innovative approaches such as tele-intervention to consult during this unprecedented time.

Keywords: NICU, COVID-19 pandemic, speech-language pathologist, service provision, neonate, survey

Neonatal Intensive Care Units (NICUs) globally underwent sudden, and severe, physical and structural changes to protect high-risk neonates and staff from, and to mitigate the spread of the Coronavirus [COVID-19] (Ahmad et al., 2020). Research is emerging on the long-term, and indirect, repercussions of the COVID-19 pandemic, however, little is known about changes that have transpired in NICUs during the height of the pandemic, and subsequently, the impact on service delivery by speech-language pathologists (SLP)s.

During the peak of the COVID-19 pandemic, medical and allied health care professionals permitted in the NICU were reduced (Mahoney et al., 2020). Repercussions included increased caseload and pressure, assumption of new roles or responsibilities, changes to the interprofessional collaborative process, and inconsistent implementation of COVID-19 policies within NICU (Klingenberg et al., 2021; Mahoney et al., 2020). Repercussions were further compounded by ethical concerns, compassion fatigue and grief, decrease in job satisfaction, increased stress, burnout, and depersonalization (Carter et al., 2021; Omidi et al., 2022). These factors may have had adverse effects on allied healthcare service provision, and the families at the receiving end of SLPs' NICU-based services (Carter et al., 2021).

Parental and visitor policy changes brought their own myriad of challenges. Restricting movement to and from, and parental presence in, the NICU, has had direct implications on caregiver-infant attachment, skin-to-skin contact (SSC) bonding, and feeding outcomes for both caregiver and infant (Ahmad et al., 2021). These domains are within the scope of practice of SLP; therefore, COVID-19 policies may have changed the service provision of SLPs in NICUs, warranting further investigation.

SLPs, who often take the lead in managing oropharyngeal dysphagia (OPD), were expected to be at the forefront of the COVID-19 pandemic due to the direct complications that the virus has on respiratory and swallowing functions (Carvalho et al., 2020; American Speech-Language-Hearing Association [ASHA], 2020). Disturbed NICU culture and service provision necessitates the gathering of perspectives of those who work at the frontline of the SLP profession in the NICU. In doing so, it is likely to further the body of research on COVID-19 and its adverse effects and may provide insight into how SLPs can implement r novel learnings into evidence-based practice. This could extend the role of the SLP in the NICU during a crisis and demonstrate the need for SLP services, thereby informing future decision-making and possible training for undergraduate SLPs. The aim of this study was to describe the perspectives of a sample of SLPs regarding service provision in the NICU before the COVID-19 pandemic, and during the initial lockdown of the COVID-19 pandemic and the subsequent easing of restrictions.

METHOD

Institutional ethical clearance was obtained prior to data collection (reference number HUM009/0422). Consent was requested from participants before they accessed the electronic survey. This South African descriptive study used a self-compiled electronic survey to collect mostly quantitative data. The South African healthcare system is divided into public healthcare and private healthcare, both of which support the Baby Friendly Hospital Initiative [BFHI] (WHO, 2009).

Participants

Non-probability purposive sampling was used to recruit twenty-seven SLPs. Participant inclusion criteria were SLPs who: worked in public or private health NICUs at least one year prior to the COVID-19 pandemic; were employed during the pandemic; had more than three years of work experience, and access to an electronic device to complete the survey.

Research Instrument

The electronic survey was compiled on Qualtrics Version 6.17 and incorporated questions from already published research [Supplementary file 1] (Adams et al., 2021; Ahmad et al., 2021; ASHA, 2005; Chadd et al., 2021; Garfield et al., 2021; Kearney et al., 2021; Mahoney et al., 2020; Omidi, 2022; Pineda et al., 2019; Rossetti, 2001; SASLHA, 2018). A pilot study was conducted with a staff member in the affiliated department to ensure clarity of questions. The multiple-item survey comprised of four sections. Section A collected demographic data. Section B used multiple choice questions to compare service provision, caseload, PPE, hospital feeding policies, interprofessional collaborative presence, and isolation policies. Section C consisted of two Likert scale questions in which participants had to rate their degree of agreement from 1 (strongly disagree) to 5 (strongly agree) with statements related to four constructs: service provision, quality of life, job satisfaction, and burnout. Section D included four open-ended questions. No identifying information was gathered, thereby ensuring the anonymity of participants.

Data Collection and Analysis

Data were collected from June – August 2022. An advertisement with a link to the survey was shared on social media and a local professional body's database. Three mandatory questions were asked prior to participants completing the survey, ensuring that respondents met all inclusion criteria. Data were analyzed using the Statistical Package for Social Sciences (SPSS) software Version 28 by a statistician. Descriptive and inferential statistics were conducted on quantitative data. Spearman correlations were run for each Likert-scale item and the ordinal variable "How many years of experience do you have working as an SLP". For the frequencies, to investigate whether the responses of "urban" and "suburban and rural" and "public" versus "private" differed (for items with single or multiple responses options), the independent two-sample z-tests for proportions were run. Qualitative data were analyzed using content analysis.

Quality Criteria

To improve content validity, the survey was reviewed by two local experts in the field: an SLP and professor emeritus, and an SLP with a Doctor of Philosophy. Due to the level of agreement, content validity was established as a score of one was obtained on the CVI index. Cronbach's alpha was used to establish reliability of the survey with values above 0,6 being acceptable (Daud et al., 2018). The Cronbach's alpha coefficients for service provision, quality of life, and burnout were all above 0,6 for both sub-sections (prior to and during COVID), indicating internal consistency for these constructs. Additionally, all correlations of the job satisfaction construct (during COVID) were above 0,1. Therefore, reliability of all constructs was established (Pallant, 2020).

RESULTS

Participant Characteristics

A total of 42 respondents answered the survey. All responses where less than half of the survey were completed (n = 15 [35,7 percent]) were excluded from the analysis. Thus, the total sample size was 27 participants (Table 1).

TABLE 1: Participant characteristics *(n = 27)*

		Participants response (n = 27) N (%)
Age		
	18-29	9 (33,3)
	30-39	17 (63,0)
	40-49	1 (3,7)
	50-59	0 (0)
	60 and over	0 (0)
Years of experience working as an SLP		
	0-3 years	3 (11,1)
	4-6 years	7 (25,9)
	7-10 years	9 (33,3)

11-15 years	7 (25,9)
16-20 years	1 (3,7)
+21 years	0 (0)
Province of employment	
Eastern Cape	3 (11,1)
Free State	2 (7,4)
Gauteng	15 (55,6)
KwaZulu Natal	2 (7,4)
Limpopo	0 (0)
Mpumalanga	2 (7,4)
North West	1 (3,7)
Northern Cape	1 (3,7)
Western Cape	1 (3,7)
Sector of employment	
Private	12 (44,4)
Public	13 (48,1)
Academic	2 (7,4)
Geographic setting	
Urban	19 (70,4)
Suburban	7 (25,9)
Rural	1 (3,7)
Years of experience working in the NICU	
3-5 years	11 (40,7)
6-10 years	12 (44,4)
11 – 15 years	3 (11,1)
16 – 20 years	1 (3,7)
+21 years	0 (0)

A large proportion of the sample were aged between 30-39 years old (n = 17; 63 percent) and had 7-10 years of work experience as an SLP (n = 9; 33,3 percent). Majority of the sample were employed in Gauteng province (n = 15; 55,6 percent), with the remaining 44,4 percent spanning across the rest of South Africa, with the exception of one province, namely Limpopo. Less than half of the participants worked in the public health sector (n = 13; 48,1 percent).

The most prominent geographic setting was urban (n = 19; 70,4 percent), and a large proportion of the sample had 6-10 years of work experience in the NICU (n = 12; 44,4 percent).

Service Provision Prior to and During the COVID-19 Pandemic, Initial Lockdown and Subsequent Easing of Restrictions

Participants were asked to compare their service provision prior to the COVID-19 pandemic to during the initial lockdown period, and second and third waves of the pandemic. Results are presented according to subheadings of topics investigated in the survey. SLPs were asked to report on the number of patients and primary caregivers that were seen in the NICU at two points in time: prior to the pandemic and during the pandemic (Figure 1). Participants reported that patients seen in a week increased during the pandemic, and caregivers being present in the NICU with their neonates decreased during the pandemic.

FIGURE 1: Perceived number of patients and caregivers seen in the NICU per week before and during the pandemic *(n = 27)*

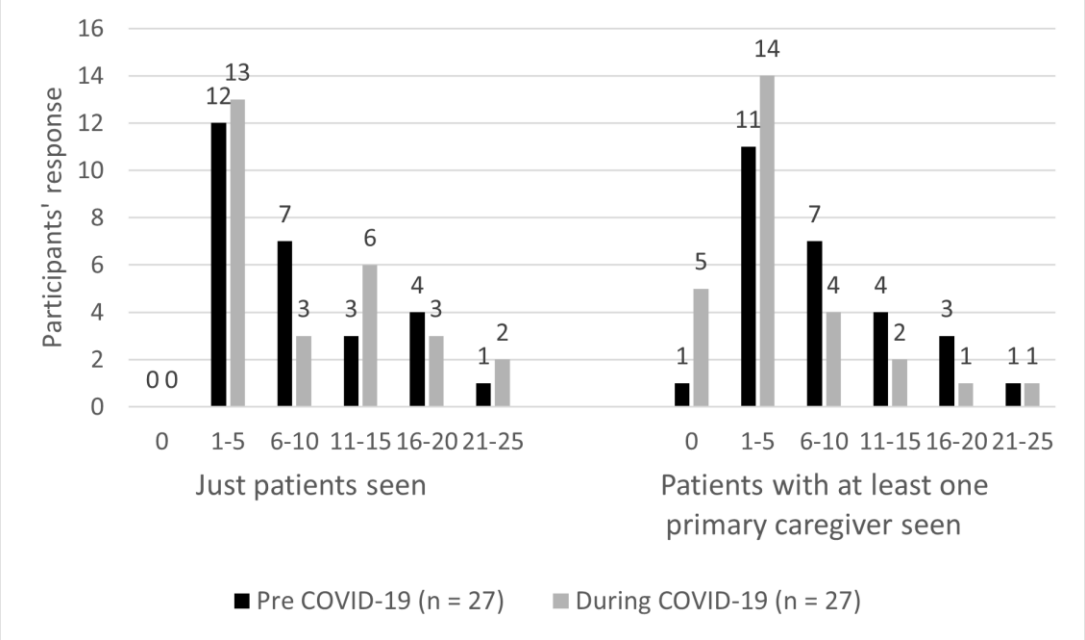


Table 2 presents the roles and responsibilities of SLPs in the NICU, and compares the reported roles assumed prior to and during the pandemic.

