Evaluation of standardized assessments used in Occupational Therapy for children with Cerebral Palsy in South Africa.

Moseka Mercy Vangu

A research report submitted to the faculty of health sciences, university of Witwatersrand, in partial fulfilment of the requirements for the degree of Master of Science in Occupational Therapy.

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Declaration

I, Moseka Mercy Vangu, hereby declare this research report is my own work. It is being submitted for the degree of Masters of Science in Occupational Therapy of the University of Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at this or any other university.

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Dedication

I dedicate my research report to all the children with Cerebral Palsy; their families and my colleagues that have given me the inspiration to do this research.

Acknowledgements

I would like to thank OTASA, RuRu SA and SANDTA for allowing me to disseminate my study through their platforms. I would like to thank to participants who willing participated to make the research a success. I would also like to thank my family and friends that have provided me with support throughout this journey. I would like to thank my supervisor who has been dedicated to supporting me throughout this journey.

Abstract

This study examines the standardized assessments employed by occupational therapists in South Africa when working with children diagnosed with cerebral palsy (CP). Participants were given the option to participate in an online survey distributed by RuRe SA, SANDTA, and OTASA. The majority of OTs surveyed operates in urban areas, with less than 11 years of experience working with CP children, predominantly in private practice and LSEN schools. Analysis of the survey data reveals a preference for visual perceptual standardized assessments over functional and hand function assessments. Despite awareness of available standardized assessments, their utilization is hindered by various factors including accessibility, appropriateness, practicality and acceptable (clinical utility). Commonly cited barriers to implementation include the cost, not appropriate for clinical settings, and time-consuming nature of these assessments. However, positive aspects such as ease of implementation, result interpretation, identification of CP children's strengths and weaknesses and identify skills CP children have were also acknowledged. These findings highlight the need for the development of cost-effective, contextually appropriate standardized assessments tailored to the needs of the CP population in South Africa.

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Abbreviations

CP: Cerebral Palsy

HPCSA: Health Professional council of South Africa

NHI: National Health insurance Act

COPM: Canadian Occupational Performance Measurement

PEDI: Paediatric Evaluation of disability inventory

TVPS-3/4: Test of visual perceptual skills

DTVP-3: Developmental test of visual perception

MVPT-3: Motor- Free Visual Perception

VMI: Visual motor integration

OTASA: Occupational Therapy Association of South Africa

SANDTA: South African Neurodevelopmental Therapy Association

RuRe SA: Rural Rehab South Africa

LSEN: Learners with special education needs

ICF: International Classification of Functioning, Disability, and Health framework

Chapter 1 Introduction

1.1 Introduction

Cerebral palsy (CP) significantly impacts children's daily activities, necessitating lifelong rehabilitation, including occupational therapy (Abbaskhanian *et al.*, 2015; Peters *et al.*, 2019) .As a client-centred profession, occupational therapists' primary goal is to facilitate independent participation in daily living activities (WFOT, 2021). A crucial aspect of effective occupational therapy interventions lies in the utilization of appropriate standardized assessments, which provide an objective measure of impairment and performance areas (Mulligan, 2014; O'Connor *et al.*, 2016; Peters *et al.*, 2019). For this reason, standardized assessments play a pivotal role in this regard, serving as a means to validate therapy, enhance professional credibility, and objectively quantify the extent of impairment, strengths, and challenges in various occupational performance areas (Majnemer *et al.*, 2010; Mulligan, 2014; O'Connor *et al.*, 2016; Peters *et al.*, 2019).

In South Africa, the Health Professions Council of South Africa (HPCSA) has a list of recommended standardized assessments that can be used by occupational therapists working with children (HPCSA, 2018). However, it is unclear whether these assessments are applicable to the CP populations within the South African context (HPCSA, 2018). Many standardized assessments were originally created based on norms prevalent in the global North(Mulligan, 2014). This design choice may pose challenges when applying these assessments in South Africa, particularly concerning their reliability and validity within the local context (Mulligan, 2014).

This study delved into the perceptions of occupational therapists in South Africa regarding the utilization of standardized assessments in varies clinical settings. Specifically, the research explored the standardized assessments used, the factors influencing their selection, and the reasons behind the choice or non-choice of standardized assessments recommended by the HPCSA. By shedding light on these aspects, the study aims to contribute to a nuanced understanding of the challenges and considerations in the application of standardized assessments for children with CP within the South African occupational therapy context.

1.2 Problem statement

The introduction of the National Health Insurance Act (NHI) in South Africa, coupled with increasing demands from medical aids and other funders for evidence-based health interventions, underscores the imperative for occupational therapists to demonstrate the efficacy of their interventions (Bennett and Bennett, 2000; Hoyt *et al.*, 2008; Dirette, Rozich and Viau, 2009; Peters *et al.*, 2019). This imperative is particularly crucial in the assessment process, where the HPCSA has delineated a list of recommended standardized assessments for occupational therapists working with children with CP(HPCSA, 2018). Despite these recommendations, the extent to which these standardized assessments are implemented across varies clinical settings in South Africa remains unclear. Given the potential high prevalence of children with CP, early and adequate rehabilitation services are paramount(Du Toit, 2019; Katangwe *et al.*, 2020; McIntyre *et al.*, 2022). Occupational therapists can develop more effective and appropriate intervention plans based on standardized assessments (Bennett and Bennett, 2000; Hoyt *et al.*, 2008; Dirette, Rozich and Viau, 2009; Burg, 2016; Peters *et al.*, 2019). This research aimed to explore the awareness of occupational therapists in South Africa regarding standardized assessments for children with CP. It delved into the utilization or non-utilization of recommended assessments, probing their appropriateness, accessibility, practicality, and acceptability.

1.3 Research question

What standardized assessments are being implemented in occupational therapy practice for children with CP in South Africa and are these assessments appropriate, accessible, practical and acceptable within the occupational therapy practice?

1.4 Aim of the study

The aim of the study is to determine what standardized assessments being implemented in the occupational therapy practice for children with cerebral palsy in South Africa and to evaluate the appropriate, accessible, practical and acceptable of these standardized assessments.

1.5 Objectives of the Study

- To determine occupational therapists' awareness of standardized assessments within the cerebral palsy population aged 0-18 years of age in South Africa
- To determine the current implementation of standardized assessments within the cerebral palsy population aged 0-18 years of age in South Africa

- To determine the therapists' perception of the appropriateness, accessibility, practicality and acceptable use of standardized assessments for the cerebral palsy population aged 0-18 years of age in South Africa

1.6 Significance of the Study

In light of the impending implementation of the NHI in South Africa and the increasing demand for evidence-based assessments, the use of standardized assessments by occupational therapists holds heightened significance, as validated by the HPCSA recommendations (Bennett and Bennett, 2000; Hoyt *et al.*, 2008; Dirette, Rozich and Viau, 2009; Peters *et al.*, 2019).This validation is imperative in the evolving healthcare landscape, with medical aids and the NHI requiring evidence-based assessments to support occupational therapy services (Bennett and Bennett, 2000; Hoyt *et al.*, 2008; Dirette, Rozich and Viau, 2009; Peters *et al.*, 2019).However, there is a notable gap in the existing literature concerning the utilization of standardized assessments by occupational therapists working with children diagnosed with CP in South Africa. This research seeks to address this gap by investigating the awareness, utilization, and perceived appropriateness, accessibility, practicality, and acceptability of HPCSA-recommended standardized assessments among occupational therapists working with children with CP in South Africa. The scarcity of studies on standardized assessments used with CP children in South Africa highlights the pressing need for research to inform the development or adaptation of assessments tailored to the local context. By exploring occupational therapists' perceptions, this research aims to contribute valuable insights that can potentially shape the landscape of standardized assessments for CP children in South Africa. Moreover, the findings can serve as a basis for updating the HPCSA list, ensuring that the list of recommended assessments remains relevant and reflective of the needs and practices in the field.

Chapter 2 Literature review

2.1 Introduction

This chapter reviews the literature regarding the role of occupational therapists in the rehabilitation process; the importance of participating in activities of daily living with CP children; the importance of standardized assessments; clinical utility of standardized assessments used with children with CP and what standardized assessments occupational therapists use with CP children. The literature was sourced from the following database: PubMed, research gate, EBSCO host. The keywords that were used: 'standardized assessments', 'cerebral palsy'; 'occupational therapy' 'participation' 'Clinical utility' and 'South Africa'.

2.2 Cerebral palsy: Clinical Presentation

Cerebral Palsy (CP) can be described as "a group of permanent disorders of the development of movement and posture, causing activity limitation, that are attributed to non- progressive disturbances that occurred in the developing foetal or infant brain. The motor disorders of cerebral palsy are often accompanied by disturbances of sensation, perception, cognition, communication, and behaviour, by epilepsy, and by secondary musculoskeletal problems" (Rosenbaum *et al.*, 2007, p. 9). Cerebral Palsy is not a homogenous condition, but rather a collection of movement problems stemming from early brain injury and thus there can be a wide range of presentations in practice (Rosenbaum *et al.*, 2007). While the key defining factor in diagnosing CP is a movement and posture problem, persons with CP can experience a wide range of co-morbidities (such as intellectual disabilities, perceptual difficulties, and behavioural difficulties) that further complicate the presentation of this condition in practice (Rosenbaum *et al.*, 2007; Abbaskhanian *et al.*, 2015; Vitrikas *et al.*, 2020). Ultimately people with CP can have a wide range of activity limitations and participation restrictions as well as face a number of environmental barriers that prevent their full participation in everyday life (Rosenbaum *et al.*, 2007; Abbaskhanian *et al.*, 2015; Vitrikas *et al.*, 2020). This means that children diagnosed with CP will have rehabilitation throughout their infant to adolescent lives with an occupational therapists, physiotherapists and speech therapists (Abbaskhanian *et al.*, 2015; Vitrikas *et al.*, 2020).

2.3Prevalence of CP worldwide, Africa and South Africa context

In childhood, CP stands out as one of the leading causes of lifetime disability (McIntyre *et al.*, 2022), despite variable prevalence across countries. In childhood, CP stands out as one of the leading causes of lifetime disability, despite variable prevalence across countries (McIntyre *et al.*, 2022). In low and middle-income nations, the birth prevalence for pre-/perinatal CP is reported at 3.4 per 1000 live births, while high-income countries register a lower, but still significant, prevalence at 1.6 per 1000 live births (McIntyre *et al.*, 2022). Notably, high-income countries employ CP registers to meticulously monitor prevalence, risk factors, distribution, frequency, and severity of CP, (Katangwe *et al.*, 2020; McIntyre *et al.*, 2022). Having CP registers will allow South Africa to have a true indication of the prevalence of CP children, which will provide additional evidence and allow for advocacy of resources needed to provide the intervention for CP children (Katangwe *et al.*, 2020; McIntyre *et al.*, 2022). Donald et al have discussed how there are different ways to getting information to determine the prevalence of CP children such as door-to- door surveys or hospital-based reviews, whilst a CP register will be more accurate (Donald *et al.*, 2014). The latest literature prevalence of CP in South Africa was implemented in 2002 by Couper, 10 per 1000 live births, and cited in studies implemented in 2019-2022 in South Africa, where one can wonder that there could be a higher estimated prevalence of CP currently (Couper, 2002; Du Toit, 2019; Katangwe *et al.*, 2020; McIntyre *et al.*, 2022). Allowing these countries to monitor trends, advocate for interventions, and compute life expectancies (Katangwe *et al.*, 2020). In Africa as a continent as well as in South Africa, there is much less rigorous monitoring of CP and thus determining prevalence is much more difficult (Du Toit, 2019; Katangwe *et al.*, 2020). The establishment of a CP register could bolster the evaluation of current services for children with CP (Katangwe *et al.*, 2020). Such a registry would not only identify service provision gaps but also furnish metrics for assessing the quality of life for both children with CP and their families (Katangwe *et al.*, 2020; McIntyre *et al.*, 2022). Donald et al. emphasise the importance of research in elucidating CP prevalence yet acknowledge the lack of literature in Africa where prevalence determination remains challenging (Donald *et al.*, 2014).Thus in South Africa, there are indications that the estimated prevalence of CP is notably higher than what Couper provided in 2002, as the latest literature of the prevalence of CP in South Africa was implemented in 2002 where in rural areas there was an estimated prevalence of 10 per 1000 live births (Couper, 2002; Du Toit, 2019; Katangwe *et al.*, 2020; McIntyre *et al.*, 2022).This may affect the distribution of

resources and services to the CP population in South Africa, thus an accurate prevalence of CP is needed (Du Toit, 2019; Katangwe *et al.*, 2020). Cerebral Palsy children seek intervention from physiotherapists, occupational therapists, speech therapists and specialised doctors and the estimated prevalence may increase the need for occupational therapists in different communities in South Africa (Hanna *et al.*, 2007; Peters *et al.*, 2019; McCoy *et al.*, 2020).

2.4 Occupational Therapy and cerebral palsy

Due to their wide ranging impairments and activity limitations as well as barriers in the environment, children with CP will have difficulties participating in activities of daily living, affecting their independence in occupational performance (Rosenbaum *et al.*, 2007; Abbaskhanian *et al.*, 2015; Vitrikas *et al.*, 2020).Occupational therapy is indicated in most cases to support occupational performance, decrease activity limitations and enhance environmental support in order to increase independent participation in everyday life activities, including education, leisure, play and activities of daily living (WFOT, 2021). In this way occupational therapy aims to limit the impact of CP on the quality of life of these children and their families (Majnemer *et al.*, 2010; Wright and Majnemer, 2014; Bourke-Taylor *et al.*, 2018; Power *et al.*, 2018; Africa, Human and Tshabalala, 2023).This is achieved by looking at what occupations the individual wants or needs or is expected to participate in (WFOT, 2021).

Participation in the these occupations enhances the child's physical, psychosocial and cognitive development (Anaby *et al.*, 2017; Africa, Human and Tshabalala, 2023) and provides opportunities for children with CP to be part of friendships groups, learn new skills, to develop knowledge, become independent and successfully integrate into their communities (Bourke-Taylor *et al.*, 2018; Power *et al.*, 2018; Africa, Human and Tshabalala, 2023).

Traditionally, occupational therapists were primarily focused on remediating impairments and building specific skills, such as gross motor skills, postural skills, fine motor skills, or visual perceptual skills, with the ultimate aim of facilitating participation in various activities and occupations (Livingston *et al.*, 2011; Abdel Malek, Rosenbaum and Gorter, 2020).The

prevailing approach is often centred on addressing body functions, structures, and activity limitations (Livingston *et al.*, 2011; Abdel Malek, Rosenbaum and Gorter, 2020). Unfortunately, this approach tended to prioritise these aspects over the broader goal of participation in occupational performance areas for children with CP(Anaby *et al.*, 2017; Schiariti *et al.*, 2017). However, a notable paradigm shift has occurred in recent years within the occupational therapy literature (Livingston *et al.*, 2011; Abdel Malek, Rosenbaum and Gorter, 2020). There has been a noticeable transition in emphasis from exclusively targeting impairments towards a more comprehensive focus on occupational performance and participation (Livingston *et al.*, 2011; Abdel Malek, Rosenbaum and Gorter, 2020). This shift represents a critical evolution in understanding the holistic needs of individuals with CP, recognizing that true therapeutic success lies in facilitating their active engagement in meaningful activities.

Furthermore, there has been a significant change in focus from an individual-centric approach to a more inclusive and family-centred approach(Hanna *et al.*, 2007; Duncan and Murray, 2012; Wright and Majnemer, 2014; Rosenbaum, 2015; O'Connor *et al.*, 2016; Peters *et al.*, 2019).Acknowledging the integral role of families in the therapy process, this approach underscores the importance of involving family members throughout the entire occupational therapy process. By doing so, occupational therapists can better understand the unique dynamics of each family and tailor interventions to the specific needs and aspirations of the child with CP.

In light of these transformative shifts in emphasis and practice, there is a compelling need to review and potentially adapt current occupational therapy practices in South Africa. By aligning with these contemporary perspectives, therapists can better cater to the diverse needs of children with CP, fostering holistic well-being and meaningful participation in their daily lives.

2.5 Occupational Therapy and Assessments

Occupational therapists that provide their services to children with CP, there is a need to involve the family members and the child in the assessment process (Hanna *et al.*, 2007; Duncan and Murray, 2012; Wright and Majnemer, 2014; Rosenbaum, 2015; O'Connor *et al.*, 2016; Peters *et al.*, 2019). As there has been a shift of therapy where one needs to focus on the participation and occupational performance of the CP child, as this is what is needed to improve the quality of life for the child and family. This has shown that occupational therapy standardized or non- standardized assessments need to involve the child and family members.

2.5.1 The Assessment process

Standardized assessments do not function in isolation; non-standardized assessment tools must complement them (Mulligan, 2014). The integration of non-standardized assessments is crucial as they provide additional information about children with CP, supporting the clinical reasoning behind clinicians' choices of assessments for effective treatment planning(Mulligan, 2014; O'Connor *et al.*, 2016, 2017). While the utilisation of standardized assessments is seen as beneficial for developing effective treatment plans and upholding "best clinical practice," it is important to note that not all standardized assessments contribute equally to treatment planning (Glover and Albers, 2007; Hanna *et al.*, 2007; Duncan and Murray, 2012; Mulligan, 2014; Wright and Majnemer, 2014) .This has led to debates in some studies regarding the evaluation of whether evidence-based assessments truly demonstrate "best clinical practice." Such debates contribute to the observed phenomenon where clinicians may refrain from using standardized assessments even in the presence of ample literature supporting the efficacy of specific standardized assessments(Chronister *et al.*, 2008; Hoyt *et al.*, 2008) .What emerges as a recurring theme in the literature is the pivotal role of involving family members, including parents or caregivers, along with the child in the therapeutic process(Hanna *et al.*, 2007; Duncan and Murray, 2012; Mulligan, 2014; Wright and Majnemer, 2014; Rosenbaum, 2015; O'Connor *et al.*, 2016; Peters *et al.*, 2019) .This collaborative approach not only fosters motivation for engagement in therapy but also ensures that therapeutic goals are collectively established, promoting a deeper understanding of the therapy process (Wright and Majnemer, 2014; O'Connor *et al.*, 2017; Pourahmad, Balvardi and KavousiPour, 2021) .

In reality, the growing demand for evidence-based practice in healthcare has spurred an increased emphasis on justifying occupational therapy interventions (Bennett and Bennett,

2000; Hoyt *et al.*, 2008; Dirette, Rozich and Viau, 2009; Peters *et al.*, 2019). Occupational therapists are now required to employ evidence-based assessment procedures and treatment techniques to ensure the effectiveness of their therapeutic (Bennett and Bennett, 2000; Hoyt *et al.*, 2008; Dirette, Rozich and Viau, 2009; Peters *et al.*, 2019).This evidentiary approach not only enhances the credibility of occupational therapy but also ensures that interventions are grounded in scientifically validated methods.

2.5.2 Assessment tools

Effective intervention for children with CP hinges on the careful selection and utilisation of appropriate standardized assessment tools, a practice advocated by various scholars(Hanna *et al.*, 2007; Duncan and Murray, 2012; Wright and Majnemer, 2014; Rosenbaum, 2015; O'Connor *et al.*, 2016; Peters *et al.*, 2019).

Beyond motivational factors, the involvement of parents or caregivers holds the potential to alleviate the burden of care associated with raising a child with CP (Chiarello *et al.*, 2011; Wright and Majnemer, 2014; Abbaskhanian *et al.*, 2015; O'Connor *et al.*, 2016; Pourahmad, Balvardi and KavousiPour, 2021). To maximise this positive impact, it is imperative to incorporate standardized assessments that actively involve parents or caregivers. Such an approach not only empowers them to contribute meaningfully to the therapeutic process but also aligns with the broader goal of enhancing the quality of life for children with CP (Chiarello *et al.*, 2011; O'Connor *et al.*, 2017).These literatures underscore the importance of a collaborative and family-centred approach in the assessment and intervention strategies for children with CP, recognizing the integral role that parents and caregivers play in optimising therapeutic outcomes and overall well-being.

The use of evidence-based practice supports the occupational therapists' clinical reasoning, which affects the choices of standardized assessments, subsequently affecting the intervention plan(Bennett and Bennett, 2000; Chan *et al.*, 2013) Evidence-based practice advocates that clinicians need to provide effective clinical services based on comprehensive research evidence (Chan *et al.*, 2013). Some occupational therapists believe their professional experience, and interactions with colleagues and with their clients are seen as more important than implementing evidence-based practice(Bennett and Bennett, 2000; Chan *et al.*, 2013; Thomas and Law, 2013) .However, if the profession does not base the effectiveness of

assessment and treatment on sound research, the profession may not receive either appropriate recognition or adequate funding for services (Bennett and Bennett, 2000; Mulligan, 2014).Therefore, a balance between professional experience and evidence-based practice is essential to ensure optimal client care and advancement of the occupational therapy profession.

2.5.3 Standardized assessments tools

Standardized assessments are defined as those that are norm-referenced and tested for reliability and validity(Howard, 2002) . Standardized assessments enhance the professions' credibility and objectively identify and quantify the extent of impairment; strengths; problems and challenges in occupational performance areas based on norms or specific criteria (Mulligan, 2014; O'Connor *et al.*, 2016).This allows occupational therapists to determine the clients' prognosis, and provide an effective treatment plan and the possible need to refer to other health professionals (Duncan and Murray, 2012; Mulligan, 2014) . Occupational therapy credibility amongst parents, other health professionals as well as funders is enhanced when research based, standardized assessments are used to underpin intervention plans and also offers a credible method of determining progress (Mulligan, 2014; O'Connor *et al.*, 2016).However, it is crucial that the standardized assessments chosen are valid, reliable and useful within the practice context (Mulligan, 2014; O'Connor *et al.*, 2016, 2017).

Norm-referenced assessment tools play a pivotal role in gauging a child's performance by comparing their scores to a normative group, thereby facilitating the identification of impairment and activity limitations (Mulligan, 2014; O'Connor *et al.*, 2016).In order to establish norms for these tools, a normative group is meticulously developed during the assessment tools' validity and reliability testing (Mulligan, 2014). This normative group serves as a benchmark, enabling practitioners to contextualise an individual's performance within a broader population (Mulligan, 2014) .Each standardized assessment tool is provided with a test kit and test manual (Mulligan, 2014). The test manual provides detailed guidelines on how to administer the assessment tools, emphasising uniformity in the testing process (Mulligan, 2014). Furthermore, it elucidates the procedures for scoring and interpreting results, allowing practitioners to derive meaningful insights from the assessment outcomes (Mulligan, 2014).The test manual serves as a comprehensive resource, offering

clarity on the purpose of the assessment tool and specifying the population group for which it is intended (Mulligan, 2014). Thus the standardized assessments that are norm referenced need to be intended for children with CP (Wright and Majnemer, 2014; O'Connor *et al.*, 2016, 2017; Peters *et al.*, 2019). Normative groups are usually conducted with typical children instead of the clinical population such as children with disabilities (Howard, 2002; Hanna *et al.*, 2007; Rosenbaum, 2009; Mulligan, 2014; O'Connor *et al.*, 2016). This where a disadvantage of using standardized assessments occur, where there is modification of standardized assessments, where clinicians will modify the standardized assessment to the child's need or limitation and this should be recorded in the assessments, where the information can be used as clinical observations (Howard, 2002; Hanna *et al.*, 2007; Rosenbaum, 2009; Mulligan, 2014) . Modifications can also occur if clinicians' choice of standardized assessments are limited in their clinical setting; only administering subtest of an item and modifying instructions(Hanna *et al.*, 2007; Mulligan, 2014). A concern would be when clinicians use the standardized assessment not appropriate to the clinical population for example children with CP, can affect the interpretation of the results(Hanna *et al.*, 2007; Mulligan, 2014; O'Connor *et al.*, 2016) and that is why Mulligan suggests to note down that results are being used as clinical observation but this can only happen if the clinicians are competent in standardized assessments(Mulligan, 2014).

Criterion-referenced standardized assessment tools employ a rating system or mastery levels to evaluate a child's performance in specific activities or skills, as highlighted by Mulligan (Mulligan, 2014).Unlike norm-referenced tools that compare a child's performance to a normative group, criterion-referenced assessments focus on describing a child's abilities in relation to predefined criteria established through research (Mulligan, 2014).These assessments provide a detailed analysis of the child's skills, categorising them as either achieved or not achieved based on the predetermined criteria(Mulligan, 2014).This method allows for a nuanced understanding of the child's abilities and highlights specific skills that may require attention or further development. A qualitative approach is often inherent in criterion-referenced assessments, offering insights beyond a simple pass-fail metric (Mulligan, 2014).This approach enables practitioners to gather information on the type of assistance a child requires or to describe the strategies they employ to complete tasks, even if these strategies deviate from the perceived norm (Mulligan, 2014). This qualitative

dimension enhances the depth of assessment, providing a more comprehensive picture of the child's capabilities.

There are disadvantages when using standardized assessments where there challenges were noted in most literature such as most tools are expensive and need intensive training to be able to use; many of the tools were normed on typical children instead of the clinical population seen by occupational therapists, which may lead to modification of standardized assessments to be appropriate for CP population for instance and some of the tools may not aid in developing intervention plan (Majnemer *et al.*, 2010; Mulligan, 2014; O'Connor *et al.*, 2016).

In the context of children with CP, standardized assessments must align with the three key aspects derived from the definition of CP: extent of impairments, activity limitations, and participation restrictions (Rosenbaum *et al.*, 2007; Wright and Majnemer, 2014; Abbaskhanian *et al.*, 2015; O'Connor *et al.*, 2016; Vitrikas *et al.*, 2020). By incorporating these dimensions into the assessment process, practitioners can ensure that the evaluation is not only accurate but also relevant to the specific needs of the child. This alignment is crucial for informing appropriate and effective service delivery tailored to address the unique challenges associated with CP.

2.5.4 Standardized assessments on the recommended HPCSA list

There are standardized assessments that were recommended by HPCSA, these standardized assessments can be used with children diagnosed with CP(HPCSA, 2018). In light of the discussion of the components focussed approaches versus occupation-focused approaches, this section is divided into functional and visual perceptual standardized assessments.

2.5.4.1 Functional standardized assessments

The Canadian Occupational Performance Measure (COPM) and the Paediatric Evaluation of Disability Inventory (PEDI) are widely utilized standardized assessments for children with CP, as reflected in various studies (Carswell *et al.*, 2004; Saleh *et al.*, 2008; Østensjø, Øien and Fallang, 2008; Haley *et al.*, 2010; Livingston *et al.*, 2011; Rozkalne and Bertule, 2014; James, Ziviani and Boyd, 2014; O'Connor *et al.*, 2016; Anaby *et al.*, 2017; Pritchard-Wiart,

2017; Schiariti *et al.*, 2017; Pavão *et al.*, 2017; Geanina and Stefan, 2019; Peters *et al.*, 2019). These standardized assessments are instrumental in collaboratively identifying daily living activities that children with CP can or cannot participate in independently, involving both the child and their parents or caregivers (Hanna *et al.*, 2007; Chiarello *et al.*, 2011; Duncan and Murray, 2012; Mulligan, 2014; Wright and Majnemer, 2014; Abbaskhanian *et al.*, 2015; Rosenbaum, 2015; O'Connor *et al.*, 2016; Peters *et al.*, 2019; Pourahmad, Balvardi and KavousiPour, 2021).

The COPM stands out for its utility in setting realistic therapy goals and its applicability to all age groups(Pavão *et al.*, 2017).It provides a platform for children, caregivers, and parents to articulate their perceptions of participation in self-care, productivity, and leisure activities, rating both their performance and satisfaction (Carswell *et al.*, 2004; Livingston *et al.*, 2011; Geanina and Stefan, 2019).Similarly, the PEDI is designed to assess functional impairments in children with CP, focusing on what a child can or cannot do in their daily life activities across various contexts (Dumas, 2001; Haley *et al.*, 2010). This moves away from a traditional impairment-based approach, emphasising functional skills domains related to self-care, mobility, and social function.

In South Africa, these assessments have found application in studies focusing on children with CP. For instance, the PEDI was employed to investigate the impact of repeated courses of Constraint-Induced Movement Therapy (CIMT) on self-care, play, and functional skills in a young boy with asymmetrical CP(Hamer-Rohrer, Smit and Burger, 2012) . The COPM was used in a South African community to identify priority occupational performance areas for individuals with disabilities within the community (Engelbrecht, Casteleijn and Uys, 2008). However, there is a limited study on how easily these studies translate into South African context, which leads one to question if the tool is reliable and valid in South African context.

While both assessments contribute valuable insights into the participation aspects of children with CP, it's noteworthy that the literature has reported mild content measures of activities and participation for the COPM and high content measures for the PEDI (Schiariti *et al.*, 2017). The content measure is in relation to the ICF, where there is a rating of how much of the content of the tools measures the activities and participation core set of ICF and the PEDI seems to be a more reliable tool to measure the activities and participation aspect of

ICF core sets versus COPM (Schiariti *et al.*, 2017). One needs to note that the PEDI is only used for 0- 7 years of age and COPM for all ages (Haley *et al.*, 2010).Despite this, these standardized assessments remain pivotal tools in understanding the unique needs, strengths, and challenges of children with CP, offering a collaborative approach that involves both the child and their support system.

2.5.4.2. Visual perception standardized assessments

Visual perceptual skills in children with CP are commonly assessed using standardized tools, and the literature reflects the utilisation of specific assessments to evaluate these skills. The Test of Visual Perceptual Skills-3 (TVPS-3) is frequently employed as a motor-free standardized assessment, making it suitable for children with CP who may present with motor and/or speech impairments (Howard, 2002; Ego *et al.*, 2015; James *et al.*, 2015; Critten *et al.*, 2018; Berelowitz and Franzsen, 2021).The TVPS-3/ 4 serves as a versatile tool in assessing visual perceptual skills across various subtypes of CP (Berelowitz and Franzsen, 2021).

Comparative studies, such as those employing the Developmental Test of Visual Perception-2 (DTVP-2) and TVPS-3, have been conducted, often comparing the visual perceptual skills of children with CP to typically developing children (Ego *et al.*, 2015). These studies reveal varying perceptual quotients, with some children with CP exhibiting lower scores compared to their typical peers (Ego *et al.*, 2015; Berelowitz and Franzsen, 2021).However, intriguingly, certain children with CP demonstrated perceptual quotients similar to those of typical children, both internationally and within the South African context (Ego *et al.*, 2015; Berelowitz and Franzsen, 2021).

The Berry Visual Motor Integration (VMI) assessment has also been employed to assess visual-motor integration skills in children with CP, particularly in relation to deficits in handwriting skills(Desai and Rege, 2005) .Despite its application in studies with children with CP, such as those by Howard (2002) and Anaby et al. (2017), there remains limited research on the Berry VMI-6, especially within the South African context and internationally (Howard, 2002; Anaby *et al.*, 2017)

2.6. Standardized assessments in practice with CP children

These findings underscore the importance of utilising appropriate and contextually relevant standardized assessments when assessing visual perceptual skills in children with CP. The TVPS-3 and Berry VMI, in their various versions, emerge as valuable tools in understanding the visual perceptual abilities of children with CP, providing insights that can inform intervention strategies tailored to their unique needs. However, the limited research on the Berry VMI-6 highlights the need for further exploration of its efficacy, especially in diverse populations and cultural contexts. There is limited literature of the MVPT-3 use with CP children globally and internationally.

A plethora of standardized assessments exists for children with CP; however, there is a noticeable gap between evidence-based assessments and their translation into clinical practice by clinicians(O'Connor *et al.*, 2016).The literature suggests that clinicians face challenges in understanding research findings, leading to difficulties in applying evidence-based assessments in their service provision for children with CP (Saleh *et al.*, 2008; Green, 2014; Jones *et al.*, 2015).This disconnect between research and practice underscores the need for strategies to bridge this gap and enhance the utilisation of evidence-based assessments in clinical settings.

Clinicians, as per the literature, grapple with the process of translating research knowledge into practical application, further emphasising the importance of supporting them in this endeavour (Saleh *et al.*, 2008; Green, 2014; Jones *et al.*, 2015).A nuanced approach that addresses the specific challenges faced by clinicians in understanding and incorporating research findings into their practice is essential for promoting effective use of evidence-based (Saleh *et al.*, 2008; Green, 2014; Jones *et al.*, 2015). In addition to the cognitive barriers faced by clinicians, the feasibility and acceptance of standardized assessments play a pivotal role in their adoption in clinical practice (Mäenpää *et al.*, 2017). Standardized assessments need to align with the practical realities of clinical settings, ensuring that they are user-friendly, efficient, and readily embraced by clinicians in their day-to-day work.

Acknowledging the need for guidance in the selection of appropriate assessments, the HPCSA has provided a list of standardized assessments that may be pertinent within the South African context (HPCSA, 2018).This resource serves as a valuable reference for clinicians, offering a curated list aligned with professional standards and contextual considerations. Several studies have examined the types of standardized assessments used by clinicians in their clinical contexts, with their findings aligning with the HPCSA-provided list (Howard, 2002; Hanna *et al.*, 2007; O'Connor *et al.*, 2017; Peters *et al.*, 2019). Additional there is limited literature of the block and box test use for children with CP internationally and national.

In conclusion, addressing the challenges faced by clinicians in translating evidence-based assessments into practice requires targeted interventions that enhance their understanding of research findings, promote the feasibility and acceptance of assessments, and align with the standards set by professional bodies such as the HPCSA. Bridging this gap holds the key to optimising the use of standardized assessments and, in turn, improving the quality of care provided to children with CP.

2.7 Clinical utility and usability criteria of standardized assessments

This research aims to scrutinise the landscape of standardized assessments employed by occupational therapists in their work with children diagnosed with CP in South Africa. Recognizing the contextual nuances that can influence the choice, validity, and reliability of these assessments, the study delved into the complex interplay between standardized assessments used in South African context by occupational therapists. While the adoption of standardized assessments is widespread, reflecting a scientific and objective approach, the challenges and contextual considerations inherent in their use necessitate closer examination. Thus dimensions of clinical utility and usability criteria were used to evaluate the utilisation of standardized assessments.

In the realm of occupational therapy, the judicious selection of standardized assessments is notably influenced by two critical dimensions: clinical utility and usability criteria (Smart, 2006; Glover and Albers, 2007).As posited by Smart (2006) and Glover and Albers (2007), these dimensions collectively appraise the efficacy, relevance, and practicality of

standardized assessments within clinical practice (Smart, 2006; Glover and Albers, 2007).Clinical utility, encapsulated as "the usefulness of intervention for or in clinical practice" , delineates four key dimensions (Smart, 2006).The appropriateness dimension scrutinises the effectiveness and relevance of standardized assessments within the occupational therapy workspace and in relation to the diverse needs of clients (Smart, 2006; Glover and Albers, 2007).Accessible, the second dimension, delves into the cost-effectiveness and availability of assessments, ensuring financial considerations do not impede their deployment (Smart, 2006; Glover and Albers, 2007).Practicable, the third dimension, assesses the ease of implementation, need for training, suitability for the client and clinical setting, and the appropriateness of the time required for assessment in the clinical context (Smart, 2006; Glover and Albers, 2007).The final dimension, acceptable, explores the ethical, legal, psychosocial, and social acceptability of assessments to both practitioners and clients, contemplating potential influences on assessment findings (Smart, 2006; Glover and Albers, 2007). Supplementary considerations include the relevance and validity of assessments in specific contexts and for particular client groups (Smart, 2006; Glover and Albers, 2007).

2.7.1 Clinical utility and usability criteria of standardized assessments in practice

Clinical practice is a complex process where there are multiple factors that can affect the use of assessments (O'Connor *et al.*, 2016, 2017). Despite numerous studies examining the reliability, validity, advantages, and disadvantages of standardized assessments for CP, there remains a persistent underutilization according to O'Connor et al (O'Connor *et al.*, 2016). While clinicians may be commonly attributed sole responsibility for low-frequency use or non-use of standardized assessments, a more nuanced understanding reveals a broader range of influential factors (Howard, 2002; Hanna *et al.*, 2007; Duncan and Murray, 2012; O'Connor *et al.*, 2016; Romeiser-Logan, Slaughter and Hickman, 2017; Peters *et al.*, 2019).Such as the availability of standardized assessments, associated costs, time constraints during therapy sessions, appropriateness for the clinical population served, and the nature of organisational or managerial support for their use (Howard, 2002; Hanna *et al.*, 2007; Duncan and Murray, 2012; O'Connor *et al.*, 2016; Romeiser-Logan, Slaughter and Hickman, 2017; Peters *et al.*, 2019). Additional, literatures highlights that peer or managerial and organisational support might not always align with the perceived effectiveness of standardized assessments in specific clinical settings, further impacting their integration into

practice (O'Connor *et al.*, 2017; Romeiser-Logan, Slaughter and Hickman, 2017). There are other challenges such as the perceived time-consuming nature of learning a new assessment tool and insufficient competency in utilising standardized assessments pose significant barriers to using standardized assessments (Howard, 2002; Hanna *et al.*, 2007; Duncan and Murray, 2012; O'Connor *et al.*, 2016, 2017; Peters *et al.*, 2019) Interestingly, the mere availability of standardized assessments in clinical settings does not guarantee their consistent use, as evidenced by clinicians who possess such resources yet refrain from incorporating them into their practice (McConnell, Johnston and Kerr, 2012). This hesitancy diminishes when clinicians have access to CP-specific standardized assessments, highlighting the importance of alignment between available tools and the unique needs of the clinical population (O'Connor *et al.*, 2016). The intricate interplay of these multifaceted factors underscores the necessity for a comprehensive understanding when seeking to enhance the integration of standardized assessments into clinical practice for children with CP.

2.8 Conclusion

In essence, CP poses a profound movement challenge for affected children, impeding their ability to engage independently in everyday life activities (Bourke-Taylor *et al.*, 2018)(Power *et al.*, 2018)(Africa, Human and Tshabalala, 2023) (Majnemer *et al.*, 2010; Wright and Majnemer, 2014; Bourke-Taylor *et al.*, 2018; Power *et al.*, 2018; Africa, Human and Tshabalala, 2023).. Early intervention is crucial, spanning from infancy to adolescence, to facilitate therapy and foster independence (Bourke-Taylor *et al.*, 2018; Power *et al.*, 2018; Africa, Human and Tshabalala, 2023) Despite the potential high prevalence of CP in South Africa, limited literature prevents an accurate understanding of the distribution, needs, and severity of the problem (Katangwe *et al.*, 2020). Nonetheless, occupational therapists are likely to meet children with CP not only in specialised practices, but also in the general public health arena.

Occupational therapy, a key player in CP management, necessitates the active involvement of both the child and parents/caregivers in the assessment process (Hanna *et al.*, 2007; Chiarello *et al.*, 2011; Duncan and Murray, 2012; Wright and Majnemer, 2014; Mulligan, 2014; Abbaskhanian *et al.*, 2015; Rosenbaum, 2015; O'Connor *et al.*, 2016; Power *et al.*, 2018; Bourke-Taylor *et al.*, 2018; Peters *et al.*, 2019; Pourahmad, Balvardi and KavousiPour, 2021; Africa, Human and Tshabalala, 2023).This collaboration proves vital in setting therapy goals

tailored to the child's learning of new skills for independence (Hanna *et al.*, 2007; Chiarello *et al.*, 2011; Duncan and Murray, 2012; Wright and Majnemer, 2014; Mulligan, 2014; Abbaskhanian *et al.*, 2015; Rosenbaum, 2015; O'Connor *et al.*, 2016; Power *et al.*, 2018; Bourke-Taylor *et al.*, 2018; Peters *et al.*, 2019; Pourahmad, Balvardi and KavousiPour, 2021; Africa, Human and Tshabalala, 2023). Various occupational performance areas, including education, leisure, play, personal management, and survival skills, are impacted throughout the child's developmental journey (Hanna *et al.*, 2007; Chiarello *et al.*, 2011; Duncan and Murray, 2012; Wright and Majnemer, 2014; Mulligan, 2014; Abbaskhanian *et al.*, 2015; Rosenbaum, 2015; O'Connor *et al.*, 2016; Power *et al.*, 2018; Bourke-Taylor *et al.*, 2018; Peters *et al.*, 2019; Pourahmad, Balvardi and KavousiPour, 2021; Africa, Human and Tshabalala, 2023).

The integration of standardized assessments is pivotal for occupational therapists, providing credibility to the profession (O'Connor *et al.*, 2016). However, it is equally imperative to complement these assessments with non-standardized counterparts, recognizing their complementary role in offering additional insights (Mulligan, 2014). Occupational therapists employ clinical reasoning guided by clinical utility and usability criteria in choosing appropriate assessments. Despite a wealth of literature supporting standardized assessments for CP, the translation of evidence into practice remains challenging, accentuating the significance of clinical utility and usability criteria(Green, 2014; Jones *et al.*, 2015). Modification of standardized assessments is a common practice among occupational therapists working with CP children, involving the use of subtests or modified instructions within the child's limitations(Mulligan, 2014). However, these modifications influence the assessment's reliability and validity. Furthermore, the reliability and validity of standardized assessments may be questioned when used outside their intended context and there may be numerous cultural, societal and environmental factors that can invalidate assessment results. To assist South African occupational therapists in this regard, the HPCSA provides a recommended list of standardized assessments aligning with literature(HPCSA, 2018). However, the usefulness of these assessments has not been investigated. While not categorised on the HPSCA list, this study categorises the assessments into functional; visual perception and hand function standardized assessments, enhancing clarity and understanding of their overall assessment purposes. In closing, a comprehensive and thoughtful approach to

standardized assessments, in conjunction with a commitment to on-going research and practice improvement, is vital for optimising the care and outcomes for children with CP.

Chapter 3 Methodology

3.1 Introduction

This chapter will discuss the study design, study population

3.2 Study Design

In alignment with the research needs, a cross-sectional survey design was deliberately chosen for this study(Goertzen, 2017). This design was deemed suitable due to its capacity to generate descriptive data, which is fundamental to the objectives of this study. The cross-sectional survey design serves as an effective methodology, featuring strategically crafted questions aimed at eliciting descriptive responses (Goertzen, 2017). In the context of this study, which focuses on occupational therapists in South Africa providing therapy to children with CP, a cross-sectional descriptive design was employed. This design involves drawing a representative sample from the population to generalise the findings for the entire study population (Omair, 2015).One notable advantage of employing a cross-sectional survey design, is its ability to determine the prevalence of outcomes (Omair, 2015). In the context of this study, this means gaining insights into various aspects, such as the distribution of occupational therapists across different clinical settings and the prevalence of specific standardized assessments used in the field. By adopting a cross-sectional survey design, this study aims to provide a comprehensive understanding of occupational therapists' use of standardized assessments with CP children in South Africa.

3.3 Study population

The population group are occupational therapists that conduct therapy sessions with children (0-18 years old) with cerebral palsy in South Africa in different clinical settings.

3.3.1 Sample selection (inclusion and exclusion criteria)

The main forms of sampling techniques used in survey designs are aimed at reaching a broad cross section of the population (Anieting and Mosugu, 2017; Etikan, 2017). Snowball sampling "is a non-probability sampling method where initial participants are selected, and then these participants help identify and recruit additional participants" (Anieting and Mosugu, 2017,p34) .To put it simply, imagine starting with a small group of people for a

research study. It's like rolling a snowball downhill, and as it rolls, it gathers more participants along the way (Anieting and Mosugu, 2017; Etikan, 2017). Sampling methodology was used to address the inherent challenges associated with reaching a challenging-to-access population within the context of South Africa (Anieting and Mosugu, 2017; Etikan, 2017). The survey distribution strategy targeted diverse professional platforms, acknowledging that not all occupational therapists in South Africa are affiliated with these organisations. Notably, membership in professional bodies such as the Occupational Therapy Association of South Africa (OTASA), Rural Rehab South Africa (RuReSA), and the South African Neurodevelopmental Therapy Association (SANDTA) is not compulsory for occupational therapists.

Given the intention to include occupational therapists beyond those affiliated with the mentioned organisations, the study implemented a snowball sampling technique(Anieting and Mosugu, 2017; Etikan, 2017). This approach facilitated the inclusion of occupational therapists that were not members of the specified organisations, leveraging the willingness of participating occupational therapists to share the survey with their non-affiliated counterparts(Anieting and Mosugu, 2017; Etikan, 2017). The research specifically employed exponential discriminative snowball sampling, permitting participants to disseminate the survey link to numerous occupational therapists whom they knew were not members of the organisations (Anieting and Mosugu, 2017; Etikan, 2017). However, it is crucial to note that even though participants could extend the survey invitation widely, respondents were still required to meet predefined inclusion criteria to determine their eligibility. This approach ensures that the research maintains ethical standards and rigour in participant selection while navigating the challenges associated with reaching a broader occupational therapist population in South Africa. Moreover, participants were required to provide informal consent before engaging in the study, allowing them to express their willingness or refusal to participate.

Inclusion criteria	● Occupational therapist ● Registered with HPCSA ● 1 year experience post community services ● Clinical load at least once a month with cerebral palsy children ● Cerebral palsy clients between the ages of 0-18 years old

There are disadvantages to using snowball sampling that the researcher is aware of where there is a concern for possible bias within the sample due to the non-random selection of participants (Cohen and Arieli, 2011).This method relies on initial participants who may share similar characteristics or opinions, leading to a skewed representation of the overall population (Cohen and Arieli, 2011).Moreover, the lack of representativeness is a crucial limitation (Cohen and Arieli, 2011).As participants recruit others based on their connections, the resulting sample may not accurately mirror the broader population (Cohen and Arieli, 2011).This limitation curtails the generalizability of the study's findings (Cohen and Arieli, 2011).Additionally, the method's tendency to foster limited diversity poses another challenge. If the initial participants have similarities in backgrounds, opinions, or characteristics, the sample may lack the variety necessary to capture a comprehensive range of perspectives and experiences (Cohen and Arieli, 2011).

3.3.2 Sample size

In trying to calculate sample size, occupational therapists registered with various organisations (outside of the HPCSA) were recorded. It is important to note that, other than SANDTA, these organisations are not specific to working with children with neurological problems and thus while providing a ballpark to work with, do not provide accurate numbers of occupational therapists working in CP. Nonetheless, these are the best numbers currently available.

In providing a contextual overview, SANDTA reported a membership count of 221 occupational therapists, OTASA reported a membership base of approximately 5000 occupational therapy professionals, and RuReSA reported 30 occupational therapy members as of the year 2021. It is noteworthy that RuReSA has indicated the feasibility of extending the survey to former members, potentially doubling the number of occupational therapists reached to 60. These figures offer a snapshot of the organizational landscape and underscore the potential representation of members from diverse professional backgrounds in the survey respondent pool. The intentional outreach to these organizations contributes to the study's inclusivity, capturing perspectives from occupational therapists affiliated with various professional bodies, while acknowledging the overarching mandate for registration with the HPCSA, a regulatory imperative binding on all practitioners.

It is pertinent to acknowledge that not all members within these organisations specialise in treating children with CP. Additionally; a noteworthy observation is that many occupational therapists maintain membership in more than one of these professional organisations.

In previous investigations conducted by Davies (2016), Janse Van Rensburg (2016), and Sweet (2020), questionnaires were distributed to various professional platforms to garner insights from occupational therapists engaged in the provision of therapy for children with CP (Davies, 2016; Janse van Rensburg, 2016; Sweet, 2020). Specifically, Davies (2016) directed inquiries to occupational therapists offering home programs for CP children within SANDTA, which reported a membership of 241 occupational therapists; however, only 17 respondents participated (Davies, 2016). Janse Van Rensburg (2016) extended surveys to multiple platforms, including the Eastern Cape Occupational Therapy Forum, targeting occupational therapists specialising in therapy for CP children with visual impairment (Janse van Rensburg, 2016). Despite a cumulative platform membership of 1820, only 47 responses were garnered (Janse van Rensburg, 2016). In a similar way, Sweet (2020) distributed questionnaires to occupational therapists providing therapy for CP children with visual impairment across platforms with a combined membership exceeding 3000, yet only 38 responses were obtained (Sweet, 2020).

The categorical data from Cochran’s formulas were employed to ascertain the estimated sample size, as suggested by Bartlett, Kotrlik, and Higgins (2001) (Bartlett, Kotrlik and Higgins, 2001). Sweet's (2020) research response rate was utilised for this calculation (38 response) (Sweet, 2020). With a smaller sample size falling below 120, the corresponding t-value is 2.00, the alpha level is set at 0.05, and an acceptable margin of error is established at 5% (Bartlett, Kotrlik and Higgins, 2001). The initially calculated the return required sample size was 400, surpassing 5% of the population (38 respondents). Consequently, a final corrected estimated minimum sample size of 35 was determined (Bartlett, Kotrlik and Higgins, 2001). It is noteworthy that the present study's sample size is 41, surpassing the established minimum of 35.

3.4 Instrumentation and outcome measurements

3.4.1 Questionnaire development

3.4.1.1 Why Online questionnaire

The utilisation of an online questionnaire in this study was a methodological choice, offering several advantages that enhance the research methodology.

The use of online surveys in this study brings several benefits. Firstly, it allows the researcher to control how questions are arranged, reducing bias and encouraging better response rates (Evans and Mathur, 2005).

Secondly, online surveys are cost-effective. They don't require much money to administer, thanks to available software for creating them and easy data transfer to databases. In our study, we used the RedCap platform, following recommended practices in survey research (Evans and Mathur, 2005; Regmi *et al.*, 2017)

Thirdly, online surveys help overcome geographical barriers, making it easier to reach diverse and hard-to-reach populations. This study reached occupational therapists across South Africa in various settings by distributing the survey through email to organisational members. Reminders were also used to boost participation, surpassing the expected sample size (Evans and Mathur, 2005, 2018; Regmi *et al.*, 2017).There is also a disadvantage to this where the mail could be seen as junk mail or sent to spam to the potential participants. In turn affecting the responds rate if the participants does not receive the email (Evans and Mathur, 2005, 2018). Another disadvantage is that it can be assumed that some of potential participants may struggle with internet or use of technological devices (Evans and Mathur, 2005, 2018).

Lastly, online surveys offer flexibility by allowing participants to respond at their own pace and maintain anonymity. This accommodates diverse schedules and creates a participant-friendly environment (Regmi *et al.*, 2017).

In conclusion, choosing an online questionnaire approach was a thoughtful decision, considering its advantages like flexibility in question formats, control over survey flow, low costs, global reach, and participant-friendly features. The advantages outweigh the disadvantage of using survey as they are more seen as indications to be cautious when doing online surveys. These considerations contribute to the research design's methodological effectiveness.

In summary, the adoption of an online questionnaire approach in this study reflects a thoughtful consideration of methodological advantages, encompassing flexibility in question formats, control over survey flow, low administration costs, global reach, and participant-friendly features. According to literatures there is no advantages outweigh the disadvantages (Regmi *et al.*, 2017).These considerations collectively contribute to the methodological rigour and efficacy of the research design.

3.4.1.2 Development of online survey

The online questionnaire was developed by the researcher using RedCAP(*JOIN & GET REDCAP*, no date) and using literatures to guide the process (Howard, 2002; Bennett *et al.*, 2003; Hanna *et al.*, 2007; Saleh *et al.*, 2008; Anaby *et al.*, 2017). Discussion of these studies will be discussed after bullet four. There was the face validity online survey developed then from the feedback the online survey was modified. The face validity online survey was structured as follows and can be seen at APPENDIX A:

1. The participants had to provide consent then move to the next section where they had to select the options in the inclusion criteria. If they selected all the options, they can proceed.
2. Participants had to answer the demographic information
3. Then each standardized assessments had fourteen questions that were the same for all standardized assessments.
4. There is the other standardized assessments section that has 8 questions about the other standardized assessments.

This was developed for face validity, which means that the participants were providing feedback of the online survey if the content is clear and answering the research topic.

To ensure the robustness and relevance of the survey, the researcher utilised insights from various studies. Guidance on usability criteria and clinical utility elements was drawn from studies such as those conducted by Glover et al. and Smart (Smart, 2006; Glover and Albers, 2007).Additionally, Saleh et al study implemented a survey of Canadian paediatric occupational therapists and physiotherapists that provided valuable information on their practices with children with CP, including details on standardized assessments used and potential barriers (Saleh *et al.*, 2008). The researcher was inspired by Howard's study

implemented survey of paediatric occupational therapists in the United Kingdom, tailored questions to investigate the clinical utility of standardized assessments employed in the practice, particularly with a focus on the majority of the therapy to CP children (82%) (Howard, 2002)Bennett et al study investigated on the perception of evidence-based practice among Australian occupational therapists, including barriers related to standardized assessments (Bennett *et al.*, 2003).Hanna et al study implemented survey on measurement practices in paediatric rehabilitation in Canada, encompassing physiotherapists, occupational therapists, and speech therapists, contributed insights into professionals' confidence, beliefs, and attitudes regarding measurements(Hanna *et al.*, 2007).The researcher also drew from Anaby et al study, which investigated current rehabilitation practices for children with CP among occupational therapists and physiotherapists in Canada by implementing a survey (Anaby *et al.*, 2017). By incorporating key elements from these studies, the researcher not only ensured the reliability and validity of the survey but also aligned the questions with established practices in the field, enhancing the instrument's relevance to the study's objectives.

3.4.1.3 Questionnaire testing

The assessment of validity is important in ensuring that collected data effectively addresses the study's objectives (Taherdoost and Group, 2017) .Face validity, a subjective and superficial evaluation, is concerned with the perceived relevance, reasonableness, and clarity of the measuring tool (Taherdoost and Group, 2017). This assessment is particularly crucial in gauging the initial appropriateness of the instrument, especially in the context of developing countries, such as South Africa (Bolarinwa, 2015).In the context of this study, participants' with knowledge in the research topic were engaged to review the online questionnaire for face validity (Patel and Desai, 2020). Their feedback, played a crucial role in determining the instrument's alignment with the study's objectives (Taherdoost and Group, 2017). Participants' comments and feedback were duly considered, prompting necessary adjustments to ensure clarity and distinctiveness of the online questionnaire through the face validity (Patel and Desai, 2020).

The face validity, indicated that each question scored above 90%, should be retained in the measuring instrument (Patel and Desai, 2020). The feedback from the participants had shown

notably in Objectives 2 and 3, exhibited lower agreement percentages of certain questions. For instance, Objective 2, Question 6.2, required re-evaluation for relevance, as highlighted by a 66% agreement rate.

Further scrutiny revealed that questions in Objective 3 (specifically, Questions 4.1, 4.2, and 8.2) fell below the 80% threshold, suggesting the need for restructuring. The participants' remarks emphasised that the options presented significantly influenced these lower percentages, leading to a reconsideration of the questionnaire structure. Notably, Question 8.2 underwent substantial modification due to its perceived lack of relevance to the research topic. The addition of a language section aimed to capture a nuanced aspect—language as a potential barrier to standardized assessment use—identified through participants' feedback. In the case of Objective 2, Question 6 underwent alterations to address concerns raised by the experts regarding similarities with Question 5. The adjustment aimed to enhance the distinction between the two questions, aligning each with its respective objective. The table below shows an example of the response compilations of one question for summary of all the response compilations can be found at appendix B. Note that only three occupational therapists were able to do the face validity as the fourth occupational therapist withdraws.

Table 3.3.1.3.1: Objective 1: To determine occupational therapists' awareness of standardized assessments within the cerebral palsy population aged 0-18 years of age in South Africa

Question	Participants name	Participants answers			Participants Remarks
		Does the following questions answer the following objectives?	Do you understand the question?	Does the question have relevance to the research topic?	
1. Are you aware of the standardized assessments?	1	Yes	Yes	Yes	None
	2	Yes	Yes	Yes	None
	3	Yes	Yes	Yes	None
	% Per question agreed	100%	100%	100%	
	% Of overall agreement	100%			

In conclusion, the examination of face validity, incorporating participants with experience working with children with CP population input and aligning with best practices, has led to refinements in the questionnaire. The iterative process of assessment and modification ensures that the instrument effectively captures the study's objectives while maintaining clarity and relevance in the context of the research topic. The final questionnaire is appendix C.

3.5 Research procedure

The steps taken in the research procedure will be described below:

1. Obtained approval of title from university of health science and ethical clearance from human research ethics committee (Medical) clearance certificate no M211191.
2. Developed the survey on RedCap.
3. Tested face validity of online survey with three occupational therapists at a learners with special education needs (LSEN) School
4. Did the face validity table to see if the online survey questionnaire is valid and made the necessary changes

5. Requested the following platforms to distribute the online survey: RuRe SA, SANDTA, and OTASA. The proof of email that provided permission will be seen at appendix E to G.
6. Sent the link to online survey via email from researchers WITS email account to the platforms mentioned above. The organisations sent the online survey through emails to their members.
7. Collected the data from the online survey, the survey was open from end of March 2022 and was meant to close the end of June 2022. Then reminders were sent, as the estimated sample size was not reached and open till end of July 2022. The estimated sample size was overreached by end of July 2022.
8. Data collection was done, with RedCap summarised the results from the survey questions and were imported into excel.
9. Data analysis, the researcher will analysis the data in regard to using figures and tables as these will describe the data in an accurate way.

3.5.1 Data Analysis

Survey designs are descriptive in nature and descriptive statistics allowed the researcher to analyse and visually represent the data. Patterns and trends were identified in the data where the online survey collected categorical, nominal, ordinal and limited text data.

3.5.2 Data Management plan

Data Management Plan	
Component of Data Management	**Management Plan for this Study**
Types of Data 1. What types of data will you be creating or capturing? (Experimental measures, observational or qualitative, model simulation, existing) 2. How will you capture, create, and/or process the data? (Identify instruments, software, imaging, etc. used)	1. Quantitative data will be used for this study 2. Capturing: a. The data will be capture through Red Cap and then transferred to excel spread sheet to interpret the data
Storage Backup and Security 1. Where and on what media will you store the data?	1. The data will be stored on a computer in a password protected folder on a password protect computer.

2. What is your backup plan for the data? 3. How will you manage data security?	2. Data will be backed up on the University of the Witwatersrand RedCap, which only the primary researcher and supervisor will have access to. 3. The data will be encrypted and stored on a password-protected computer to ensure security and a password folder. 4. After the study has ended and the student has submitted the research report for examining, all data will be handed over to the Department of Occupational Therapy to be stored in its digital research repository. 5. Data will be archived by the University library two years after the student graduates.
Provisions for Protection/Privacy 1. How are you addressing any ethical or privacy issues (IRB, anonymization of data)? 2. Who will own any copyright or intellectual property rights to the data?	1. Pseudonyms and Codes will be used for participants to ensure anonymity of data. RedCap put numbers for the participants. 2. Intellectual property rights will belong to the University of the Witwatersrand. All data will be handed over at the end of the project. However, the data will be labelled as "sensitive".
Policies for Re-use 1. What restrictions need to be placed on re-use of your data?	1. If someone wishes to access the data in the future, they will need consent from the principal researcher and from the Department of Occupational Therapy at university of Witwatersrand in accordance with the University's data access policies. They will also need to obtain ethical clearance from the HREC-M.
Policies for Access and Sharing 1. What is the process for gaining access to your data?	1. In lieu of a data management committee at the University of the Witwatersrand, anyone wishing to gain access to the data will need to apply through the HREC-M
Plan for archiving and Preservation of Access **1.** What is your long-term plan for preservation and maintenance of the data?	1. Data will be archived in the University of the Witwatersrand library archive

3.5.3. Analysis of demographic information

Demographic data, incorporating both categorical nominal and continuous quantitative variables, were transferred to an Excel spread sheet from the RedCap platform. The table below explain the section of the online survey that provided the above variables mentioned.

Categorical (nominal)	**Continuous**
Gender	Age
Which province currently working in	Work experience with CP children
Clinical setting	

3.5.4. Analysis of questionnaire data

In order to achieve a useful representation of data, a number of steps were taken to cluster questions together that answered each specific objective. First The standardized assessments for this study were categorised into functional standardized assessments (COPM & PEDI); visual perception standardized assessments (Beery VMI 5th/6th edition, DTVP-3, TVPS-3/ 4 and MVPT-3) and hand function standardized assessments (Block and Box test), reflecting the multidimensional nature of evaluating the needs and capabilities of children with CP. Additional visual perceptual standardized assessments were categorised into two subgroups: those with non-motor components and those with both non-motor and motor components (Desai and Rege, 2005; Ego *et al.*, 2015; Berelowitz and Franzsen, 2021). Notably, assessments such as Berry VMI and DTVP-3 encompass both non-motor and motor elements, whereas TVPS-3 and MVPT-3 primarily focus on non-motor components (Howard, 2002; Ego *et al.*, 2015; James *et al.*, 2015; Critten *et al.*, 2018; Berelowitz and Franzsen, 2021). This classification provides a more detailed understanding of the specific components evaluated by each assessment tool, contributing to enhanced clarity in research interpretation and practice application. Thus in each objective, the data was represented in these clusters.

Secondly, questions regarding awareness, current implementation and clinical utility were clustered under each separate standardized assessment in the questionnaire, but during data analysis questions were clustered under objectives. Thus questions from different parts of the questionnaire were clustered together based on which research objective they met, as seen in

below table and face validity feedback was given where the questions were answering the questions according to the face validity participants.

Please note the questions with the word "standardized assessment" have been replaced with specific name of standardized assessment on the online survey.

Objective 1: To determine occupational therapists' awareness of standardized assessments within the cerebral palsy population aged 0-18 years of age in South Africa	**Objective 2:** To determine the current implementation of standardized assessments within the cerebral palsy population aged 0-18 years of age in South Africa	**Objective3:** To determine the therapists' perception of the appropriateness, accessibility, practicality and acceptable use of standardized assessments for the cerebral palsy population aged 0-18 years of age in South Africa
• Are you aware of the standardized assessment?	• Do you use the standardized assessment?	• Why is the standardized assessment not in your clinical setting?
• How did you become aware of the standardized assessment?	• How often do you use the standardized assessments?	• Why don't you use the standardized assessment?
• Is the standardized assessment available at your clinical setting?	• Why is the standardized assessment not in your clinical setting?	• Why do you use standardized assessments?
	• Why don't you use the standardized assessment?	• What factors affect your choice of standardized assessment to use with children with cerebral palsy?
	• Why do you use standardized assessments?	• In your opinion is the standardized assessment relevant for South Africa?
	• What factors affect your choice of standardized assessment to use with children with	• Why is the standardized assessment not relevant for South Africa context?

	cerebral palsy?	
		● Why is the standardized assessment relevant for South Africa?

Finally descriptive analysis was performed on all questions determining the percentages and representing the data visually in bar graphs or pie Charts. There were questions that affected the n of participants.

The following quantitative variables were used in this study, which then enabled presentation of data in graphical format such as pie and bar graphs. Binary data is known when there is no and yes answers only. There are the questions that have pre-determined options that the participants and to choose thus nominal categorical (Goertzen, 2017).

Nominal data (Binary data)	**Nominal data (categorical)**
● Are you aware of the standardized assessment?	● How did you become aware of the standardised assessment?
● Is the standardized assessment available at your clinical setting?	How often do you use the standardized assessments?
● Do you use the standardized assessment?	● Why is the standardized assessment not in your clinical setting?
● In your opinion is the standardized assessment relevant for South Africa?	● Why don't you use the standardized assessment?
	● Why do you use standardized assessments?
	● What factors affect your choice of standardized assessment to use with children with cerebral palsy?
	● In your opinion is the standardized assessment relevant for South Africa?
	● Why is the standardized assessment not relevant for South Africa context?

	● Why is the standardised assessment relevant for South Africa?

3.6. Ethical considerations

The study protocol was submitted to human research ethics committee (Medical) of the university Witwatersrand, Johannesburg and obtained an ethical clearance certificate (M211191). The clearance certificate can be seen in Appendix I.

3.6.1. Autonomy

Autonomy is the ability for the participants to make their own decision or choice. (Ketefian, 2015; Yip, Han and Sng, 2016) In the context of this study, obtaining informed consent is a crucial ethical consideration, particularly given the online survey questionnaire format (Regmi *et al.*, 2017). As highlighted by Regmi et al, it is acknowledged that there are survey tools that don't allow the researcher to explain the study or obtaining verbal consent, thus n online setting (Regmi *et al.*, 2017). An information sheet (Appendix D) was provided to participants, offering detailed explanations about the study, including contact details for the researcher and supervisor, and information on research clearance. This not only ensures transparency but also aligns with ethical standards in research(Regmi *et al.*, 2017). The survey design implemented in this study facilitates the informed consent process. Participants are presented with the option to choose whether to continue with the survey or not. This aligns with ethical guidelines, emphasising participants' autonomy and the freedom to withdraw from participation if they wish (Regmi *et al.*, 2017). The right to withdraw is a fundamental ethical consideration in this study (Regmi *et al.*, 2017). Participants have the autonomy to withdraw from the study if they feel uncomfortable with the questions (Regmi *et al.*, 2017). While the ability to omit specific items is not provided due to its potential impact on questionnaire completion, the option for withdrawal is explicitly stated in the information sheet, as advised by Regmi et al (Regmi *et al.*, 2017). This ensures that participants can exercise their right to withdraw from the study without any coercion or consequence. In this study there was one participant who did consent but did not tick any of the inclusion criteria and thus deemed not to qualify in the inclusion criteria.

3.6.2. Beneficence

Beneficence do no harm to the participants as they need to be protected (Ketefian, 2015; Yip, Han and Sng, 2016) . To keep to the terms of beneficence it is important that Privacy and confidentiality must be adhere to safeguarding participants' identities and personal information (Regmi *et al.*, 2017). The researcher needs to have their personal information protected, as it is important so that others cannot get access to the information and protect the participant. The study ensures anonymity by assigning participants numerical identifiers, and only the researcher and supervisor have access to the data, as outlined through the RedCap platform (*JOIN & GET REDCAP*, no date; Regmi *et al.*, 2017). This measure aligns with ethical principles to protect participants' privacy and maintain the confidentiality of their responses (Regmi *et al.*, 2017).

3.6.3 Justice

Justice in research means being fair to everyone (Ketefian, 2015). It's about making sure that nobody gets treated unfairly and that everyone has a fair chance to be part of the research (Ketefian, 2015). It also means that the research should help make things better for everyone, not just a few people (Ketefian, 2015). In this study an inclusion criterion was set, to allow the relevant group to answer the questions which would bring in bias but having the relevant group for study was important as they were at the point of answering the survey provide service to children with CP thus a fair study. This study may attribute to the perceptive use of standardized assessments in South Africa not only with CP children but maybe other clinical populations as well.

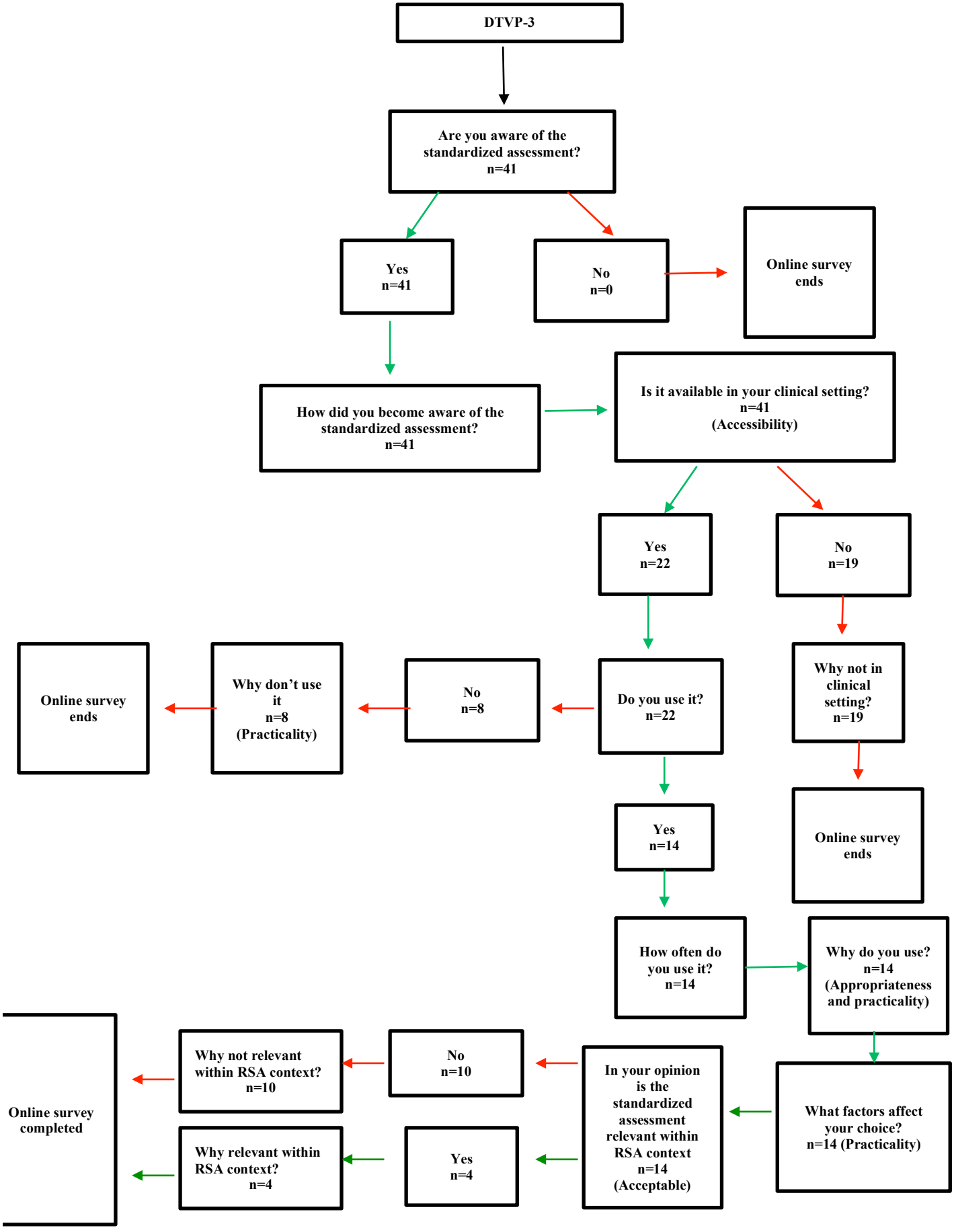
In summary, the ethical considerations of informed consent, privacy, confidentiality, and the right to withdraw have been carefully addressed in the study's design and implementation. These measures not only adhere to ethical guidelines but also demonstrate a commitment to protecting the rights and well being of the study participants.

3.7. Critique on development of online survey

During data analysis, it was observed that the construction of the online survey had some problems, influencing the data collection process and as well as the final results of the study. The branching built into the questionnaire led to a gradual reduction in the sample size, which consequently hindered the interpretation of certain data points.

For an example of how the branching questionnaire influenced the sample size, see **figure 3.7.1**. **Appendix J- L** contains flow diagrams for all six assessments included in the study. The limitations to the interpretation of the study data caused by the problems with online survey design will be discussed in the section **chapter 5.8** on study limitations.

Figure 3.7.1 Flowchart example



Chapter 4 Results

4.1 Introduction to chapter

This chapter will discuss and interpret the results found from this study. The results will interpret the demographic information, awareness of standardized assessments, and current implementation of standardized assessments and the perception of standardized assessments by use of the clinical utility criteria: appropriate, accessible, practical and acceptable use.

4.2 Demographic information

4.2 .1 Sample selection

A total of 58 online surveys were completed with only 55 had given consent to participate in the online survey, thus 3 had not provided consent. It is important to note that only one participant had given consent but did not qualify for the inclusion criteria. From the 55 that gave consent only 41 were eligible as they met the inclusion criteria. The main inclusion criteria not met was the clinical load at least once a month with CP children.

The general demographic information of the sample is summarised in table 4.2.2.

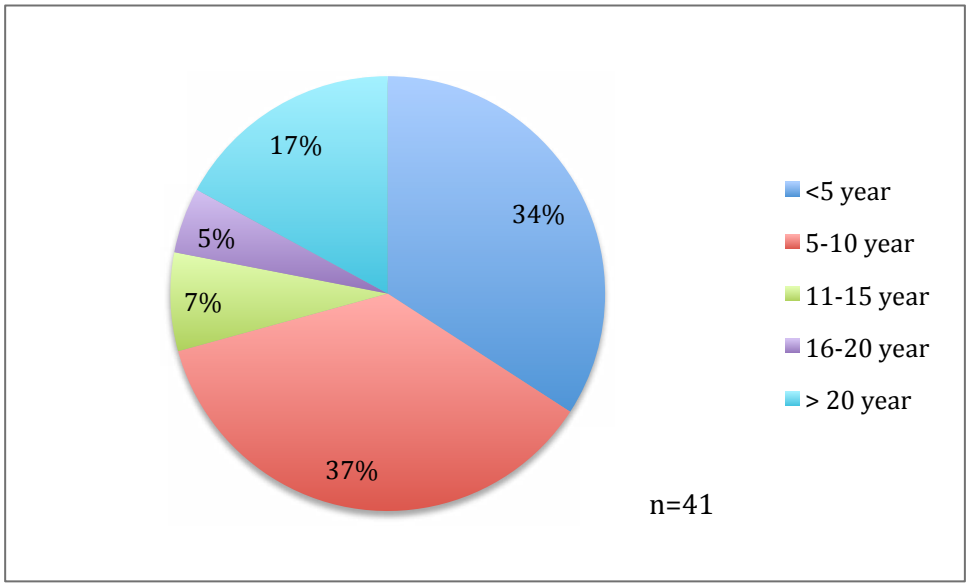
Table 4.2.2 Participants demographic information according to age, gender and provinces

Age	**22-27**	**28-32**	**33-37**	**38-over**
	29%	22%	20%	29%
Gender	**Female**	**Male**		
	98%	2%		
Provinces	**Eastern Cape**	**Free state**	**Gauteng**	**KwaZulu-Natal**
	3% (1)	10% (4)	54% (22)	12% (5)
	Limpopo	**Mpumalanga**	**Northern Cape**	**Western Cape**
	2%	7%	2%	10%

n=41

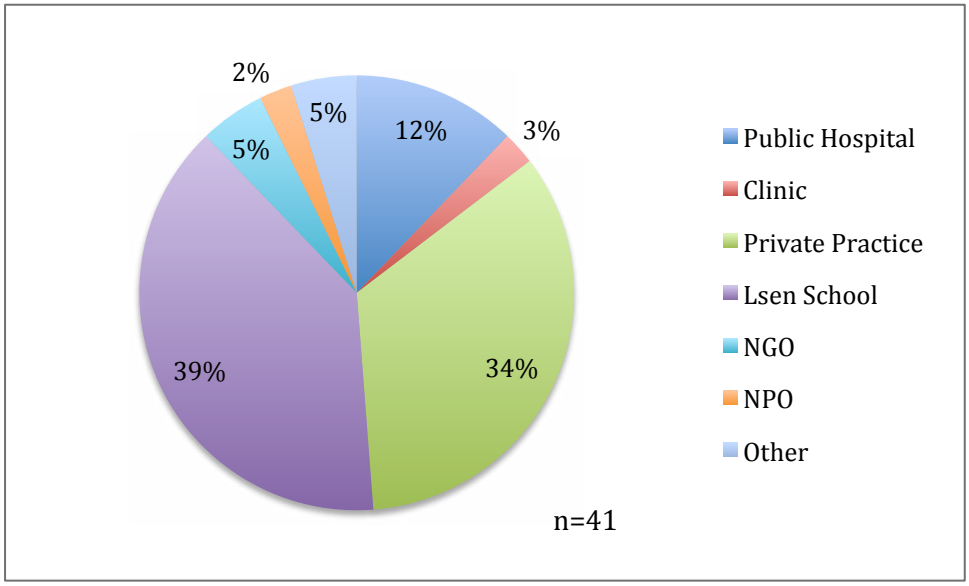
Participants' age range was evenly spread between the different age groups, while most participants were female. The participants practised in the more urbanised provinces of Gauteng, Western Cape, and KwaZulu Natal, with more than 50% of the participants worked in Gauteng.

Figure 4.2.3 Work experience



A large proportion of participants had worked with children diagnosed with CP with less than 10 years of work experience. There was a small group of participants who had 11 years and more work experience with children with CP.