TABLE 2: SLPs' Roles and Responsibilities in NICUS before and during the COVID-19 pandemic *(n = 27)*

SLP Roles and Responsibilities in the NICU	Pre COVID-19 (n = 27) N (%)	During COVID-19 (n = 27) N (%)
1. Assessment and diagnosis of feeding and swallowing disorders	26 (96,3)	14 (51,9)
2. Pre-feeding assessment	25 (92,6)	13 (48,1)
3. Promotion of oral feeding readiness	25 (92,6)	12 (44,4)
4. Evaluation of breastfeeding	23 (85,2)	12 (44,4)
5. Evaluation of bottle-feeding readiness	23 (85,2)	13 (48,1)
6. Conduct instrumental feeding assessments (MBS, VFSS or FEES)	17 (63,0)	8 (29,6)
7. Promotion of SSC and attachment	22 (81,5)	9 (33,3)
8. Prevention and promotion of communication and feeding disorders	19 (70,4)	9 (33,3)
9. Caregiver training, education and counseling on communication and feeding development	24 (88,9)	11 (40,7)
10. Interprofessional collaboration	23 (85,2)	13 (48,1)
11. Interprofessional education (parents, nurses, doctors, team members)	23 (85,2)	13 (48,1)
12. Staff and caregiver training	21 (77,8)	10 (37,0)
13. Role release and exchange with other professionals in the NICU (for example, weighing babies in addition to providing therapy)	14 (51,9)	6 (22,2)
14. Use neurodevelopmental and family-centered principles to guide service provision	22 (81,5)	9 (33,3)
15. Promotion of self-regulating behaviors, positioning and positive touch, containment, and pain management as part of service delivery	23 (85,2)	12 (44,4)
16. Attend and contribute to medical or developmental rounds	15 (55,6)	6 (22,2)
17. Co-treat with other allied health care professionals	19 (70,4)	10 (37,0)
18. Engage in discharge planning and recommendations for discharge	22 (81,5)	11 (40,7)
19. Communication with other allied health care professionals in the client's community to transition services from NICU to home	20 (74,1)	9 (33,3)

Abbreviations: MBS = modified barium swallow; VFSS = video fluoroscopic swallow study; FEES = fiberoptic endoscopic evaluation of swallowing; SSC = skin-to-skin contact.

While there were no statistically significant differences between the two sets of answers and changes in roles and responsibilities reported, some participants expressed that their responsibilities became increasingly strenuous, and their overall workload increased during the pandemic. On average, fewer SLPs reported to be less involved in their routine roles in the NICU during the pandemic. The quantitative data in Table 2 can be triangulated with qualitative data collected using open ended questions at the end of the survey. When asked how they felt their role as an SLP in the NICU had changed during the COVID-19 pandemic, 11 participants perceived no change, or that it mainly remained the same; seven participants perceived less access to family/caregivers in the NICU, and therefore had to become more adaptable, as is seen in the following:

PARTICIPANT 1: "I have learnt to be more adaptable and resilient in all of my roles as an SLT in the NICU. I have also had to become more innovative. For example, doing video calls for parent training pre-discharge."

Seven participants perceived an increase in, or changes to their roles in the NICU. Six SLPs perceived a decrease in comprehensive services as a result of reduced staff presence and interprofessional collaboration; four SLPs perceived that the quality of their services improved as they provided more holistic treatment. The following quote describes how one SLP perceived their role to have changed in the NICU during the pandemic, and subsequently during the easing of restrictions:

PARTICIPANT 2: "I am able to still provide my full services as a feeding therapist and lactation consultant in the NICU. My role and service provision were a bit more difficult when mothers and infants were separated if the mother contracted COVID-19. I then had to focus more on protecting the mother's milk supply as well as the infant's oral feeding readiness for when breastfeeding could commence. It has since gone back to normal."

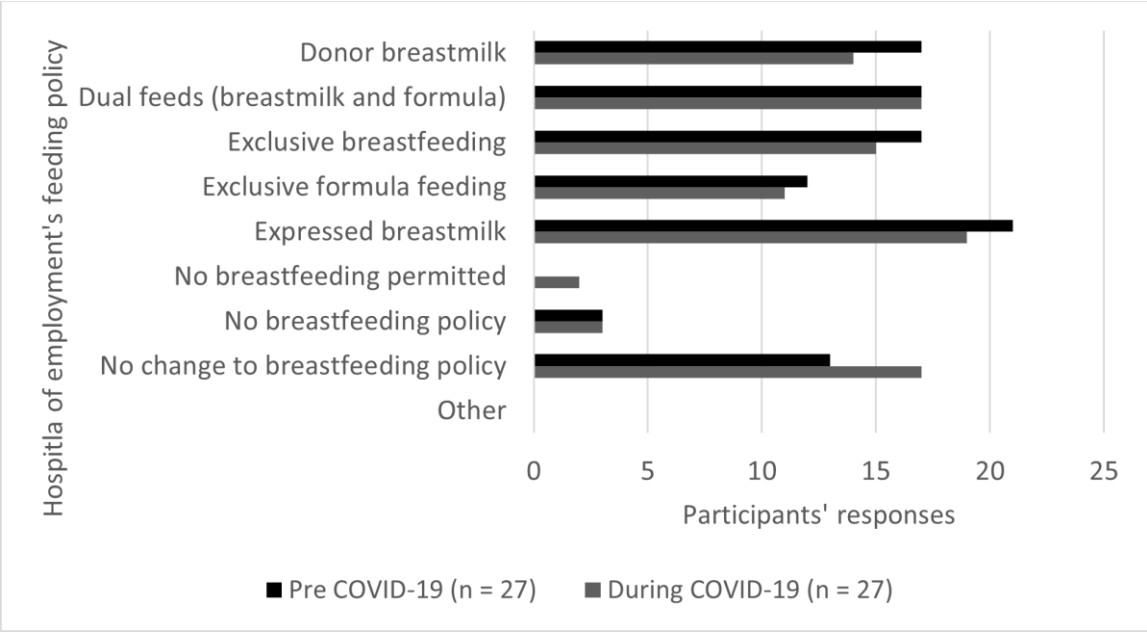
Two SLPs perceived an increased use of synchronous tele-intervention with families. An increase in the use of bottle feeding infants appeared to add to staff workload in terms of

sterilization of bottles and ensuring safe bottle feeding by families as is clear from the following:

PARTICIPANT 3: "It placed a lot of pressure on the SLPs because we couldn't train mothers to continue with therapy at other feeding times - we sometimes had to see neonates multiple times a day to ensure that they were getting appropriate stimulation. It also increased the amount of neonates' bottle feeding in the NICU and in our hospital this increased the burden on the SLP as we had to ensure all neonates could bottle feed safely. It also meant that we had to make sure that all bottles were sterilized properly and further increased our workload. By the third wave, mothers were being allowed in to see their neonates at certain times - this resulted in us creating socially distant groups so that we could train all of the caregivers regarding appropriate feeding techniques."

All participants reported an increase in the use of PPE in the NICU during the pandemic and easing of restrictions compared to before the pandemic (aprons = 100 percent; booties = 40,7 percent; full hazmat bodysuits = 14,8 percent; gloves = 100 percent; goggles = 25,9 percent; hairnets = 40,7 percent; masks = 96,3 percent; respirators = 14,8 percent, and shields = 63 percent). Four SLPS perceived that PPE and infection control became increasingly prominent or that it changed in their role. The majority of participants perceived no change to their hospital's breastfeeding policy during the pandemic (Figure 2).

FIGURE 2: Hospital of employment's feeding policy before and during the pandemic *(n = 27)*



Overall, SLPs in the study perceived a decrease in all team members' presence during the pandemic as compared to before, with the exception of the SLP, whose presence was perceived to remain at 100 percent during the pandemic. It was perceived that parental presence decreased from 100 percent to 77,8 percent. SLPs perceived a decrease in neonatal admissions to the NICU from 44,4 percent (before the COVID-19 pandemic) to 33,3 percent (during the pandemic). Additionally, there was a perceived decrease in mother and neonate rooming in with no physical distancing from 33,3 percent before the pandemic to 11,1 percent during pandemic. SLPs were asked to describe aspects to which they ascribe their clinical competence in the NICU to before the pandemic and during the pandemic. Table 3 shows that SLPs made use of articles, learning and interprofessional collaboration with team members, and the available hospital and government policies to negotiate the complex working environment that was the result of the COVID-19 pandemic.

TABLE 3: Perceived aspects of clinical competence in the NICU before and during the COVID-19 pandemic *(n = 26)*

	Pre COVID-19 N (%)	During COVID-19 N (%)
Articles	22 (81,5)	22 (81,5)
CPD courses or seminars	23 (85,2)	18 (66,7)
Learning and collaboration with medical and allied healthcare team members	26 (96,3)	24 (88,9)
Own independent learning or reading	24 (88,9)	24 (88,9)
Prior experience	23 (85,2)	22 (81,5)
Released policies	13 (48,1)	15 (55,6)
Undergraduate training	18 (66,7)	16 (59,3)

Abbreviation: CPD = continuous professional development.

This data were triangulated with open-ended questions, whereby participants were asked to describe how they could have been better prepared to render SLP services in the NICU during a time of crisis such as the COVID-19 pandemic. Participants reported that they would have been better equipped if they: had received improved support from hospital management and better staffing (n = 7; 26,0 percent), had increased access to academic research (n = 3; 12,5 percent), and better undergraduate training (n = 3; 12,5 percent). Three participants (12,5 percent) reported that developing improved communication with patients' families, as well as between team members and staff in the hospital, would have better prepared them for the circumstances they faced in the NICU during this time of crisis, as is attested to in the following quotes:

PARTICIPANT 1: "Clearer guidelines on the various roles of multidisciplinary team in the NICU and specifically what SLPs may and may not work on in the NICU. Improved varsity training and education."

PARTICIPANT 2: "Better communication between hospital management and ourselves providing services in the NICU."

Participants were asked to describe their hospital of employment's service provision from before the COVID-19 pandemic to during the pandemic (Table 4).

TABLE 4: Perceived changes to participant's hospital service provision before and during the COVID-19 pandemic *(n = 26)*

Hospital of employment's NICU service provision	Pre COVID-19 N (%)	During COVID-19	
		Increase N (%)	Decrease N (%)
1. Full capacity of essential medical staff (for example, doctors and nurses)	26 (96,3)	14 (51,9%)	7 (25,9)
2. Full capacity of allied healthcare staff (for example, SLPs)	25 (92,6)	-	10 (37,0)
3. Full capacity of support staff (for example, cleaning staff)	24 (88,9)	-	9 (33,3)
4. Full capacity of parental presence	22 (81,5)	-	21 (77,8)
5. Regular parental or caregiver involvement and joint decision-making	19 (70,4)	2 (7,4)	8 (29,6)
6. Regular referrals for patient/client groups on routine clinical caseload	12 (44,4)	5 (18,5)	6 (22,2)
7. Regular attendance of medical or developmental rounds	16 (59,3)	4 (14,8)	11 (40,7)
8. Regular interprofessional collaboration & education	19 (70,4)	4 (14,8)	12 (44,4)
9. Regular engagement in discharge planning and recommendations for discharge	20 (74,1)	8 (29,6)	4 (14,8)
10. Regular communication with other allied health care professionals in the client's community to transition services from NICU to home	15 (55,6)	4 (14,8)	3 (11,1)
11. Regular provision of parental or pastoral care to neonates	13 (48,1)	1 (3,7)	4 (14,8)
12. Regular quality control and risk management	15 (55,6)	13 (48,1)	1 (3,7)

The most prominent points of interest are a decrease in full capacity of parental presence in NICUs during the pandemic (n = 21; 77,8 percent), decreased SLP attendance of medical or developmental hospital rounds (n = 11; 40,7 percent), and decreased team collaboration and

education within the NICU setting (n = 12; 44,4 percent). Regular quality control and risk management within the NICU increased during the pandemic (n = 13; 48,1 percent).