Figure 4.2.4 Clinical setting



Predominant number of participants worked at LSEN Schools and in private practice. There was a small group of the participants that worked in public hospitals, clinics, NGO, NPO and other. The other category includes participants that were working at the department of paediatrics and child health faculty of Health Science University of Free State, whilst there are others that worked at both private practice and NPO.

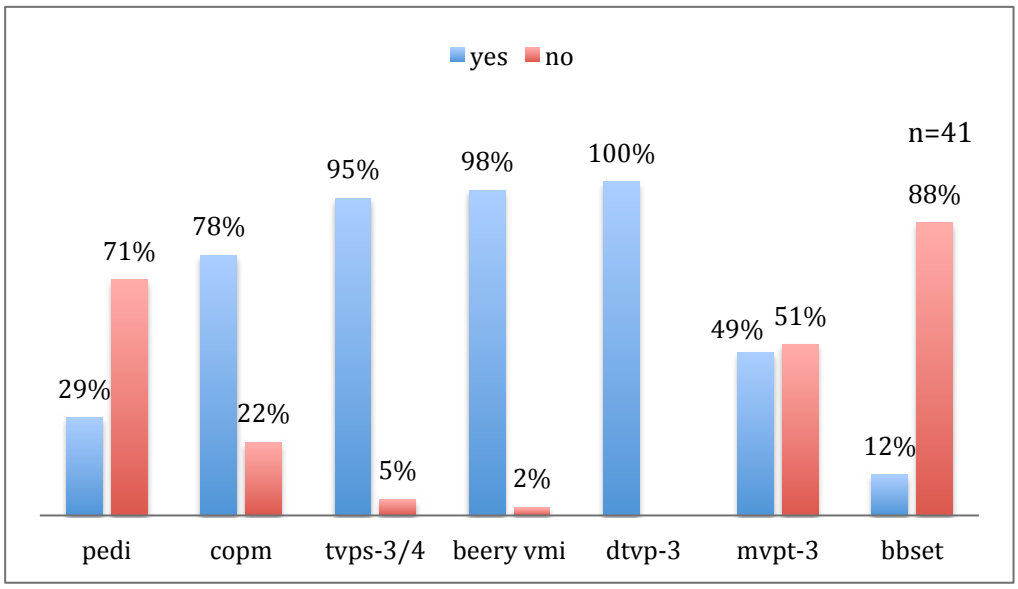
4.2.5 Conclusion of demographic information

The sample was small and most representative of urban populations situated in Private Practice and LSEN Schools. Predominant numbers of participants had less than 10 years' experience with children with CP and are females.

4.3 Objective 1: Awareness of standardized assessment

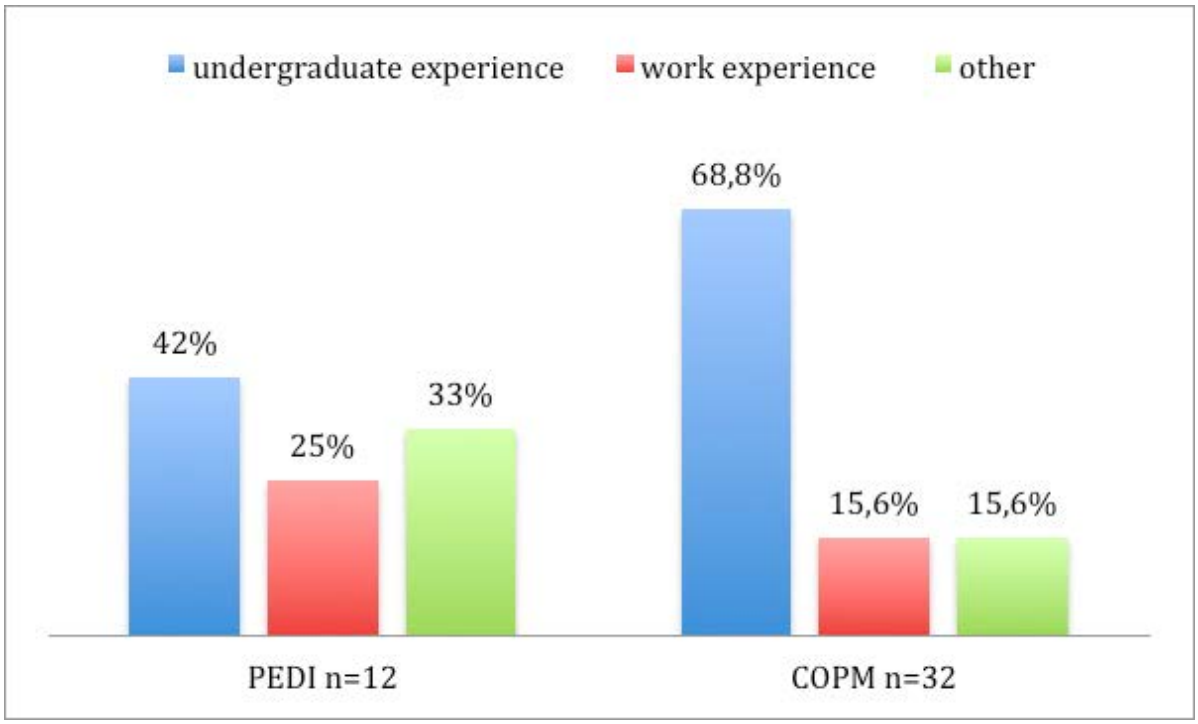
The first objective of this study was to determine occupational therapists' awareness of standardized assessments within the cerebral palsy population aged 0-18 years of age in South Africa and how occupational therapists came to know about these assessments. The researcher was interested in seeking what standardized assessments participants have been exposed to in the CP context. The results are summarised in figure 4.3.1.

Figure 4.3.1 Awareness of standardized assessments



A clear majority of participants were aware of the visual perceptual standardized assessments while there was only a small group of participants who were aware of the hand function standardized assessment. It is interesting to note that MVPT-3 was the only standardized assessment where the majority did not know the MVPT-3, but there was a small percentage difference between knowing and not knowing the MVPT-3. A discrepancy existed in the functional standardized assessments, with substantially more participants were aware of COPM than the PEDI. In order to describe the patterns of exposure to these standardized assessments, participants who were aware of certain assessments were asked how they become aware of the standardized assessments. The following information is important to note for **figure 4.3.2-figure 4.3.5:** the undergraduate experience is when they had chosen taught and exposed at university and exposed during practical university fieldwork options, whilst work experience was exposed during community service /post community service; the n of the sample was the number of participants that are aware of the functional standardized assessments.

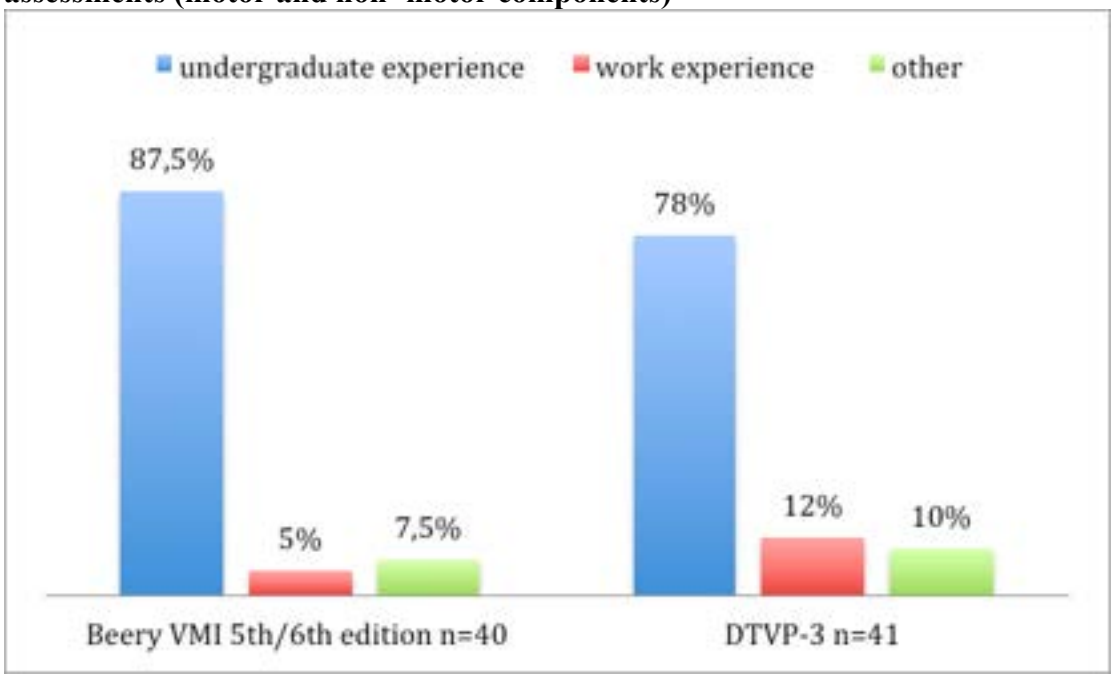
Figure 4.3.2 How participants became aware of the functional standardized assessments.



Again there was a discrepancy in the functional standardized assessment category. A predominant number of the participants who knew about the COPM were exposed to it during

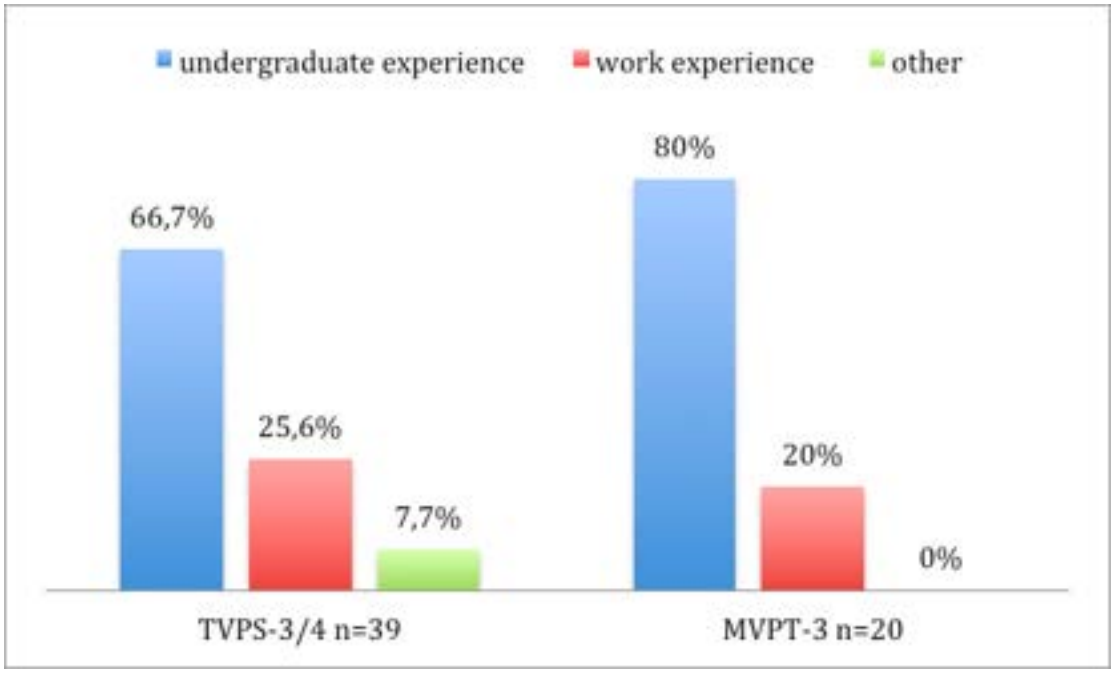
their undergraduate studies, while there is a more even spread between graduate and work experience with the PEDI. The other categories were related to the above data, as they pertain to participants who were exposed to functional standardized assessments during work experience.

Figure 4.3.3 How participants became aware of visual perceptual standardized assessments (motor and non- motor components)



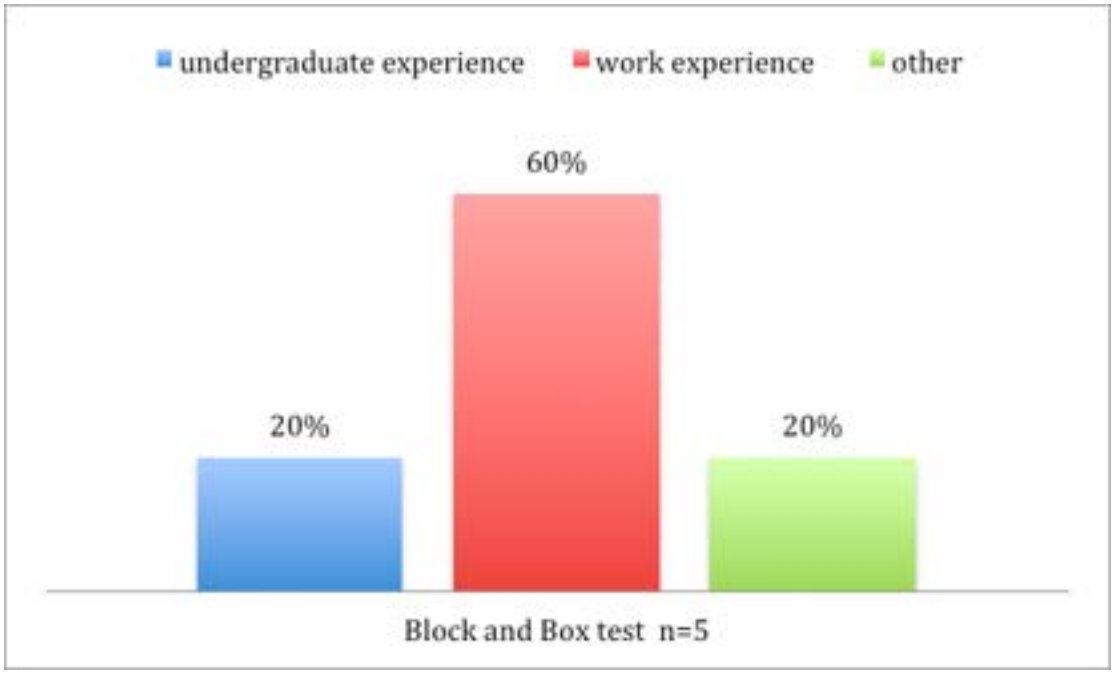
A clear majority of the participants were exposed to the visual perceptual standardized assessments that have a motor and non-motor components, during their undergraduate studies. The other categories are related to the above data, as they pertain to participants who were exposed to visual perceptual standardized assessment (motor and non motor components) particular the DTVP-3 was exposed during undergraduate experience.

Figure 4.3.4 How participants became aware of visual perceptual standardized assessments (non- motor components)



Once again there is a clear pattern in the data that shows undergraduate exposure was the primary place where participants learnt about visual perceptual standardized assessments. Although in these non-motor assessments there was a significant minority that only become aware during work exposure.

Figure 4.3.5. How participants became aware of hand function standardized assessments



The block and box test were the only outlier in terms of place of exposure and was clearly the least well-known assessment (n=5). Of these five participants most had learnt of this assessment during work experience

4.3.6 Conclusion of awareness of standardized assessments

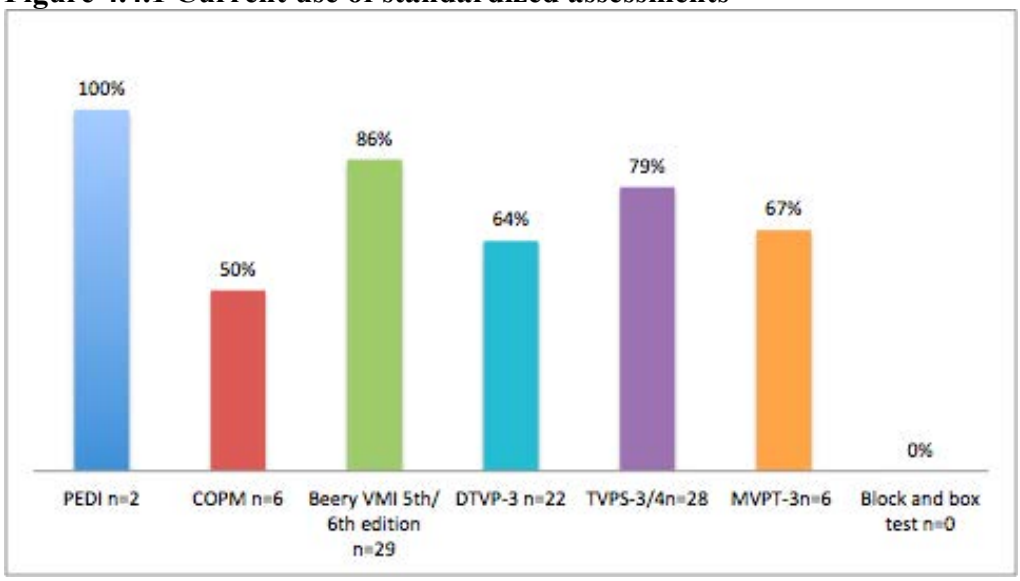
In conclusion the visual perceptual standardized assessments were the most well known categories of standardized assessments with DTVP-3, Beery VMI- 5th/6th edition and the TVPS3/4, standing out as known to more than 90% of the sample. This category was also the type of standardized assessments most participants encountered in their undergraduate training. There was a clear discrepancy in the category of functional standardized assessments with the COPM comparing favourably to the PEDI in terms of awareness in the sample, as well as more often encountered in undergraduate training. Participants aware of the Block and Box test only learnt of the standardized assessment after graduating.

Participants can be aware of the standardized assessments but the question remains weather they are being used, which will be presented in the next section.

4.4 Objective 2: Current implementation of standardized assessments

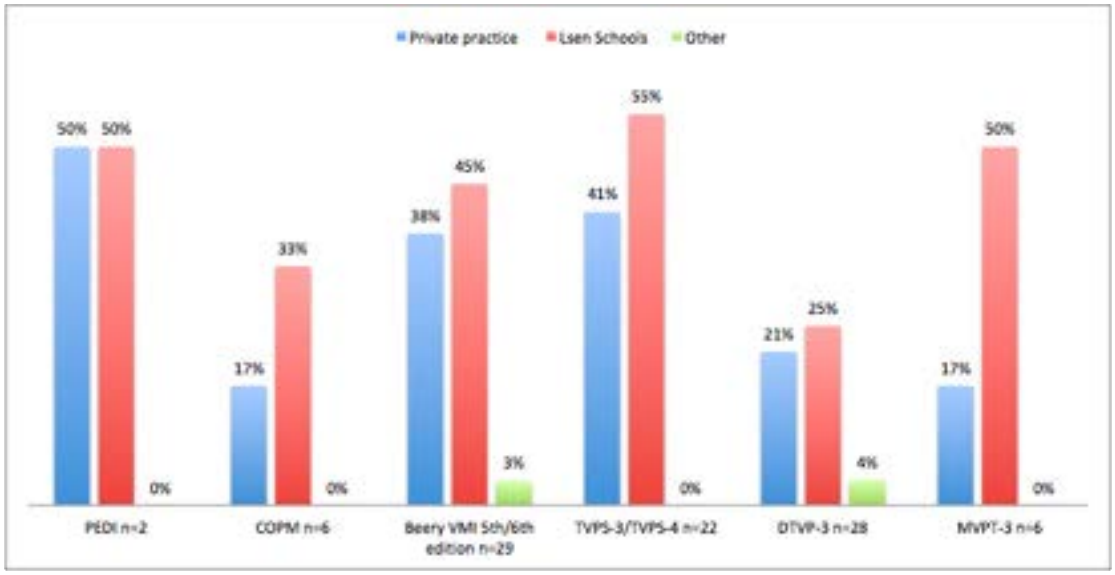
The second objective of this study was to determine the current implementation of standardized assessments within the cerebral palsy population aged 0-18 years of age in South Africa. The researcher was interested in seeking what standardized assessments occupational therapists used in the CP context. The results are summarised for current use of the standardized assessment within the total number of n is the participants that are aware of the standardized assessments in **figure 4.4.1 - 4.4.2**. Please refer to **Appendices J – P (flow chart of questions)** to understand the flow of the questions on the online survey for each standardized assessment. As this explains why availability was the n of the figures below.

Figure 4.4.1 Current use of standardized assessments



It is clear that participants were using at least one visual perceptual standardized assessment motor component (Beery VMI $5^{th}/6^{th}$ edition) and at least one visual perceptual standardized assessment non-motor component (TVPS-3/4). It should be taken with caution that there is a small sample that uses the PEDI (n=2) and COPM (n=6), with this sample all the participants use the PEDI and half the participants use COPM. From the data above there is a small sample that use the functional standardized assessments. MVPT-3 (n=6) is an outlier in relation to other visual perceptual standardized assessments as there is high use percentage of using the standardized assessment within its sample size. Further investigation into the patterns of use in standardized assessment is summarised in figure 4.4.2.

Figure 4.4.2 Current use of standardized assessments across clinical settings.



There was a clear pattern in the data, which has shown that participants in private practice and LSEN Schools favoured the use of visual perceptual standardized assessments in practice. It is important to note that there is low availability rate of the functional standardized assessments, thus results must be interpreted with caution. The PEDI (n=2) and COPM (n=6) the participants had reported all the participants that had it available in their setting are using it, whilst there was a high use of COPM at LSEN schools. In other settings, which included public hospitals, clinics, NGO, NPO and university institution, there was almost no use of standardized assessment at all.

4.4.3 Conclusion of current implementation of standardized assessments

Once again the most commonly used category of standardized assessment was the visual perceptual standardized assessments. Only a small percentage of the sample actually used the functional standardized assessments while none of the participants used the hand function standardized assessment. This pattern of use was replicated when the data was analysed by setting for Private Practice and LSEN schools, but participants in other settings indicated almost no use of any standardized assessments.

4.5 Objective 3: Clinical utility of standardized assessments in South African context

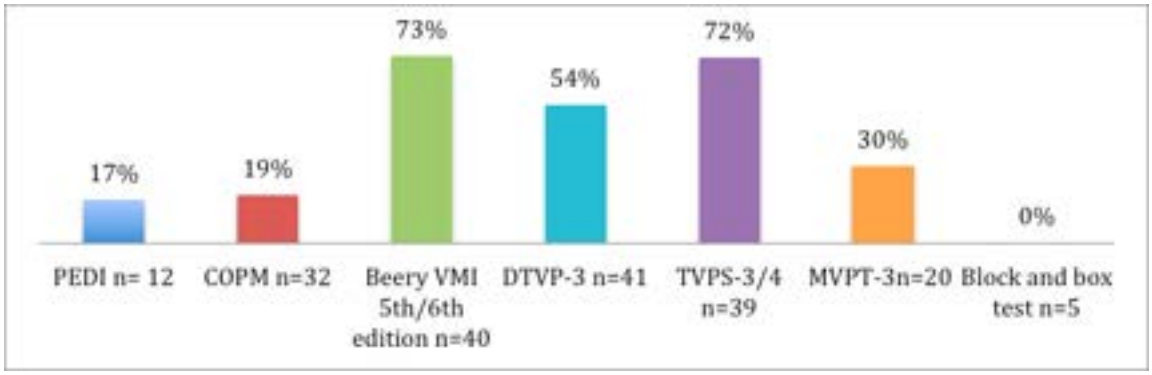
The third objective of this study was to determine the occupational therapists' perception of the appropriateness, accessibility, practicality and acceptable use of standardized assessments

for the cerebral palsy population aged 0-18 years of age in South Africa. The researcher was interested in seeking what the perception of the clinical utility of the standardized assessments used by occupational therapists in the CP context was. The results will be summarised in figures below. It is important to note in this objective, the n in the **figures 4.5.2- 4.5.3** below represents the awareness of the standardized assessment. Please refer to **Appendices J – P** to understand the flow of the questions on the online survey for each standardized assessment. As this explains why awareness was the n of the figures below.

4.5.1 Clinical utility: Accessibility

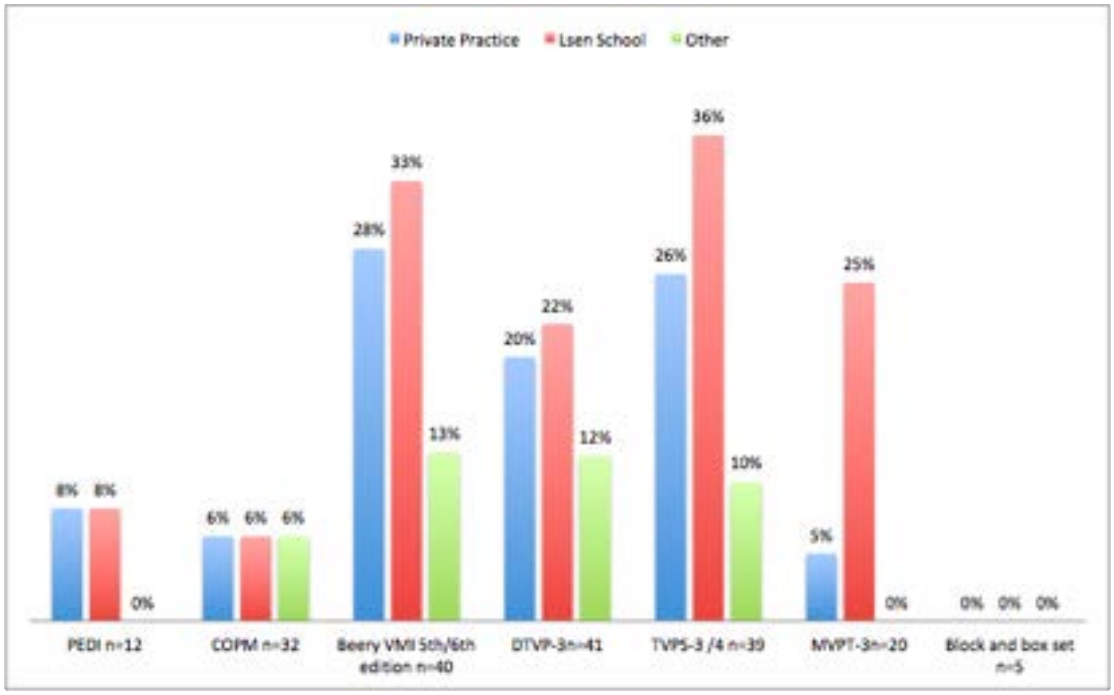
Accessibility of standardized assessment focuses on the availability of this assessment in South Africa context and factors that influences this availability (Smart 2006). The figures below will present the accessibility of the standardized assessments. The results summarised in **figure 4.5.2 - figure 4.5.3.** , Shows availability as a percentage of awareness as only participants who were aware of the particular standardized assessments were asked to comment on accessibility.

Figure 4.5.2 Availability of the standardized assessments



The majority of the participants reported access to three of the visual perceptual standardized assessments (Beery VMI $5^{th}/6^{th}$ edition; TVPS-3/ 4 and DTVP-3). A small group of participants reported access to functional standardized assessments, whilst none reported access to the hand function standardized assessment.

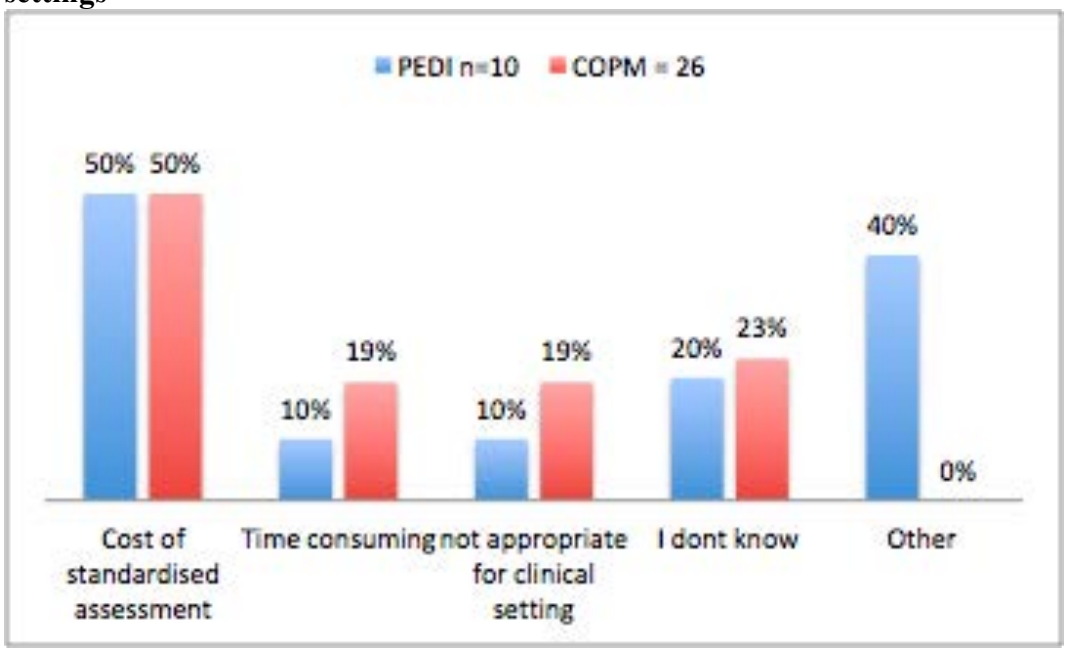
Figure 4.5.3 availability in different clinical settings



Again visual perceptual standardized assessments were reported as the predominant standardized assessments that were accessible within the private practice and LSEN schools settings whilst functional standardized assessments are much less available. In other settings availability of the standardized assessments is very limited.

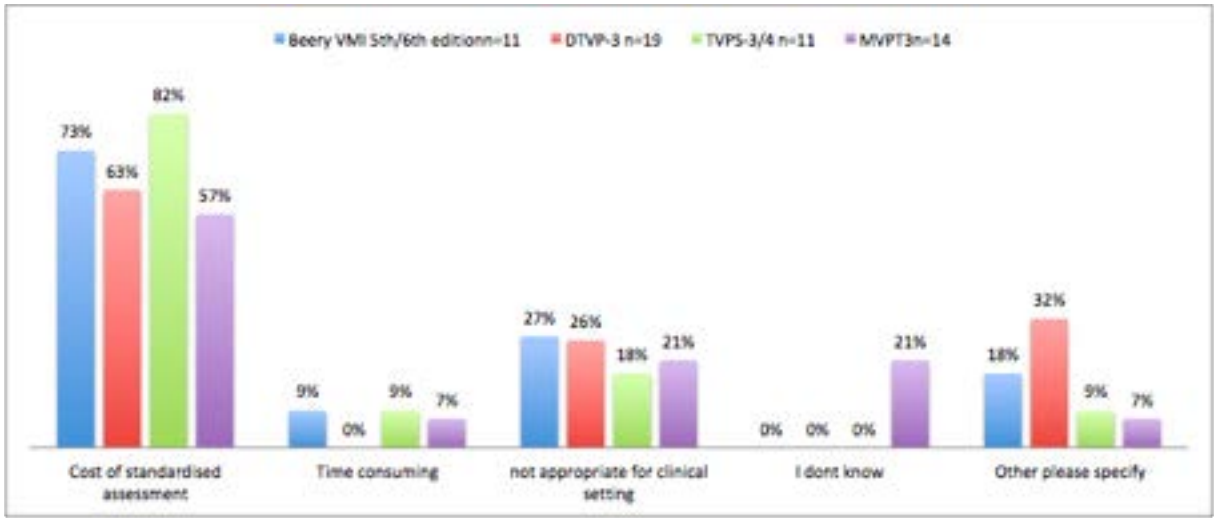
There may be many factors influencing the accessibility or non-accessibility of standardized assessments. **In figures 4.5.4 – 4.5.6** illustrate the reported reasons for lack of accessibility of particular standardized assessments within clinical practice. In each of the figures n equals the number of participants don't have access to particular standardized assessment.

Figure 4.5.4 why the functional standardized assessments not available in clinical settings



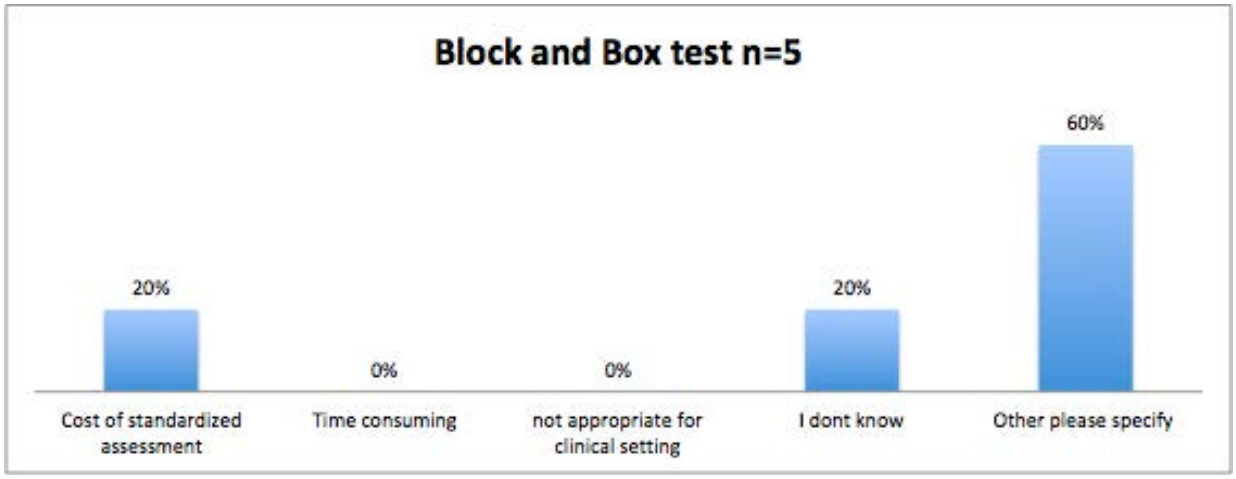
It is important to note, that interpreting this data must be taken with caution as there is a huge discrepancy of sample size of the PEDI (n=10) and COPM (n=26). Cost of standardized assessments was the most common reason reported by participants for why they did not have access to functional standardized assessments. Other reasons included time-consuming nature of assessments and the appropriateness for each clinical setting. One fifth of the participants in this sample had never thought about using functional assessments and could not give concrete reasons for not having the functional standardized assessments.

Figure 4.5.5 why the visual perceptual standardized assessments not available in clinical settings



Cost of standardized assessment was the most common reason reported by the participants of why they did not have access to the specific standardized assessment. Other reasons included them not being appropriate for the clinical setting and time consuming was reported by a small percentage of participants. The MVPT-3 is the only visual perceptual standardized assessment that participants had not think of having this standardized assessment.

Figure 4.5.6 why the hand function standardized assessments not available in clinical settings



Only a very few participants (n=5) could answer questions about the Block and box test and the most common reason given was that this assessments was out dated and irrelevant (others please specify).

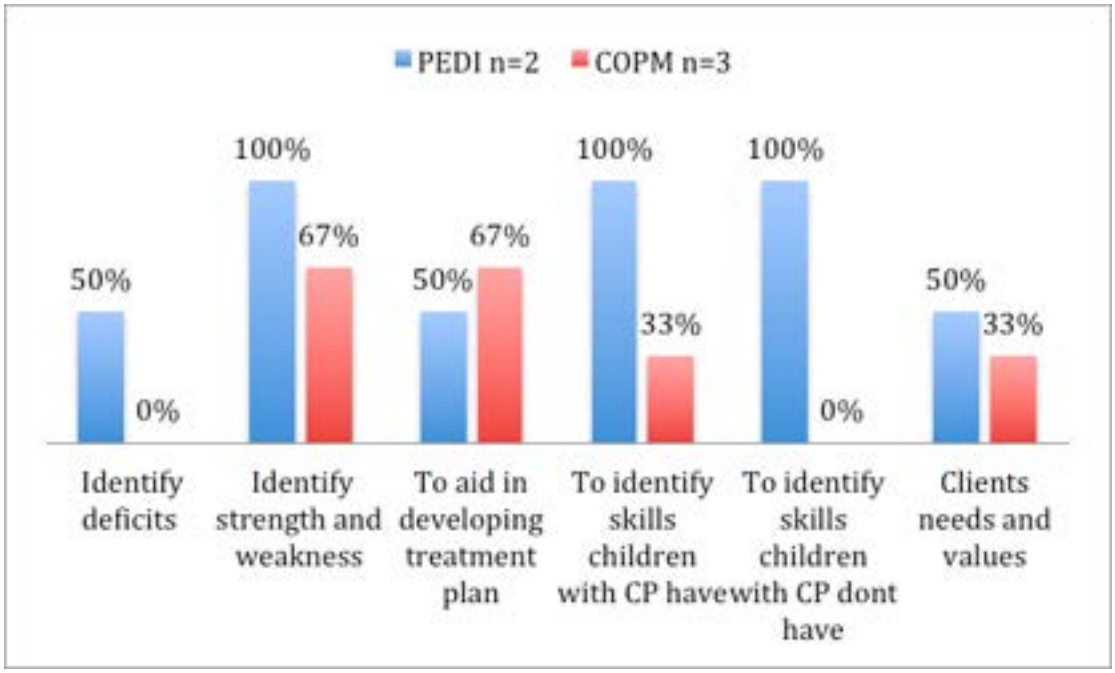
4.5.7 Conclusion of accessibility of standardized assessments

In this study, participants had more access to visual perceptual standardized assessments than functional standardized assessments, while there was no access to the hand function standardized assessments. The most common reason given by participants for not having certain standardized assessments was the cost of the standardized assessment, whilst a small group reported time-consuming nature of these assessments and the inappropriateness within their clinical setting as reasons for not having the assessments available.

4.6 Clinical utility: Appropriateness of standardized assessments

Appropriateness refers to effectiveness and relevance of the standardized assessments within the participants' clinical setting as well as within the population of children with CP. To note no participants used the block and box test thus there were unable to answer the appropriateness of the hand function standardized assessment. The results summarised in **figure 4.6.1 - figure 4.6.3**, shows appropriateness as a percentage of being used as only participants who were using the particular standardized assessments were asked to comment on appropriateness. Please refer to **Appendices J-P to** understand the flow of the questions on the online survey for each standardized assessment. As this explains why current use of standardized assessments is the n of the figures below.