Table 5 describes participants' perspectives of their clinical practice, infrastructure and job satisfaction before the pandemic. Spearman correlations were run. Respondents from the private health sector were in agreement (n = 7; 58,3 percent) significantly more than respondents from the public sector (n = 2; 16,7 percent) that their hospital of employment provided sufficient emotional support to staff prior to the COVID-19 pandemic (z = 2,108; p = 0,035). Interestingly, 83.3 percent (n = 5) of the sample from "suburban and rural" areas agreed significantly more that their place of employment provided sufficient emotional support during the COVID-19 pandemic (z = 2,968; p = 0,003) than participants from the private health sector (n = 3; 16,7 percent). Finally, respondents from the public health sector were in agreement (n = 8; 66,7 percent) significantly more than respondents from the private sector (n = 1; 8,3 percent) regarding the concern of their hospital of employment's human resources already prior to the pandemic (z = 2,968; p = 0,003). In Tables 5 and 6, no statistically significant differences were found between participants' answers before and during the pandemic. For the missing values, pairwise deletion was used (Raaijmakers, 1999).

TABLE 5: Participants' perspectives of their service provision pre-COVID-19 *(n = 26)*

Statement		Strongly disagree / Disagree N (%)	Neutral N (%)	Strongly agree / Agree N (%)	Missing N (%)
1.	I was adequately prepared to provide services as an SLP in the NICU	2 (7,4)	4 (14,8)	20 (74,1)	1 (3,7)
2.	I was satisfied with my personal accomplishment and quality of service provision	0 (0)	0 (0)	26 (96,3)	1 (3,7)
3.	My place of employment provided sufficient emotional support for their staff	8 (29,6)	9 (33,3)	9 (33,3)	1 (3,7)
4.	My quality of life was better compared to after the COVID-19 pandemic, initial lockdown period and subsequent 2nd and 3rd waves	1 (3,7)	10 (37)	15 (55,6)	1 (3,7)
5.	Human resources at my place of employment were a concern	5 (18,5)	10 (37)	11 (40,7)	1 (3,7)
6.	I was confident in my abilities to render services as an SLP in the NICU	1 (3,7)	1 (3,7)	24 (88,9)	1 (3,7)
7.	I had sufficient clinical experience to provide evidence-based services in the NICU	1 (3,7)	2 (7,4)	23 (85,2)	1 (3,7)
8.	I frequently experienced compassion fatigue as an SLP in the NICU	3 (11,1)	3 (11,1)	20 (74,1)	1 (3,7)
9.	I frequently experienced burnout as an SLP in the NICU	4 (14,8)	10 (37,0)	12 (44,4)	1 (3,7)
10.	I had the necessary skill set to render services as an SLP in the NICU sufficiently	1 (3,7)	0 (0)	25 (92,6)	1 (3,7)

Table 6 contrasts participants' perspectives of their clinical practice, infrastructure and job satisfaction before and during the pandemic.

TABLE 6: Participants' perspectives of their service provision during COVID-19 *(n = 24)*

Statement	Strongly disagree / Disagree N (%)	Neutral N (%)	Strongly agree / Agree N (%)	Missing n N (%)
1. I was adequately prepared to provide services as an SLP in the NICU	4 (14,8)	2 (7,4)	19 (70,4)	2 (7,4)
2. I was satisfied with my personal accomplishment as an SLP in the NICU	2 (7,4)	2 (7,4)	20 (74,1)	3 (11,1)
3. My place of employment provided sufficient emotional support for their staff	9 (33,3)	7 (25,9)	8 (29,6)	3 (11,1)
4. I was satisfied with my quality of service provision as an SLP in the NICU	2 (7,4)	3 (11,1)	19 (70,4)	3 (11,1)
5. The use of PPE did not interfere with my ability to provide patient-centered and evidence-based services as an SLP in the NICU	11 (40,7)	0 (0)	13 (48,1)	3 (11,1)
6. I experienced increased compassion fatigue during as an SLP in the NICU	1 (3,7)	1 (3,7)	22 (81,5)	3 (11,1)
7. It was difficult to communicate with the families of the neonates on my caseload in the NICU	3 (11,1)	2 (7,4)	19 (70,4)	3 (11,1)
8. I was not confident in my abilities to render services as an SLP in the NICU	17 (63,0)	2 (7,4)	5 (18,5)	3 (11,1)
9. I felt increased burnout at my workplace	2 (7,4)	0 (0)	22 (81,5)	3 (11,1)
10. I felt I had the necessary skill set to render services as an SLP in the NICU sufficiently	1 (3,7)	0 (0)	23 (85,2)	3 (11,1)
11. The visiting restrictions were medically necessary to protect the health of the neonates in the NICU at my place of employment	4 (14,8)	4 (14,8)	15 (55,6)	4 (14,8)

The perspectives from Tables 5 and 6 can be triangulated with SLPs' reported in the open-ended question about barriers they had to overcome during the pandemic while working in the NICU. Ten SLPs perceived PPE as a barrier; whether it be access to, use of, and training on use, discarding, or purchasing their own PPE during a global shortage. Seven SLPs perceived separation of mother and infant and decreased access to families as a barrier, and seven SLPs perceived the exchange of communication with caregivers and parents became increasingly difficult as the pandemic progressed. Five SLPs perceived that staff burnout, compassion fatigue, personal isolation, and decreased morale as barriers, as is shown in the following quote:

PARTICIPANT 1: "Burnout and compassion fatigue as well as dealing with reduced morale of all health care professionals in the team. Increased time at the hospital/working hours due to different PPE requirements for each ward and donning [putting on PPE] and doffing [taking off PPE] in between."

Additionally, three SLPs perceived national and hospital protocols and policy changes, inconsistent implementation of policies, and changing COVID-protocols in the hospital as barriers. Two SLPs perceived COVID itself and the fear and misconceptions of contracting the virus, difficulty with caregiver training, and delayed breastfeeding of neonates as barriers to their service provision:

PARTICIPANT 2: "Increased workload. Not only did we have more patients to see in the NICU, but another hospital's KMC ward was moved to our hospital to make more room for COVID patients, so we had to see those neonates as well. Greater communication difficulties with caregivers not being in the NICU. Initially during the pandemic, the uncertainty surrounding COVID-19 caused increased stress to all service providers in the NICU. Adapting to changes in policies, not all neonates who required MBS could receive it due to being in isolation. High risk and other outpatient clinics were canceled. We could at least follow up neonates as outpatients on an individual basis as needed but caregivers were sometimes hesitant to come to the hospital during the COVID-19 waves."

DISCUSSION

Participants in NICUs who were at the frontline of the COVID-19 pandemic believe that it has changed their service provision to an extent, with subsequent service provision beginning to normalize. Participants reported frequent separation of mothers and neonates in the NICU. This result aligns with international research where mothers and infants were separated when mothers were either awaiting test results or tested positive for the virus (Mahoney et al., 2020). Partial, and especially total separation of mother and neonate prohibit vital interactions during breastfeeding, SSC and attachment (Ludington-Hoe et al., 2021). The

decrease in mother and neonate rooming-in together during the pandemic and subsequent easing of restrictions goes against principles of SSC. While perhaps medically necessary at the time, this does not promote neonatal neurological and medical stability, weight gain, sensory development, strengthening of immunity, decreasing length of hospital stay, and emotional attachment of mother and newborn (Bergman, 2014).

Secondary benefits of SSC are promotion and attainment of direct breastfeeding, increased feeding duration and nutritional intake, and improved endurance (Pike et al., 2017). The benefits of SSC and breastfeeding outweigh the risks of transmission of any virus, however, SSC and breastfeeding during the pandemic were not always motivated for (Global Breastfeeding Collective, 2020). Participants perceived that parental presence in NICUs decreased during the pandemic. Under the extreme and unknown circumstances, measures were taken to restrict parental presence for the safety of all in NICUs. However, this does not align with principles of infant and family-centered developmental care and has medical and emotional impacts on families (Kostenzer et al., 2021). Parents are unable to be present during medical rounds to receive proper caregiver coaching from the neonate's team (Edwards et al., 2022). Shared-decision making and support of caregivers are also restricted (Ludington-Hoe et al., 2021). Insufficient parent coaching may result in parents not having the ability to recognize and interpret neonatal stress signals or pre-feeding readiness cues, while increasing parental stress, which may have been heightened during the pandemic (Kostenzer et al., 2021). This further limits the time the team has to establish safe feeding practices with families before being discharged from the NICU (Edwards et al., 2022). These learnings further motivate for the #ZeroSeparation campaign should a future healthcare crisis occur (Discenza, 2021). Separation of neonates and families not only impacts these two parties, but also the neonatal health care team.

Primary caregivers are responsible for providing somato-sensory stimulation to infants prior to feeding every three hours, which may be one of many responsibilities of team members (Spellman, 2022). Separation of mother from neonate altered these three-hourly feeding routines, resulting in NICU staff particularly nurses and SLPs, assuming this role. Prior to the

pandemic, SLPs were responsible for coaching families, particularly mothers, on neonate's stress signals, SSC, safe feeding practices, and breastfeeding support. With parental restrictions implemented in NICUs, SLPs may have been responsible for feeding of all neonates in their caseload, leading to an increased clinical caseload, extended working hours, and adapting their parent coaching from in-person to using alternative practices. A few SLPs had to be innovative in how they coached parents to identify risks of aspiration, among others, post-discharge from the NICU.

Participants did not specify the medium of tele-intervention efforts such as videoconferencing or telephonic calls, however, both have advantages and disadvantages (Tar-Mohamed & Kater, 2022). Tele-intervention has proven to be an effective tool to bring families and healthcare workers together during the pandemic (Tar-Mohamed & Kater, 2022; Aazuqa et al., 2021). Research is warranted on the on-going implementation of long-term use of tele-intervention, and tele-lactation to support exclusive breastfeeding in NICUs and follow-up clinics. Further research should determine its benefits to the healthcare system and at-risk populations (Azzuqa et al., 2021; Mahoney et al., 2020). The implication of these emergent fields may be that SLPs, and health care professionals should become proficient in digital literacy and receive training on tele-intervention and its ethical use at tertiary institutions. Low- and middle-income countries could consider how to structure healthcare systems, make provision for appropriate technology, and equip staff with new skills that they may have learnt during this pandemic, in order to be better prepared for a future healthcare crisis.

Healthcare crises necessitate fast and drastic change to previously normal service delivery to protect the majority of the population (Ahmad et al., 2020). This study found that over half of participants believed visitation restrictions to be medically necessary to protect at-risk neonates. This belief was shared by healthcare workers globally (Garfield et al., 2021). However, over 80 percent of participants experienced some degree of compassion fatigue and burnout. High levels of stress, compassion fatigue, and burnout all have adverse effects on individual functioning and clinical decision making, and was established in other healthcare

disciplines prior to the pandemic (Omidi et al., 2022; Oosthuizen et al., 2022; Zakia et al., 2022).

Despite these findings, over 70% of SLPs were satisfied with their personal accomplishment and quality of service provision during this time of crisis. This speaks to the adaptability and resilience of SLPs, which are critical skills required in the intense climate of NICUs (ASHA, 2004). This unprecedented time will have long-standing consequences on the psychological and emotional health of many healthcare workers (Balton et al., 2022; Whalen & Smith, 2021). Further research on equipping health care professionals and students with coping strategies and stress management as part of delivering evidence-based and person-centered care is warranted.