Figure 4.6.1 why functional standardized assessments are appropriate



Very few participants answered questions about the PEDI (n=2) and the COPM (n=3) and thus results must interpreted with caution. The most common reason reported by participants for the appropriateness of the functional standardized assessments was the ability of these assessments to identify strengths and weaknesses. Both participants using the PEDI reported that this assessment could differentiate between the skills CP children have and don't have. while the COPM appears to have potential in a aiding the development of treatment plans. In **figure 4.6.2 and 4.6.3** reasons for the appropriateness of the visual perceptual standardized assessments are summarised. Information is split to increase the readability of the figures but will be described together below figure 4.6.3.

Figure 4.6.2 why visual perceptual standardized assessments (motor and non motor components) are appropriate

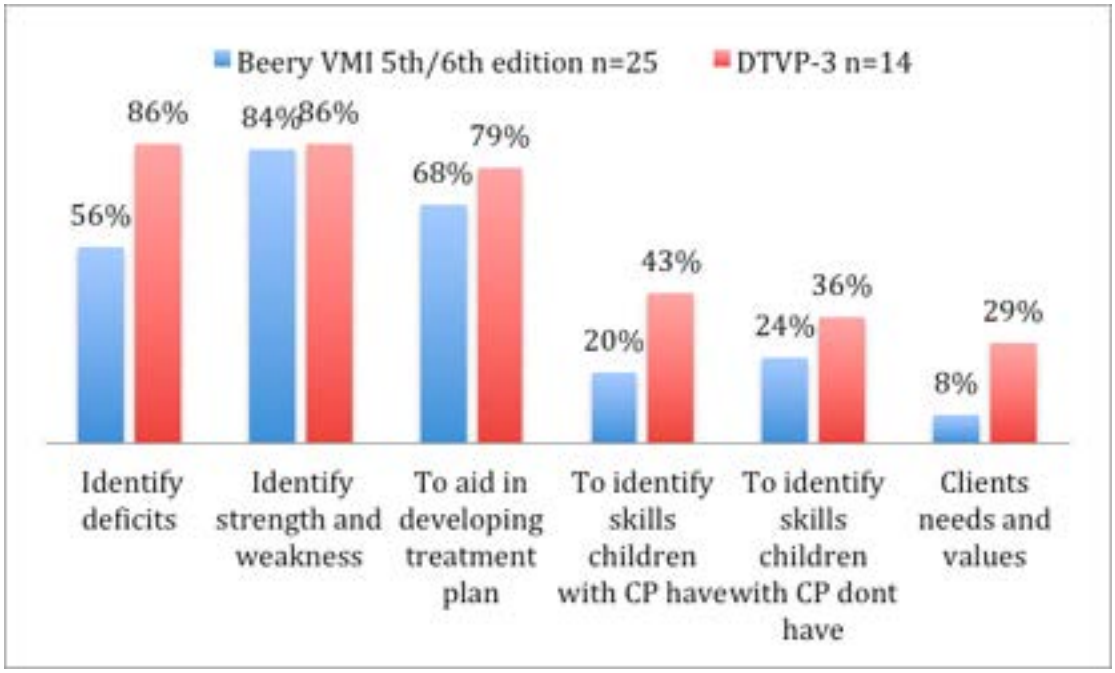
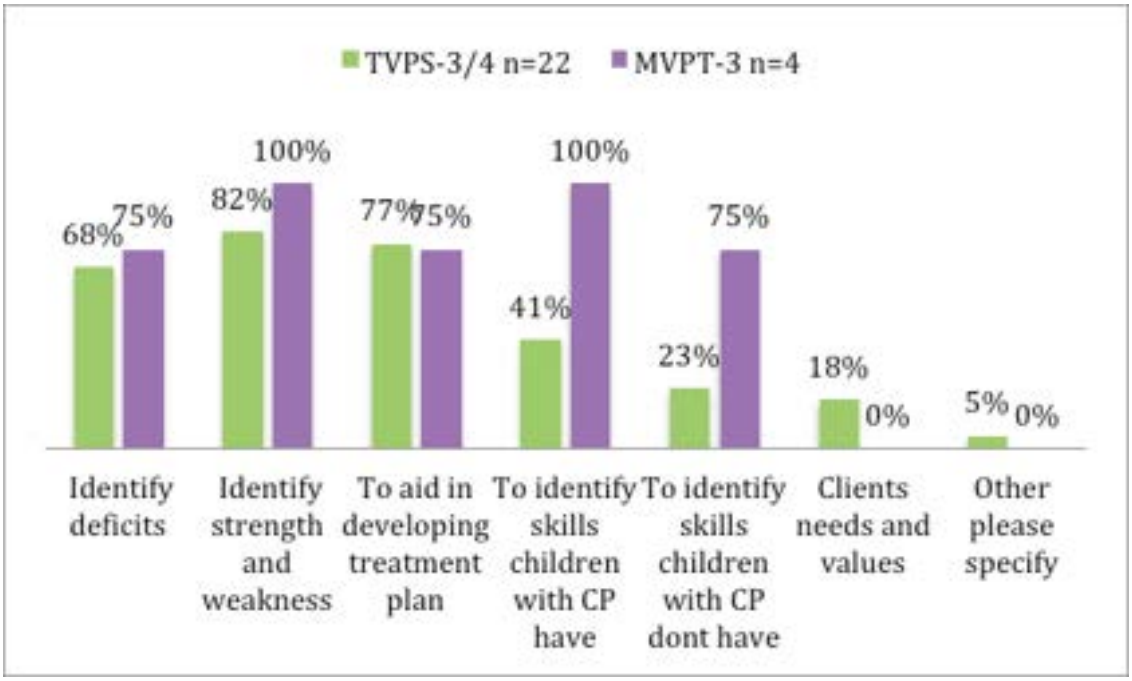


Figure 4.6.3 why visual perceptual standardized assessments (non motor components) are appropriate



Reasons reported for the appropriateness of the visual perceptual standardized assessments included the ability to identify deficits, strengths and weaknesses, aiding in development of treatment plan. However, participants reported that visual perceptual standardized assessments don't clearly address clients' needs and values or identify missing skills. It is

important to note that TVPS-3 /4(n=39)_ is the highest percentage in identifying the skills children with CP have, in comparison to Beery VMI $5^{th}/6^{th}$ edition (n=40) and DTVP-3 (n=41). MVPT-3 (n=4) is an outlier with a small sample size; it should be interpreted with caution. All the participants who use the MVPT-3 had chosen the ability to identify weakness and strengths and identify the skills CP children have, that perceived the appropriateness of the standardized assessment.

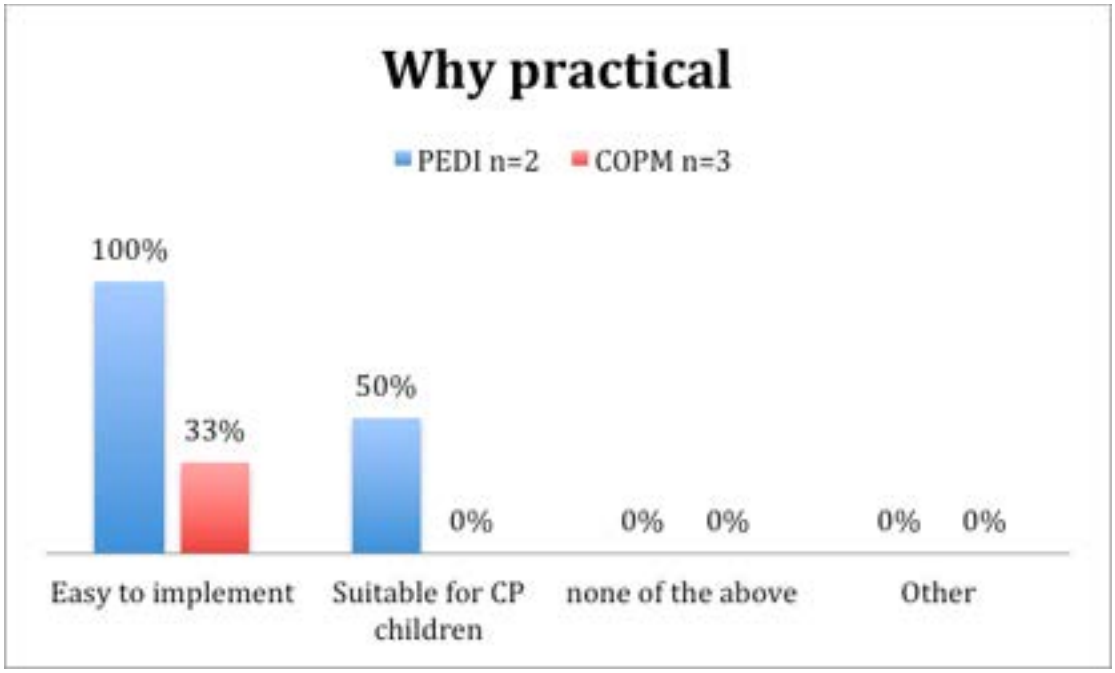
4.6.4 Conclusion of appropriateness of standardized assessments

In conclusion, there was a clear distinction between visual perceptual standardized assessments and other standardized assessments in terms of perceived appropriateness. Visual perceptual standardized assessments as a group were perceived to be more appropriate than functional standardized assessments. The most common reasons perceived by the participants for appropriateness of standardized assessments were identifying strengths and weakness; aiding in development of treatment plan and identifying skills children with CP have.

4.7 Clinical utility: Practicality of standardized assessments

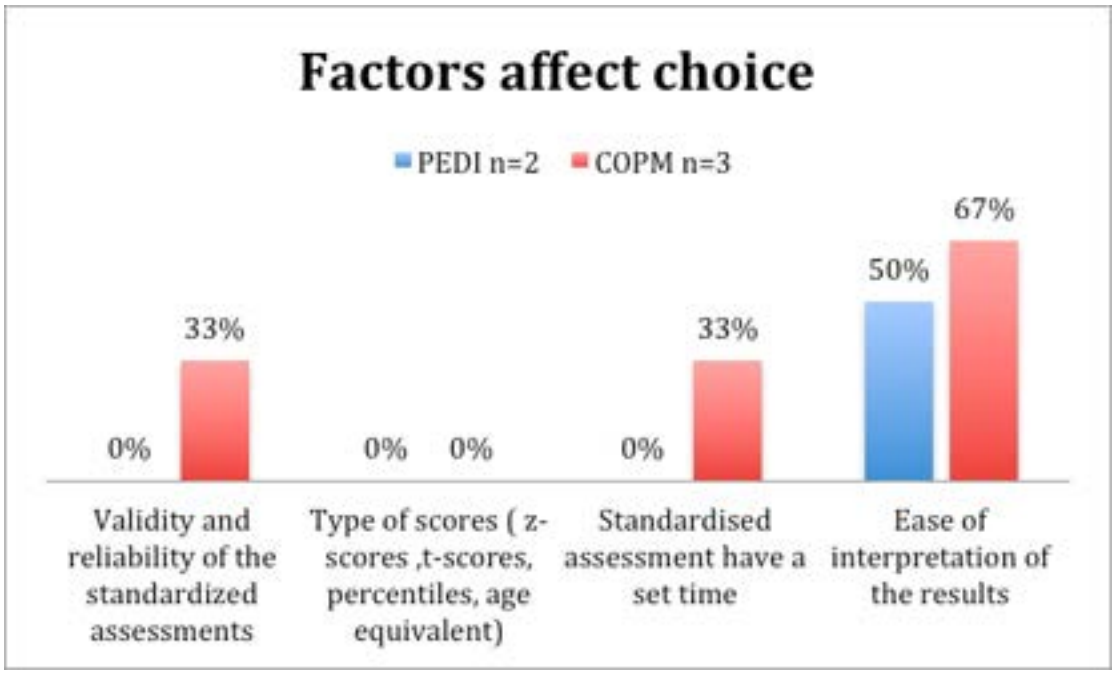
Practicality refers to ease of use, the suitability for CP in South Africa and the time effectiveness of the standardized assessment. To note no participants used the block and box test thus there were unable to answer the appropriateness of the hand function standardized assessment. The results summarised in **figure 4.7.1 - figure 4.7.2**, shows practicality as a percentage of being used as only participants who were using the particular standardized assessments were asked to comment on appropriateness. Please refer to **Appendices J-P** to understand the flow of the questions on the online survey for each standardized assessment. As this explains why current use of standardized assessments is the n of the figures below.

Figure 4.7.1 Practicality of functional standardized assessments



Very few participants answered questions about the PEDI (n=2) and the COPM (n=3) and thus results must interpreted with caution. Both participants of PEDI had reported that the ease to implement is one of the factors that make the standardized assessment practical. Whilst the COPM only ease of implementation of the COPM was chosen. This shows that the common reason was the ability to implement the functional standardized assessments with ease.

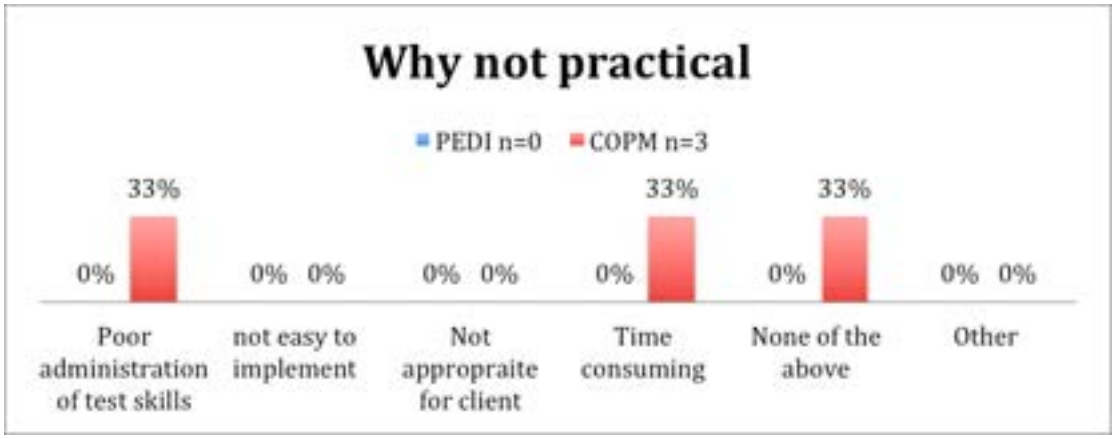
Figure 4.7.2 Factors affect choice of standardized assessments



The participants reported the factors that affect their reason to have used the functional standardized assessments. The COPM had shown that ease of interpretation of the result was one of the reasons affecting their choice. The PEDI, ease of interpretation of the results was the only factor chosen. It is important to note that results should be interpreted with caution, as the n is small.

Figure 4.7.3 Why not functional standardized assessment not practical

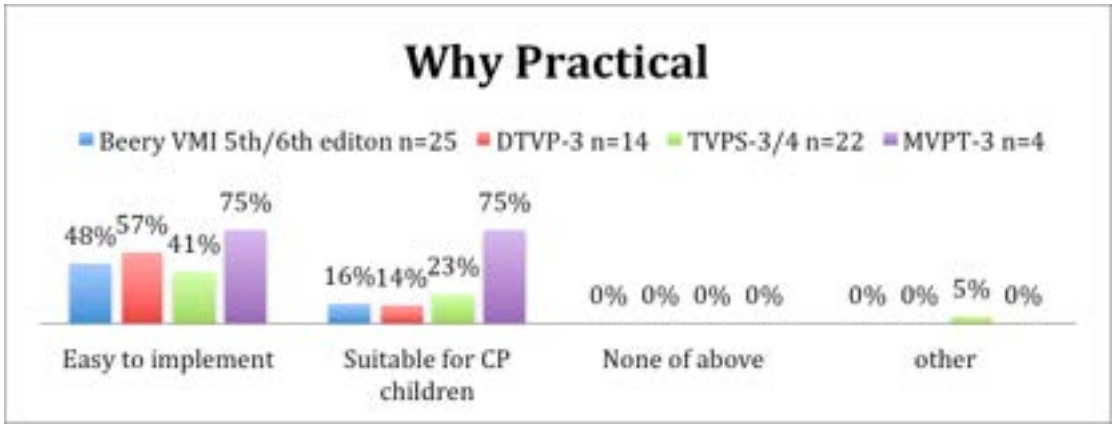
The n in this data is the participants who don't have the standardized assessment.



All the participants aware of the PEDI (n=0), all use the standardized assessment. As they did not need to answer this aspect. The COPM (n=3), participants had reported that poor administrations skills and time consuming affected their reason for not using this standardized assessment.

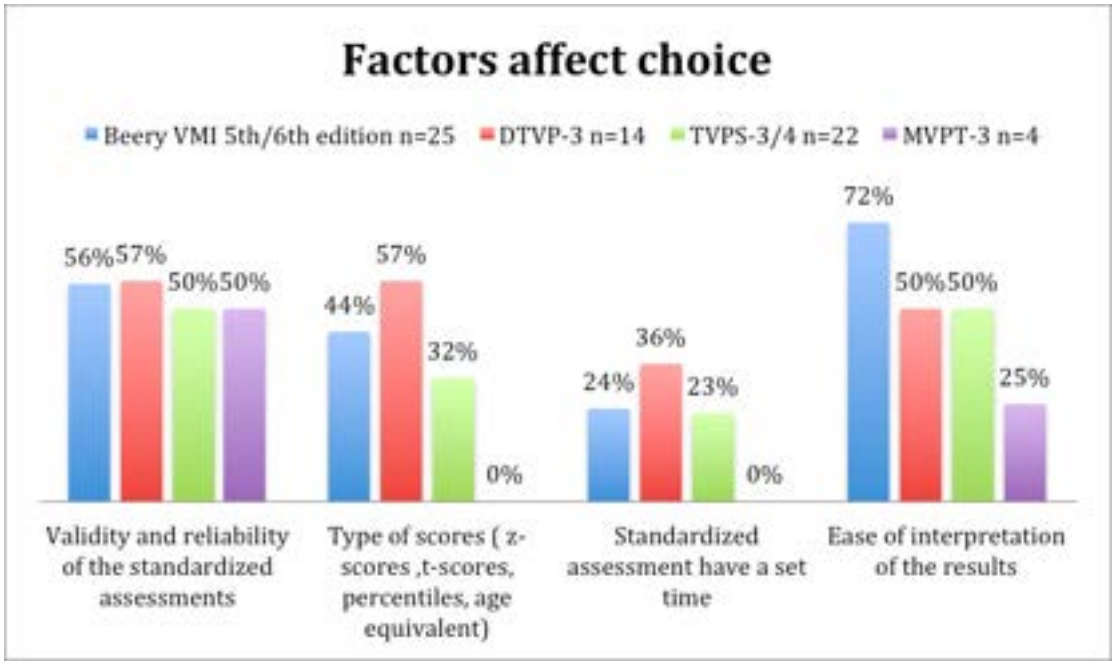
Figure 4.7.3 Practicality of visual perceptual standardized assessments

The results summarised in **figure 4.7.3 - figure 4.7.4**, shows practicality as a percentage of being used as only participants who were using the particular standardized assessments were asked to comment on appropriateness. Please refer to **Appendices J-P** to understand the flow of the questions on the online survey for each standardized assessment. As this explains why current use of standardized assessments is the n of the figures below.



The common reason for using visual perceptual standardized assessments were the ease of implementation and then low percentage of the standardized assessments being suitable for CP children. There is an expectation where the MVPT-3 (n=4) had a higher percentage for ease to implement and suitable for CP children but the results need to be interpreted with caution.

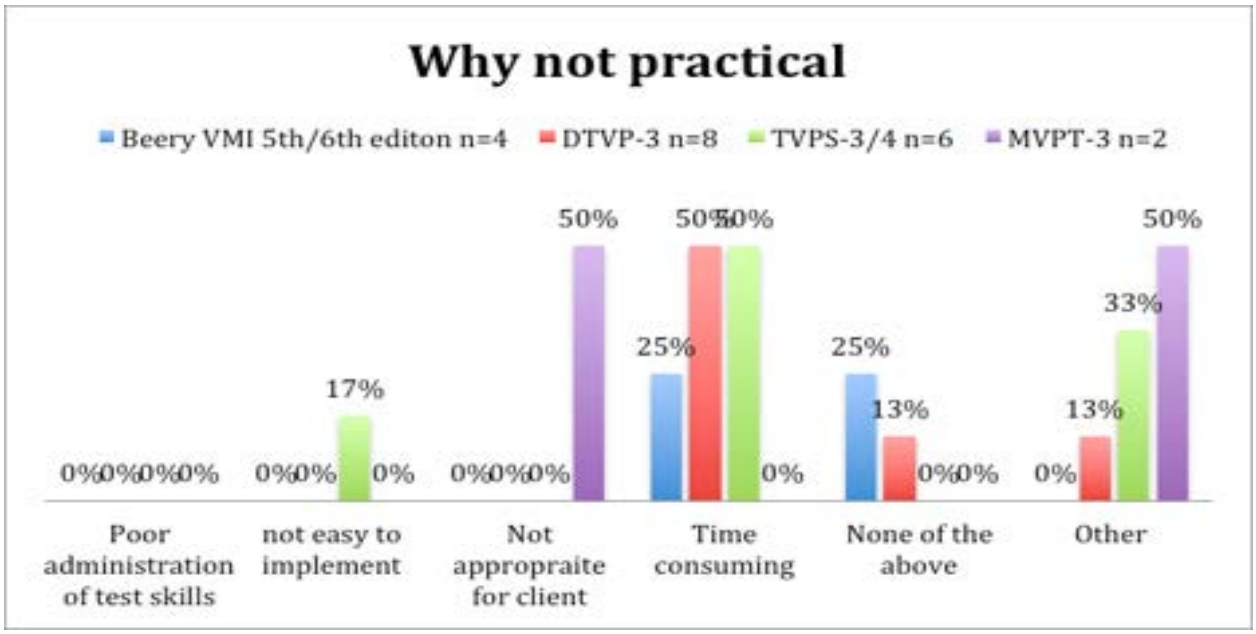
Figure 4.7.4 what factors affect choice of visual perceptual standardized assessments



The common reason that affected the choice of standardized assessments for visual perceptual standardized assessment was the validity and reliability of the standardized assessment and ease of interpretation of the results. MVPT-3 (n=4) the participants reported the same common reason as above but needs to be taken with caution, as the sample size is small.

Figure 4.7.5 Why not functional standardized assessment not practical

The n in this data is the participants who don't have the standardized assessment.



The common reason for not have used the Beery VMI 5th /6th edition, DTVP-3 and TVPS-3/ 4 was them being time consuming. MVPT-3 the participant had reported that it is not appropriate for client.

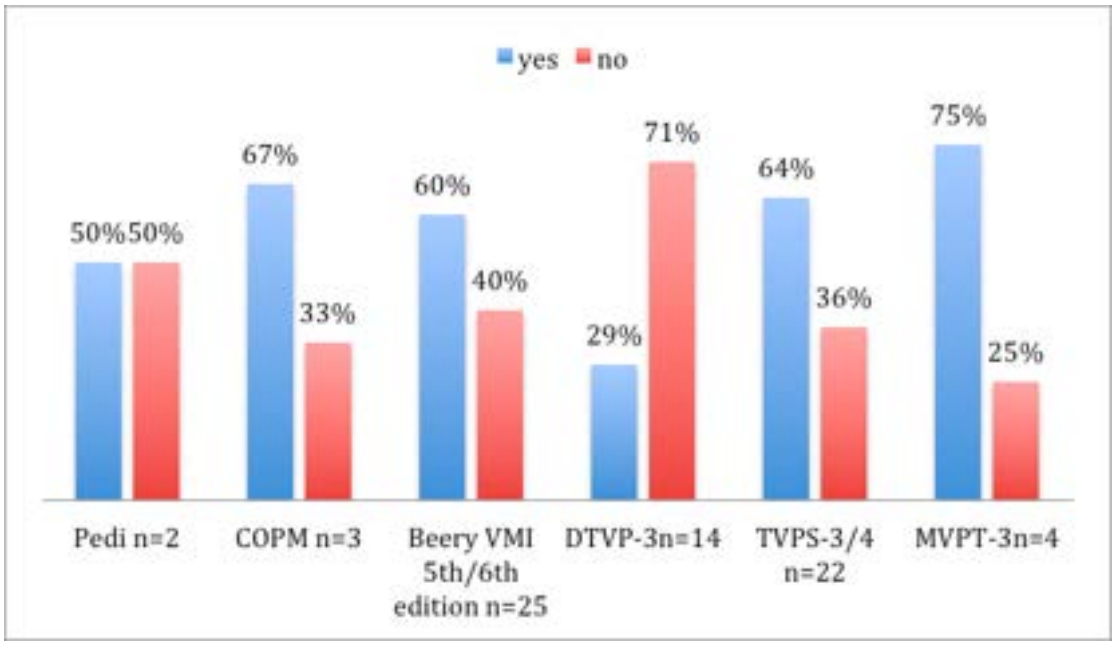
4.7.6 Conclusion of practicality of standardized assessments

In conclusion the common reason for both functional and visual perceptual standardized assessments as was reported by the participants was due to ease of implement and ease of interpretation of results. The common reasons for not using both visual perceptual and functional standardized assessments is due to them being time consuming. It was difficult to interpret the results of practicality as the sample size affected the interpretation of results.

4.8 Clinical utility: Acceptability of standardized assessment

Acceptability refers to the perceived relevance and validity of the standardized assessments in South African context. To note no participants used the block and box test thus there were unable to answer the appropriateness of the hand function standardized assessment. The results summarised in **figure 4.8.1** shows acceptability as a percentage of being used as only participants who were using the particular standardized assessments were asked to comment on acceptability. Please refer to **Appendices J-P** to understand the flow of the questions on the online survey for each standardized assessment. As this explains why current use of standardized assessments is the n of the figures below.

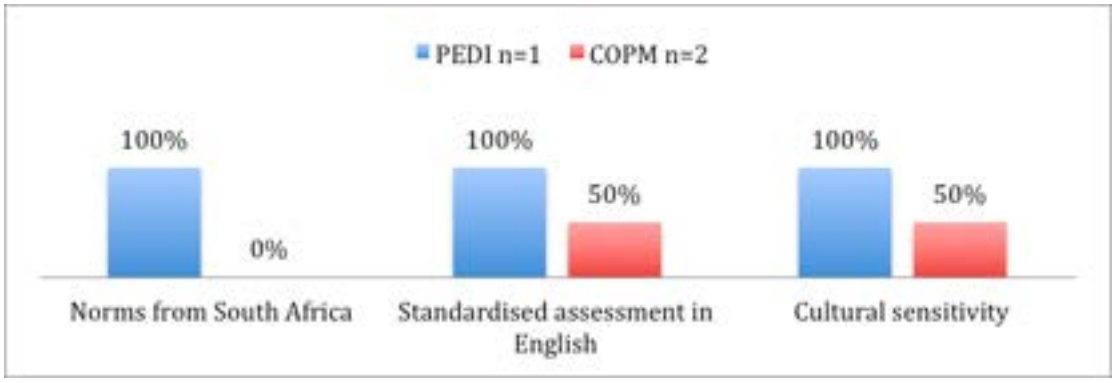
Figure 4.8.1 Perceived relevance of standardized assessments within the South African context



Of those who used the various standardized assessments with children with CP, there was variability in perceived relevance. Overall, the figure appears to show that participants perceived visual perceptual standardized assessments and functional standardized assessments to be relevant in their context. There was a low percentage of functional standardized assessment relevance within South Africa context. Of note participants reported low levels of perceived relevance of the DTVP-3 in a population of CP children.

Figure 4.8.2 why functional standardized assessments are relevant in the South African context

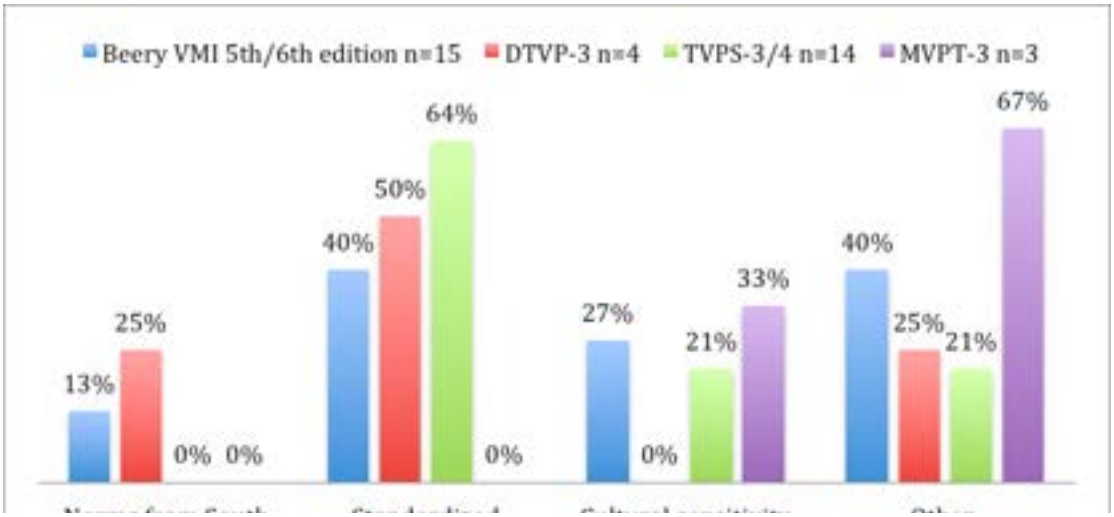
The n represent the number of the participants that state the standardized assessment was relevant in South Africa.



Participants perceive the functional standardized assessments to be relevant in South African context due to them being in English and cultural sensitive. There is a low percentage that perceived that the norms are from South Africa for the PEDI. There were a small percentage of participants that perceived the COPM to have been valid and reliable.

Figure 4.8.3 Why Visual perceptual standardized assessments are relevant in the South African context

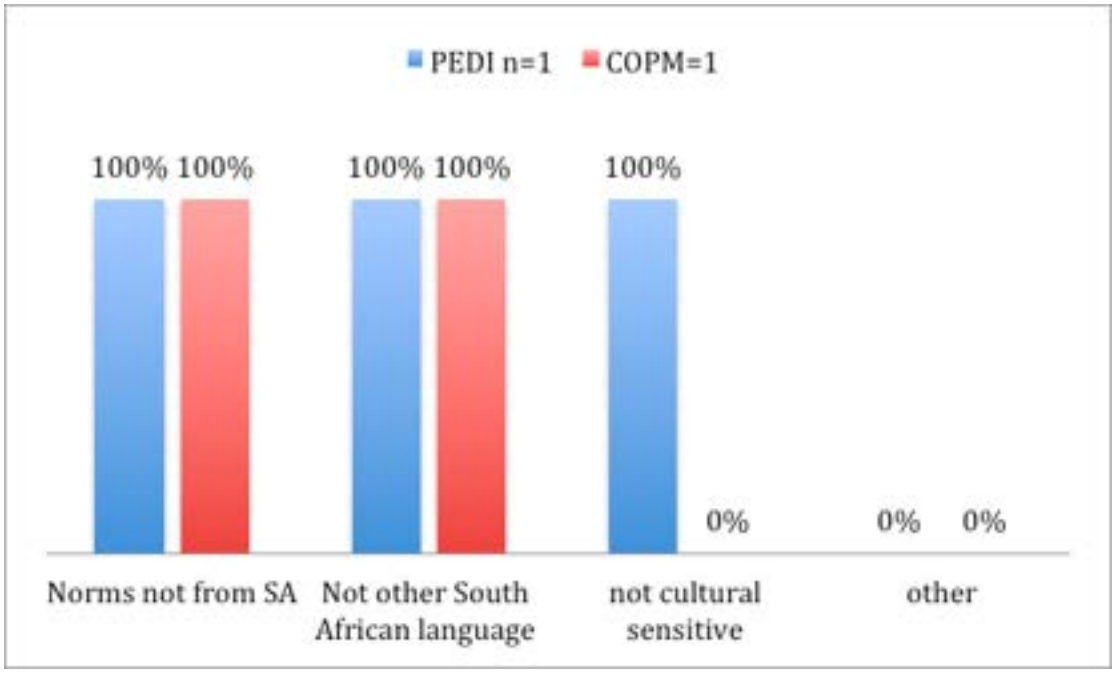
The n represent the number of the participants that state the standardized assessment was relevant in South Africa.



The Berry VMI 5th/6th edition and TVPS-3/ 4 perceived relevance of the assessment due to the standardized assessments being in English. It is interesting to note that the two sample sizes of Beery VMI 5th/6th edition and TVPS 3/ 4 are close to each other and there is at least one of each visual perceptual standardized assessment (motor and non motor components). There is a small percentage that perceived relevance due to norms from South Africa (Beery VMI $5^{th}/6^{th}$ edition and DTVP-3), this is a concern. The MVPT-3 a small percentage perceived relevance due to cultural sensitivity and being valid and reliable.

Figure 4.8.4 why functional standardized assessments are perceived as not being relevant within South Africa context.

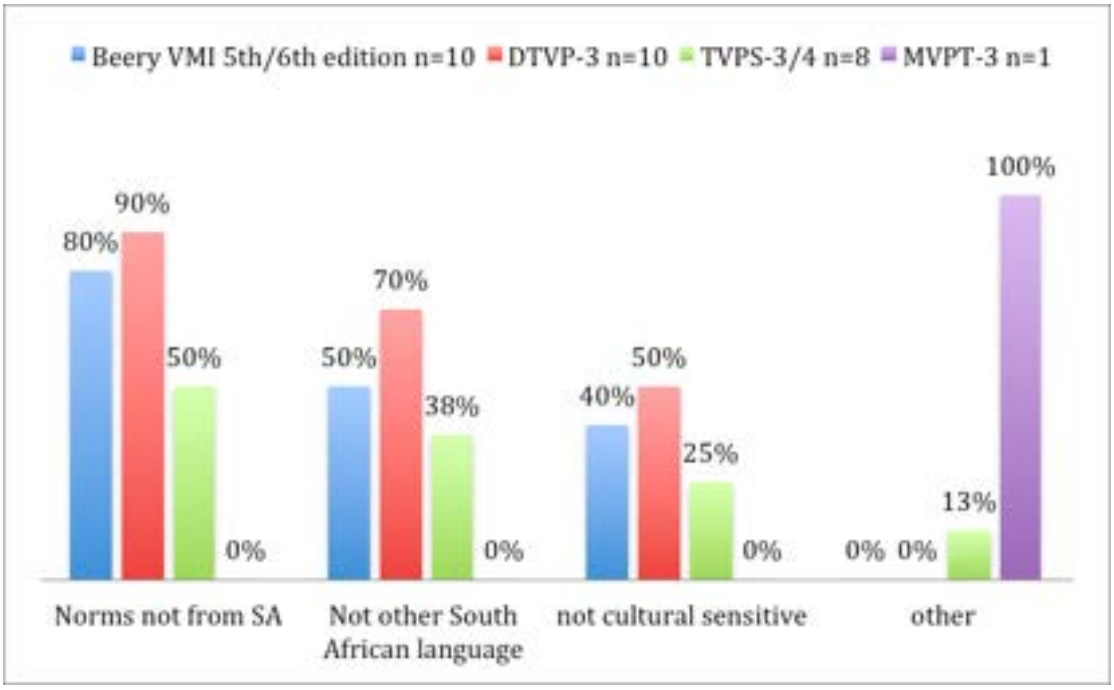
The n represent the numbers of the participants that state the standardized assessment were not relevant in South Africa.



These results should be taken with caution due to the small sample size, where both only had one participant that reported the above data. The PEDI and COPM was perceived as note relevant due to norms not from South Africa and not in other South African Language.

Figure 4.8.5 why visual perceptual standardized assessments are perceived as not being relevant within South Africa context.

The n represent the numbers of the participants that state the standardized assessment were not relevant in South Africa.



The common reasons for the visual perceptual standardized assessments (Beery VMI 5th/6th edition, DTVP-3 and TVPS-3 /4) perceived as not relevant within South Africa context was due to norms not from South Africa. MVPT-3 (n=1) is an outlier as has small sample size the participants chose other (please specify).

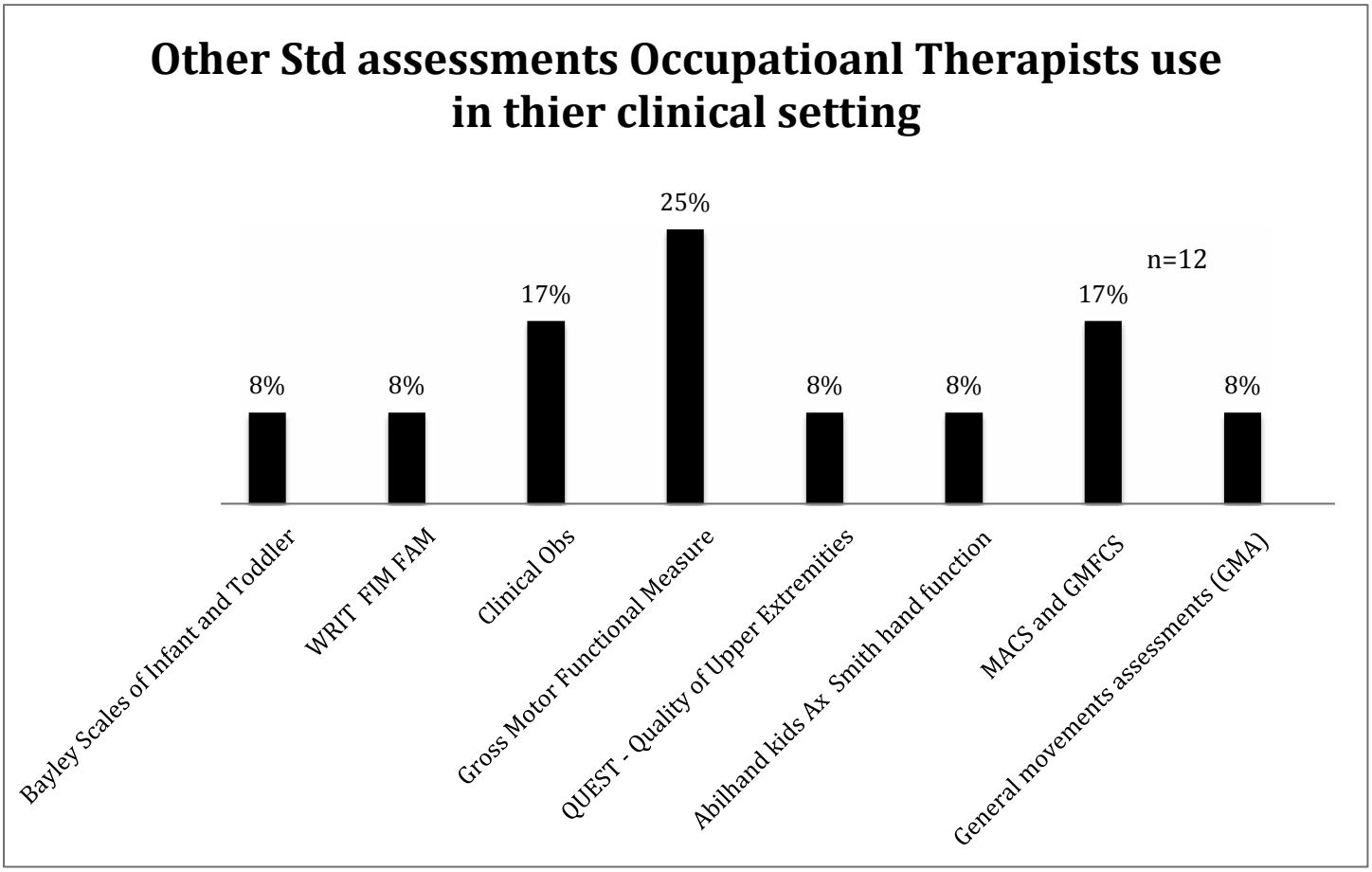
4.8.6 Conclusion of acceptability of standardized assessments

Participants had common reasons that perceived relevance of standardized assessments within South Africa context such as being in English and small percentage that reported that they are cultural sensitive. It is concerning that there is a small percentage participant that perceived certain standardized assessments (PEDI, Beery VMI5th/6th edition and DTVP-3) relevant due to norms from South Africa. The perceived non-relevance of both visual perceptual and functional standardized assessments was due to the norms not being from South Africa and not in another South African language. There were difficulties in interpreting results, as the sample size got smaller throughout the online survey that affected the data above.