The climate of interprofessional collaboration in healthcare has changed since the onset of the pandemic (Nazir et al., 2021). Participants in this sample reported that interprofessional collaboration decreased during the pandemic. This finding aligns with several other international studies (Mannering et al., 2021; Mahoney et al., 2020). This decrease may be due to reduction in staff numbers across hospitals, or individuals having to isolate after being exposed to or contracting the virus. Interprofessional collaboration is a core principle to providing evidence-based, holistic and patient-centered care (Prentice et al., 2015). Some participants perceived that clearer guidelines on each individual's role as part of the neonatal health care team may have mitigated barriers experienced in the NICU during this time. These learnings should be explored and implemented to broaden the knowledge of the roles and ethical responsibilities of each stakeholder in the interprofessional collaborative process which would enhance the coordination of care given to patients and improve communication between all stakeholders (Prentice et al., 2015). A few SLPs reported that improved undergraduate training or access to NICU-related academic resources may also have assisted them in providing evidence-based services during the pandemic. In addition to tele-intervention being a popular development globally during the pandemic, the increase in infection control and risk management procedures have been noted. SLPs, SLP students and other health care professionals, need to advocate for themselves, their professions, and the

populations they serve. Policy and decision making in healthcare, as well as risk and crisis management, should be incorporated in university training and as a shared responsibility with employers as part of employment orientation.

CONCLUSION

This time of crisis changed how SLPs render services in NICUs, and these services will continue to change as the aftereffects of COVID-19 emerge. The learnings on #ZeroSeparation, the importance of SSC and breastfeeding, tele-intervention, interprofessional collaboration, and globally unified healthcare systems within the NICU are invaluable in paving the way toward a post COVID-19 world.

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Chapter Four: Implications and conclusion

“Once again, I arrived at my usual conclusion: one must educate oneself.”
– Marjane Satrapi

CHAPTER FOUR: CONTRIBUTIONS, IMPLICATIONS, LIMITATIONS, AND CONCLUSION

4. Chapter four aim

The aim of this chapter is to discuss theoretical and clinical implications of the findings from this study and highlight the potential contributions thereof. Furthermore, strengths and limitations, and recommendations for future research followed by the conclusion will be provided.

4.1.Theoretical and clinical implications of this study

The COVID-19 pandemic was a phenomenon that no one could have been prepared for. International and local frameworks and guidelines provided ample support and direction on SLT intervention for neonates in NICUS before the onset of this time of crisis, however, little was known at the peak of the pandemic about how to best treat neonates, their caregivers, and provide evidence-based and family centred services during this period.

The following clinical and theoretical implications arise from this study: tele-intervention, specifically in NICUs for families and team members, the incorporation of tele-health in undergraduate training to enable clinicians to be technologically advanced, hybrid models of service delivery, and the motivation for effective technological infrastructure (Khoza-Shangase et al., 2022). The second implication is IPC and its emphasised necessity in the NICU context. And thirdly, looking ahead, with the knowledge from this current pandemic, the importance of closely monitoring at-risk neonates affected by COVID-19, integrating the findings into evidence-based practice, and disaster preparedness for future crises by SLTs and other allied health professionals.

Tele-intervention, or tele-health, has surged since the onset of the pandemic (van der Linde, et al., 2021). Clinicians had to become familiar with transferring their in-person skills to asynchronous skills. Similarly, students who were completing their undergraduate training during the pandemic also had to gain at least some basic skills in tele-intervention. The findings that tele-health is effective and has the potential to be a feasible service delivery tool implies that future clinicians likely need to have the necessary skills to optimally use tele-

intervention in a variety of contexts. Undergraduate training should be revised to include the theoretical, clinical, and ethical uses of technology in the workplace and specifically the NICU and other neonatal nurseries. It is also possible to start investigating devices that can be used by SLTs to facilitate the assessment and intervention that occur in NICUs. The incorporation of tele-intervention also opens the door for highly knowledgeable and trained therapists to supervise students online, perhaps even to the extent of bridging international borders in speech-language pathology (Khoza-Shangase et al., 2022). Advocating for adequate technological infrastructure in the workplace also then becomes a role the SLT and student SLT will likely take upon themselves. This may also align with the Sustainable Developmental Goals (SDGs).

SDG 3 focuses on "Good Health and Well-Being" (UNICEF, 2020). One of the four key areas is strengthening healthcare systems, whereby people have access to current information, sustainable resources, and "access to promotive, preventive, curative, rehabilitative and palliative health services" (UNICEF, 2020). These services and resources have the potential to reduce multiple barriers that many South African citizens have when it comes to accessing healthcare. While technology has its own challenges, when implemented appropriately, has the possibility to: connect mothers or primary caregivers to their families when they are rooming in at hospitals with their neonates, thereby empowering and supporting the entire family unit; reduce time and travelling expenses of families for multiple visits and follow ups, and thereby support on-going services; connect health care professionals on a larger scale; mitigate linguistic barriers, and provide the broader population with specialised services and information that they previously may not have had access to (van den Hoogen et al., 2021; van der Linde et al., 2021). Despite South Africa having a low- to middle income demographic, many South African citizens have cellular phones. The promulgation of eHealth technology and its frameworks may be able to provide service provision to communities who are further removed from their local hospitals (Swanepoel, 2020). Adapting a known resource such as the VOICE programme into a hybrid model of IPC and communication may be a way forward in under resourced NICUs to connect all family members to all professionals on the neonate's team, thereby rendering cost-effective, holistic, and family centred care (van Hoogen et al., 2021).

The second implication is access to improved IPC for all team members involved in a neonate's care. While it has always been said to be the gold standard of NICU service delivery, IPC has again been highlighted as an effective way of providing services in healthcare and the lack thereof during a time of crisis was verbalised by participants (Fernandes et al., 2021). Perhaps the most prominent example of IPC can be seen in how South Africa as a nation worked together during the COVID-19 pandemic, and its implications for service delivery and teamwork in the future. The unseen impact this time of crisis has had on a nation will only come to the fore in years to come. Therefore, learnings of role clarity, role release and role expansion should be reiterated in the workplace and in undergraduate training in accordance with local guidelines for early communication intervention (SASLHA, 2018). Undergraduate students who have increased in-depth knowledge about the skills and roles of other health professionals they work with may be more likely to work in a team in the future (Hood et al., 2014; van Gessel et al., 2018). Education of the role of the SLT in NICUs should form part of a broader NICU curricula as well as public education (SASLHA, 2018).

And finally, looking ahead as a country emerging from the COVID-19 pandemic, there have been several learnings and implications. The first is that clinicians should always motivate for zero separation of mother and neonate in times of crisis, if possible (Discenza, 2021). Evidence has shown that the benefits of KMC outweighs the need for separating mothers from their infants. Breastfeeding should also always be motivated and advocated for (Global Breastfeeding Collective, 2020; Sokou et al., 2022). Thorough theoretical and clinical training of assessment and management of breastfeeding difficulties, either as an undergraduate or postgraduate training programme, should form part of the NICU-based SLTs' refined skillset. This skillset should also be supported with access to specialized postgraduate education or continuous professional development (CPD) courses that further the knowledge of evidence-based practice and best care in neonatal intervention.

Since the onset of the pandemic, several topics have come to the forefront, particularly that of mental health. Many participants experienced some form of emotional strain over the last few years; however, this was already occurring prior to the pandemic (Omidi et al., 2022). It is important that individual well-being continue to be emphasised and practiced even now in the subsequent normalisation of service delivery (Balton et al., 2022; Oosthuizen et al., 2021;

Whalen & Smith, 2021). Individual well-being and resilience are a necessity for clear decision-making, critical thinking, high quality service provision, and ultimately the overall outcomes of the neonates receiving intervention, therefore, the work environment should be led by compassionate employers and management who are responsible for taking care of and supporting their staff. Improved employee wellness should also be prioritised (Balton et al., 2022).

4.2.Potential contributions of this study

Findings from this study can be incorporated into already well organised and practical frameworks for early communication intervention [ECI] (ASHA, 2004; SASLHA, 2018). Three of the six pillars of (ECI) can be seen in a new, emerging COVID-19, light with the incorporation of the main findings from this study. The three pillars of interest are: pillar one, “services are family-centred, culturally and linguistically responsive;” pillar two, “services are comprehensive, coordinated and team-based,” and pillar three, “services promote attachment between mothers and their neonate” (SASLHA, 2018). These ECI principles already are rooted in evidence-based practice [EBP] (ASHA, 2004; SASLHA, 2018). The main findings of this study fit into evidence-based practice and align with the three tenets of EBP: best research evidence, clinician experience and expertise, and family values and practices (Gilgun, 2005; Satterfield et al., 2009). Figure three displays this incorporation of the three ECI pillars, the constructs of EBP, and the three main findings that emerged from this study.

FIGURE 3: Incorporation of most pertinent study findings with tenets of EBP

Abbreviations: EBP = Evidence based practice; IPC = interprofessional collaboration; NICU = neonatal intensive care unit.

(Gilgun, 2005; Satterfield et al., 2009)

As ECI pillar one speaks to patient values and preferences, the finding nearly 80% of NICUs not permitting family presence and visitors is not conducive to ideal early intervention practice. Similarly, as ECI pillar two speaks to clinician expertise and experience, and perhaps wisdom, the decrease in IPC by nearly 45% further affects the quality of holistic early intervention services. And lastly, Finally, as ECI pillar three speaks to all three tenets of EBP, more specifically best research evidence, the finding that nearly 80% of mothers and newborns were separated in NICUs across South Africa unfortunately does not align with the

gold standard for neonatal intervention, which emphasises the value of caregiver presence for the neonate and improving their condition.

4.3.Strengths and limitations, and recommendations for future research

4.3.1. Strengths

The content validity of the research instrument used is a strength to the research study. The survey was reviewed multiple times by two experts in the field of speech-language pathology and applied statistics. The survey yielded a CVI score of 1, indicating that the experts who panel reviewed the survey concluded that all the questions asked pertained to the nature of the study and relevance in the field (Yusoff, 2019). A second strength of the study design is that there were data triangulation between the quantitative and qualitative sections in the survey. This data triangulation therefore yields better methodological rigour (Tobin & Begley, 2004). The third strength of this study is that there were fairly distributed responses across the private and public healthcare sector and the various work settings. Despite the small sample size, which in of itself is a limitation to this study, there were valuable perspectives collated from both settings.

4.3.2. Limitations

The first limitation to this study is that it was a small-scale study and therefore difficult to generalise the findings across the vast South African context. It would be recommended for a similar study to be conducted on a larger scale including more hospital settings such as KMC wards or units and step-down units from the NICU, such as a Baby Room. The second limitation to this study is that one province yielded no participants and is therefore not a true reflection of the changes pre COVID-19, the pandemic at its peak, and the subsequent return to normality in NICUs. This may be due to the strict inclusion criteria stipulated by the researcher and that NICU service provision is a sub-specialty within the field of speech-language therapy (LaManna, 2022). Despite the small sample, a study of this nature has not been conducted before, and therefore renders valuable findings contributing to the planning of future research endeavours.

4.3.3. Recommendations for future research

It has been valuable to learn how the COVID-19 pandemic affected the service provision of SLTs in NICUs, however, it is also important to research how the neonates and families receiving this intervention were impacted. Several participants in this study expressed concern for the feeding, speech, language, hearing and social development and attachment of neonates they managed during this timeframe. It is possible that many neonates and their families have been seen regularly as follow up patients as South Africa has emerged from the state of disaster. However, many families may still remain at risk of not being identified as the healthcare system has slowly recovered from this time of crisis. It is imperative that all neonates who were in NICUs during the peak and subsequent easing of restrictions receive long-term follow up care so as to mitigate the consequences the pandemic had on their first few months of life. Long-term follow up care will support the well-established principles of ECI as well as family-centred care. This research design could follow a descriptive study of how neonates born during the peak of the COVID-19 pandemic and who spent time in NICUs are developing now and what intervention they have received since discharge. Alternatively, a retrospective longitudinal study investigating the development of neonates born during the pandemic over multiple three-to-six-month intervals could be compared to the development of neonates born prior to the pandemic over the same interval periods.

A construct central to the findings of this study is IPC. A final recommendation is to broaden the inclusion criteria to all allied health care professionals, as well as parents, who were in NICUs during this time of crisis. The learnings and shortcomings experienced by those rendering IPC can be studied and integrated into current day intervention practices, as well as undergraduate and postgraduate training programmes to better equip those working in health care teams, and the individuals receiving their services. Clinicians could also be surveyed to determine which tele-health methods and intervention tools they are subsequently using as a result of the pandemic, and their recommendations for building an infrastructure to allow for better care in a future time of crisis. An alternative research design, such as a qualitative study using focus groups of health care professionals and parents, may also be effective in gathering broader and more in-depth data about navigating IPC during and after a time of crisis.

4.4.Conclusion

COVID-19 brought about a myriad of changes and challenges. Clinicians providing services during this unprecedented time displayed resilience and innovation to overcome these challenges to best serve their patients and their families in NICUs. The findings from this study have highlighted the importance of interprofessional collaboration and technological advances in the field of speech-language pathology in the NICU-context in South Africa. Hybrid approaches of service delivery and improved technological infrastructure have the potential to overcome multiple barriers a nation-wide shutdown may present. Essential to its success is the effective communication between families and health care providers, as well as policy makers. These findings may be of value to undergraduate students, clinicians in academia writing academic curricula and responsible for the training of upcoming professionals, clinicians working in multidisciplinary health care teams, and those motivating for the provision of such services. Decision-making in future times of crisis should be guided by principles of early communication intervention, evidence-based practice, and the learnings from these experienced health care professionals.

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APPENDIX A: ONLINE SURVEY

Survey (DS Henning 17017115)

This survey is being conducted as part of a Master's research study by Dominique Henning, in Speech-Language Pathology at the University of Pretoria. The aim of this study is to describe the service provision in the Neonatal Intensive Care Unit (NICU) during the COVID-19 pandemic from South African Speech-Language Therapists' perspectives. The estimated completion time of this survey is 20 minutes. No risks or discomforts are anticipated by taking part in this study. Your participation is voluntary. You may choose to discontinue the survey at any time prior to pressing the submit button. By beginning the survey, you acknowledge your agreement to participate in this research. If you have concerns or questions about or want the results from this study, please contact dominiquesarahhenning@gmail.com.

Title of survey: Service provision in the NICU during the COVID-19 pandemic: South African Speech-Language Therapists' perspectives

Mandatory questions before accessing survey (participants will not be able to access the survey if they answer "No" for any of the three below questions):

1. Do you have at least three years of work experience in NICUs?
2. Are you a speech-language therapist (SLT) who worked in an NICU at least one year prior to the COVID-19 pandemic?
3. Did you work as an SLT in an NICU during the COVID-19 pandemic?

Section A: Demographic information	
1.1 What is your age?	□ 18-29 □ 30-39 □ 40-49 □ 50-59 □ 60 and over
1.2 How many years of experience do you have working as an SLT?	□ 0-3 years □ 4-6 years □ 7-10 years □ 11-15 years □ 16-20 years □ +21 years

1.3 Your current province of employment:	□ Eastern Cape □ Free State □ Gauteng □ KwaZulu Natal □ Limpopo □ Mpumalanga □ North West □ Northern Cape □ Western Cape
1.4 Your current sector of employment:	□ Private □ Public □ Academic
1.5 Geographic setting	□ Urban □ Suburban □ Rural
1.6 How many years of experience do you have working in the NICU?	□ 3-5 years □ 6-10 years □ 11 – 15 years □ 16 – 20 years □ +21 years

Section B: Comparing service provision prior to and during the COVID-19 pandemic, initial lockdown & subsequent easing of restrictions			
Service provision PRIOR to COVID-19 **Please answer these questions bearing in mind the situation at your place of employment PRIOR to the COVID-19 pandemic.**		**Service provision DURING COVID-19 during the initial lockdown and subsequent easing of restrictions in South Africa** **Please answer these questions bearing in mind the situation at your place of employment DURING the COVID-19 pandemic.**	
2.1 On average, how many patients did you see in the NICU per week **PRIOR** to the COVID-19 pandemic?	□ 0 □ 1-5 □ 6-10 □ 11-15 □ 16-20 □ 21-25 □ 26-30 □ More than 30	3.1 On average, how many patients did you see in the NICU per week **DURING the initial lockdown and subsequent 2nd and 3rd waves**?	□ 0 □ 1-5 □ 6-10 □ 11-15 □ 16-20 □ 21-25 □ 26-30 □ More than 30
2.2 On average, how many patients with **at least one primary caregiver** present did you see in the NICU per week **PRIOR** to the COVID-19 pandemic?	□ 0 □ 1-5 □ 6-10 □ 11-15 □ 16-20 □ 21-25 □ 26-30 □ More than 30	3.2 On average, how many patients with **at least one primary caregiver** present did you see in the NICU per week **DURING the initial lockdown and subsequent 2nd and 3rd waves**?	□ 0 □ 1-5 □ 6-10 □ 11-15 □ 16-20 □ 21-25 □ 26-30 □ More than 30

2.3 What were your **roles and responsibilities** in the NICU **PRIOR** to the COVID-19 pandemic? (Select all that apply)	□ Neonatal communication assessment □ Neonatal communication intervention □ Assessment and diagnosis of feeding and swallowing disorders □ Pre-feeding assessment □ Promotion of oral feeding readiness □ Evaluation of breastfeeding □ Evaluation of bottle-feeding readiness □ Conduct instrumental feeding assessments (MBS, VFSS or FEES) □ Promotion of KMC and attachment □ Conduct hearing screening □ Prevention and promotion of communication and feeding disorders □ Caregiver training, education and counselling on communication and feeding development □ Routine clinical caseload □ Multidisciplinary team (MDT) collaboration □ MDT education (parents, nurses, doctors, team members) □ Unique referrals or discharges to other hospitals and facilities □ Staff and caregiver training □ Role release and exchange with other team members in the NICU (for example, weighing babies in addition to providing therapy)	3.3 What were your **new roles and responsibilities** in the NICU since the pandemic **DURING the initial lockdown and subsequent 2nd and 3rd waves**? (Please select all that apply)	□ Neonatal communication assessment □ Neonatal communication intervention □ Assessment and diagnosis of feeding and swallowing disorders □ Pre-feeding assessment □ Promotion of oral feeding readiness □ Evaluation of breastfeeding □ Evaluation of bottle-feeding readiness □ Conduct instrumental feeding assessments (MBS, VFSS or FEES) □ Promotion of KMC and attachment □ Conduct hearing screening □ Prevention and promotion of communication and feeding disorders □ Caregiver training, education and counselling on communication and feeding development □ Routine clinical caseload □ Multidisciplinary team (MDT) collaboration □ MDT education (parents, nurses, doctors, team members) □ Unique referrals or discharges to other hospitals and facilities □ Staff and caregiver training □ Role release and exchange with other team members in the NICU (for example, weighing babies in addition to providing therapy)

	□ Use neurodevelopmental and family-centred principles to guide service provision □ Promotion of self-regulating behaviours, positioning and positive touch, containment, and pain management as part of service delivery □ Attend and contribute to medical or developmental rounds □ Co-treat with other allied health care professionals □ Engage in discharge planning and recommendations for discharge □ Communication with other allied health care professionals in the client's community to transition services from NICU to home □ Provision of parental or pastoral care to neonates □ Quality control and risk management □ Professional education □ Supervision of student-therapists □ Public education and advocacy □ Conduct standardised assessments for clinical purposes □ Conduct standardised assessments for research purposes □ Other _____		□ Use neurodevelopmental and family-centred principles to guide service provision □ Promotion of self-regulating behaviours, positioning and positive touch, containment, and pain management as part of service delivery □ Attend and contribute to medical or developmental rounds □ Co-treat with other allied health care professionals □ Engage in discharge planning and recommendations for discharge □ Communication with other allied health care professionals in the client's community to transition services from NICU to home □ Provision of parental or pastoral care to neonates □ Quality control and risk management □ Professional education □ Supervision of student-therapists □ Public education and advocacy □ Conduct standardised assessments for clinical purposes □ Conduct standardised assessments for research purposes □ Other _____

2.4 What PPE were you required to use in the NICU **PRIOR** to the COVID-19 pandemic? (Please select all that apply)	□ Aprons □ Boots □ Full hazmat bodysuit □ Gloves □ Goggles □ Hairnets □ Masks □ Respirators □ Shields □ None □ Other _____	3.4 What PPE were you required to use in the NICU **DURING the initial lockdown and subsequent 2nd and 3rd waves**? (Please select all that apply)	□ Aprons □ Boots □ Full hazmat bodysuit □ Gloves □ Goggles □ Hairnets □ Masks □ Respirators □ Shields □ None □ Other _____
2.5 What was your hospital of employment's **feeding policy PRIOR** to the COVID-19 pandemic? (Please select all that apply)	□ Donor breastmilk □ Dual (breastmilk and formula) □ Exclusive breastfeeding □ Exclusive formula feeding □ None □ Other _____	3.5 What was your hospital of employment's **feeding policy DURING the initial lockdown and subsequent 2nd and 3rd waves**? (Please select all that apply)	□ Donor breastmilk □ Dual (breastmilk and formula) □ Exclusive breastfeeding □ Exclusive formula feeding □ Expressed breastmilk □ No breastfeeding permitted □ No change to feeding policy □ Other _____
2.6 Which **team members** were present in the NICU **PRIOR** to the COVID-19 pandemic? (Please select all that apply)	□ Dieticians □ Doctors □ Lactation consultants □ Neonatologists □ Nurses □ OTs □ Paediatricians □ Parents □ PTs □ SLTs □ Social workers □ None □ Other _____	3.6 Which **team members** were present in the NICU **DURING the initial lockdown and subsequent 2nd and 3rd waves**? (Please select all that apply)	□ Dieticians □ Doctors □ Lactation consultants □ Neonatologists □ Nurses □ OTs □ Paediatricians □ Parents □ PTs □ SLTs □ Social workers □ None □ Other _____

2.7 If the infants' mothers contracted annual influenza or the flu, what was your hospital's policies towards the infants in terms of isolation and rooming **PRIOR** to the COVID-19 pandemic? (Please select all that apply)	□ Admission to NICU □ Admission to NICU—negative pressure room □ Isolation from mother for 14 days, discharged home with an alternate caregiver □ Room in with mother—no distancing □ Room in with mother—physically distanced □ Room in with mother—physically distanced and maternal PPE □ Not sure □ Other _____	3.7 If the infants' mothers tested positive for COVID-19, what was your hospital's policies towards the infants in terms of isolation and rooming **DURING the initial lockdown and subsequent 2nd and 3rd waves**? (Please select all that apply)	□ Admission to NICU □ Admission to NICU—negative pressure room □ Isolation from mother for 14 days, discharged home with an alternate caregiver □ Room in with mother—no distancing □ Room in with mother—physically distanced □ Room in with mother—physically distanced and maternal PPE □ Not sure □ Other _____
2.8 To which of the following do you ascribe your competence to handle the work circumstances in the NICU **PRIOR** to the initial COVID -19 pandemic? (Please select all that apply)	□ Articles □ CPD courses or seminars □ Infographics □ Learning and collaboration with medical and allied healthcare team members □ Mentors or supervisors in the workplace □ Own independent learning or reading □ Postgraduate research or coursework □ Prior experience □ Released policies □ Undergraduate training □ Other _____	3.8 To which of the following do you ascribe your competence to handle the work circumstances in the NICU **DURING** the initial lockdown and subsequent **2nd and 3rd waves**? (Please select all that apply)	□ Articles □ CPD courses or seminars □ Infographics □ Learning and collaboration with medical and allied healthcare team members □ Mentors or supervisors in the workplace □ Own independent learning or reading □ Postgraduate research or coursework □ Prior experience □ Released policies □ Undergraduate training □ Other _____