4.9 Other standardized assessments

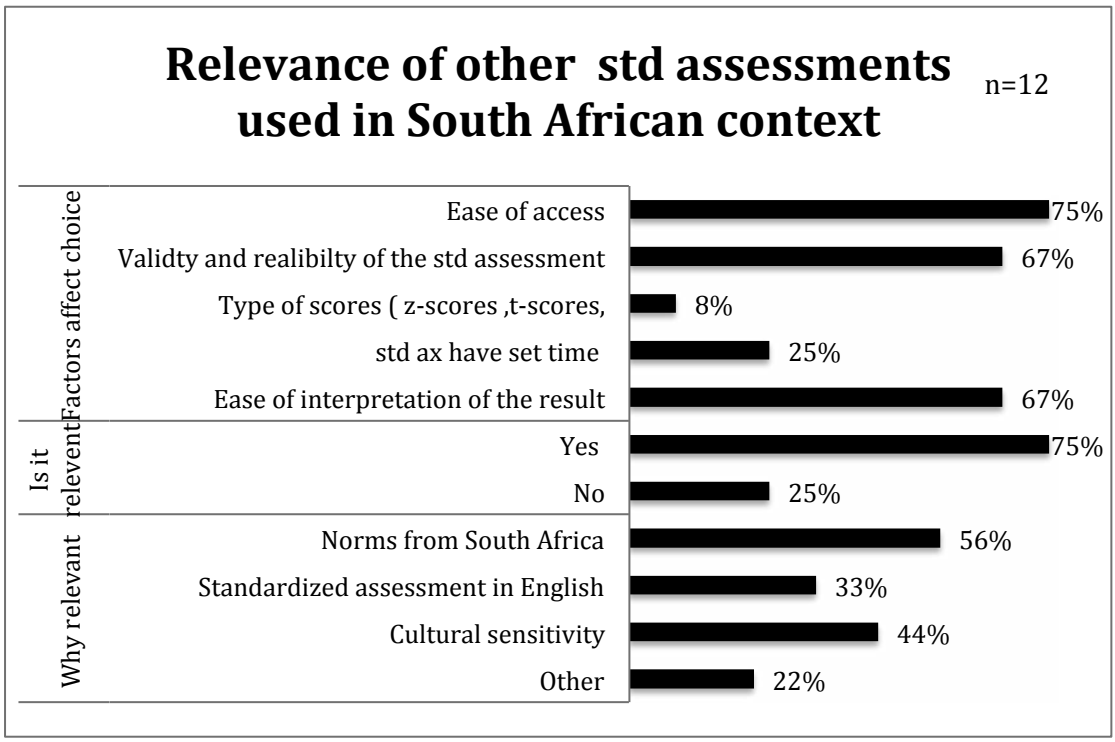
The researcher acknowledges that there are other standardized assessments that participants may have been using, which lead to the question of other standardized assessments the participants had provided for use with standardized assessments. Throughout **figure 4.9.1-4.9.2,** the n is the total number of participants that provided other standardized assessments.

Figure 4.9.1 other standardized assessments used in participants'' clinical settings not mentioned in study



There are other standardized assessments participants use as seen above and the most common one use is the Gross motor functional measure assessment.

Figure 4.9.2 Perceived relevance of other standardized assessments



The other standardized assessments that the participants use were due to ease of access; validity and reliability of the test and ease of interpretation of results. Participants found other standardized assessments to be relevant in South Africa context that they had mentioned. There was a high percentage of the perceived relevance of the other standardized assessments due to the factor of the norms from South Africa was the common reason.

4.9.3 Conclusion of other standardized assessments

Of the standardized assessments suggested by participants as alternatives to those investigated in this study, he Gross Motor Functional Measure (GMFM) was the most commonly used. Ease of access; validity and reliability of the test and ease of interpretation are the reasons for using the other tests. The tests are also relevant in South Africa due to the norms are from South Africa as perceived from the occupational therapists, which is concerning.

4.10 Conclusion of result

The study primarily focused on the familiarity and utilization of standardized assessments amongst the participants, particularly in urban settings and Private Practice and LSEN Schools. The findings revealed that visual perceptual standardized assessments were the most well known and commonly encountered, such as the DTVP-3, Beery VMI-5th/6th edition,

and TVPS3/4. These assessments were also prominently featured in undergraduate training. However, there was a notable disparity regarding functional standardized assessments, with the COPM being more recognized than the PEDI and the hand function standardized assessment (Block and Box test) being learned post-graduation.

Visual perceptual standardized assessments were significantly more utilized than functional assessments, with no use of hand function standardized assessment (Block and Box Test). Cost was cited as a major barrier to acquiring standardized assessments, followed by concerns about time consumption and appropriateness for clinical settings. The perceived appropriateness of visual perceptual assessments was notably higher than functional assessments, with reasons including identifying strengths and weaknesses; aiding in treatment planning and identifying skills CP children may have or not have, it is important to note that the sample size was smaller for functional standardized assessments in comparison to the visual perceptual standardized assessments.

The study encountered challenges in interpreting results due to sample size limitations. Additionally, there were concerns about the relevance of certain standardized assessments within the South African context, particularly regarding language and cultural sensitivity. Some participants suggested alternatives such as the Gross Motor Functional Measure (GMFM), citing ease of access, validity, reliability, and relevance to South African norms. However, the perceived relevance on assessments with norms from inside South Africa raised concerns about their applicability.

It is important to note that one can be aware and have standardized assessments but doesn't guarantee use of the standardized assessment. The results has shown the importance of addressing barriers to access and ensuring the relevance of standardized assessments through locally applicable norms to improve their effectiveness in clinical practice. Further research and development tailored to the unique context of South Africa are warranted to enhance the quality of assessment practices for children with CP in the region.

Chapter 5 Discussion

5.1 Introduction

In this chapter there will be discussion of the of participants, awareness of standardized assessments, current implementation of standardized assessments and the clinical utility of the standardized assessments.

5.2 Sample of participants

The total sample size for this study was 41. While this sample size is seemingly small, it aligns with the estimated minimum sample size of 35 as calculated for this study (Bartlett, Kotrlik and Higgins, 2001). It is noteworthy that surveys conducted in South Africa targeting a similar population have reported comparable sample sizes. For instance, Davies (2016) had a sample size of 17, Janse Van Rensburg (2016) had 47, and Sweet (2020) had 38 participants in their respective studies (Davies, 2016; Janse van Rensburg, 2016; Sweet, 2020).

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The studies conducted by Davies, Janse Van Rensburg, and Sweet focused on diverse aspects of the current practices and interventions related to children with CP in South Africa (Davies, 2016; Janse van Rensburg, 2016; Sweet, 2020). Davies explored the implementation of home programs by occupational therapists and physiotherapists for young children with CP(Davies, 2016). Janse Van Rensburg investigated the current interventions for CP children with visual impairment (Janse van Rensburg, 2016), while Sweet delved into the screening and assessment practices used by occupational therapists for children with CP and cerebral visual impairment (Sweet, 2020). Despite the differences in focus, the sample sizes in these studies, including the current one, appear to be deemed efficient for surveys targeting children with CP in South Africa.

The occupational therapist distribution in terms of workplace settings in the current study is consistent with findings from the mentioned South African studies, indicating a prevalence of practitioners in LSEN schools and private practice. Specifically, 39% of participants in the current study reported working in Lsen schools, and 34% in private practice, mirroring patterns observed in Davies, Janse Van Rensburg, and Sweet's studies (Davies, 2016; Janse van Rensburg, 2016; Sweet, 2020).

Regarding work experience, the majority of participants in the current study (71%) reported having less than 10 years of experience, aligning with similar trends observed in the South African studies. A smaller proportion (29%) reported having more than 11 years of experience, reflecting a consistent pattern across these studies (Davies, 2016; Janse van Rensburg, 2016; Sweet, 2020).

In conclusion, despite the apparent small size, the sample in this study appears to be representative of the population of occupational therapists actively engaged in working with children with CP who were willing to participate in the survey. The consistent findings with previous South African studies lend support to the credibility and relevance of the obtained data within the context of occupational therapy practices for children with CP in the region.

5.3Awareness of standardized assessments for use in cerebral palsy

The first objective of the study centred on gauging the awareness among occupational therapists regarding various standardized assessments applicable when working with children diagnosed with CP. The findings of the current study revealed that a substantial majority of participants demonstrated high levels of awareness for visual perceptual standardized assessments (ranging from 95% to 100%). Additionally, the functional standardized assessments such as the Canadian Occupational Performance Measure (COPM) garnered notable awareness, with 78% of participants indicating familiarity, whilst the Pediatric Evaluation of Disability Inventory (PEDI) was known to 29% of participants. The Block and Box Test (hand function standardized assessment) were recognized by only n =12 knew this standardized assessment. These outcomes provide insights into the participants' knowledge landscape regarding standardized assessments for children with CP. The widespread awareness of visual perception standardized assessments; functional standardized assessments in the study has strong familiarity with literature that provides the commonly utilized standardized assessment tools with CP children, as one needs to be aware of the standardized assessment to decide if they should use it or not (Howard, 2002; Hanna *et al.*, 2007; Saleh *et al.*, 2008; Duncan and Murray, 2012; Wright and Majnemer, 2014; James, Ziviani and Boyd, 2014; Rosenbaum, 2015; Ego *et al.*, 2015; O'Connor *et al.*, 2016; Anaby *et al.*, 2017; Schiariti *et al.*, 2017; Pavão *et al.*, 2017; Geanina and Stefan, 2019; Peters *et al.*, 2019). There is limited literature of the Block and Box test, where the block and box test is a tool that was used in clinical researches as seen in Peter et al systematic research, whilst in

Pavao et al the standardized assessments is recommend to be used when assessing motor abilities in CP children (Pavão *et al.*, 2017; Peters *et al.*, 2019)

The international context, as reflected in existing literature from Australia, the UK, Canada, and the USA, aligns with the findings of the current study regarding the widespread awareness of visual perceptual standardized assessments (Howard, 2002; Hanna et al 2007; Saleh *et al.*, 2008; Wright and Majnemer, 2014; Ego *et al.*, 2015; O'Connor *et al.*, 2016; Anaby *et al.*, 2017; Schiariti *et al.*, 2017; Peters *et al.*, 2019). The familiarity of occupational therapists with visual perception standardized assessments on a global scale is consistent with international trends (Howard, 2002; Hanna et al 2007; Saleh *et al.*, 2008; Wright and Majnemer, 2014; Ego *et al.*, 2015; O'Connor *et al.*, 2016; Anaby *et al.*, 2017; Schiariti *et al.*, 2017; Peters *et al.*, 2019). There was a similar pattern of the number of occupational therapists that aware of the functional standardized assessment internationally and in this current study (Hanna *et al.*, 2007; Saleh *et al.*, 2008; Wright and Majnemer, 2014; James, Ziviani and Boyd, 2014; Rozkalne and Bertule, 2014; O'Connor *et al.*, 2016; Anaby *et al.*, 2017; Pavão *et al.*, 2017; Schiariti *et al.*, 2017; Geanina and Stefan, 2019; Peters *et al.*, 2019). It is important to exercise caution when interpreting evidence related to the COPM and PEDI, as awareness of these tools are notably more widespread in certain countries, such as the USA, UK, Netherlands, Norway, Germany, and Australia (Hanna *et al.*, 2007; Saleh *et al.*, 2008; Wright and Majnemer, 2014; James, Ziviani and Boyd, 2014; Rozkalne and Bertule, 2014; O'Connor *et al.*, 2016; Anaby *et al.*, 2017; Pavão *et al.*, 2017; Schiariti *et al.*, 2017; Geanina and Stefan, 2019; Peters *et al.*, 2019).There is limited literature that shows the awareness and use of the visual perceptual standardized assessments and functional standardized assessment in South Africa as compared to the above countries mentioned.

In terms of the hand function standardized assessment, the Block and Box test is the recommended standardized assessment listed on the HPCSA list. Yet, there is limited literature locally and internationally reporting on the use of the Block and Box test as a common assessment for assessing children with CP (Pavão *et al.*, 2017; Peters *et al.*, 2019). The difficulty in finding research on the Block and Box Test suggests that the current study's findings of low levels of awareness may be reflected in the global community as well.

In conclusion, the findings of this study raise a concern regarding the potential limitations imposed on occupational therapists' ability to justify a functional focus of therapy when there is a lack of awareness of certain functional standardized assessments. Existing literature emphasizes the pivotal role of awareness in the utilization of standardized assessments, with implications for the justification and application of functional therapy approaches (Chiarello *et al.*, 2011; Wright and Majnemer, 2014; WFOT, 2021).The recognition that awareness significantly influences the utilization of standardized assessments underscores the importance of targeted efforts to enhance occupational therapists' knowledge of a diverse array of assessment tools. A lack of awareness may inadvertently restrict the therapeutic options available to practitioners, potentially hindering their capacity to tailor interventions to the unique needs of children with CP. It is crucial to note, however, that while awareness serves as a foundational factor influencing the use of standardized assessments, the mere knowledge of a particular tool does not guarantee its application in practice. Various factors, such as training, accessibility, and perceived relevance to individual cases, contribute to the actual utilization of assessment tools (Chiarello *et al.*, 2011; Wright and Majnemer, 2014; WFOT, 2021).Therefore, interventions aimed at improving awareness should be complemented by strategies addressing the barriers to implementation, fostering a comprehensive approach to enhancing the integration of functional assessments into occupational therapy practice.

5.4 Current implementation of standardized assessments

The second objective of the study aimed to investigate the prevailing implementation of standardized assessments with children diagnosed with CP. The noteworthy observation from the current study is that visual perceptual standardized assessments are the most commonly utilized standardized assessments among participants. At least 60% and above of the different samples reported implementing a visual perceptual standardized assessments in their occupational therapy practices. In contrast, the utilization of functional standardized assessments was marked with high prevalence, it is important to note that the sample of the PEDI (n=2) and COPM (n=6) where there is high percentage usage but the sample are very small in comparison to the visual perceptual standardized assessments (Beery VMI5th/6th edition (n= 29); TVPS 3 /4 (n=22); DTVP-3 (n=28); whilst MVPT-3 is an outlier of n=6.

This finding underscores a significant emphasis on visual perceptual assessments in the occupational therapy practices of participants. The elevated use of visual perceptual tests may reflect a prevalent focus on aspects related to visual processing and cognitive function in the assessment and intervention processes for children with CP (Desai and Rege, 2005; Ego *et al.*, 2015; Berelowitz and Franzsen, 2021). However, the comparatively limited implementation of functional tests raises questions about the extent to which occupational therapists are incorporating assessments that directly evaluates functional abilities and activities of daily living in their practice. The observed discrepancy between the high use of visual perceptual tests and the limited use of functional tests prompts considerations about the comprehensiveness and client-centeredness of assessments conducted with children with cerebral palsy but to note that the samples varied for each standardized assessments and results should be taken with caution. A more balanced incorporation of both visual perceptual and functional assessments may offer a more holistic understanding of the child's abilities and needs, enabling tailored and effective intervention strategies (Howard, 2002; Hanna et al 2007; Saleh *et al.*, 2008; Wright and Majnemer, 2014; Ego *et al.*, 2015; O'Connor *et al.*, 2016; Anaby *et al.*, 2017; Schiariti *et al.*, 2017; Peters *et al.*, 2019). The prevalence of visual perceptual standardized assessments of choice when working with children with cerebral palsy is not only evident in the current study but also resonates internationally, as supported by existing literature (Howard, 2002; Hanna et al 2007; Saleh *et al.*, 2008; Wright and Majnemer, 2014; Ego *et al.*, 2015; O'Connor *et al.*, 2016; Anaby *et al.*, 2017; Schiariti *et al.*, 2017; Peters *et al.*, 2019). This global pattern underscores the significance placed on assessing visual perceptual skills in the evaluation processes for children with CP. This may be because children with CP often present with co-morbidities, such as vision abnormalities and/or visual perceptual skills impairment, which can impact their abilities, particularly in activities related to reading and writing (Stiers *et al.*, 2002; Desai and Rege, 2005; Patricia A. Burtner, Aimee Dukeminier, Lynette Ben, 2006; Kozeis *et al.*, 2007; Ego *et al.*, 2015; Berelowitz and Franzsen, 2021).The prevalence of visual perceptual assessments is particularly pertinent in the context of working in Lsen schools in comparison to private practices. These clinical settings, may contribute to the prominence of visual perceptual standardized assessments, given the importance of reading and writing skills in educational contexts (Desai and Rege, 2005; Berelowitz and Franzsen, 2021). The study by O'Connor et al. (2016), which systematically reviewed evidence-based assessments practiced by allied health practitioners for children with CP, provides additional context (O'Connor et al., 2016).

O’Connor et al literature has shown the standardized assessments that are being used and the level of use, where the visual perceptual standardized assessments are being highly used by allied health practitioners compared to functional standardized assessments

(O’Connor *et al.*, 2016). Therefore, the observed patterns (internationally and study specific) align with the broader goal of tailoring assessments to address the specific challenges and requirements of children with CP, particularly in educational settings. However, there is also a danger in only using visual perceptual standardized assessments, as this may narrow the focus of occupational therapy unnecessarily.

The International Classification of Functioning, Disability, and Health (ICF) framework provides a comprehensive perspective on the impact of CP on children, considering both comorbidities and the potential impairments in body structure and function

(Majnemer *et al.*, 2010; Playford, 2015; Anaby *et al.*, 2017; Schiariti *et al.*, 2017; Abdel Malek, Rosenbaum and Gorter, 2020; Africa, Human and Tshabalala, 2023). According to this framework, such impairments may result in activity limitations and participation restrictions in various life domains, including education, leisure, and play, ultimately influencing the quality of life for children with CP (Majnemer *et al.*, 2010; Anaby *et al.*, 2017; Schiariti *et al.*, 2017; Abdel Malek, Rosenbaum and Gorter, 2020; Africa, Human and Tshabalala, 2023).Despite this understanding, this study the functional standardized assessment showed discrepancy of use and awareness, where PEDI had low awareness(n=12) but high use and COPM had high awareness(n=32) but low use, but it is important to note that PEDI(n=2) had a small sample size in comparison to COPM(n=6) for use. It can be assumed that the overall use of functional assessment is low as international studies have also had similar low usage of the functional standardized assessments (O’Connor *et al.*, 2016).

Evidence-based assessments are essential for establishing the credibility of the occupational therapy profession(Saleh *et al.*, 2008; Mulligan, 2014; O’Connor *et al.*, 2016, 2017; Anaby *et al.*, 2017; Peters *et al.*, 2019).Functional standardized assessments, such as the COPM and the PEDI , focus on evaluating participation in everyday life tasks (Dumas, 2001; Carswell et al., 2004; Haley et al., 2010; Livingston et al., 2011; Wright and Majnemer, 2014; Geanina and Stefan, 2019; Shairiti 2017; Anaby 2017;Abdel Malek, Rosenbaum and Gorter, 2020). The literature highlights that the use of functional assessments aligns with a family-centered and holistic approaches, allowing for a comprehensive understanding of the child as a whole.

Functional assessments enable therapists to identify strengths and barriers that may impact a child's ability to participate in daily life functions (Dumas, 2001; Carswell et al., 2004; Haley et al., 2010; Livingston et al., 2011; Wright and Majnemer, 2014; Geanina and Stefan, 2019; Shairiti 2017; Anaby 2017;Abdel Malek, Rosenbaum and Gorter, 2020). This approach is fundamental to the occupational therapy scope, where the assessment of a child's capabilities and limitations in everyday life is pivotal.

Understanding how children with CP participate in essential activities like education, leisure, and play is crucial for their overall development (Hanna *et al.*, 2007; Chiarello *et al.*, 2011; Duncan and Murray, 2012; Wright and Majnemer, 2014; Mulligan, 2014; Abbaskhanian *et al.*, 2015; Rosenbaum, 2015; O'Connor *et al.*, 2016; Power *et al.*, 2018; Bourke-Taylor *et al.*, 2018; Peters *et al.*, 2019; Pourahmad, Balvardi and KavousiPour, 2021; Africa, Human and Tshabalala, 2023).Participation in these occupations not only facilitates the formation of friendships and the acquisition of knowledge and skills but also fosters creativity(Africa, Human and Tshabalala, 2023). Assessing and leveraging the strengths of children with CP through functional standardized assessments can enhance their engagement in meaningful occupations, promoting motivation and overall well-being (Majnemer *et al.*, 2010; Wright and Majnemer, 2014; Bourke-Taylor *et al.*, 2018). It's essential to recognize that while occupational therapists may not always utilize standardized assessments to evaluate participation in everyday tasks, they are still actively assessing a child's participation in these tasks through informal assessments to gauge how well a child engages in daily activities. (Mulligan, 2014). The use of evidence-based assessments in literature refers to using research-supported standardized assessments (Saleh et al., 2008; Mulligan, 2014; O'Connor et al., 2016, 2017; Anaby et al., 2017; Peters et al., 2019). This gives us clear, objective information about a child's strengths and weaknesses. They also help track progress over time and see how interventions or programs affect them (Saleh et al., 2008; Mulligan, 2014; O'Connor et al., 2016, 2017; Anaby et al., 2017; Peters et al., 2019), thus functional standardized assessments are needed.

The limited awareness and utilization of the block and box test among participants in the current study are attributed to the absence of this standardized assessment in their clinical settings, as seen in the results. This finding aligns with the literature, which also indicates a scarcity of information on the use of the block and box test, both in the global North and

South Africa (Pavão *et al.*, 2017; Peters *et al.*, 2019). There is limited literature supporting the application of the block and box test for children with CP further raising questions about its inclusion in the list of standardized assessments recommended by the Health Professions Council of South Africa (HPCSA) for neurological impaired children (HPCSA, 2018). The limited literature support for the block and box test may suggest a gap in the evidence base regarding its efficacy and relevance for assessing children with CP. The absence of this standardized assessment in clinical settings, coupled with the lack of literature support, underscores the importance of critically evaluating and updating standardized assessment in the field of occupational therapy. The inclusion of assessments in official guidelines, such as those provided by the HPCSA, warrants careful consideration and alignment with current evidence to ensure the provision of effective and evidence-based interventions.

In conclusion the low usage of functional standardized assessments in South Africa, as revealed in the current study, raises concerns given the significant benefits associated with these assessments. Functional assessments, such as the PEDI and the COPM, play a crucial role in allowing children with CP, their parents, and occupational therapists to recognize the child's strengths and identify limitations that may impact their engagement in meaningful activities. The gap between the usage rates and awareness of functional standardized assessments such as the PEDI (n=12, awareness; n=2, usage, 100% use) and COPM (n=32, awareness; n=6, 50% use) among participants suggests that factors beyond awareness may influence the utilization of these assessments and it goes for visual perceptual standardized assessments. This discrepancy highlights the presence of additional factors that contribute to the decision-making process regarding which assessments to use, with availability emerging as a potential influencing factor.

The lack of availability of certain tests, as evidenced by the low usage rates despite awareness, underscores the concept of clinical utility in the context of standardized assessments. Clinical utility encompasses the practicality, relevance, and feasibility of using a particular assessment tool in real-world clinical settings (Smart, 2006; Glover and Albers, 2007). In this instance, the limited use of the COPM, despite awareness, may be attributed to factors such as time constraints, complexity, or perceived challenges in incorporating the tool into routine practice (Howard, 2002; Hanna et al 2007; Saleh et al, 2008; O'Connor 2017). These findings emphasize the need to consider not only awareness but also practical aspects

such as the availability and ease of use of assessment tools when evaluating their integration into occupational therapy practices. Addressing barriers to the clinical utility of standardized assessments is essential for optimizing their impact on the assessment and intervention processes for children with CP in South Africa.

5.5 Relevance of standardized assessments in South African context

The final objective of the study was to determine participants' perceptions on the clinical utility and relevance of the standardized assessments within the South African context by commenting specifically on accessibility, appropriateness, practicality and acceptable use. Each of these characteristics will be discussed separately below with a conclusion on the relevance at the end of the section.

5.5.1Accessibility of standardized assessments

Accessibility of standardized assessment focuses on the availability of these assessments in South Africa context and factors that influences this availability (Smart, 2016). The accessibility of standardized assessments is a crucial factor influencing their use in occupational therapy practice (O' Connor, 2016). The findings of the current study illuminate that while there is a correlation between access and use, barriers beyond availability contribute to the underutilization of certain assessments. The majority of participants reported having access to at least one visual perceptual standardized assessment (non motor component) and at least one visual perceptual standardized assessment (motor and non motor component), aligning with the observed prevalence in their use. In contrast, accesses to functional standardized assessments were limited, and none of the participants had access to the hand function standardized assessment. This discrepancy highlights a significant barrier to the use of functional assessments in practice. Examining specific assessments provides further insights. For instance, the COPM had a reported availability of n=6, but only three of the participants implemented it. Similarly, the Beery VMI showed a reported access of n=29, yet only twenty-five of the participants reported being used. Notably, all participants with access to the PEDI (n=2) reported using it in practice, suggesting that when access is facilitated, uptake is more likely.

In conclusion these findings underscore the multifaceted nature of barriers to the use of standardized assessments. While access is a fundamental prerequisite, other factors, such as

familiarity, perceived usefulness, and ease of integration into clinical practice, play pivotal roles (Howard , 2002; Smart, 2006; Glover and Albers, 2007; Hanna et al 2007 ; Saleh et al , 2008; O'connor 2017) The variation in reported use despite availability implies that overcoming barriers to access alone may not be sufficient to enhance the utilization of certain assessments.

5.5.1.1. Challenges influencing accessibility

The most consistent challenge identified across all standardized assessments hindering their availability and use in South African clinical settings was cost. A closer look at the results showed that participants faced significant barriers in obtaining standardized assessments even in the realm of visual perception, which led to either non-use of tests, or the use of out dated/old versions of standardized assessments (which could further compromise the accuracy or relevance of the assessment findings). Cost is a concern worldwide with many studies reporting difficulties in obtaining tests because of the money involved (Howard, 2002; Smart, 2006; Glover and Albers, 2007; Hanna *et al.*, 2007; Saleh *et al.*, 2008; Duncan and Murray, 2012; O'Connor *et al.*, 2016, 2017). Notably, the fact that these assessments are priced in US dollars, as highlighted in Peters et al. (2019), underscores a critical aspect of the problem as any change in exchange rates can significantly increase the cost of these assessments (Peters *et al.*, 2019). Considering the financial constraints faced by clinical settings across diverse economic contexts, the proposition of developing locally-tailored and cost-effective standardized assessments for South African occupational therapists holds merit (Howard, 2002; Smart, 2006; Glover and Albers, 2007; Hanna *et al.*, 2007; Saleh *et al.*, 2008; Duncan and Murray, 2012; O'Connor *et al.*, 2016, 2017). This approach aligns with the principles of cultural competence and affordability, ensuring that assessments are not only relevant to the South African context but also accessible to a broader spectrum of occupational therapists, regardless of their financial resources.

The influence of the clinical setting on access to and utilization of standardized tests emerges as a critical factor in the current study. Participants express reservations about the practicality of visual perceptual tests and functional tests within their specific clinical settings. To note this practicality is related to administrative burden rather than appropriateness to clinical population. The administrative burden was time consuming, where the standardized

assessments take time (Howard, 2002; Smart, 2006; Glover and Albers, 2007; Hanna *et al.*, 2007; Saleh *et al.*, 2008; Duncan and Murray, 2012; O'Connor *et al.*, 2016, 2017) This highlights the interconnected nature of administration burden, clinical protocols, and the practicality of assessments within diverse occupational therapy environments(Howard, 2002; Smart, 2006; Glover and Albers, 2007; Hanna *et al.*, 2007; Saleh *et al.*, 2008; Duncan and Murray, 2012; O'Connor *et al.*, 2016, 2017). The reluctance to incorporate visual perceptual and functional standardized assessments may stem from the perception that these assessments may not align with the unique demands and protocols of certain clinical settings (Howard, 2002; Smart, 2006; Glover and Albers, 2007; Hanna *et al.*, 2007; Saleh *et al.*, 2008; Duncan and Murray, 2012; O'Connor *et al.*, 2016, 2017)This emphasizes the importance of tailoring assessments to the specific needs and characteristics of different occupational therapy contexts in South Africa. Addressing this issue may require a nuanced approach, involving collaboration between researchers, clinicians, and policymakers to develop assessments that strike a balance between comprehensiveness and feasibility within various clinical settings. Furthermore, the development of guidelines that assist therapists in selecting assessments based on the specific needs and constraints of their practice environments may also help to improve the situation.

It is important to note that hand function assessments block and box test is not available due to cost of the standardized assessment, not being available, being an old standardized assessments where not applicable for their setting and prefer other tests as the participants had expressed. In addition there is limited literature of using the block and box test with children with CP.

The findings of the current study underscore the intricate interplay of various factors that collectively influence the accessibility of standardized tests within diverse clinical settings. Key determinants identified include cost; the time required for administration, and the perceived appropriateness of the assessment tools within specific occupational therapy contexts. Addressing these factors necessitates a comprehensive and collaborative approach. Initiatives aimed at developing cost-effective, culturally relevant assessments, streamlining assessment processes to enhance efficiency, and providing targeted training on the use of assessments in different settings can collectively contribute to improving the accessibility and applicability of standardized tests within the South African occupational therapy landscape.

5.5.2Appropriateness of standardized assessments

The clinical utility of standardized assessments extends beyond their mere availability and accessibility; it hinges on their appropriateness for the specific population under consideration (Smart, 2006). The clinical utility of standardized assessments extends beyond their mere availability and accessibility; it hinges on their appropriateness for the specific population under consideration. There are critical questions that need to be raised about the alignment of existing assessments with the unique needs and characteristics of children with CP in the South African context. The perceived appropriateness for standardized assessments may stem from various factors, including cultural considerations, contextual relevance, and the comprehensiveness of the assessments in capturing the intricacies of CP-related challenges. However, it is noteworthy that participants, reported on components that highlight the standardized assessments appropriateness. These include the identification of deficits, strengths and weaknesses, as well as the capacity to pinpoint specific skills that children with CP possess or lack.

Considering the definition of CP, which involves terms such as "activity limitations" and highlights difficulties in participating in meaningful occupations due to physical disabilities affecting movement (Rosenbaum et al., 2007; Abbaskhanian et al., 2015; Vitrikas et al., 2020), the ICF framework proves particularly relevant. The functional standardized assessments, such as the PEDI and the COPM, align with the ICF components of body function, activities, and participation and allow comprehensive assessment (Wright and Majnemer, 2014; Rozkalne and Bertule, 2014; Anaby et al., 2017; Schiariti et al., 2017). Notably, the ICF framework provides a robust foundation for assessing the appropriateness of standardized assessments for children with CP. It allows therapists to evaluate how well the assessments address the specific challenges encompassed by activity limitations and participation restrictions outlined in the CP definition (Wright and Majnemer, 2014; Rozkalne and Bertule, 2014; Anaby et al., 2017; Schiariti et al., 2017).

Visual perceptual standardized assessments have not extensively been discussed in terms of appropriateness within the context of children with CP, but has been recognized by Anaby et al. (2017) as valuable tools for assessing the body function and structure of individuals with CP (Anaby *et al.*, 2017).While there may be limited literature specifically addressing the

appropriateness of visual perceptual assessments for children with CP, Anaby et al.'s work highlights their potential utility in understanding the visual and perceptual challenges that individuals with CP may face (Anaby *et al.*, 2017). In the absence of an extensive body of literature on this specific topic, it becomes important to draw insights from related research areas (Stiers et al., 2002; Patricia A. Burtner, Aimee Dukeminier, Lynette Ben, 2006; Kozeis et al., 2007; Ego et al., 2015; Berelowitz and Franzsen, 2021). Where Patricia et all discuss about the visual perceptual assessments are designed to evaluate an individual's ability to interpret and make sense of visual information, which can be crucial in various daily activities (Patricia A. Burtner, Aimee Dukeminier, Lynette Ben, 2006) For children with CP, who may experience challenges related to movement and coordination, understanding their visual perception abilities becomes relevant to address holistic aspects of their functioning (Patricia A. Burtner, Aimee Dukeminier, Lynette Ben, 2006).Berelowitz and Franzsen study was to determine the specific visual perceptual impairment in different subtypes of CP children in South Africa using the TVPS-3/ 4 (Berelowitz and Franzsen, 2021). Ego et al 2015 study was a systematic review of visual impairment of children with CP where they assess frequency of the visual impairment and its relationship with patient characterises and the TVPS- 3/ 4 and DVTP -2 /3 was reportedly used in their study (Ego *et al.*, 2015). Kozeis et al study was on investigating the visual function and visual perception in CP children by using MVPT-R (Kozeis *et al.*, 2007). Steirs et al investigated visual perceptual impairment in random sample of children with CP whilst using the Beery VMI out dated as did not specify the version as this study is in 2002(Stiers *et al.*, 2002). This literature at least showed investigation into visual perception of CP children either using the non-motor visual perceptual standardized assessment (TVPS- 3/ 4 and MVPT-R) or the non-motor and motor visual perceptual standardized assessment (DTVP-2 /3 and Berry VMI (out dated version) or Berry VMI 5th/ 6th edition).

The limited literature on visual perceptual assessments in the context of CP may indicate an area that warrants further exploration and research. Future studies could delve deeper into the appropriateness and effectiveness of visual perceptual assessments for children with CP, considering factors such as the potential impact on their daily activities, learning, and overall participation. Additionally, exploring the perspectives of therapists and caregivers on the relevance of visual perceptual assessments in the CP population could provide valuable insights into their practical application and utility in diverse settings.

The recognition of functional standardized assessments were deemed more appropriate in the literature which aligns with the holistic nature of these assessments, allowing for the identification of impairments and the overall level of functioning in children with c CP (O'Connor *et al.*, 2016). However, the study participants have indicated that both functional and visual perceptual standardized assessments are perceived as appropriate for CP children.
The question of practicality arises, highlighting the need to assess not only the appropriateness but also the feasibility and ease of use of these assessments in real-world clinical settings. Practicality encompasses factors such as the time required for administration, ease of interpretation, and the extent to which these assessments align with the existing workflow and demands of occupational therapy practice (Smart, 2006). Understanding the practicality of these assessments is essential for informing evidence-based and user-friendly approaches in occupational therapy practice. By bridging the gap between theoretical appropriateness and practical utility, researchers and practitioners can enhance the meaningful application of standardized assessments in the care and support of children with CP.

5.5.3Practicality of standardized assessments

The practicality of standardized assessments is multifaceted, encompassing considerations such as ease of use, interpretability of results, and suitability for children with CP, and administrators' skills (Smart, 2006). Participants in this study indicated that the functional standardized assessments (the PEDI (n=2) and the COPM (n=3)) were feasible for implementation, but reported suitability differed, with one participant reporting that the PEDI was suitable for children with CP whereas none of the participants reported that the COPM was suitable for this population.

Participants reported the perceived practicality through ease of implementation and reliability and validity of standardized assessments for all the visual perceptual standardized assessments. There was small sample of the participants that found the visual standardized assessment to not be practical due to them being time consuming (Beery VMI 5th/6th edition n=4 (25%); DTVP-3 n=8 (50%) and TVPS-3/ 4 n=6 (50%) whilst MVPT-3 n=2, only one participants reported not appropriate for client.

Only one participant reported a lack of confidence in administering the COPM n=3 (33%) due to poor administration skills, whilst visual perceptual standardized assessments there was none had reported, hence significance of administration skills is underscored by the adverse impact of poor skills on the usability of standardized assessments (Hanna *et al.*, 2007; Saleh *et al.*, 2008; O'Connor *et al.*, 2016, 2017). Occupational therapists exhibiting inadequate administration skills often attribute this to a lack of training on the assessment tool and financial constraints hindering their ability to undergo proper training (Hanna *et al.*, 2007; Saleh *et al.*, 2008; O'Connor *et al.*, 2016, 2017). Consequently, these factors adversely affect the confidence of occupational therapists in administering the standardized assessments (Hanna *et al.*, 2007; Saleh *et al.*, 2008; O'Connor *et al.*, 2016, 2017) and may lead to standardized assessments not being used in the clinical setting.