2.9 Describe your hospital's NICU service provision **PRIOR** to the COVID-19 pandemic**.** (Please select all that apply)	□ Full capacity of essential medical staff (for example, doctors and nurses) □ Full capacity of allied healthcare staff (for example, SLTs) □ Full capacity of support staff (for example, cleaning staff) □ Full capacity of parental presence □ Regular parental or caregiver involvement and joint decision-making □ Regular clinical case load □ Regular infant mortalities □ Regular infant re-admissions to NICU post discharge □ Regular referrals for patient/client groups on routine clinical caseload □ Regular in-person service delivery post discharge □ Participation in non-clinical tasks and/or projects □ Regular attendance of medical or developmental rounds □ Regular MDT collaboration □ Regular co-treatment with other allied health care professionals □ Regular engagement in discharge planning and recommendations for discharge □ Regular communication with other allied health care professionals in the client's community to	1. Describe your hospital's NICU service provision **DURING the initial lockdown and subsequent 2nd and 3rd waves**. (Please select all that apply)	□ Stayed at full capacity □ Reduction in essential medical staff (for example, doctors and nurses) □ Reduction in allied healthcare staff (for example, SLTs) □ Reduction in support staff (for example, cleaning staff) □ Reduction in parental presence □ Increase in parental or caregiver involvement and joint decision-making □ Decrease in parental or caregiver involvement and joint decision-making □ Reduction in clinical case load □ Change in PPE policies □ Increase in infant mortalities □ Decrease in infant mortalities □ Increase in infant re-admissions to the NICU □ Decrease in infant re-admissions to the NICU post discharge □ Altered method of service delivery post discharge (for example, remote delivery, teletherapy) □ Increase in referrals for patient/client groups on routine clinical caseload □ Reduction in referrals for patient/client groups on routine clinical caseload □ Increase in non-clinical tasks and/or projects □ Decrease in non-clinical tasks and/or projects □ Increase in role exchange and role

	transition services from NICU to home □ Regular provision of parental or pastoral care to neonates □ Regular quality control and risk management □ Provision of and referral to parent support groups □ Regular conduction of standardised assessments for clinical purposes □ Regular conduction of standardised assessments for research		release within the MDT □ Increase in attendance of medical or developmental rounds □ Decrease in attendance of medical or developmental rounds □ Increase in MDT education (parents, nurses, doctors, team members) □ Decrease in MDT education (parents, nurses, doctors, team members) □ Increase in discharge planning and discharge recommendations □ Decrease in discharge planning and discharge recommendations □ Increase in communication with other therapists in the client's community to transition services from NICU to home □ Decrease in communication with other therapists in the client's community to transition services from NICU to home □ Increase in provision of parental or pastoral care to neonates □ Decrease in provision of parental or pastoral care to neonates □ Increase in quality control and risk management □ Decrease in quality control and risk management

			□ Increase in provision of and referral to parent support groups □ Decrease in provision of and referral to parent support groups □ Increase in conduction of standardised assessments for clinical purposes □ Decrease in conduction of standardised assessments for clinical purposes □ Increase in conduction of standardised assessments for research □ Decrease in conduction of standardised assessments for clinical purposes or research □ Other _____

Section C: Overall perceptions of service provision Pre-COVID-19 & Post COVID-19 (Likert scale):

(The below constructs and colours will not appear on the online survey):

1. Clinical practice / service provision:
    a. Preparedness
    b. Confidence in abilities
    c. Knowledge/experience
    d. Skills
    e. Communication
2. Infrastructure:
    a. PPE
    b. Policy changes
    c. Restrictions
    d. Workplace support
3. Job satisfaction:
    a. Personal accomplishment
    b. Compassion fatigue
    c. Burnout
    d. Quality of life

Please rate the degree of agreement with the following statements:

Prior to the COVID-19 pandemic…	**Strongly disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly agree**
1. I was adequately prepared to provide services as an SLT in the NICU					
2. I was satisfied with my personal accomplishment and quality of service provision					
3. My place of employment provided sufficient emotional support for their staff					
4. My quality of life was better compared to after the COVID-19 pandemic, initial lockdown period and subsequent 2nd and 3rd waves					
5. I was able to communicate easily with the families of the patients on my caseload					
6. Human resources at my place of employment were a concern					
7. I was confident in my abilities to render services as an SLT in the NICU					
8. I had sufficient clinical experience to provide evidence-based services in the NICU					
9. The use of PPE did not interfere with my ability to provide patient-centred and evidence-based services as an SLT in the NICU					
10. I frequently experienced compassion fatigue as an SLT in the NICU					
11. I was able to communicate easily with team members of the patients on my caseload.					
12. I frequently experienced burnout as an SLT in the NICU					
13. I had the necessary skill set to render services as an SLT in the NICU sufficiently					

During the COVID-19 pandemic, initial lockdown period and subsequent 2nd and 3rd waves…	**Strongly disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly agree**
1. I was adequately prepared to provide services as an SLT in the NICU					
2. I was satisfied with my personal accomplishment as an SLT in the NICU					
3. My place of employment provided sufficient emotional support for their staff					
4. I was satisfied with my quality of service provision as an SLT in the NICU					
5. The use of PPE did not interfere with my ability to provide patient-centred and evidence-based services as an SLT in the NICU					
6. I was able to communicate easily with team members of the neonate's on my caseload in the NICU despite changes in my place of employment					
7. Policy changes did not interfere with my ability to provide patient-centred and evidence-based services as an SLT in the NICU					
8. I experienced increased compassion fatigue during as an SLT in the NICU					
9. It was difficult to communicate with the families of the neonate's on my caseload in the NICU					
10. My job satisfaction in the NICU deteriorated					
11. I was not confident in my abilities to render services as an SLT in the NICU					
12. I felt increased burnout at my workplace					

13. I felt I had the necessary skill set to render services as an SLT in the NICU sufficiently					
14. The visiting restrictions were medically necessary to protect the health of the neonates in the NICU at my place of employment					

Section D: Open-ended questions	
1. How has your role as an SLT in the NICU changed during the COVID-19 pandemic?	
2. What barriers have you had to overcome to provide services in the NICU during the COVID-19 pandemic?	
3. How could you have been better prepared to render services as an SLT in the NICU during the COVID-19 pandemic?	
4. What are your professional concerns as an SLT in the NICU about the potential the long-term impact of COVID-19 will be on patients' attachment, hearing, feeding, communication, and social development?	

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Omidi, Z. (2022). Association between burnout and nurses' quality of life in neonatal intensive care units: During the COVID-19 pandemic *Journal of Neonatal Nursing*, https://doi.org/10.1016/j.jnn.2022.04.005

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APPENDIX B: CONSENT FROM SASLHA

SASLHA
South African Speech-Language-Hearing Association

Local Tel : 0861 113 297
Address : P. O Box 1690 Umhlanga Rocks 4320
Email : admin@saslha.co.za
Web : www.saslha.co.za

10 June 2022,

Ms Dominique Sarah Henning
Email: dominiquesarahhenning@gmail.com

Dear Dominique,

Request for permission to send survey to members

Student: Ms Dominique Sarah Henning
Supervisor: Dr Esedra Kruger and Mrs Bhavani Pillay
Title of study: Service provision in the NICU during the COVID-19 pandemic: South African Speech-Language Therapists' perspectives

Link to survey: https://pretoria.eu.qualtrics.com/jfe/form/SV_cO5WCFhP3IZ18Dc

We, hereby acknowledge receipt of your request to publish your survey to SASLHA members via email. The SASLHA Research and Education committee hereby permits the distribution of the survey link on the association's social media platforms once ethical clearance has been obtained from the University of Pretoria, Faculty of Humanities Research Ethics Committee for the study entitled, *Service provision in the NICU during the COVID-19 pandemic: South African Speech-Language Therapists' perspectives*. The ethical clearance letter together with the finalized advert should be submitted to the committee after which it will be shared with members. The researchers must ensure compliance with the ethical conditions set out.

Kind regards
Research and Education Sub-committee

APPENDIX C: CONSENT FROM "SOUTH AFRICAN SPEECH-LANGUAGE THERAPISTS AND AUDIOLOGISTS" FACEBOOK PAGE

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Humanities
Fakulteit Geesteswetenskappe
Lefapha la Bomotho

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PERMISSION TO POST RESEARCH ON SOCIAL MEDIA PLATFORMS

1 April 2022

Dear Administrator,

Re: Request for permission to post an advertisement and link to research study on service provision in the NICU during the COVID-19 pandemic: South African Speech-Language Therapists' perspectives

My name is Dominique Henning, and I am a MA Speech-Language Pathology candidate from the Department of Speech-Language Pathology and Audiology at the University of Pretoria. I would like to obtain your permission to post the advertisement and survey link of my research study on the "South African Audiologists and Speech-Language Therapists" Facebook page.

The aim of this study is to describe the perspectives of experienced South African speech-language therapists regarding their service provision in the NICU across public and private hospitals during the COVID-19 pandemic, initial South African lockdown, and subsequent easing of restrictions. The advertisement is attached to this letter.

The research proposal of this study will be submitted to the Faculty of Humanities' Research and Ethics Committee to obtain ethical clearance before data collection can proceed.

If you have any further questions, you are encouraged to contact me, Dominique, at dominiquesarahhenning@gmail.com, or the supervisors, Dr Esedra Krüger at esedra.kruger@up.ac.za or Mrs Bhavani Pillay at bhavani.pillay@up.ac.za.

Yours sincerely,

Ms Dominique Sarah Henning	Dr Esedra Krüger	Mrs Bhavani Pillay
Researcher	Supervisor	Supervisor

Room 2-11, Communication Pathology Building
University of Pretoria, Private Bag X20
Hatfield 0028, South Africa
Tel +27 (0)12 420 2949 | Fax +27 (0)12 420 3517
Email esedra.kruger@up.ac.za | www.up.ac.za/faculty-of-humanities

CONSENT FORM

Please check in the box after each statement to confirm it has been read and agreed to.

1. I, Karyn Casey administrator of South African Audiologists and Speech-Language Therapists , have read the accompanying Information Sheet relating to the project on: Service provision in the NICU during the COVID-19 pandemic: South African Speech-Language Therapists' perspectives and I understand the purposes of the project. ☑
2. I agree to the arrangements described in the Information Sheet in so far as they relate to the use of the social media platform and provide permission to Dominique Henning to advertise this research study on this group. ☑

Signature

Page Administrator

Designation

Signed on:

05/04/2022

Insert official stamp here

There is no stamp for a Facebook page

APPENDIX D: CONSENT FROM "ALLIED HEALTH IN SOUTH AFRICA" FACEBOOK PAGE

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UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Humanities
Fakulteit Geesteswetenskappe
Lefapha la Bomotho

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PERMISSION TO POST RESEARCH ON SOCIAL MEDIA PLATFORMS

1 April 2022

Dear Administrator,

Re: Request for permission to post an advertisement and link to research study on service provision in the NICU during the COVID-19 pandemic: South African Speech-Language Therapists' perspectives

My name is Dominique Henning, and I am a MA Speech-Language Pathology candidate from the Department of Speech-Language Pathology and Audiology at the University of Pretoria. I would like to obtain your permission to post the advertisement and survey link of my research study on the "Allied health in South Africa" Facebook page.

The aim of this study is to describe the perspectives of experienced South African speech-language therapists regarding their service provision in the NICU across public and private hospitals during the COVID-19 pandemic, initial South African lockdown, and subsequent easing of restrictions. The advertisement is attached to this letter.

The research proposal of this study will be submitted to the Faculty of Humanities' Research and Ethics Committee to obtain ethical clearance before data collection can proceed.

If you have any further questions, you are encouraged to contact me, Dominique, at dominiquesarahhenning@gmail.com, or the supervisors, Dr Esedra Krüger at esedra.kruger@up.ac.za or Mrs Bhavani Pillay at bhavani.pillay@up.ac.za.

Yours sincerely,

Ms Dominique Sarah Henning	**Dr Esedra Krüger**	**Mrs Bhavani Pillay**
Researcher	**Supervisor**	**Supervisor**

Room 2-11, Communication Pathology Building
University of Pretoria, Private Bag X20
Hatfield 0028, South Africa
Tel +27 (0)12 420 2949 | Fax +27 (0)12 420 3517
Email esedra.kruger@up.ac.za | www.up.ac.za/faculty-of-humanities

CONSENT FORM

Please check in the box after each statement to confirm it has been read and agreed to.

1. I, Salome Geertsema administrator of "Allied health in South Africa", have read the accompanying Information Sheet relating to the project on: Service provision in the NICU during the COVID-19 pandemic: South African Speech-Language Therapists' perspectives and I understand the purposes of the project. ☑
2. I agree to the arrangements described in the Information Sheet in so far as they relate to the use of the social media platform and provide permission to Dominique Henning to advertise this research study on this group. ☑

Signature

Administrator

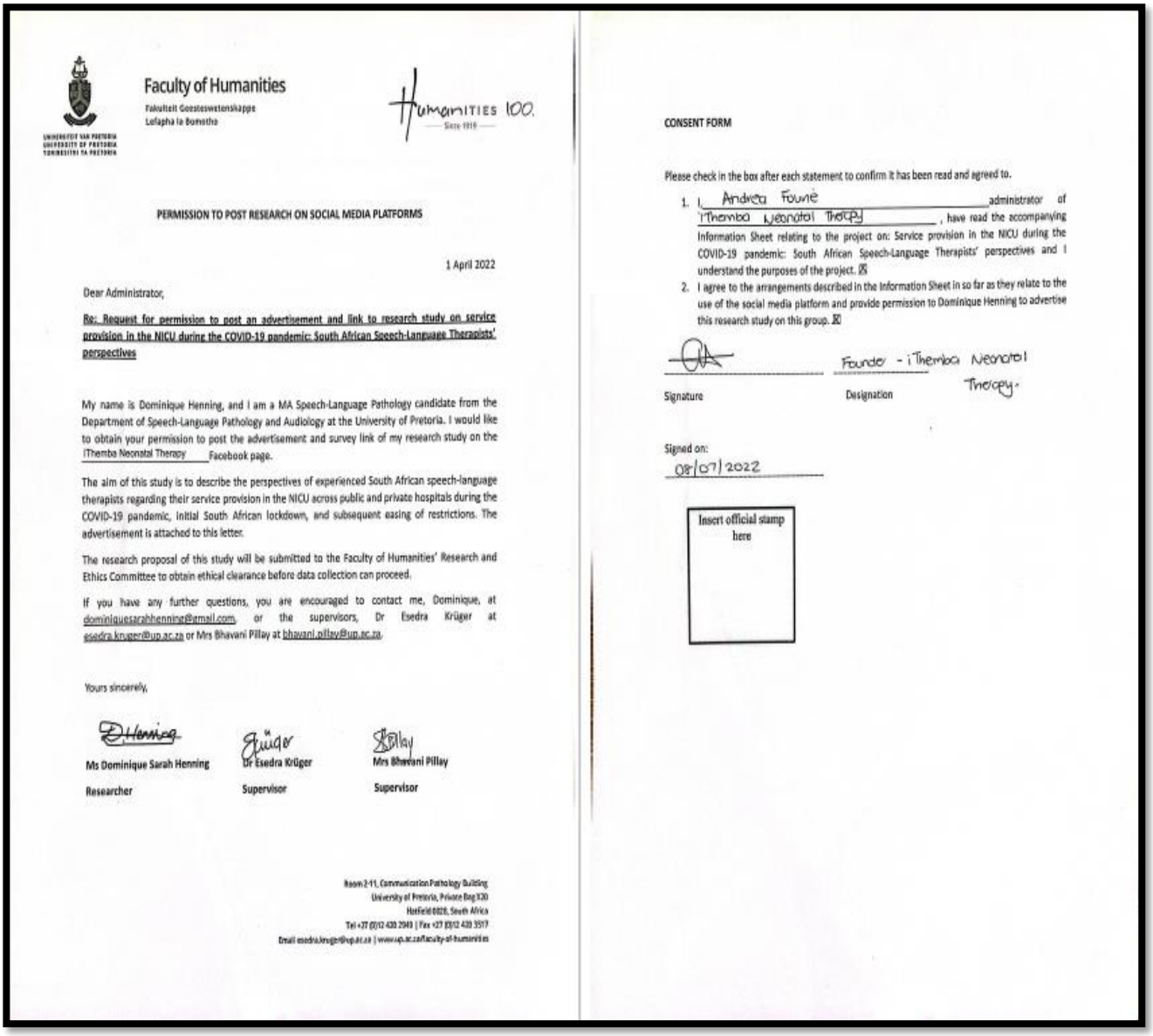
Designation

Signed on:

04/04/2022

Insert official stamp here

APPENDIX E: CONSENT FROM "ITHEMBA NEONATAL THERAPY" FACEBOOK PAGE



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PERMISSION TO POST RESEARCH ON SOCIAL MEDIA PLATFORMS

1 April 2022

Dear Administrator,

Re: Request for permission to post an advertisement and link to research study on service provision in the NICU during the COVID-19 pandemic: South African Speech-Language Therapists' perspectives

My name is Dominique Henning, and I am a MA Speech-Language Pathology candidate from the Department of Speech-Language Pathology and Audiology at the University of Pretoria. I would like to obtain your permission to post the advertisement and survey link of my research study on the iThemba Neonatal Therapy Facebook page.

The aim of this study is to describe the perspectives of experienced South African speech-language therapists regarding their service provision in the NICU across public and private hospitals during the COVID-19 pandemic, initial South African lockdown, and subsequent easing of restrictions. The advertisement is attached to this letter.

The research proposal of this study will be submitted to the Faculty of Humanities' Research and Ethics Committee to obtain ethical clearance before data collection can proceed.

If you have any further questions, you are encouraged to contact me, Dominique, at dominiquesarahhenning@gmail.com, or the supervisors, Dr Esedra Krüger at esedra.kruger@up.ac.za or Mrs Bhavani Pillay at bhavani.pillay@up.ac.za.

Yours sincerely,

Ms Dominique Sarah Henning	Dr Esedra Krüger	Mrs Bhavani Pillay
Researcher	Supervisor	Supervisor

Room 2-11, Communication Pathology Building
University of Pretoria, Private Bag X20
Hatfield 0028, South Africa
Tel +27 (0)12 420 2043 | Fax +27 (0)12 420 3517
Email esedra.kruger@up.ac.za | www.up.ac.za/faculty-of-humanities

CONSENT FORM

Please check in the box after each statement to confirm it has been read and agreed to.

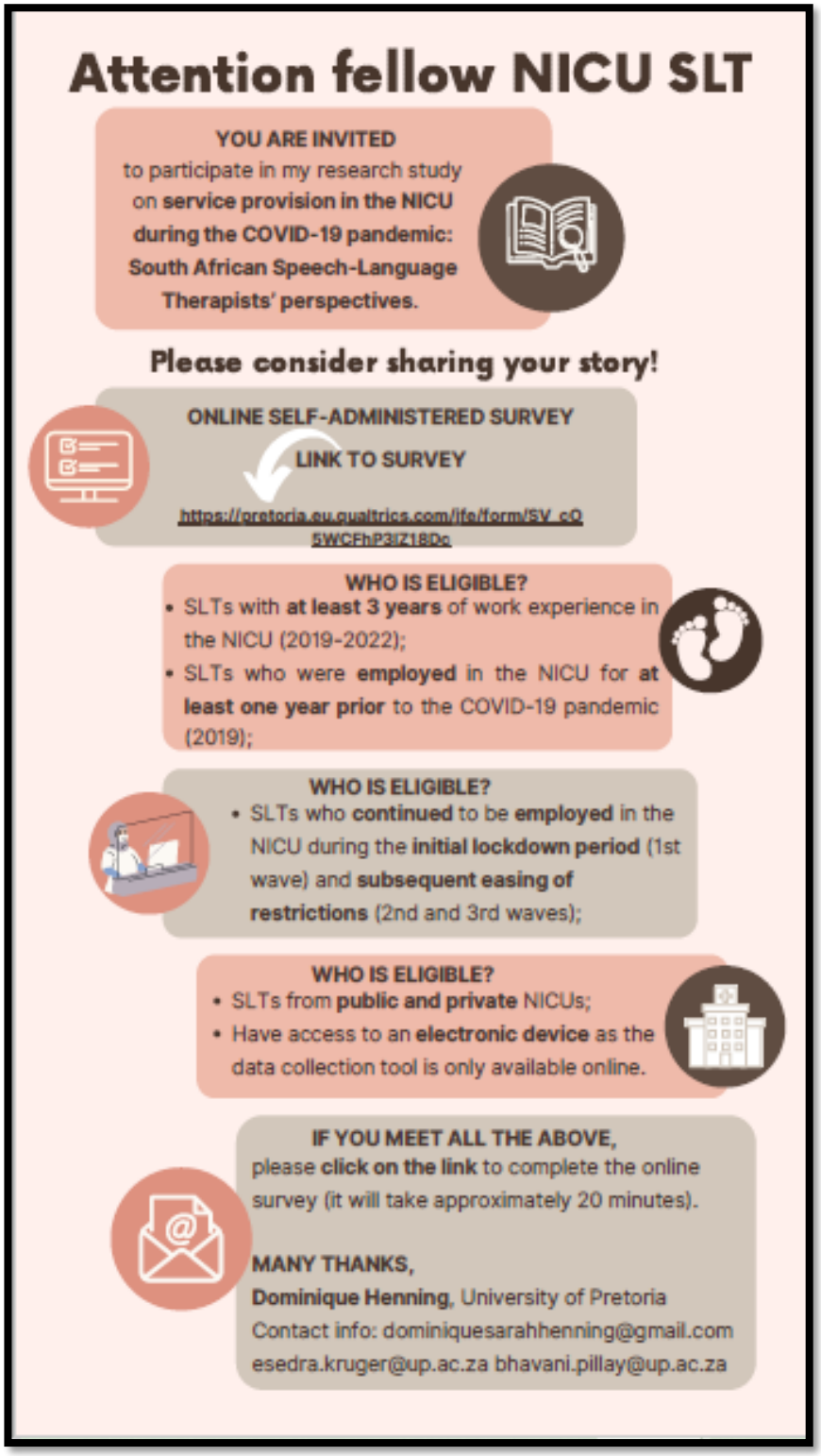
1. I, Andrea Fourie, administrator of 'iThemba Neonatal Therapy, have read the accompanying Information Sheet relating to the project on: Service provision in the NICU during the COVID-19 pandemic: South African Speech-Language Therapists' perspectives and I understand the purposes of the project. ☒
2. I agree to the arrangements described in the Information Sheet in so far as they relate to the use of the social media platform and provide permission to Dominique Henning to advertise this research study on this group. ☒

Signature — Designation: Founder - iThemba Neonatal Therapy.