The administrative burden, encompassing both time constraints and poor administrative skills for specific clinical settings, emerged as a significant barrier in the current study. Administration burden, as described in the literature, arises when clinical settings have protocols requiring a certain number of client interactions per day(Howard, 2002; Smart, 2006; Glover and Albers, 2007; Hanna *et al.*, 2007; Saleh *et al.*, 2008; Duncan and Murray, 2012; O'Connor *et al.*, 2016, 2017). This necessitates efficiency in the assessment process, making time-consuming tests impractical, especially in high client-to-therapist ratio scenarios (Howard, 2002; Bennett et al., 2003; Hanna et al., 2007; Saleh et al., 2008; Duncan and Murray, 2012; James, Ziviani and Boyd, 2014; O'Connor et al., 2017). Visual perceptual tests, which typically take between 10 and 40 minutes to administer, and functional assessments with durations ranging from 20 to 60 minutes, present challenges within the context of clinical efficiency (James, Ziviani and Boyd, 2014; Rozkalne and Bertule, 2014; Pavão et al., 2017; Harris, Franzsen and De Witt, 2021). The severity of CP adds another layer of complexity, potentially impacting the time required for assessment (James, Ziviani and Boyd, 2014; Rozkalne and Bertule, 2014; Pavão et al., 2017; Harris, Franzsen and De Witt, 2021). . The participants in the current study highlighted the time-consuming nature of these assessments as a significant contributor to their limited use, emphasizing the practical challenges faced in real-world clinical settings. This finding underscores the importance of developing assessments that align with the time constraints and operational demands of South African occupational therapy practices.

Finally, the last aspect of clinical utility is the relevance of standardized assessments to the context, which is crucial for obtaining accurate results within the norms of the specific context, rendering the assessments acceptable (Smart, 2006). This contextual relevance ensures that the assessments align with the unique needs and characteristics of the population being evaluated, contributing to the overall appropriateness and utility of the assessment process. Standardized assessments need to be relevant to the context as this allows for more accurate results within the norms of the context if appropriate, thus being acceptable.

5.5.4Acceptable use of standardized assessments

The acceptability of standardized assessments is contingent upon societal perceptions regarding their reliability and relevance (Smart, 2006). Within the South African context, there were mixed results reported by the participants in the study. Unfortunately, the small percentage for particularly the functional standardized assessments makes it difficult to interpret the results. However, despite these small percentages, those participants who did use the standardized assessments, tended to perceive both the functional and the visual perceptual standardized assessments as relevant for use in the CP population. In contrast, the block and box test received minimal acknowledgment as none of the participants had access to it, and only n=12 were aware of its existence.

A number of factors play a role in determining the relevance of a standardized assessment, including the types of norms, cultural sensitivity, as well as the validity and reliability of an assessment (Howard et, al 2002). Interestingly, despite overall perception within the sample that both functional and visual perceptual standardized assessments are relevant in the South African context, perceived cultural sensitivity was low, particularly for the visual perceptual assessments. This links closely with the fact that most standardized assessments do not have norms for South African populations. Remarkably, there was a small sample of participants identified the PEDI, Beery VMI 5th/6th edition, and DTVP-3 as relevant in the South African context. However, a concern arises as the norms for these assessments are derived from the global north (Haley *et al.*, 2010; Pavão *et al.*, 2017). Participants expressed divergent views on the reliability and validity of the COPM and PEDI. Contrary to literature, the PEDI is more reliable and valid in comparison to the COPM (James, Ziviani and Boyd, 2014; Pavão *et al.*, 2017; Schiariti *et al.*, 2017). Participants in this study found the COPM more reliable

and valid than the PEDI, emphasizing the importance of contextual considerations in assessment tool evaluation.

Regarding cultural sensitivity, participants indicated that visual perceptual standardized assessments were perceived as less culturally sensitive, while functional tests were considered more culturally sensitive but to note that the n samples differed needs to be taken with caution. Despite limited literature on the cultural sensitivity of standardized assessments, Duncan et al. have highlighted the potential difficulties clients may encounter in engaging with and completing such tools in the presence of cultural sensitivity issues (Duncan and Murray, 2012). The participants in this study have echoed concerns about cultural sensitivity, emphasizing the importance of addressing these considerations in the use of standardized assessments.

5.5.5 Conclusion of clinical utility

In conclusion, this study found a number of perceived facilitators and barriers with regards to the clinical utility of functional, visual perceptual and hand function
Standardized assessments. Overall, clear conclusions about clinical utility proved elusive and not one standardized assessment stood out as clearly more useful than the other. Nonetheless, the participants reported important issues of availability, cost, administration, validity and reliability and cultural sensitivity.

5.6 Other standardized assessments

This study set out to investigate the assessments listed by the HPCSA. However, there are many other standardized assessments available for use by occupational therapists in South Africa. Therefore, participants were asked to comment on other assessments that might be more useful than the ones mentioned in this study. The most common suggestions were GMFCS, MACS, GMFM, QUEST, and Abilhands kids.

The other standardized assessments were also seen in literature, where the tools are commonly employed in the evaluation of children with cerebral palsy (Voorman *et al.*, 2006; Livingston *et al.*, 2011). Abilhands kids, specifically designed for hand function assessment in CP children, has been documented in the literature, drawing comparisons with the Block

and Box test (Voorman *et al.*, 2006; Livingston *et al.*, 2011). It is noteworthy that the GMFCS and MACS, being classification tools integral to assessing every child with CP, were not explicitly included in this study due to their mandatory nature. However, the GMFM and QUEST, recognized tools in the evaluation of CP children, merit consideration for potential inclusion in the HPCSA standardized assessments for occupational therapists in South Africa. It is advisable that further research be conducted to explore the applicability and effectiveness of these tools within the South African context.

There was limited evidence of the block and box test, which could bring one to assume that the block and box test is not an appropriate tool to be used for CP children and that there may not be any other hand function standardized assessment too for CP children.

5.7 Hand function standardized assessment

In children diagnosed with CP, the upper limbs are often affected(Arnould, Bleyenheuft and Thonnard, 2014; Basu *et al.*, 2015). Hand function, encompassing the ability to perform tasks requiring both hands, is crucial for the majority of daily activities (Arnould, Bleyenheuft and Thonnard, 2014; Basu *et al.*, 2015).CP may restrict the domain of activities outlined in the International Classification of Functioning, Disability, and Health (ICF), particularly those involving essential tasks like eating, drinking, or dressing that rely on hand function (Arnould, Bleyenheuft and Thonnard, 2014; Basu *et al.*, 2015).Numerous activities necessitate coordinated hand movements, with the non-dominant hand typically providing support while the dominant hand executes precise actions (Basu *et al.*, 2015). Recognizing the significance of evaluating hand function in CP children, a classification tool known as the Manual Ability Classification System (MACS) was developed (McConnell, Johnston and Kerr, 2011). This system, a fine motor component of the Gross Motor Function Classification System (GMFCS), grades the severity of hand function impairment by observing how CP children utilize their upper limbs for manual tasks(McConnell, Johnston and Kerr, 2011).

Despite the Health Professions Council of South Africa (HPCSA) recommending the block and box test for hand function assessment (HPCSA, 2018), there's a notable lack of awareness and utilization of the block and box test as seen in the study. This raises questions about whether the block and box test should be included in the recommended standardized

assessments list and may highlight the need for further research into standardized assessments for evaluating hand function in CP children.

5.7Conclusion of discussion

In summary, the study's participant's demographics, while relatively a small sample, reflects patterns consistent with existing literature on occupational therapists working with children with CP in South Africa. Notably, participants predominantly work in private practice and LSEN schools, with the majority possessing less than a decade of experience in paediatric care, specifically with children diagnosed with CP.

A noteworthy finding pertains to the participants' heightened awareness of visual perceptual standardized assessments compared to functional assessments. The sample needs to be noted, as the sample got smaller towards the end of the online survey as depicted at Appendices J-P. Where the COPM exhibits a high awareness, contrasting with the PEDI, which has a significantly lower awareness, but utilization was less for both standardized assessments. According to international literatures, this awareness pattern resonates, indicating a broad acknowledgment of these standardized assessments within the occupational therapy community. However, the study underscores that awareness alone does not guarantee utilization; rather, other factors influence the decision to employ these assessments.

Clinical utility emerges as a crucial factor impacting the choice of standardized assessments. The study reveals that practical considerations, including cost, time constraints, and appropriateness for clinical settings, significantly affect accessibility. Age restrictions inherent in some assessments, such as PEDI; contribute to their limited applicability in certain clinical settings. Additionally, discrepancies in perceptions of appropriateness for clients underscore potential measurement errors and the need for nuanced evaluation criteria.

In conclusion, the study's findings highlight the importance of a collaborative approach to the development of indigenous standardized assessments in South Africa. Engaging local experts, clinicians, and researchers can lead to assessments that address cultural, linguistic, and socioeconomic factors, ensuring cost-effectiveness and cultural sensitivity. This process fosters a sense of ownership and relevance among occupational therapists, aligning

assessments with the diverse needs and nuances of the South African population. Further research could explore the utilization of other recommended assessments and their impact on occupational therapy practices for children with CP in South Africa.

5.8 Limitations of study

1. **Questionnaire Design**: The study employed a researcher-developed questionnaire rather than utilizing a pre-existing and validated tool, potentially impacting the robustness of measurement. The questionnaire design also meant that some questions were answered by only a very few participants, limiting the conclusions that could be drawn particularly regarding functional and hand function standardized assessments.

The limitations imposed by the questionnaire development were evident throughout the research. Thus, the importance of validity is needed, where validity is how well data is collected that covers the areas of the investigation (Taherdoost and Group, 2017). The assessment of validity is important in ensuring that collected data effectively addresses the study's objectives (Taherdoost and Group, 2017). There are four types of validity: content validity; construct validity criterion validity and face validity (Taherdoost and Group, 2017).

Content validity is the judgmental approach entails conducting literature reviews followed by evaluations from expert judges or panels. (Taherdoost and Group, 2017).

Construct Validity evaluates the degree to which a concept, idea, or behaviour (a construct) is accurately represented by its operationalization or translation into a measurable form (Taherdoost and Group, 2017).

Criterion validity assesses how well a measurement tool predicts or correlates with an external criterion or standard that is already established (Taherdoost and Group, 2017). It evaluates whether the scores obtained from the measurement tool align with some other measure or outcome that is considered valid (Taherdoost and Group, 2017). Essentially, criterion validity determines the extent to which the measurement tool accurately predicts or corresponds to an external criterion of interest (Taherdoost and Group, 2017).

Face validity, a subjective and superficial evaluation, is concerned with the perceived relevance, reasonableness, and clarity of the measuring tool (Taherdoost and Group, 2017). Face validity was used as discussed in previous chapter but this can be criticized as the branching of the questions were not notice by the experts. The participants evaluated the

questions on paper, not via the RedCAP link and answered questions to see if content was relevant to objectives. However, they were not asked to evaluate the flow of the questions and the branching nature of the questionnaire was not obvious in the paper version of the questionnaire. Furthermore, experts in research that could have given feedback on the branching and may have raised awareness of the problems of branching were not included in the testing of the questionnaire. Thus, despite conducting a face validity exercise with a small group, no remarks were provided regarding the numbering of questions or concerns about overlap. In the end, the problems with the questionnaire only manifested during the data analysis stage, casting doubt on the construct validity of some parts of the questionnaire focussed on clinical utility and limiting conclusions, particularly about the functional standardised assessments. This is a serious concern in survey research, and future researchers should consider all forms of validity during the questionnaire development phase (Goertzen, 2017; Taherdoost and Group, 2017).

Furthermore, testing questionnaires should be a rigorous process that includes completing the questionnaire in its research form (e.g. via RedCAP if that is the chosen platform), and strongly interrogates who would answer which questions as well as how the data will be represented in the analysis stage. This kind of interrogation could help eliminate some of the problems experienced in this research. Finally, the use of a pre-determined survey (already used in previous research) that has been made to evaluate standardized assessments could be very useful in eliminating questionnaire design problems and assisting in determining appropriate sample size (Goertzen, 2017). However, this is not always possible.

2. **Lack of Subtype Differentiation:** Cerebral palsy (CP) is a heterogeneous condition with distinct subtypes; however, the study did not differentiate standardized assessment use across these subtypes, limiting the granularity of clinical insights. It is possible that certain standardized assessments would be more useful with one subtype of CP than another and by not differentiating between subtypes, it may have been difficult for participants to give accurate opinions.

3. **Sample Representation:** The sample size and composition may not fully reflect the diversity within the population of therapists working with CP children, potentially impacting the generalizability of results. The total sample size was already small, and then with the

dividing up of the sample into even smaller groups, some questions ended up with only two or three respondents, making conclusions difficult. Thus, while overall sample size was achieved according to the original sample size calculation, the questionnaire design problems meant that sample size was not met for all the questions. This highlights the importance of interrogating questionnaire design as the more branching a questionnaire has, the larger the total sample size needs to be in order to maintain a reasonable number of participants in each smaller group.

Chapter 6

6.1 Conclusion

In conclusion, the imperative to develop indigenous standardized assessments for occupational therapy in South Africa necessitates a collaborative endeavour involving local experts, clinicians, and researchers. This collective effort is fundamental in addressing the intricate interplay of cultural, linguistic, and socioeconomic factors unique to the South African landscape. Through this collaborative process, assessments can be meticulously crafted to not only be cost-effective but also culturally sensitive, aligning with the diverse needs of the population.

The envisioned indigenous assessments have the potential to transcend financial constraints associated with existing tools, offering a pragmatic solution to the current challenges faced by occupational therapists. By being locally tailored, these assessments not only enhance affordability but also foster accessibility and cultural relevance. This, in turn, holds the promise of elevating the overall quality of assessment practices, thereby contributing to an improved standard of care for the diverse and dynamic populations served by South African occupational therapists working with children with CP.

Moreover, the development of these local assessments goes beyond the practical implications—it embodies a sense of ownership and relevance among South African occupational therapists. By incorporating local perspectives and acknowledging the contextual nuances of South Africa, these assessments become more than tools; they become meaningful instruments that resonate with the cultural tapestry of the nation.

In essence, the proposal to develop cost-effective, locally tailored standardized assessments is a transformative step towards ensuring that assessment practices align with the realities of South Africa. This initiative holds the potential to usher in a new era of inclusivity, accessibility, and cultural resonance in occupational therapy, reaffirming the commitment to providing high-quality care that is both locally grounded and globally informed

6.2 Clinical Recommendation

It would be recommended that their needs to be further research into standardized assessments that researchers find to be inappropriate for children with CP within the practice in occupational therapy. Further studies into the use of ICF in relation to standardized assessments used with CP children in South Africa.

6.3 Research recommendation

It would be recommended that there needs to be further studies on hand function standardized assessments for CP children as one needs to function with use of their hands (where possible). Further studies into functional and visual perceptual standardized assessments that are being used with different subtype of CP and investigate the relevance of the tools in South Africa. Development of standardized assessments that are relevant within the South African context via collaboration between researchers, clinicians, and policymakers to develop assessments that strike a balance between comprehensiveness and feasibility within various clinical settings. Furthermore, the development of guidelines that assist therapists in selecting assessments based on the specific needs and constraints of their practice environments may also help to improve the situation.

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Appendices

APPENDIX A: Face Validity questionnaire

(Face validity questions)
Please tick if yes or no

1. **Does the following questions answer the following objectives?**

Objective 1: To determine occupational therapists' awareness of standardized assessments within the cerebral palsy population aged 0-18 years of age in South Africa

Please note the questions with the word "standardised assessment" have been replaced with specific name of standardised assessment on the online survey.

<table>
<tr><td>Questions</td><td>Yes</td><td>No</td><td colspan="2">Do you understand the question?</td><td colspan="2">Does the question have relevance to the research topic?</td></tr>
<tr><td rowspan="3">1.Are you aware of the standardized assessment?</td><td rowspan="3"></td><td rowspan="3"></td><td>Yes</td><td>No</td><td>Yes</td><td>No</td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="2">If No please circle the reason
Misleading , double-barrelled or confusing
Other comments:</td><td colspan="2">Other comments :</td></tr>
<tr><td rowspan="3">2. How did you become aware of the standardised assessment?</td><td rowspan="3"></td><td rowspan="3"></td><td>Yes</td><td>No</td><td>Yes</td><td>No</td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="2">If No please circle the reason
Misleading , double-barrelled or confusing
Other comments:</td><td colspan="2">Other comments :</td></tr>
<tr><td rowspan="3">3.Is the standardized assessment available at your clinical setting?</td><td rowspan="3"></td><td rowspan="3"></td><td>Yes</td><td>No</td><td>Yes</td><td>No</td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="2">If No please circle the reason
Misleading , double-barrelled or confusing
Other comments:</td><td colspan="2">Other comments :</td></tr>
</table>

Objective 2 : To determine the current implementation of standardized assessments within the cerebral palsy population aged 0-18 years of age in South Africa

Questions	Yes	No	Do you understand the question?		Does the question have relevance to the research topic?	
1.Do you use the standardized assessment?			Yes	No	Yes	No
			If No please circle the reason Misleading , double-barrelled or confusing Other comments:		Other comments :	
2.How often do you use the standardized assessments?			Yes	No	Yes	No
			If No please circle the reason Misleading , double-barrelled or confusing Other comments:		Other comments :	
3.Why is the standardized assessment not in your clinical setting?			Yes	No	Yes	No
			If No please circle the reason Misleading , double-barrelled or confusing Other comments:		Other comments :	
4.Why don't you use the standardized assessment?			Yes	No	Yes	No
			If No please circle the reason Misleading , double-barrelled or confusing Other comments:		Other comments :	
5. Why do you use standardized assessments?			Yes	No	Yes	No
			If No please circle the reason		Other comments :	

			Misleading , double-barrelled or confusing Other comments:			
6.What factors affect your choice of standardized assessment to use with children with cerebral palsy?			Yes	No	Yes	No
			If No please circle the reason Misleading , double-barrelled or confusing Other comments:		Other comments :	

Objective 3: To determine the therapists' perception of the appropriateness, accessibility, practicality and acceptable use of standardized assessments for the cerebral palsy population aged 0-18 years of age in South Africa

Definitions

Appropriate: is the standardized assessment effective and relevant your clinical setting and to CP children in South Africa

Accessible: is the standardized assessment cost effective and available in South Africa context.

Practical: is the standardized assessment easy to implement, is it suitable for CP children in South Africa and time effective.

Acceptable : Is the standardized assessments relevant and valid in the South African context .

Questions	Yes	No	Do you understand the question?		Does the question have relevance to the research topic?	
1. Why is the standardized assessment not in your clinical setting?			Yes	No	Yes	No
			If No please circle the reason Misleading , double-barrelled or confusing Other comments:		Other comments :	
2. Why don't you use the standardized assessment?			Yes	No	Yes	No
			If No please circle the reason Misleading , double-barrelled or confusing Other comments:		Other comments :	
3. Why do you use standardized assessments?			Yes	No	Yes	No

			If No please circle the reason Misleading , double-barrelled or confusing Other comments:		Other comments :	
4. What factors affect your choice of standardized assessment to use with children with cerebral palsy?			Yes	No	Yes	No
			If No please circle the reason Misleading , double-barrelled or confusing Other comments:		Other comments :	
5. In your opinion is the standardized assessment relevant for South Africa?			Yes	No	Yes	No
			If No please circle the reason Misleading , double-barrelled or confusing Other comments:		Other comments :	
6. Why is the standardized assessment not relevant for South Africa context?			Yes	No	Yes	No
			If No please circle the reason Misleading , double-barrelled or confusing Other comments:		Other comments :	
7. Why is the standardised assessment relevant for South Africa?			Yes	No	Yes	No
			If No please circle the reason Misleading , double-barrelled or confusing Other comments:		Other comments:	
8. In your opinion what other languages should the standardized assessment be available in (when selecting not available in other South African languages)			Yes	No	Yes	No
			If No please circle the reason Misleading , double-barrelled or confusing Other comments:		Other comments:	

2. **Is the order of questions flowing systematically: Please provide the alternative number for the questions or tick that it at right position.**

Questions	Right position	Alternative number
1. Are you aware of the Paediatric Evaluation of Disability Inventory?		
2. How did you become aware of the Paediatric Evaluation of Disability Inventory? **(When they select yes to question 1)**		
3. Is the Paediatric Evaluation of Disability Inventory available in your clinical setting?		
4. Why is it not in your clinical setting? (You can select more than one answer) **(When they select No to question 3)**		
5. Do you use the Paediatric Evaluation of Disability Inventory ? **(When they select yes to question 3)**		
6.Why don't you use the Paediatric Evaluation of Disability Inventory? (You can select more than one answer) **(When they select no to question 5)**		
7.How often do you use the Paediatric Evaluation of Disability Inventory? (**When they select yes to question 5)**		
8.Why do you use the Paediatric Evaluation of Disability Inventory? (You can select more than one answer) (**next question after answer question 7)**		
9.What factors affect your choice of using the Paediatric Evaluation of Disability Inventory? **(next question after answer question 8)**		
10.In your opinion is the Paediatric Evaluation of Disability Inventory relevant for South African context?		
11.Why is the Paediatric Evaluation of Disability Inventory relevant for South African context? (You can select more then one option) **(When select yes to question 10)**		
12.Why is the Paediatric Evaluation of Disability Inventory not relevant for South African context? (You can select more then one option) **(When select no to question 10)**		
13.In your own opinion what other languages should the Paediatric Evaluation of disability inventory be available in? **(When selecting "Not available in other south African languages")**		
14.Why should it be in the languages you have chosen in previous question? (When **answer question 13**)		

Duration of survey:

Other comments :

APPENDIX B: Face Validity test and responses

Please note each standardized assessments had the same question under their heading

test : Face Validity

Please complete the survey below.

Thank you!

Consent	○ I have read the information sheet and I am willing to participate in the online survey. I am aware by selecting this, means I have provided consent to participate voluntary. ○ I have read the information sheet and I do not want to participate in the online survey. I am aware by selecting this, means I have provided consent not to participate voluntary.
Inclusion criteria	☐ Occupational therapist ☐ Registered with HPCSA ☐ 1 year experience post community services ☐ Clinical load at least once a month with cerebral palsy children ☐ Cerebral palsy clients between the ages of 0-18 years old
Demographical information	
Age	○ 22-27 ○ 28-32 ○ 33-37 ○ 38- over
Gender	○ Female ○ Male
Work experience with CP children	○ < 1 year ○ < 5 year ○ 5-10 years ○ 11-15 years ○ 16 -20 years ○ > 20 years
Which provinces currently working in	○ Eastern cape ○ Free State ○ Gauteng ○ Kwazulu- natal ○ Limpopo ○ Mpumalanga ○ North west ○ Northern cape ○ Western cape
Clinical setting (you can select more then one answer)	☐ Public hospital ☐ clinics ☐ private practice ☐ LSEN schools ☐ NGO ☐ NPO ☐ other (please specify)

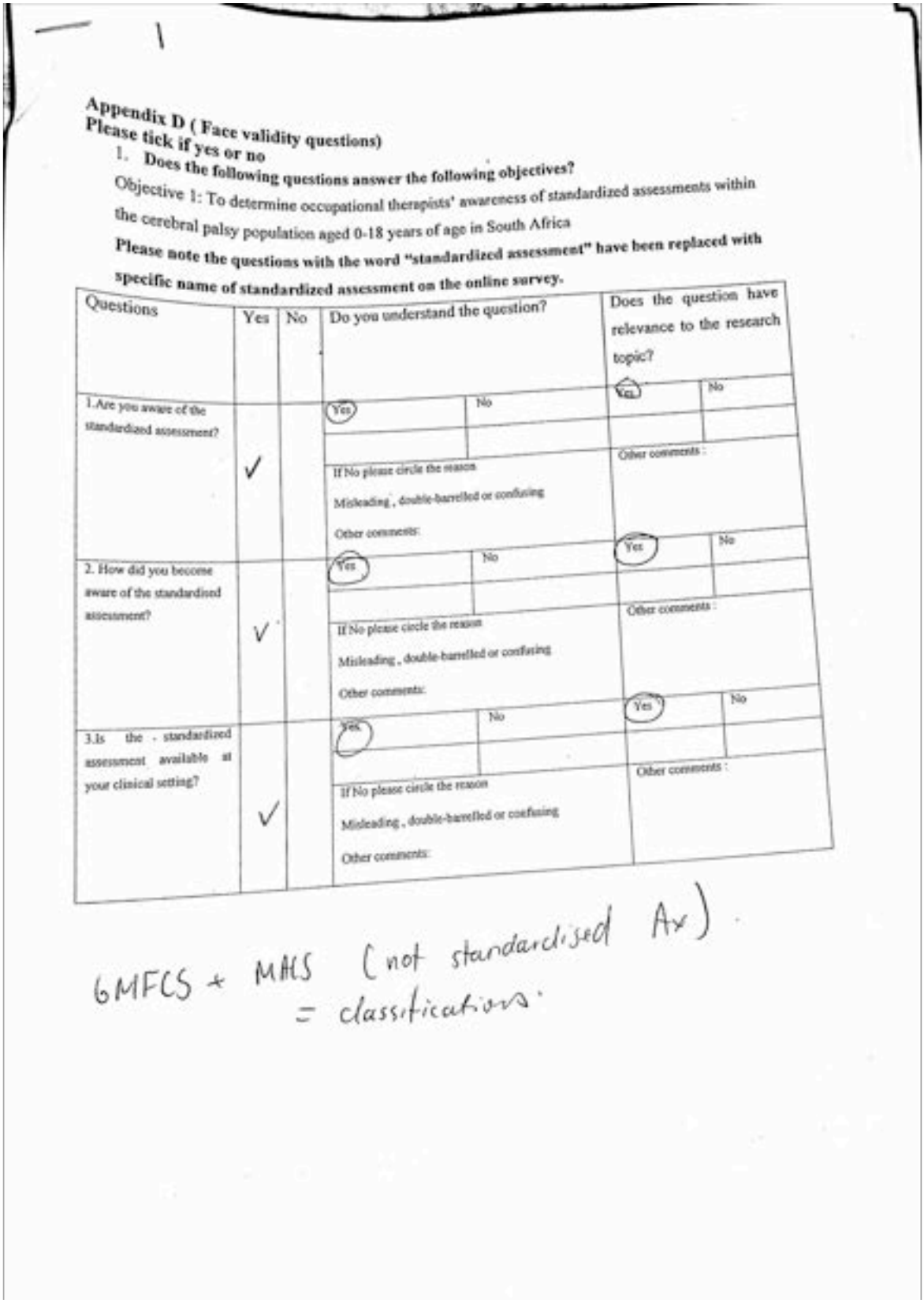
Paediatric Evaluation of Disability Inventory (PEDI)	
Are you aware of the Paediatric Evaluation of Disability Inventory?	◯ Yes ◯ No
How did you become aware of the Paediatric Evaluation of Disability Inventory? (You can select more then one answer)	☐ Taught and exposed at university ☐ Exposed during practical university fieldwork ☐ Exposed during community service ☐ Exposed post community service ☐ Other (Please specify)
	_____
Is the Paediatric Evaluation of Disability Inventory available in your clinical setting?	◯ Yes ◯ No
Do you use the Paediatric Evaluation of Disability Inventory?	◯ Yes ◯ No
Why is it not in your clinical setting? (You can select more than one answer)	☐ Cost of standardised assessment ☐ Time consuming ☐ Not appropriate for clinical setting ☐ I don't know ☐ Other please specify :
	_____
How often do you use the Paediatric Evaluation of Disability Inventory?	◯ Daily ◯ Weekly ◯ Monthly

Why don't you use the Paediatric Evaluation of Disability Inventory? (You can select more than one answer)	☐ Poor administration of test skills ☐ Not easy to implement ☐ Not appropriate for client ☐ Time consuming ☐ None of the above ☐ Other please specify:
	_____
Why do you use the Paediatric Evaluation of Disability Inventory? (You can select more than one answer)	☐ Appropriate for client ☐ Identify deficits ☐ Identify strength and weakness ☐ To aid in developing treatment plan ☐ To identify skills children with CP have ☐ To identify skills children with CP don't have ☐ Easy to implement ☐ None of the above ☐ Other please specify:
	_____

What factors affect your choice of using the Paediatric Evaluation of Disability Inventory? (You can choose more than one answer)	☐ Client's needs and values ☐ Suitable for CP children ☐ Validity and reliability of the standardized assessments ☐ None of the above ☐ Other (Please specify):
	_____
In your opinion is the Paediatric Evaluation of Disability Inventory relevant for South African context?	○ Yes ○ No
Why is the Paediatric Evaluation of Disability Inventory relevant for South African context? (You can select more then one answer)	☐ Norms from South Africa ☐ Content of standardized assessment in English ☐ Cultural diversity ☐ Other (please specify):
	_____
Why is the Paediatric Evaluation of Disability Inventory not relevant for South African context? (You can select more then one answer)	☐ Norms not from South Africa ☐ Not available in other south African languages ☐ Not cultural diverse ☐ Other (please specify):
	_____

In your own opinion what other languages should the Paediatric Evaluation of disability inventory be available in? (You can select more then one answer)	☐ Isizulu ☐ Afrikaans ☐ Sepedi ☐ Sesotho ☐ Setswana ☐ SiSwati ☐ Tshivenda ☐ Xitsonga ☐ IsiNdebele ☐ IsiXhosa
Why should it be in the languages you have chosen in previous question? (You can select more then one answer)	☐ Majority of your client speaks the languages in your work context ☐ Allow clients to express easily ☐ Allow for accurate assessment findings ☐ Other (Be specific):

Participant A



Appendix D (Face validity questions)
Please tick if yes or no

1. **Does the following questions answer the following objectives?**

Objective 1: To determine occupational therapists' awareness of standardized assessments within the cerebral palsy population aged 0-18 years of age in South Africa

Please note the questions with the word "standardized assessment" have been replaced with specific name of standardized assessment on the online survey.

Questions	Yes	No	Do you understand the question?		Does the question have relevance to the research topic?	
1.Are you aware of the standardized assessment?	✓		Yes	No	Yes	No
			If No please circle the reason Misleading , double-barrelled or confusing Other comments:		Other comments :	
2. How did you become aware of the standardized assessment?	✓		Yes	No	Yes	No
			If No please circle the reason Misleading , double-barrelled or confusing Other comments:		Other comments :	
3.Is the standardized assessment available at your clinical setting?	✓		Yes	No	Yes	No
			If No please circle the reason Misleading , double-barrelled or confusing Other comments:		Other comments :	

GMFCS + MACS (not standardised Ax)
= classifications.

Objective 2 : To determine the current implementation of standardized assessments within the cerebral palsy population aged 0-18 years of age in South Africa

Questions	Yes	No	Do you understand the question?		Does the question have relevance to the research topic?	
1.Do you use the standardized assessment?	✓		Yes	No	Yes	No
			If No please circle the reason Misleading , double-barrelled or confusing Other comments:		Other comments :	
2.How often do you use the standardized assessments?	✓		Yes	No	Yes	No
			If No please circle the reason Misleading , double-barrelled or confusing Other comments:		Other comments :	
3.Why is the standardized assessment not in your clinical setting?	✓		Yes	No	Yes	No
			If No please circle the reason Misleading , double-barrelled or confusing Other comments:		Other comments :	
4.Why don't you use the standardized assessment?	✓		Yes	No	Yes	No
			If No please circle the reason Misleading , double-barrelled or confusing Other comments:		Other comments :	
5. Why do you use standardized assessments?	✓		Yes	No	Yes	No
			If No please circle the reason Misleading , double-barrelled or confusing Other comments: same ?.		Other comments :	
6.What factors affect your choice of standardized			Yes	No	Yes	No

Strengths + weaknesses
Skills.

assessment to use with children with cerebral palsy?			If No please circle the reason Misleading , double-barrelled or confusing Other comments:	Other comments :

Objective 3: To determine the therapists' perception of the appropriateness, accessibility, practicality and acceptable use of standardized assessments for the cerebral palsy population aged 0-18 years of age in South Africa

Definitions

Appropriate: is the standardized assessment effective and relevant your clinical setting and to CP children in South Africa (This help with the grouping)
Accessible: is the standardized assessment cost effective and available in South Africa context.

Practical: is the standardized assessment easy to implement, is it suitable for CP children in South Africa and time effective.

Acceptable : Is the standardized assessments relevant and valid in the South African context .

Questions	Yes	No	Do you understand the question?		Does the question have relevance to the research topic?	
1. Why is the standardized assessment not in your clinical setting? ✓			Yes	No	Yes	No
			If No please circle the reason Misleading , double-barrelled or confusing Other comments:		Other comments :	
2. Why don't you use the standardized assessment? ✓			Yes	No	Yes	No
			If No please circle the reason Misleading , double-barrelled or confusing Other comments:		Other comments :	
3. Why do you use standardized assessments? ✓			Yes	No	Yes	No
			If No please circle the reason Misleading , double-barrelled or confusing Other comments:		Other comments :	

supports

clients needs + values → it aligns with considers

4. What factors affect your choice of standardized assessment to use with children with cerebral palsy?	✓		Yes	No	Yes	No
			But right write options in full sentences			
			If No please circle the reason Misleading, double-barrelled or confusing Other comments:		Other comments:	
5. In your opinion is the standardized assessment relevant for South Africa?	✓		Yes	No	Yes	No
it accommodates for cultural diversity.			If No please circle the reason Misleading, double-barrelled or confusing Other comments:		Other comments:	
6. Why is the standardized assessment not relevant for South Africa context?	✓		Yes	No	Yes	No
			If No please circle the reason Misleading, double-barrelled or confusing Other comments:		Other comments:	
7. Why is the standardized assessment relevant for South Africa?	✓		Yes	No	Yes	No
			If No please circle the reason Misleading, double-barrelled or confusing Other comments:		Other comments:	
8. In your opinion what other languages should the standardized assessment be available in (when selecting not available in other South African languages)	✓		Yes	No	Yes	No
			If No please circle the reason Misleading, double-barrelled or confusing Other comments:		Other comments: you identify language as a barrier in your previous question, why do you need to know specific language. This does not answer the Objective 3.	

not culturally diverse / culture sensitive.

2. **Is the order of questions flowing systematically: Please provide the alternative number for the questions or tick that it at right position.**

Questions	Right position	Alternative number
1. Are you aware of the Paediatric Evaluation of Disability Inventory?	✓	
2. How did you become aware of the Paediatric Evaluation of Disability Inventory? **(When they select yes to question 1)**	✓	
3. Is the Paediatric Evaluation of Disability Inventory available in your clinical setting?	✓	
4. Why is it not in your clinical setting? (You can select more than one answer) **(When they select No to question 3)**	✓	
5. Do you use the Paediatric Evaluation of Disability Inventory ? **(When they select yes to question 3)**	✓	
6. Why don't you use the Paediatric Evaluation of Disability Inventory? (You can select more than one answer) **(When they select no to question 5)**	✓	
7. How often do you use the Paediatric Evaluation of Disability Inventory? **(When they select yes to question 5)**	✓	
8. Why do you use the Paediatric Evaluation of Disability Inventory? (You can select more than one answer) **(next question after answer question 7)**	✓	
9. What factors affect your choice of using the Paediatric Evaluation of Disability Inventory? **(next question after answer question 8)**	✓	
10. In your opinion is the Paediatric Evaluation of Disability Inventory relevant for South African context?	✓	
11. Why is the Paediatric Evaluation of Disability Inventory relevant for South African context? (You can select more then one option) **(When select yes to question 10)**	✓	
12. Why is the Paediatric Evaluation of Disability Inventory not relevant for South African context? (You can select more then one option) **(When select no to question 10)**	✓	
13. In your own opinion what other languages should the Paediatric Evaluation of disability inventory be available in? **(When selecting "Not available in other south African languages")**	✓	
14. Why should it be in the languages you have chosen in previous question? (When **answer question 13**)	✓	

Duration of survey: 30 min

Other comments :

lang

allow clients to express themselves easily

Stand

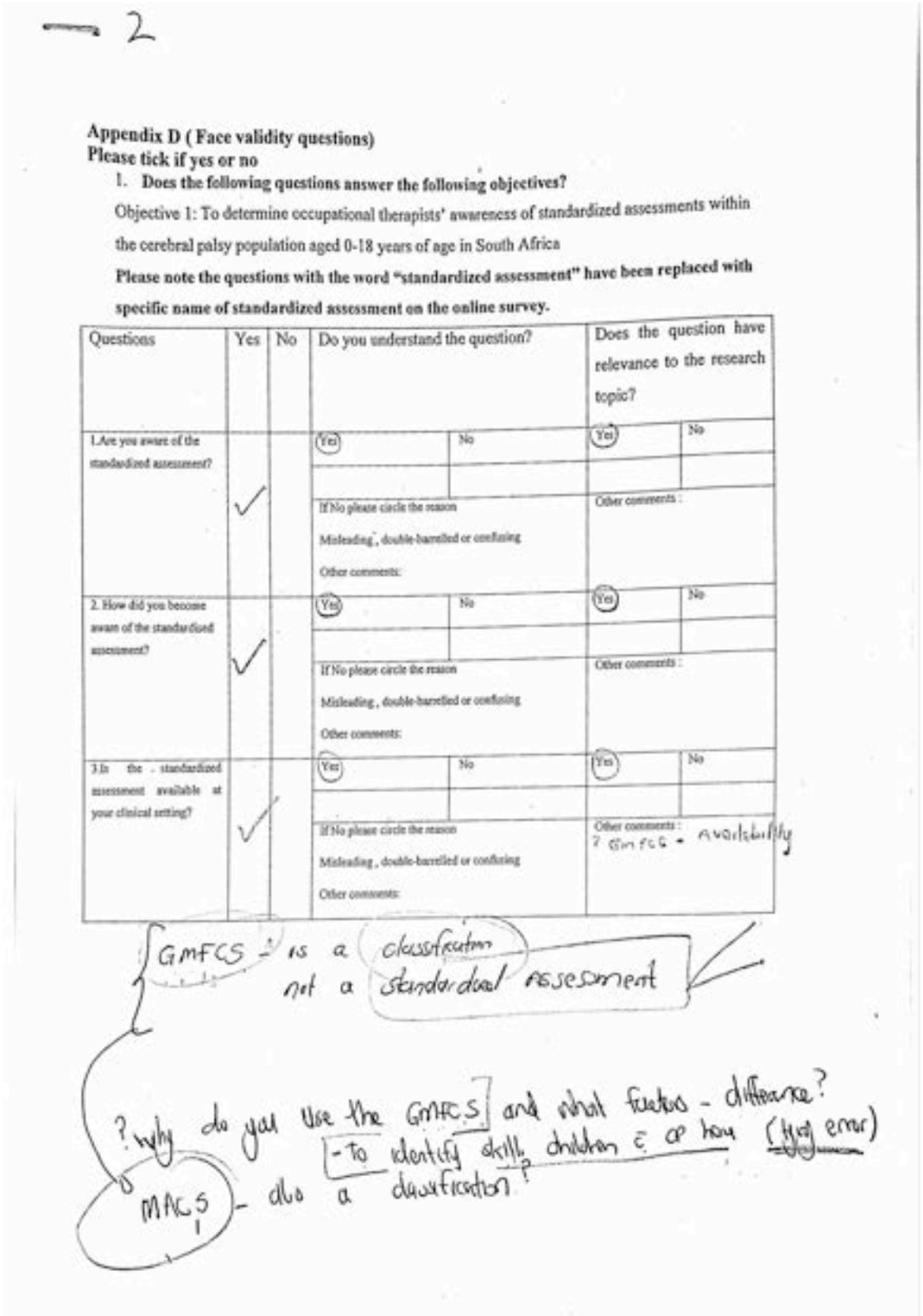
Why relevant?

Standardized in Eng
Not avail. in other

Why do you use. ← ease of access
clear assessment
clear break down of client factors & goal sett.

What factors? — ease of access
— validity
— use of scores.
— time.
— results.

Participant B



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Appendix D (Face validity questions)
Please tick if yes or no

1. **Does the following questions answer the following objectives?**

Objective 1: To determine occupational therapists' awareness of standardized assessments within the cerebral palsy population aged 0-18 years of age in South Africa

Please note the questions with the word "standardized assessment" have been replaced with specific name of standardized assessment on the online survey.

Questions	Yes	No	Do you understand the question?		Does the question have relevance to the research topic?	
1.Are you aware of the standardized assessment?	✓		(Yes)	No	(Yes)	No
			If No please circle the reason Misleading , double-barrelled or confusing Other comments:		Other comments :	
2. How did you become aware of the standardized assessment?	✓		(Yes)	No	(Yes)	No
			If No please circle the reason Misleading , double-barrelled or confusing Other comments:		Other comments :	
3.Is the standardized assessment available at your clinical setting?	✓		(Yes)	No	(Yes)	No
			If No please circle the reason Misleading , double-barrelled or confusing Other comments:		Other comments : ? GMFCS - availability	

GMFCS - is a classification not a standardized assessment

? why do you use the GMFCS and what factor - difference?
- to identify skills children @ age (typ error)

MACS - also a classification?

Objective 2 : To determine the current implementation of standardized assessments within the cerebral palsy population aged 0-18 years of age in South Africa

Questions	Yes	No	Do you understand the question?		Does the question have relevance to the research topic?	
1.Do you use the standardized assessment?	✓		(Yes)	No	(Yes)	No
			If No please circle the reason Misleading , double-barrelled or confusing Other comments:		Other comments :	
2.How often do you use the standardized assessments?	✓		(Yes)	No	(Yes)	No
			If No please circle the reason Misleading , double-barrelled or confusing Other comments:		Other comments :	
3.Why is the standardized assessment not in your clinical setting?	✓		(Yes)	No	Yes	No
			If No please circle the reason Misleading , double-barrelled or confusing Other comments:		Other comments :	
4.Why don't you use the standardized assessment?	✓		(Yes)	No	(Yes)	No
			If No please circle the reason Misleading , double-barrelled or confusing Other comments:		Other comments :	
5. Why do you use standardized assessments?	✓		(Yes)	No	Yes	No
			If No please circle the reason Misleading , double-barrelled or confusing Other comments:		Other comments :	
6.What factors affect your choice of standardized			(Yes)	No	Yes	(No)

assessment to use with children with cerebral palsy?			If No please circle the reason Misleading , double-barrelled or confusing Other comments:	Other comments : Sound redundant?

Objective 3: To determine the therapists' perception of the appropriateness, accessibility, practicality and acceptable use of standardized assessments for the cerebral palsy population aged 0-18 years of age in South Africa

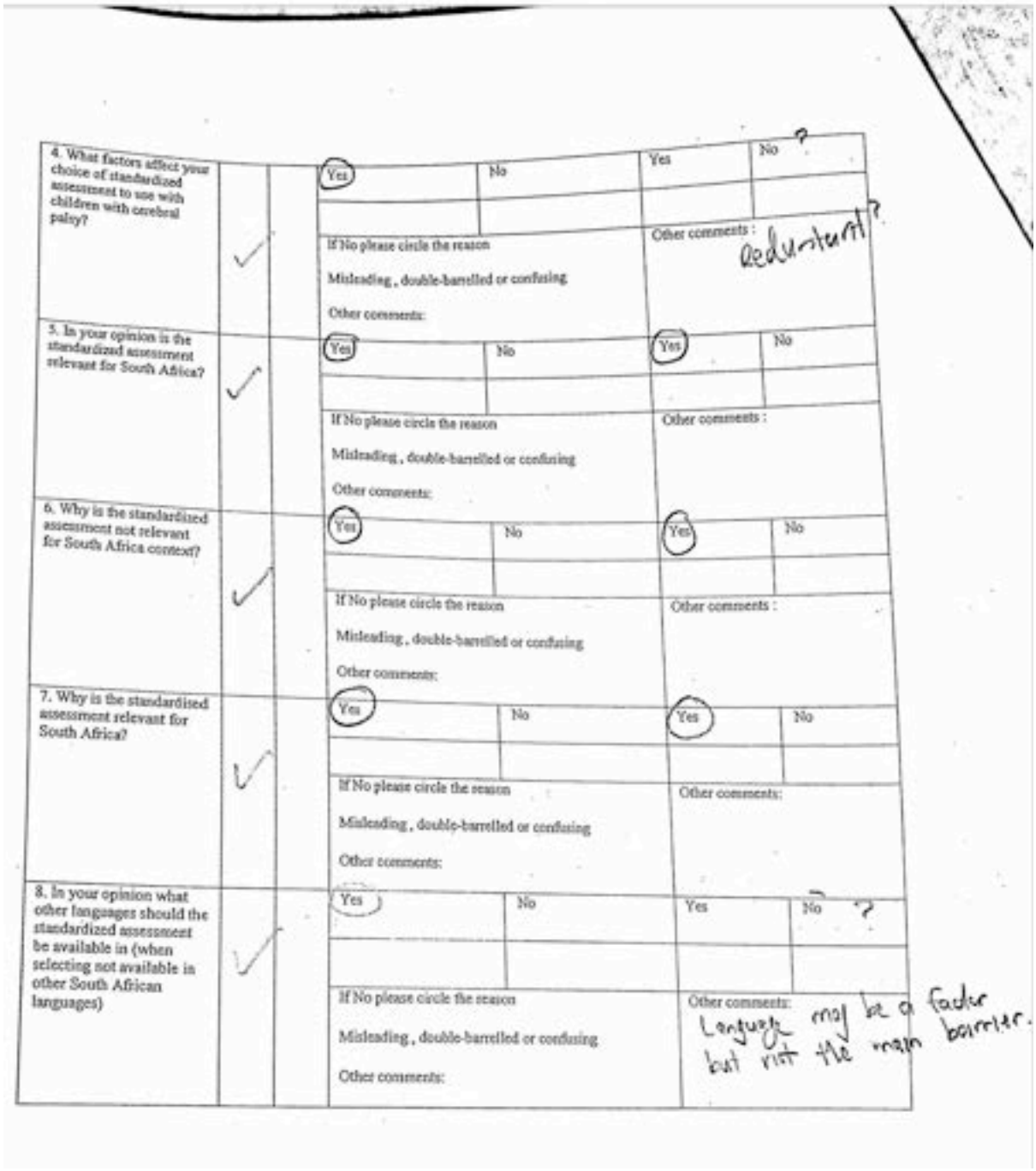
Definitions

Appropriate: is the standardized assessment effective and relevant your clinical setting and to CP children in South Africa (This help with the grouping)
Accessible: is the standardized assessment cost effective and available in South Africa context.

Practical: is the standardized assessment easy to implement, is it suitable for CP children in South Africa and time effective.

Acceptable : Is the standardized assessments relevant and valid in the South African context .

Questions	Yes	No	Do you understand the question?		Does the question have relevance to the research topic?	
1. Why is the standardized assessment not in your clinical setting?	✓		(Yes)	No	(Yes)	No
			If No please circle the reason Misleading , double-barrelled or confusing Other comments:		Other comments :	
2. Why don't you use the standardized assessment?	✓		(Yes)	No	(Yes)	No
			If No please circle the reason Misleading , double-barrelled or confusing Other comments:		Other comments :	
3. Why do you use standardized assessments?	✓		(Yes)	No	(Yes)	No
			If No please circle the reason Misleading , double-barrelled or confusing Other comments:		Other comments :	



4. What factors affect your choice of standardized assessment to use with children with cerebral palsy?	✓	Yes	No	Yes	No ?	
						If No please circle the reason Misleading, double-barrelled or confusing Other comments:
						Other comments : redundant?
5. In your opinion is the standardized assessment relevant for South Africa?	✓	Yes	No	Yes	No	
						If No please circle the reason Misleading, double-barrelled or confusing Other comments:
						Other comments :
6. Why is the standardized assessment not relevant for South Africa context?	✓	Yes	No	Yes	No	
						If No please circle the reason Misleading, double-barrelled or confusing Other comments:
						Other comments :
7. Why is the standardised assessment relevant for South Africa?	✓	Yes	No	Yes	No	
						If No please circle the reason Misleading, double-barrelled or confusing Other comments:
						Other comments:
8. In your opinion what other languages should the standardized assessment be available in (when selecting not available in other South African languages)	✓	Yes	No	Yes	No ?	
						If No please circle the reason Misleading, double-barrelled or confusing Other comments:
						Other comments: Language may be a factor but not the main barrier.

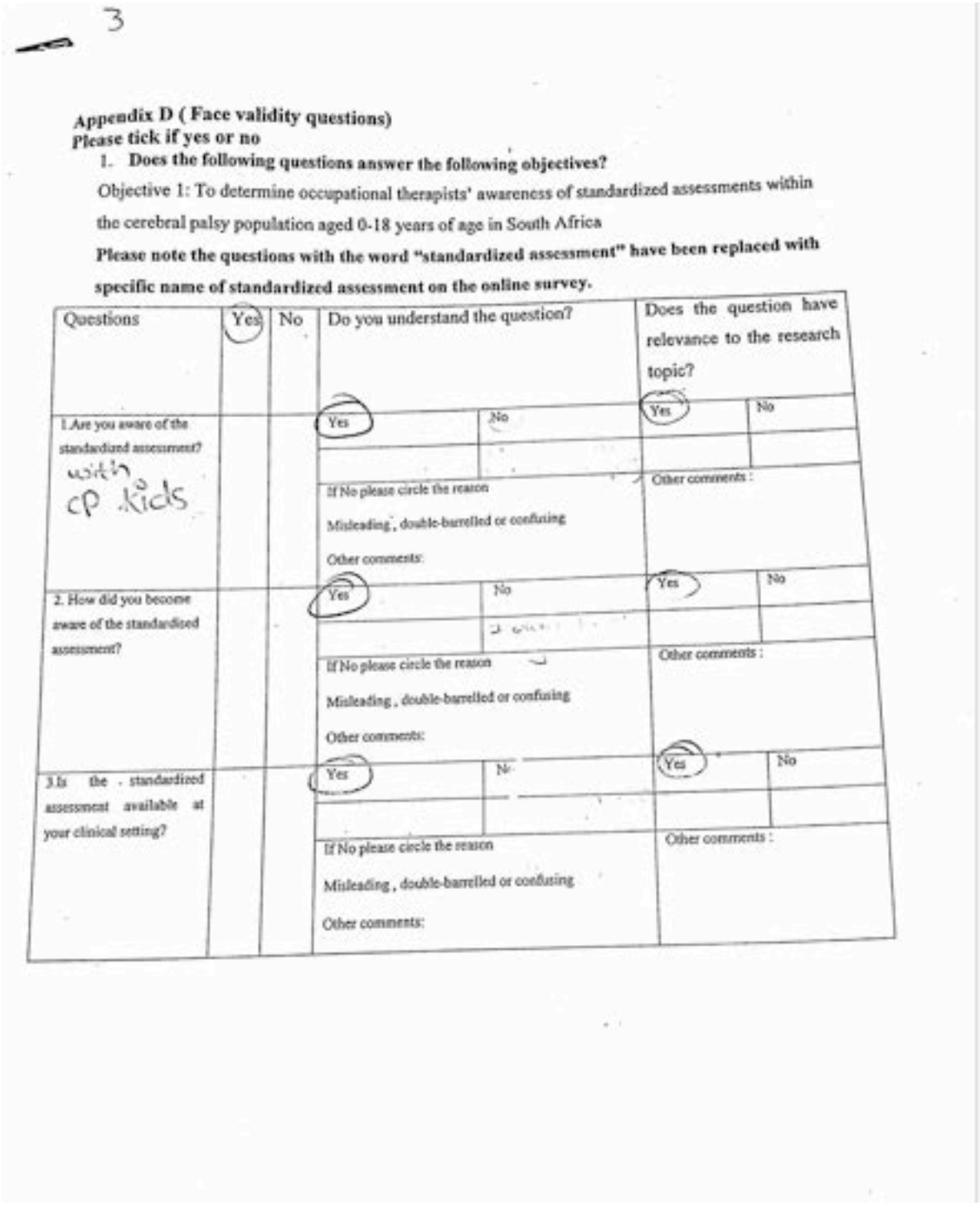
2. **Is the order of questions flowing systematically: Please provide the alternative number for the questions or tick that it at right position.**

Questions	Right position	Alternative number
1. Are you aware of the Paediatric Evaluation of Disability Inventory?	✓	
2. How did you become aware of the Paediatric Evaluation of Disability Inventory? **(When they select yes to question 1)**	✓	
3. Is the Paediatric Evaluation of Disability Inventory available in your clinical setting?	✓	
4. Why is it not in your clinical setting? (You can select more than one answer) **(When they select No to question 3)**	✓	
5. Do you use the Paediatric Evaluation of Disability Inventory ? **(When they select yes to question 3)**	✓	
6.Why don't you use the Paediatric Evaluation of Disability Inventory? (You can select more than one answer) **(When they select no to question 5)**	✓	
7.How often do you use the Paediatric Evaluation of Disability Inventory? **(When they select yes to question 5)**	✓	
8.Why do you use the Paediatric Evaluation of Disability Inventory? (You can select more than one answer) **(next question after answer question 7)**	✓	
9.What factors affect your choice of using the Paediatric Evaluation of Disability Inventory? **(next question after answer question 8)**	✓	
10.In your opinion is the Paediatric Evaluation of Disability Inventory relevant for South African context?	✓	
11.Why is the Paediatric Evaluation of Disability Inventory relevant for South African context? (You can select more then one option) **(When select yes to question 10)**	✓	
12.Why is the Paediatric Evaluation of Disability Inventory not relevant for South African context? (You can select more then one option) **(When select no to question 10)**	✓	
13.In your own opinion what other languages should the Paediatric Evaluation of disability inventory be available in? **(When selecting "Not available in other south Africas languages")**	✓	
14.Why should it be in the languages you have chosen in previous question? (When **answer question 13)**	✓	

Duration of survey:

Other comments :

Participant C



3

Appendix D (Face validity questions)
Please tick if yes or no

1. **Does the following questions answer the following objectives?**

Objective 1: To determine occupational therapists' awareness of standardized assessments within the cerebral palsy population aged 0-18 years of age in South Africa

Please note the questions with the word "standardized assessment" have been replaced with specific name of standardized assessment on the online survey.

Questions	Yes	No	Do you understand the question?		Does the question have relevance to the research topic?	
1.Are you aware of the standardized assessment? with cp kids			Yes	No	Yes	No
			If No please circle the reason Misleading , double-barrelled or confusing Other comments:		Other comments :	
2. How did you become aware of the standardized assessment?			Yes	No	Yes	No
			If No please circle the reason Misleading , double-barrelled or confusing Other comments:		Other comments :	
3.Is the standardized assessment available at your clinical setting?			Yes	No	Yes	No
			If No please circle the reason Misleading , double-barrelled or confusing Other comments:		Other comments :	

Objective 2 : To determine the current implementation of standardized assessments within the cerebral palsy population aged 0-18 years of age in South Africa

Questions	Yes	No	Do you understand the question?		Does the question have relevance to the research topic?	
1.Do you use the standardized assessment?			Yes	No	Yes	No
			If No please circle the reason Misleading , double-barrelled or confusing Other comments:		Other comments :	
2.How often do you use the standardized assessments?			Yes	No	Yes	No
			If No please circle the reason Misleading , double-barrelled or confusing Other comments:		Other comments :	
3.Why is the standardized assessment not in your clinical setting?			Yes	No	Yes	No
			If No please circle the reason Misleading , double-barrelled or confusing Other comments:		Other comments :	
4.Why don't you use the standardized assessment?			Yes	No	Yes	No
			If No please circle the reason Misleading , double-barrelled or confusing Other comments:		Other comments :	
5. Why do you use standardized assessments?			Yes	No	Yes	No
			If No please circle the reason Misleading , double-barrelled or confusing Other comments:		Other comments :	
6.What factors affect your choice of standardized			Yes	No	Yes	No

Q* Why is it important to have std test for CP children?, in the clinical setting.

assessment to use with children with cerebral palsy?			If No please circle the reason Misleading , double-barrelled or confusing Other comments:	Other comments :

Objective 3: To determine the therapists' perception of the appropriateness, accessibility, practicality and acceptable use of standardized assessments for the cerebral palsy population aged 0-18 years of age in South Africa

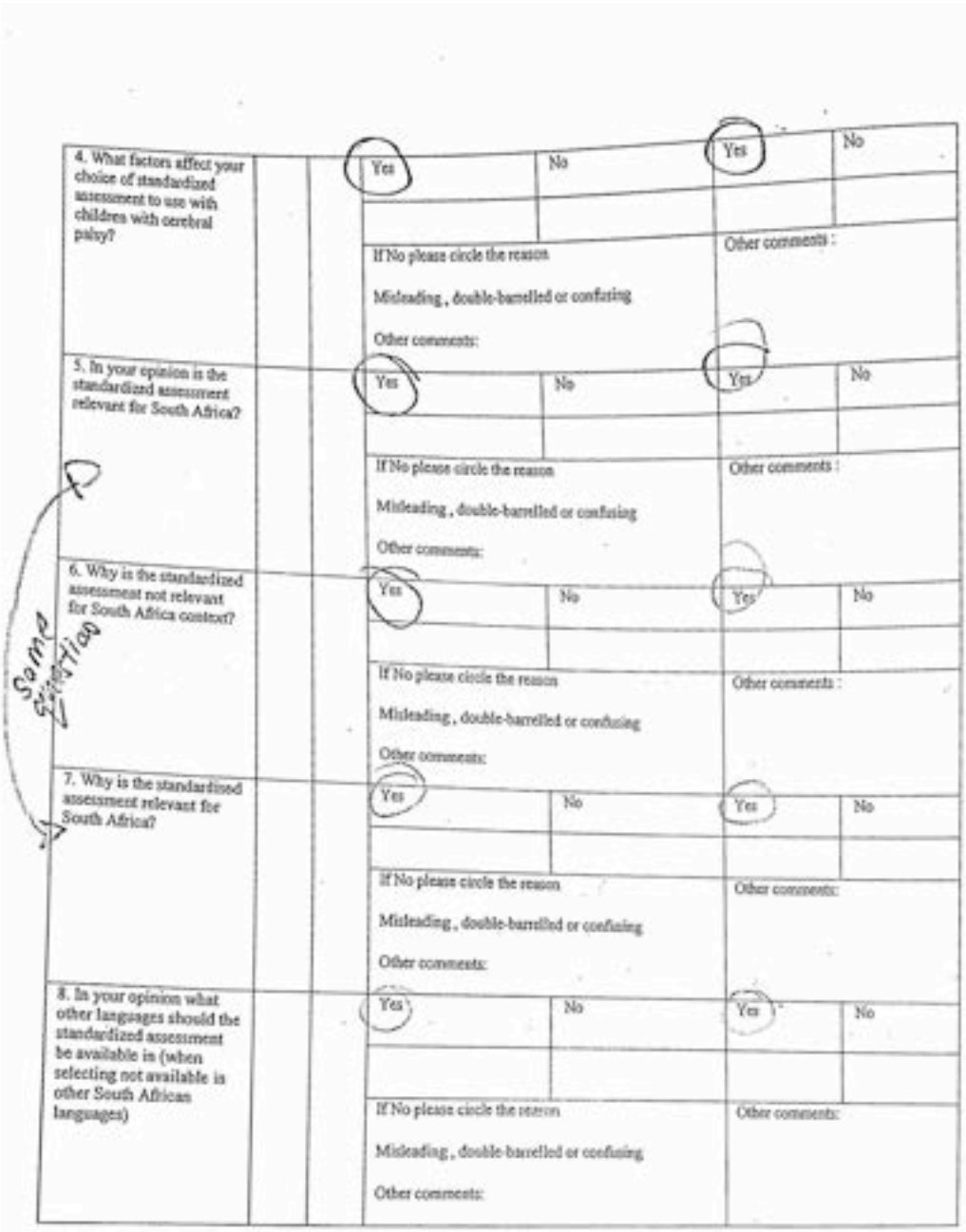
Definitions

Appropriate: is the standardized assessment effective and relevant your clinical setting and to CP children in South Africa (This help with the grouping)
Accessible: is the standardized assessment cost effective and available in South Africa context.

Practical: is the standardized assessment easy to implement, is it suitable for CP children in South Africa and time effective.

Acceptable : Is the standardized assessments relevant and valid in the South African context .

Questions	Yes	No	Do you understand the question?		Does the question have relevance to the research topic?	
1. Why is the standardized assessment not in your clinical setting?			Yes	No	Yes	No
			If No please circle the reason Misleading , double-barrelled or confusing Other comments:		Other comments :	
2. Why don't you use the standardized assessment?			Yes	No	Yes	No
			If No please circle the reason Misleading , double-barrelled or confusing Other comments:		Other comments :	
3. Why do you use standardized assessments?			Yes	No	Yes	No
			If No please circle the reason Misleading , double-barrelled or confusing Other comments:		Other comments :	



4. What factors affect your choice of standardized assessment to use with children with cerebral palsy?	Yes	No	Yes	No
	If No please circle the reason Misleading, double-barrelled or confusing Other comments:		Other comments:	
5. In your opinion is the standardized assessment relevant for South Africa?	Yes	No	Yes	No
	If No please circle the reason Misleading, double-barrelled or confusing Other comments:		Other comments:	
6. Why is the standardized assessment not relevant for South Africa context?	Yes	No	Yes	No
	If No please circle the reason Misleading, double-barrelled or confusing Other comments:		Other comments:	
7. Why is the standardized assessment relevant for South Africa?	Yes	No	Yes	No
	If No please circle the reason Misleading, double-barrelled or confusing Other comments:		Other comments:	
8. In your opinion what other languages should the standardized assessment be available in (when selecting not available in other South African languages)	Yes	No	Yes	No
	If No please circle the reason Misleading, double-barrelled or confusing Other comments:		Other comments:	

Some question

9) How would std AX Benefit the CP child + the clinician's evaluation of the CP child..

2. **Is the order of questions flowing systematically: Please provide the alternative number for the questions or tick that it at right position.**

Questions	Right position	Alternative number
1. Are you aware of the Paediatric Evaluation of Disability Inventory?	✓	
2. How did you become aware of the Paediatric Evaluation of Disability Inventory? **(When they select yes to question 1)**	✓	
3. Is the Paediatric Evaluation of Disability Inventory available in your clinical setting?	✓	
4. Why is it not in your clinical setting? (You can select more than one answer) **(When they select No to question 3)**	✓	
5. Do you use the Paediatric Evaluation of Disability Inventory ? **(When they select yes to question 3)**	✓	
6. Why don't you use the Paediatric Evaluation of Disability Inventory? (You can select more than one answer) **(When they select no to question 5)**	✓	
7. How often do you use the Paediatric Evaluation of Disability Inventory? **(When they select yes to question 5)**	✓	
8. Why do you use the Paediatric Evaluation of Disability Inventory? (You can select more than one answer) **(next question after answer question 7)**	✓	
9. What factors affect your choice of using the Paediatric Evaluation of Disability Inventory? **(next question after answer question 8)**	✓	
10. In your opinion is the Paediatric Evaluation of Disability Inventory relevant for South African context?		Move to 11, last questi with followup questions
11. Why is the Paediatric Evaluation of Disability Inventory relevant for South African context? (You can select more then one option) **(When select yes to question 10)**		
12. Why is the Paediatric Evaluation of Disability Inventory not relevant for South African context? (You can select more then one option) **(When select no to question 10)**		
13. In your own opinion what other languages should the Paediatric Evaluation of disability inventory be available in? **(When selecting "Not available in other south African languages")**		
14. Why should it be in the languages you have choose in previous question? (When **answer question 13)**		

Duration of survey: ± 15 min.

Other comments :

More than 1 year experience — Inclusion criteria.

* If you have epilepsy with CPV it should take you to answer questions.

* Pls include in GMFC + MACS
  - How often do you use it
  + Pls put (sometimes) also
  + TVPS - Include (once off / during IX)
    LDuse of it

Face Validity responses

Objective 1: To determine occupational therapists' awareness of standardized assessments within the cerebral palsy population aged 0-18 years of age in South Africa

Question	Participants name	Participants answers			Participants Remarks
		Does the following questions answer the following objectives ?	Do you understand the question?	Does the question have relevance to the research topic?	
1. Are you aware of the standardized assessments?	1	Yes	Yes	Yes	None
	2	Yes	Yes	Yes	None
	3	Yes	Yes	Yes	None
	% Per question agreed	100%	100%	100%	
	% Of overall agreement	100%			
2. How did you become aware of the standardized assessments?	1	Yes	Yes	Yes	None
	2	Yes	Yes	Yes	None
	3	Yes	Yes	Yes	None
	% Per question agreed	100%	100%	100%	
	% Of overall agreement	100%			
3. Is the standardized assessment available at your clinical setting?	1	Yes	Yes	Yes	None

	2	Yes	Yes	Yes	None
	3	Yes	Yes	Yes	None
	% Per question agreed	100%	100%	100%	
	% Of overall agreement	100%			

Objective 2 : To determine the current implementation of standardized assessments within the cerebral palsy population aged 0-18 years of age in South Africa

Question	Participants name	Participants answers			Participants Remarks
		Does the following questions answer the following objectives ?	Do you understand the question?	Does the question have relevance to the research topic?	
1. Do you use the standardized assessment ?	1	Yes	Yes	Yes	None
	2	Yes	Yes	Yes	None
	3	Yes	Yes	Yes	None
	% Per question agreed	100%	100%	100%	
	% Of overall agreement	100%			
2.How often do you use the standardized assessments?	1	Yes	Yes	Yes	None
	2	Yes	Yes	Yes	None
	3	Yes	Yes	Yes	None
	% Per question agreed	100%	100%	100%	

	% Of overall agreement	100%			
3.Why is the standardized assessment not in your clinical setting?	1	Yes	Yes	Yes	None
	2	Yes	Yes	No (with a question mark)	None
	3	Yes	Yes	Yes	None
	% Per question agreed	100%	100%	67%	
	% Of overall agreement	89%			
4.Why don't you use the standardized assessment?	1	Yes	Yes	Yes	None
	2	Yes	Yes	Yes	None
	3	Yes	Yes	Yes	None
	% Per question agreed	100%	100%	100%	
	% Of overall agreement	100%			
5. Why do you use standardized assessments?	1	Yes	Yes	Yes	None
	2	Yes	Yes	Yes	None
	3	Yes	Yes	Yes	None
	% Per	100%	100%	100%	

	question agreed				
	% Of overall agreement	100%			
6.What factors affect your choice of standardized assessment to use with children with cerebral palsy?	1	Yes	Yes	Yes	Same as question 5
	2	Yes	Yes	No	None
	3	Yes	Yes	Yes	None
	% Per question agreed	100%	100%	67%	
	% Of overall agreement	89%%			

Objective 3: To determine the therapists' perception of the appropriateness, accessibility, practicality and acceptable use of standardized assessments for the cerebral palsy population aged 0-18 years of age in South Africa

Question	Participants name	Participants answers			Participants Remarks
		Does the following questions answer the following objectives ?	Do you understand the question?	Does the question have relevance to the research topic?	
1. Why is the standardized assessment not in your clinical setting?	1	Yes	Yes	Yes	None
	2	Yes	Yes	Yes	None
	3	Yes	Yes	Yes	None
	% Per	100%	100%	100%	

	question agreed				
	% Of overall agreement	100%			
2. Why don't you use the standardized assessment?	1	Yes	Yes	Yes	None
	2	Yes	Yes	Yes	None
	3	Yes	Yes	Yes	None
	% Per question agreed	100%	100%	100%	
	% Of overall agreement	100%			
3. Why do you use standardized assessments?	1	Yes	Yes	Yes	None
	2	Yes	Yes	Yes	None
	3	Yes	Yes	Yes	None
	% Per question agreed	100%	100%	100%	
	% Of overall agreement	100%			
4. What factors affect your choice of standardized assessment to use with children with cerebral palsy?	1	Yes	No	No	Misleading
	2	Yes	Yes	No	Redundant
	3	Yes	Yes	Yes	None
	% Per question	100%	67%	33%	

	agreed				
	% Of overall agreement	67%			
5. In your opinion is the standardized assessment relevant for South Africa?	1	Yes	Yes	Yes	It accommodates for cultural diversity
	2	Yes	Yes	Yes	None
	3	Yes	Yes	Yes	None
	% Per question agreed	100%	100%	100%	
	% Of overall agreement	100%			
6. Why is the standardized assessment not relevant for South Africa context?	1	Yes	Yes	Yes	None
	2	Yes	Yes	Yes	None
	3	Yes	Yes	Yes	None
	% Per question agreed	100%	100%	100%	
	% Of overall agreement	100%			
7. Why is the standardised assessment relevant for South Africa?	1	Yes	Yes	Yes	None
	2	Yes	Yes	Yes	None
	3	Yes	Yes	Yes	Same question as number 5

	% Per question agreed	100%	100%	100%	
	% Of overall agreement	100%			
8. In your opinion what other languages should the standardized assessment be available in (when selecting not available in other South African languages)	1	Yes	Yes	No	Does not answer objective three
	2	Yes	Yes	No	Language may be the main factor but not the main barrier
	3	Yes	Yes	Yes	None
	% Per question agreed	100%	100%	33%	
	% Of overall agreement	78%			

APPENDIX C: Online Survey Questionnaire

Please note each standardized assessments had the same question under their heading

Consent	○ I have read the information sheet and I am willing to participate in the online survey. I am aware by selecting this, means I have provided consent to participate voluntary. ○ I have read the information sheet and I do not want to participate in the online survey. I am aware by selecting this, means I have provided consent not to participate voluntary.
Inclusion criteria Please select all the boxes that is applicable to you, please note if all boxes are not ticked then you will not be able to proceed to answer the survey. This means that you have not meet the inclusion criteria.	☐ Occupational therapist ☐ Registered with HPCSA ☐ more than 1 year experience post community services ☐ Clinical load at least once a month with cerebral palsy children ☐ Cerebral palsy clients between the ages of 0-18 years old
Demographical information	
Age	○ 22-27 ○ 28-32 ○ 33-37 ○ 38- over
Gender	○ Female ○ Male
Work experience with CP children	○ < 1 year ○ < 5 year ○ 5-10 years ○ 11-15 years ○ 16 -20 years ○ > 20 years
Which province currently working in ?	○ Eastern cape ○ Free State ○ Gauteng ○ Kwazulu- natal ○ Limpopo ○ Mpumalanga ○ North west ○ Northern cape ○ Western cape

Clinical setting (you can select more then one answer)	◯ Public hospital ◯ clinics ◯ private practice ◯ LSEN schools ◯ NGO ◯ NPO ◯ other (please specify):

Paediatric Evaluation of Disability Inventory (PEDI)

Are you aware of the Paediatric Evaluation of Disability Inventory?	◯ Yes ◯ No
How did you become aware of the Paediatric Evaluation of Disability Inventory? (You can select more then one answer)	☐ Taught and exposed at university ☐ Exposed during practical university fieldwork ☐ Exposed during community service ☐ Exposed post community service ☐ Other (Please specify):
Is the Paediatric Evaluation of Disability Inventory available in your clinical setting?	◯ Yes ◯ No
Do you use the Paediatric Evaluation of Disability Inventory?	◯ Yes ◯ No
Why is it not in your clinical setting? (You can select more than one answer)	☐ Cost of standardised assessment ☐ Time consuming ☐ Not appropriate for clinical setting ☐ I don't know ☐ Other please specify :

How often do you use the Paediatric Evaluation of Disability Inventory?	◯ Daily ◯ Weekly ◯ Monthly ◯ Other (please specify) :
	_____
Why don't you use the Paediatric Evaluation of Disability Inventory? (You can select more than one answer)	☐ Poor administration of test skills ☐ Not easy to implement ☐ Not appropriate for client ☐ Time consuming ☐ None of the above ☐ Other please specify:

	_____
Why do you use the Paediatric Evaluation of Disability inventory? (You can select more than one answer)	☐ Appropriate for client ☐ Identify deficits ☐ Identify strength and weakness ☐ To aid in developing treatment plan ☐ To identify skills children with CP have ☐ To identify skills children with CP don't have ☐ Easy to implement ☐ Client's needs and values ☐ Suitable for CP children ☐ None of the above ☐ Other please specify:
	_____
What factors affect your choice of using the Paediatric Evaluation of Disability Inventory? (You can choose more than one answer)	☐ Ease of access ☐ Validity and reliability of the standardized assessments ☐ Type of scores (z-scores ,t-scores, percentiles, age equivalent) ☐ Standardized assessment have a set time ☐ Ease of interpretation of the results
In your opinion is the Paediatric Evaluation of Disability Inventory relevant for South African context?	◯ Yes ◯ No
Why is the Paediatric Evaluation of Disability Inventory relevant for South African context? (You can select more then one answer)	☐ Norms from South Africa ☐ Standardized assessment in English ☐ Cultural sensitivity ☐ Other (please specify):

	_____
Please elaborate why you choose the above reasons ?	
	_____
Why is the Paediatric Evaluation of Disability not relevant for South African context? (You can select more then one answer)	☐ Norms not from South Africa ☐ Not available in other South African languages ☐ Not cultural sensitive ☐ Other (please specify):
	_____
Please elaborate why you choose the above reasons ?	
	_____

Other standardised assessments

Do you use other standardised assessment/ assessments for cerebral palsy children that were not mentioned above? Please provide the name of standardised assessment/assessments if answered yes , in the text box below.	○ Yes ○ No
	_____
How did you become aware of the/ these standardised assessment / assessments you mentioned ? (You can select more then one answer)	☐ Taught and exposed at university ☐ Exposed during practical university fieldwork ☐ Exposed during community service ☐ Exposed post community service ☐ Other (Please specify):
	_____
How often do you use the/these standardised assessment /assessments you mentioned ?	○ Daily ○ Weekly ○ Monthly ○ Other (please specify) :
	_____
What factors affect your choice of using the/these standardised assessment/ assessments? (You can select more then one answer)	☐ Ease of access ☐ Validity and reliability of the standardized assessments ☐ Type of scores (z-scores ,t-scores, percentiles, age equivalent) ☐ Standardized assessment have a set time ☐ Ease of interpretation of the results
In your opinion are/is the standardised assessments/assessment relevant for South African context?	○ Yes ○ No
Why is/are the standardised assessment/assessments relevant for South Africa Context? (You can select more then one answer)	☐ Norms from South Africa ☐ Standardized assessment in English ☐ Cultural sensitivity ☐ Other (please specify):
	_____
please elaborate why you choose the above reasons	
	_____

Why is/are the standardised assessment/assessments not relevant for South Africa context? (You can select more then one answer)	☐ Norms not from South Africa ☐ Not available in other South African languages ☐ Not cultural sensitive ☐ Other (please specify):
	_____
please elaborate why you choose he above reasons	
	_____
Thank you for participating, you have completed the survey.If you have any other additional comments please provide in text box or press/click the submit button.	
	_____

APPENDIX D: Information sheet for participants

Evaluation of standardised assessments used in Occupational Therapy for children with cerebral palsy in South Africa

Information sheet

Good Day,

My name is Moseka Vangu, a student undertaking a masters of Science in Occupational Therapy in Neuroscience at the University of Witwatersrand Faculty of Health Sciences. I am evaluating the standardized assessments that occupational therapists use for children with cerebral palsy (0-18 years old) in different clinical settings. The purpose of this research is to provide information of the awareness of standardized assessment, what standardized assessments are used and the clinical utility of standardized assessments that are used. The aim of the research is to evaluate the usability, usefulness appropriateness and relevance of standardized assessments that may be used within the occupational therapy practice for children with cerebral palsy in South Africa.

I am inviting you to take part in this study since you have experience in treating children with CP. In the beginning of the survey there will be questions to establish if you meet the inclusion criteria. If you know of other occupational therapist that work with children with cerebral palsy and not part of OTASA, RuRe SA or SANDTA please can you forward the link to them as well?

The survey contains questions about the use of standardized assessments you use with CP children and your perception of how appropriate , accessible, practical and acceptable they are. If you meet the inclusion criteria you will need to complete the survey, answering mostly closed ended questions and a few open-ended questions. This online survey may take 30 minutes of your time.

Participation is voluntary and you may stop the survey at any time or choose not to answer it without consequences. Completing and submitting the survey implies informed consent.

Your information will remain confidential as no identifying data is being collected and, through the REDCap platform all answers are anonymous. All data will be stored on a password-protected laptop.

For further information about the research please do not hesitate to contact the researcher or supervisor

Researcher

Ms Moseka Vangu

547063@students.wits.ac.za

Supervisor

Ms Lyndsay Koch

Lyndsay.Koch@wits.ac.za

Contact details of HREC administrator and chair:

This study has been approved by the Human Research Ethics Committee (Medical) of the University of the Witwatersrand, Johannesburg (“Committee”) (Clearance certificate no. M211191). A principal function of this Committee is to safeguard the rights and dignity of all human subjects who agree to participate in a research project and the integrity of the research.