Signed on: 08/07/2022

Insert official stamp here

APPENDIX F: INFOGRAPHIC ADVERTISING THE ONLINE SURVEY



APPENDIX G: HUMANITIES ETHICAL CLEARANCE LETTER

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20 June 2022

Dear Ms DS Henning

Project Title:	Service provision in the NICU during the COVID 19 pandemic: South African Speech-Language Therapists perspectives
Researcher:	Ms DS Henning
Supervisor(s):	Dr E Krüger
Department:	Speech Language Pathology and Audiology
Reference number:	17017115 (HUM009/0422)
Degree:	Masters

I have pleasure in informing you that the above application was **approved** by the Research Ethics Committee on 20 June 2022. Please note that before research can commence all other approvals must have been received.

Please note that this approval is based on the assumption that the research will be carried out along the lines laid out in the proposal. Should the actual research depart significantly from the proposed research, it will be necessary to apply for a new research approval and ethical clearance.

We wish you success with the project.

Sincerely,

Prof Karen Harris
Chair: Research Ethics Committee
Faculty of Humanities
UNIVERSITY OF PRETORIA
e-mail: tracey.andrew@up.ac.za

Room 7-27, Humanities Building, University of Pretoria, Private Bag X20, Hatfield 0028, South Africa
Tel +27 (0)12 420 4853| Fax +27 (0)12 420 4501 |Email pghumanities@up.ac.za | www.up.ac.za/faculty-of-humanities

APPENDIX H: INFORMED CONSENT

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INFORMATION LETTER AND INFORMED CONSENT

2 April 2022

Dear participant,

Re: Request for participation in research study on service provision in the NICU during the COVID-19 pandemic: South African Speech-Language Therapists' perspectives

My name is Dominique Henning, and I am a MA Speech-Language Pathology candidate from the Department of Speech-Language Pathology and Audiology at the University of Pretoria. The aim of this study is to describe the perspectives of experienced South African speech-language therapists (SLTs) regarding their service provision in the NICU across public and private hospitals during the COVID-19 pandemic, initial South African lockdown, and subsequent easing of restrictions. You are invited to participate in this study. This information leaflet is to provide you with more information about the study before you choose to participate. If you have any further questions, you are encouraged to contact me, Dominique, at dominiquesarahhenning@gmail.com, or the supervisors, Dr Esedra Krüger at esedra.kruger@up.ac.za and Mrs Bhavani Pillay at bhavani.pillay@up.ac.za.

Title of the study: Service provision in the NICU during the COVID-19 pandemic: South African Speech-Language Therapists' perspectives

Researcher: Dominique Sarah Henning

Research supervisors: Dr Esedra Krüger and Mrs Bhavani Pillay

Who is eligible to participate: Participants should be qualified SLTs who have worked in the NICU for at least one year prior to the onset of the COVID-19 pandemic (2020), as well as continued to work in the NICU during the pandemic, initial lockdown period and subsequent easing of restrictions. Participants from private and public NICUs are invited to participate. Participants should have access to an electronic device as the survey is only available online.

What is expected from participants: This research will be conducted as a descriptive research design using an online survey. A short, self-administered electronic survey will be used to obtain background information from the research participants and to compare the SLTs' perspectives of NICU service provision before the COVID-19 pandemic, during the initial lockdown and during subsequent easing of restrictions. Participation in this study is entirely voluntarily, and you may withdraw from the study prior to submission of the survey, without having to provide a reason. Please note that you will not be paid to participate in the study. However, two Takealot vouchers to the value of R250 are being offered as an incentive for participation. These two vouchers will be allocated to two participants at random and will be emailed to them after the close of the survey.

Room 2-11, Communication Pathology Building
University of Pretoria, Private Bag X20
Hatfield 0028, South Africa
Tel +27 (0)12 420 2949 | Fax +27 (0)12 420 3517
Email esedra.kruger@up.ac.za | www.up.ac.za/faculty-of-humanities

Confidentiality: Data obtained from the online survey will be handled with confidentiality, and no identifying information of the participants or their place of employment will be disclosed. Confidentiality will be guaranteed throughout the entire research project and storage of information. Only the researcher and supervisors and a statistician will have access to the data. Alphanumeric codes will be implemented for the analysis and reporting of results and identifying information about participants will not be used in the reporting of findings.

Risks: There are no perceived risks related to this research study. The survey takes 20 minutes to complete.

Release of findings: The results from this research study will be published in an accredited academic journal and as a dissertation in the UP repository.

Data storage: All information and data collected is the Intellectual Property of the University of Pretoria. All data will be stored online on the UP Data Repository website and in hard copy at the Department of Speech-Language Pathology and Audiology in room 2-11 for a minimum of 15 years. The data may be used for future research.

Ethical approval: This information letter will appear on the landing page of the online survey. Should you as a participant agree to partake in this study, it will be required that participants clearly accept that they understand the information and agree to participate in the study. Access to the online survey will only be granted once informed consent has been provided by a potential participant. This study has been submitted to the Research Ethics Committee at the Faculty of Humanities at the University of Pretoria for ethical approval.

Should you require further information, you are encouraged to contact me, Dominique, at dominiquesarahhenning@gmail.com. Alternatively, you can contact the supervisors, Dr Esedra Krüger at esedra.kruger@up.ac.za or Mrs Bhavani Pillay at bhavani.pillay@up.ac.za.

D.Henning
Ms Dominique Sarah Henning
Researcher (MA Speech-Language Pathology candidate)

Krüger
Dr Esedra Krüger
Supervisor

Pillay
Mrs Bhavani Pillay
Supervisor

Prof. Jeannie van der Linde
Head of Department

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CONSENT FORM TO APPEAR ON LANDING PAGE OF ONLINE SURVEY

Please check the box after each statement to confirm it has been read and agreed to.

1. I have read the accompanying Information Sheet relating to the survey on: Service provision in the NICU during the COVID-19 pandemic: South African Speech-Language Therapists' perspectives. ☐

2. I understand the purposes of the study and what will be required of me, that I have the right to ask questions during the research process, and any questions I have had have been answered to my satisfaction. I agree to the arrangements described in the Information Sheet in so far as they relate to my participation. ☐

3. I understand what information will be collected about me, what it will be used for, who it may be shared with, how it will be kept safe, and my rights in relation to my data. ☐

4. I understand that participation is entirely voluntary and that I have the right to withdraw from the project any time, and that this will be without detriment. ☐

5 (a). I understand that the data collected from me in this study will be preserved and made available in anonymised form, so that they can be consulted and re-used by others. ☐

5 (b). I understand that the data collected from me in this study will be preserved, and subject to safeguards that will be made available to other authenticated researchers. ☐ *

(*Guidance note only safeguards will include pseudonymisation, data minimisation, secure transfers, and any necessary data sharing and confidentiality agreements between parties)

8. I understand that this study has been reviewed by the University of Pretoria's Faculty of Humanities Research Ethics Committee and has been given ethical clearance for the research project to be conducted. ☐

9. I have received a copy of this Consent Form and of the accompanying Information Sheet. ☐

10. I am aware that when writing up the results, the researcher will comply with UP's policies regarding plagiarism. ☐

Room 2-11, Communication Pathology Building
University of Pretoria, Private Bag X20
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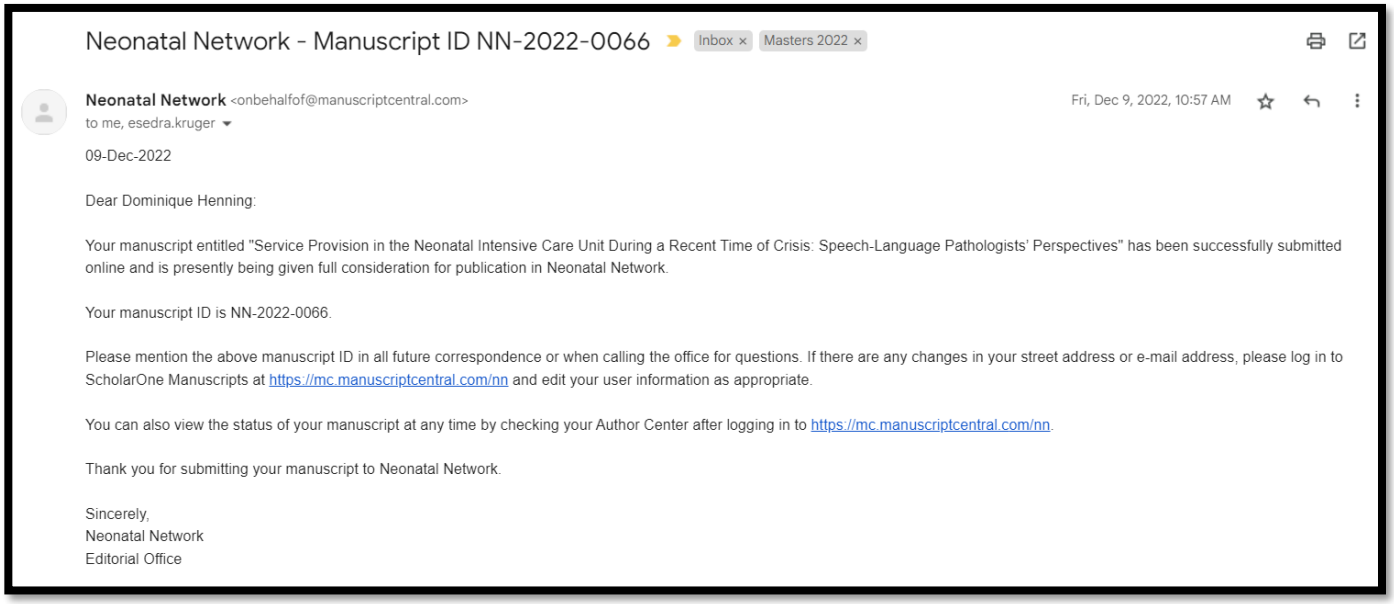
APPENDIX I: PROOF OF SUBMISSION TO JOURNAL



Neonatal Network - Manuscript ID NN-2022-0066 Inbox × Masters 2022 ×

Neonatal Network <onbehalfof@manuscriptcentral.com>
to me, esedra.kruger

Fri, Dec 9, 2022, 10:57 AM

09-Dec-2022

Dear Dominique Henning:

Your manuscript entitled "Service Provision in the Neonatal Intensive Care Unit During a Recent Time of Crisis: Speech-Language Pathologists' Perspectives" has been successfully submitted online and is presently being given full consideration for publication in Neonatal Network.

Your manuscript ID is NN-2022-0066.

Please mention the above manuscript ID in all future correspondence or when calling the office for questions. If there are any changes in your street address or e-mail address, please log in to ScholarOne Manuscripts at https://mc.manuscriptcentral.com/nn and edit your user information as appropriate.

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STATUS	ID	TITLE	CREATED	SUBMITTED
ME: Thomas, Koren • Awaiting Reviewer Scores Contact Journal	NN-2022-0066	Service Provision in the Neonatal Intensive Care Unit During a Recent Time of Crisis: Speech-Language Pathologists' Perspectives View Submission Cover Letter	06-Dec-2022	09-Dec-2022