If you have any concern over the way the study is being conducted, please contact the Chairperson of this Committee who is Professor Clement Penny, who may be contacted on telephone number 011 717 2301, or by e-mail on Clement.Penny@wits.ac.za. The telephone numbers for the Committee secretariat are 011 717 2700/1234 and the e-mail addresses are Zanele.Ndlovu@wits.ac.za and Rhulani.Mukansi@wits.ac.za

Feedback on the study will be available on request

APPENDIX E: Permission to disseminate study at SANDTA

Master student enquiry External

Moseka Vangu <547063@students.wits.ac.za>
to kongres

Good Morning Marianne,

As per our telephonic conversation.

My name is Moseka Vangu , I am doing my masters in Occupational Therapy in Neuroscience at the University of witwatersrand. My research entails the evaluation of standardized assessments used within the Occupational Therapy practice for children with cerebral palsy in South Africa. My research will be implemented by an online survey and I would like to know the cost of using your platform to email the members at SANDTA. If possible, may I have the numbers of SANDTA members that are Occupational therapists as this will help with my sampling section for my research protocol. Thank you in advance for your assistance. I will await your response.

Kind Regards
Moseka Vangu

Marianne Oosthuizen <kongres@internext.co.za>
to me

Thank you Moseka
I received your e-mail. Just give me a day or two, I have sent it to our chairperson for approval.

Have a great day!
Marianne

SANDTA

SANDTA Office

Marianne Oosthuizen <kongres@internext.co.za>
to me, Sandta

Good morning Maseka

I hope this e-mail finds you well.
My apologies for the delay in response , I had to wait for permission from the SANDTA NEC.

At a Zoom meeting of the SANDTA NEC they discussed your request and they decided that you can use the SANDTA platform for your research.

You can send me a blurb about your research and the link and we will share it with our database for free. We won't charge you because it's for your masters degree.

SANDTA has 221 OT members out of 540 members (OT's, ST's and PT's).

Have a great day!
Marianne

SANDTA

SANDTA Office
Marianne Oosthuizen
E-mail: sandta@internext.co.za
Tel: 083 229 3456

APPENDIX F: Permission to disseminate study at RuRe SA

Re: New Form Entry: Contact Form External Inbox x

RuReSA <ruralrehabsa@gmail.com> Thu, 29 Apr 2021, 09:12

to me

Hi Moseka

We are happy to circulate research requests to our members but may not give their addresses to you. There is no fee, but I like to check the letter introducing the research and the survey to make sure it is "rural proof" before sending it on to the members.

Regards

Stephanie

Stephanie Horner
Office Co-ordinator
0826878550

www.ruresa.com
ruralrehabsa@gmail.com
www.facebook.com/ruresa

RuReSA
Rural Rehab South Africa

On 29 Apr 2021, at 08:21, no-reply@weebly.com wrote:

Moseka Vangu <547063@students.wits.ac.za> Thu, 29 Apr 2021, 10:42

to RuReSA

Good Morning Stephanie,

Thank you for your response. Here is a bit more information about what I am doing and what my research entails. I am doing my masters in Occupational Therapy in Neuroscience at the University of witwatersrand.At the moment I am doing my research protocol as my research needs to be approved. Once it is approved I will be able to send you the information sheet, so that you can see if my research is "rural proof ". As my online survey will only be implemented next year (2022). My research entails the evaluation of standardized assessments used within the Occupational Therapy practice for children with cerebral palsy in South Africa. I would like to know if you are able to provide me the number of Occupational therapists that are part of your organisation as this will help with my sampling section for my research protocol. Thank you in advance for your assistance. I will await your response.

Kind regards
Moseka Vangu

RuReSA <ruralrehabsa@gmail.com> Fri, 30 Apr 2021, 10:20

to me

Hi Moseka

Our membership varies and we can send out to past members. So at least 30 OTs currently members and probably double that with past members.

Regards

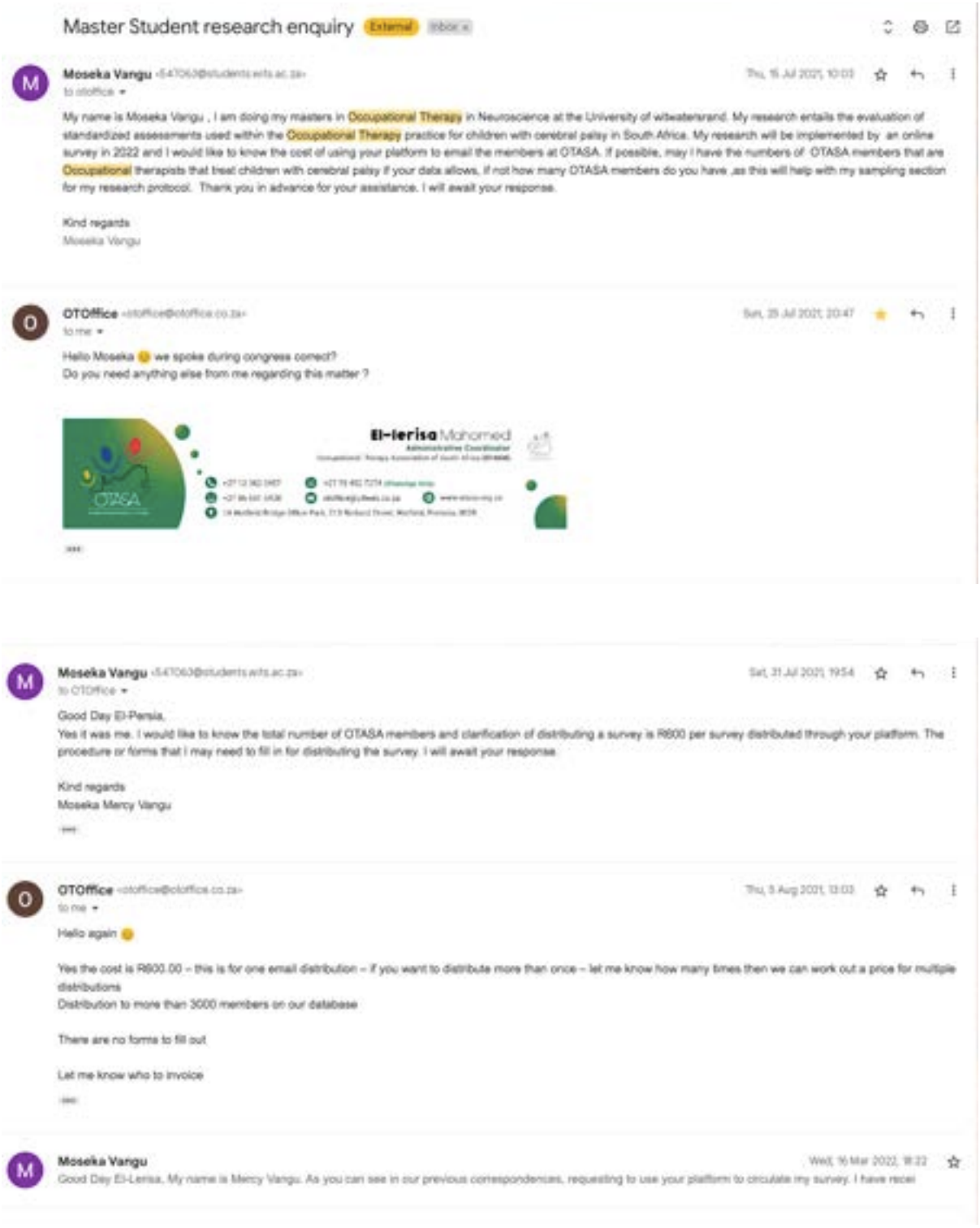
Stephanie

Stephanie Horner
Office Co-ordinator
0826878550

www.ruresa.com

RuReSA

APPENDIX G: Permission to disseminate study at OTASA



Master Student research enquiry External Inbox x

Moseka Vangu <547063@students.wits.ac.za> Thu, 15 Jul 2021, 10:03
to otoffice

My name is Moseka Vangu , I am doing my masters in Occupational Therapy in Neuroscience at the University of witwatersrand. My research entails the evaluation of standardized assessments used within the Occupational Therapy practice for children with cerebral palsy in South Africa. My research will be implemented by an online survey in 2022 and I would like to know the cost of using your platform to email the members at OTASA. If possible, may I have the numbers of OTASA members that are Occupational therapists that treat children with cerebral palsy if your data allows, if not how many OTASA members do you have ,as this will help with my sampling section for my research protocol. Thank you in advance for your assistance. I will await your response.

Kind regards
Moseka Vangu

OTOffice <otoffice@otoffice.co.za> Sun, 25 Jul 2021, 20:47
to me

Hello Moseka we spoke during congress correct?
Do you need anything else from me regarding this matter ?

El-Ierisa Mohamed
Administrative Coordinator

Moseka Vangu <547063@students.wits.ac.za> Sat, 31 Jul 2021, 19:54
to OTOffice

Good Day El-Persia,
Yes it was me. I would like to know the total number of OTASA members and clarification of distributing a survey is R600 per survey distributed through your platform. The procedure or forms that I may need to fill in for distributing the survey. I will await your response.

Kind regards
Moseka Mercy Vangu

OTOffice <otoffice@otoffice.co.za> Thu, 5 Aug 2021, 13:03
to me

Hello again

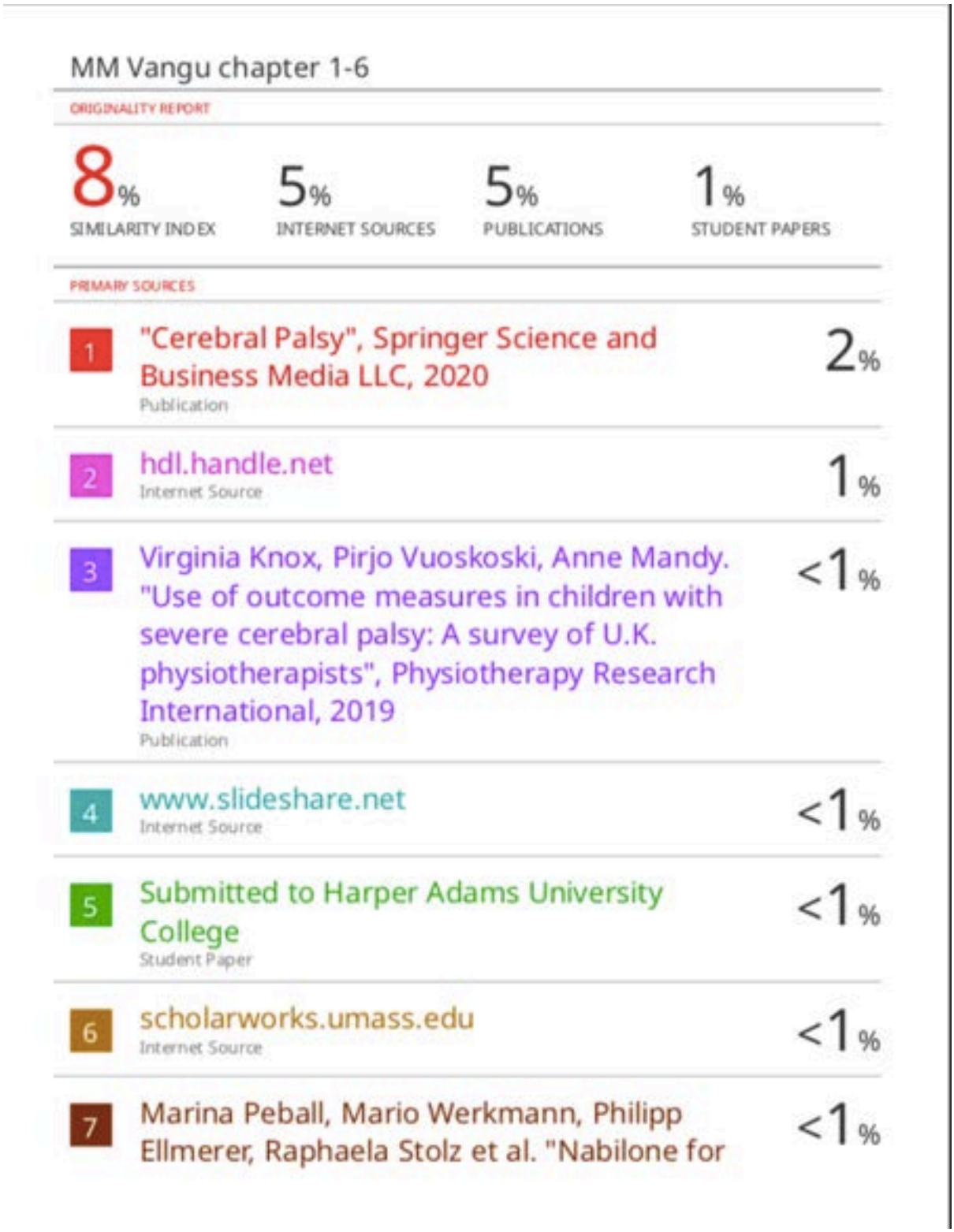
Yes the cost is R600.00 – this is for one email distribution – if you want to distribute more than once – let me know how many times then we can work out a price for multiple distributions
Distribution to more than 3000 members on our database

There are no forms to fill out

Let me know who to invoice

Moseka Vangu Wed, 16 Mar 2022, 18:22
Good Day El-Lerisa, My name is Mercy Vangu. As you can see in our previous correspondences, requesting to use your platform to circulate my survey. I have recei

APPENDIX H: Turn it in report



MM Vangu chapter 1-6

ORIGINALITY REPORT

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non-motor symptoms of Parkinson's disease: a randomized placebo-controlled, double-blind, parallel-group, enriched enrolment randomized withdrawal study (The NMS-Nab Study)", Journal of Neural Transmission, 2019
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children", Science of The Total Environment, 2023
Publication

47	Chung-Yi Chiu, Timothy N. Tansey, Fong Chan, David Strauser, Michael P. Frain, Simran Arora. "Effect of Rehabilitation Technology Services on Vocational Rehabilitation Outcomes of Individuals With Multiple Sclerosis", Rehabilitation Research, Policy, and Education, 2015 Publication	<1 %
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75	Emira vraka. "Chapter 4 Children with Cerebral Palsy and Epilepsy", IntechOpen, 2012 Publication	<1 %

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APPENDIX I: Ethical clearance certificate

UNIVERSITY OF THE WITWATERSRAND JOHANNESBURG

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)

Office of the Deputy Vice-Chancellor (Research and Innovation)

TO: Ms MM Vangu
School of Therapeutic Sciences
Department of Occupational Therapy
Medical School
University

E-mail: 547063@students.wits.ac.za

CC: Supervisor: Ms L Koch
<Lyndsay.Koch@wits.ac.za>
and <HREC-Medical Research Office@wits.ac.za>

FROM: Mr Iain Burns
Human Research Ethics Committee (Medical)
Tel: 011 717 1252

E-mail: Iain.Burns@wits.ac.za

DATE: 2022/03/08

REF: R14/49

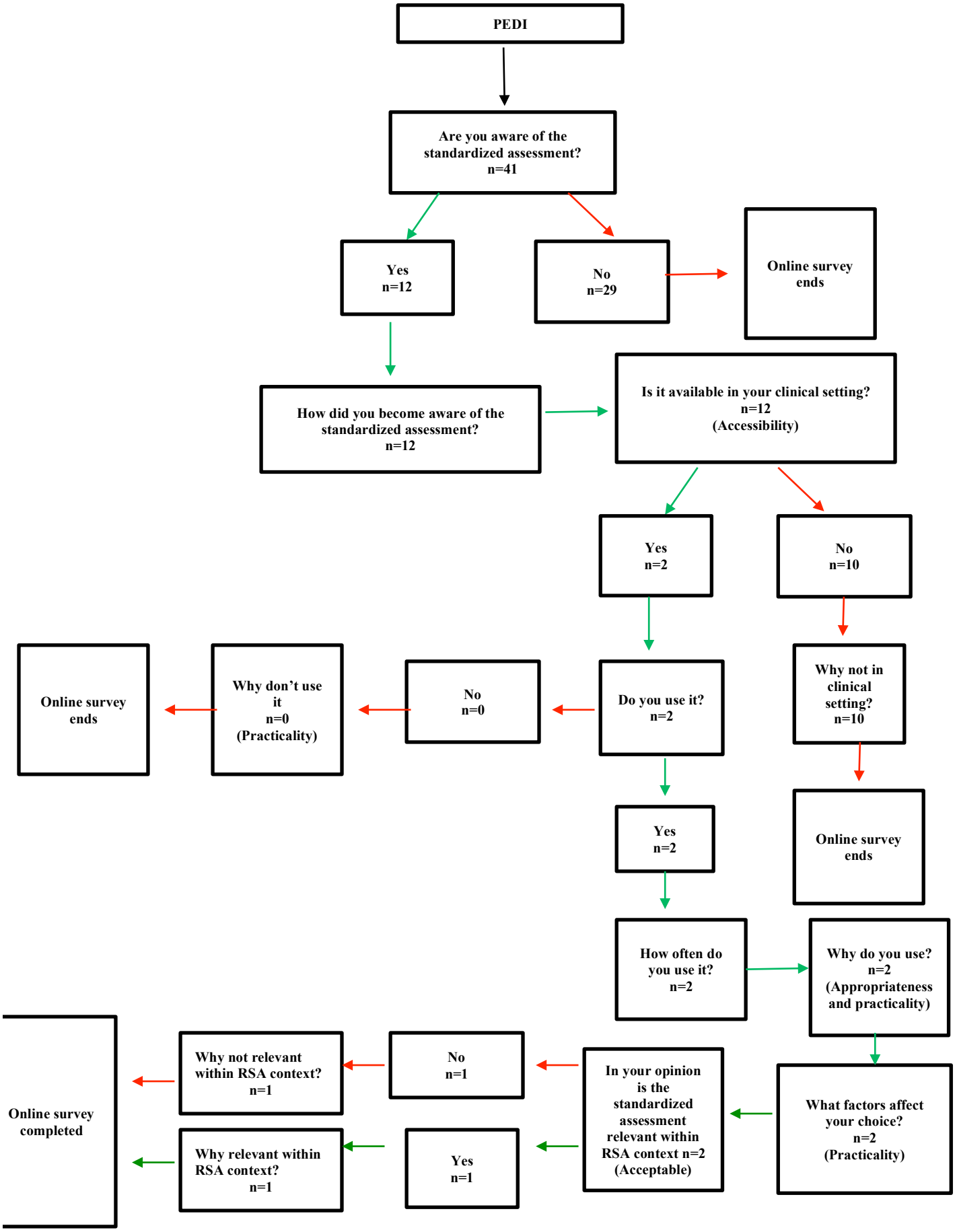
PROTOCOL NO: **M211191** (This is your ethics application reference number. Please quote it in all enquiries, oral or written, relating to this study.)

PROJECT TITLE: *Evaluation of standardised assessments used in Occupational Therapy for children with Cerebral Palsy in South Africa.*

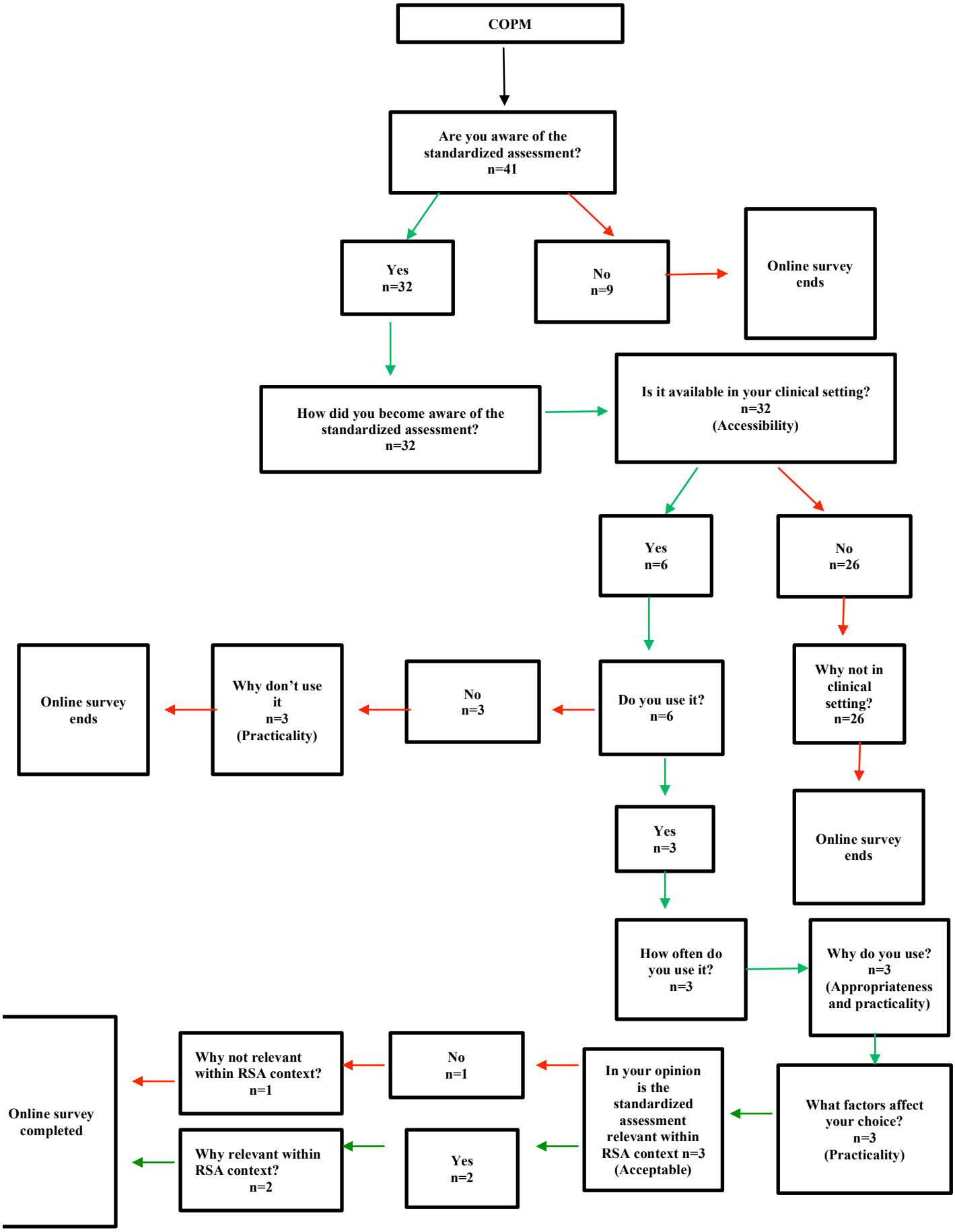
Please find attached the Clearance Certificate for the above project. I hope it goes well and that an article in a recognized publication comes out of it. This will reflect well on your professional standing and contribute to Government funding of the University.

MSWorks2000/Iain0007/Clearscan.wps

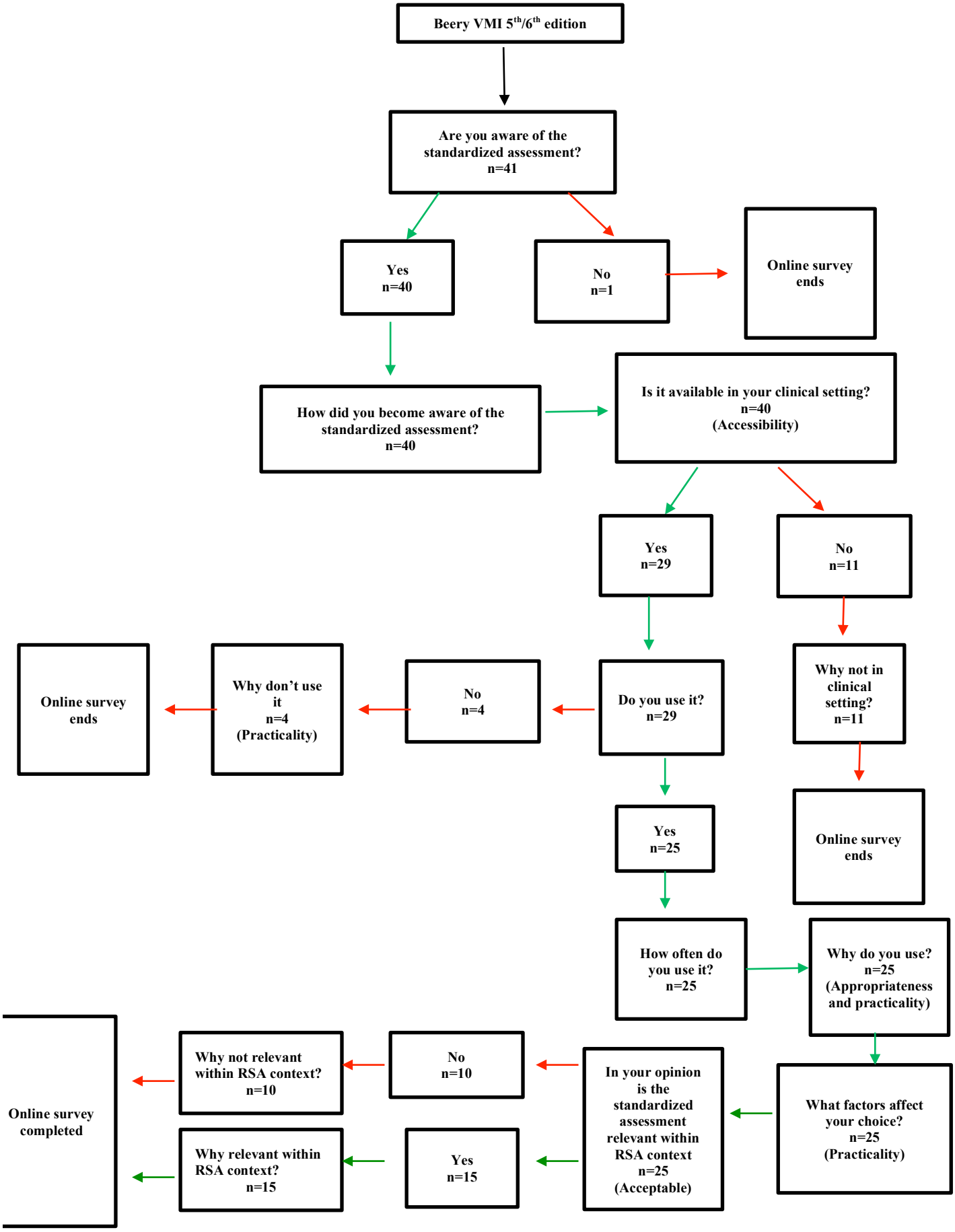
APPENDIX J: PEDI: flow chart online survey



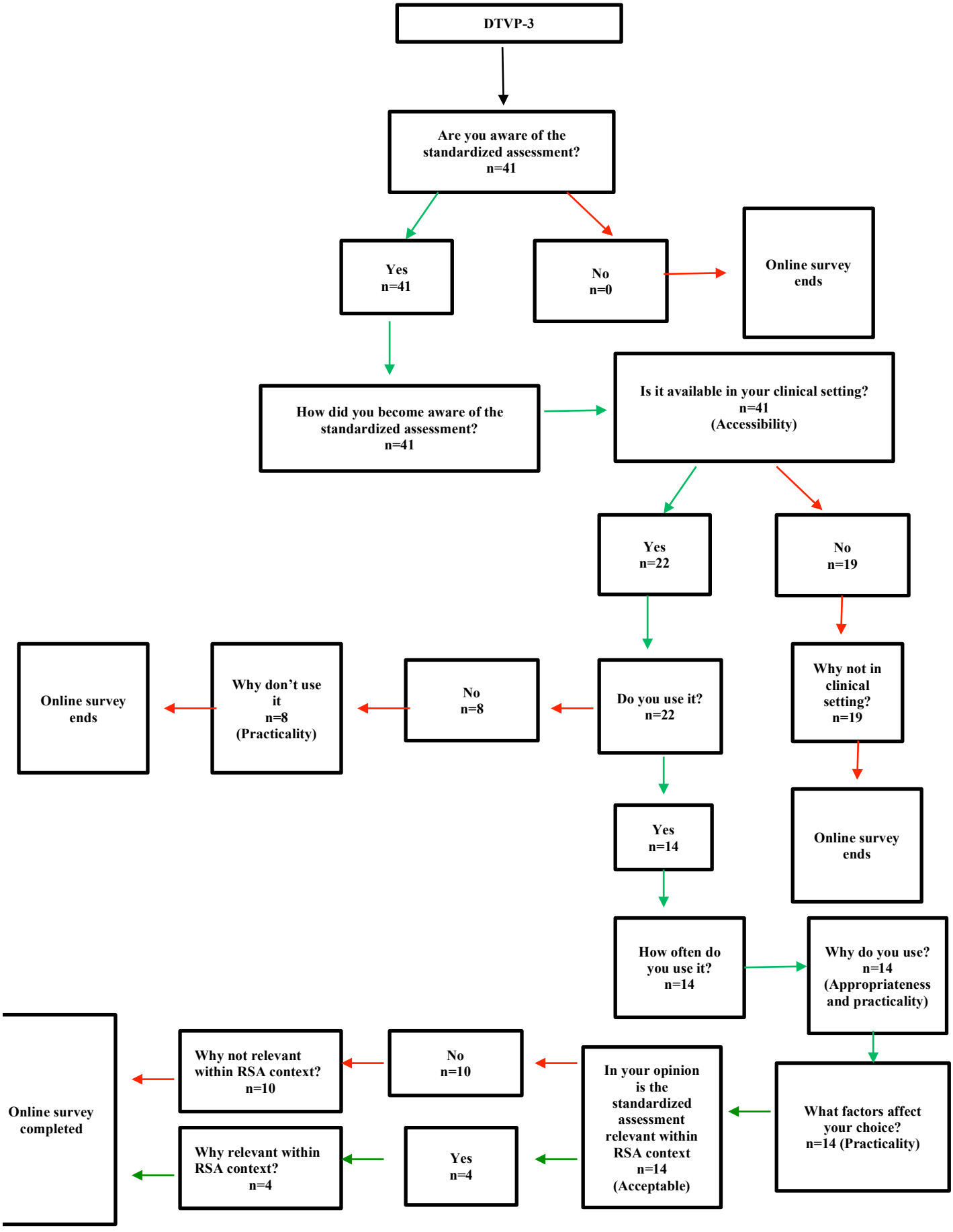
APPENDIX K: COPM: flowchart online survey



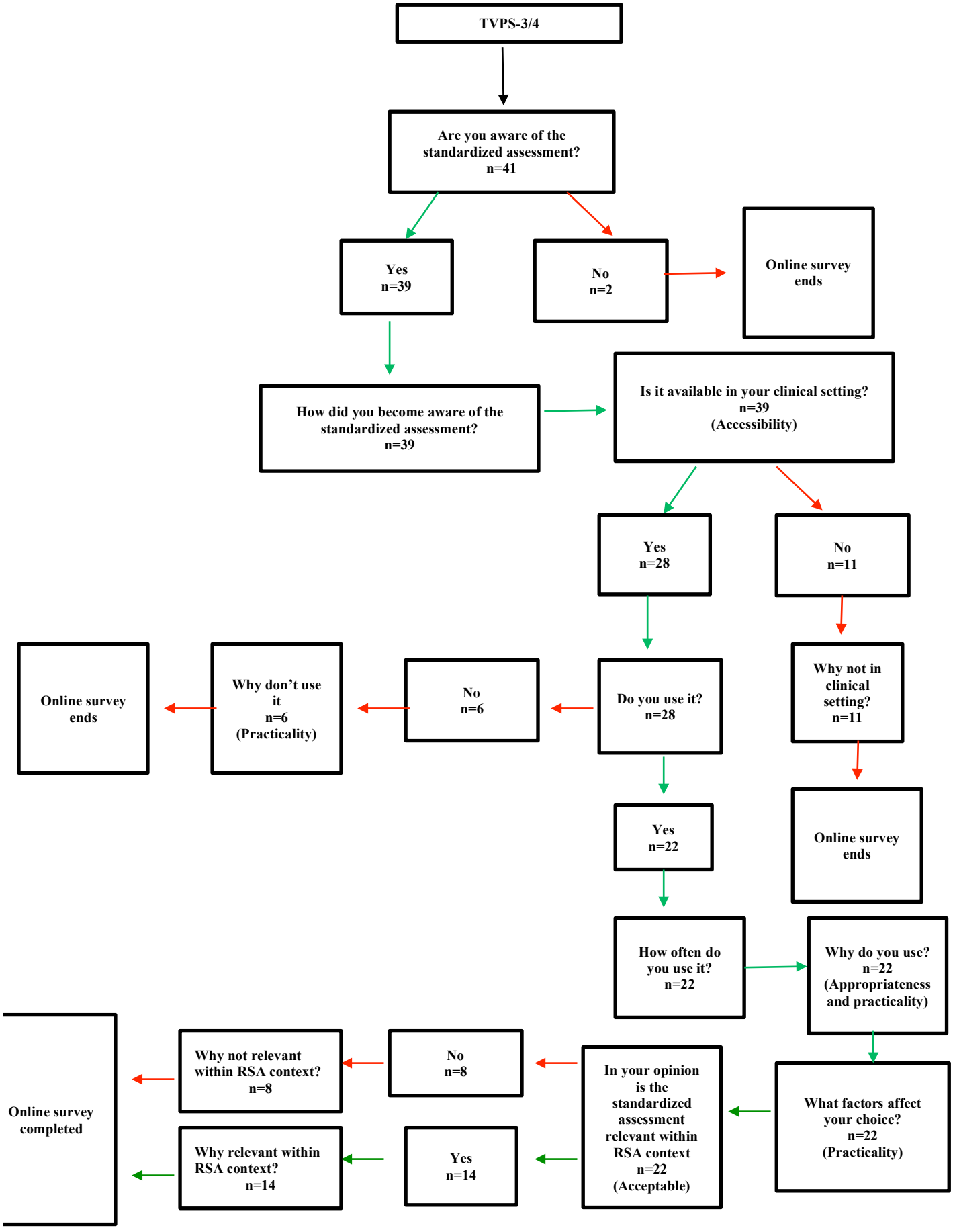
APPENDIX L: Beery VMI 5th /6th edition: flowchart online survey



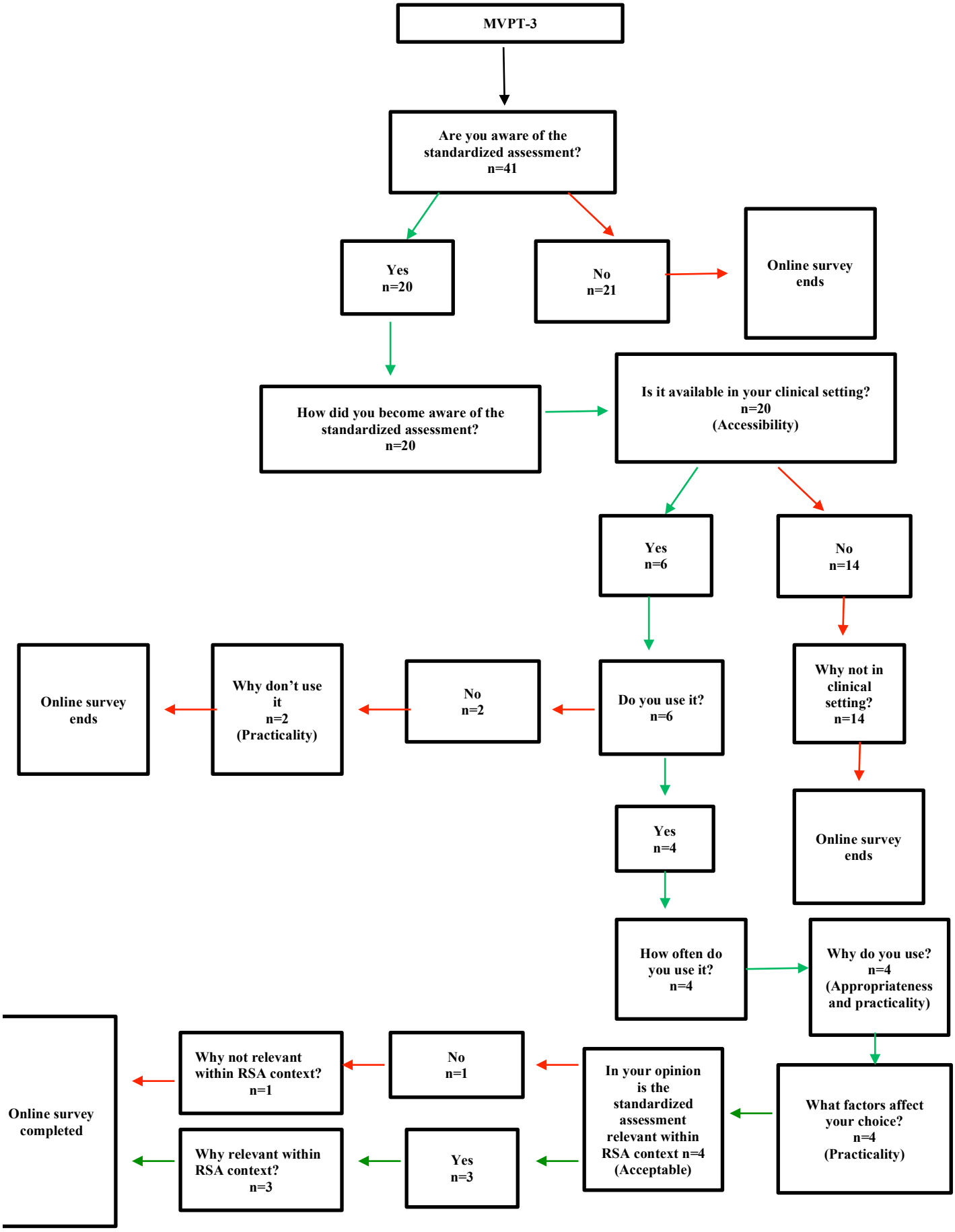
APPENDIX M: DTVP-3: flowchart online survey



APPENDIX N: TVPS-3/4: flowchart online survey



APPENDIX O: MVPT -3: flowchart online survey



APPENDIX P: Block and Box test: flowchart online survey