

UNIVERSITY OF THE
WITWATERSRAND,
JOHANNESBURG



**EVIDENCE OF DETERMINING CLINICAL
UTILITY IN THE DEVELOPMENT OF
ASSESSMENTS IN OCCUPATIONAL THERAPY:
A SCOPING REVIEW.**

LINDSAY DAWSON

2272561

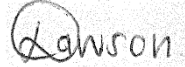
A Research Report submitted to the Department of Occupational Therapy of the University of the Witwatersrand, Johannesburg, in partial fulfilment of the requirements for the degree of Masters of Science in Occupational Therapy, Johannesburg, June 2022.

Declaration

I, **Lindsay Dawson** declare that this Research Report is my own, unaided work. It is being submitted for the **Master of Sciences in Occupational Therapy degree** at the University of Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at any other University.

Lindsay Dawson

Name of candidate

A handwritten signature in black ink that reads "LAWSON". The signature is written in a cursive style with a large initial 'L' and is positioned above a horizontal line.

Signature of candidate

23rd day of June 2022 in Centurion.

Plagiarism Declaration

Faculty of Health Sciences, Postgraduate Office

Phillip V Tobias Building, 2nd Floor

Cnr York & Princess of Wales Terrace, Parktown 2193

Tel: (011) 717 2745 | Fax: (011) 717 2119

Email: Mathoto.senamela@wits.ac.za



PLAGIARISM DECLARATION TO BE SIGNED BY ALL HIGHER DEGREE STUDENTS

SENATE PLAGIARISM POLICY: APPENDIX ONE

I **Lindsay Dawson** (Student number: **2272561**) am a student registered for the degree of **MSc Occupational Therapy** in the academic year **2019**.

I hereby declare the following:

- I am aware that plagiarism (the use of someone else's work without their permission and/or without acknowledging the original source) is wrong.
- I confirm that the work submitted for assessment for the above degree is my own unaided work except where I have explicitly indicated otherwise.
- I have followed the required conventions in referencing the thoughts and ideas of others.
- I understand that the University of the Witwatersrand may take disciplinary action against me if there is a belief that this is not my own unaided work or that I have failed to acknowledge the source of the ideas or words in my writing.
- I have included as an appendix a report from "Turnitin" (or other approved plagiarism detection) software indicating the level of plagiarism in my research document.

Signature:  Date: 19/01/2022

Acknowledgements

I would like to express my sincere gratitude and appreciation for everyone who has supported me through the process of completing this degree.

- To my family and fiancé, without your love, patience, support, and encouragement, this would not have been possible.
- To my supervisor, Dr Janine van der Linde, thank you for your assistance and guidance during the completion of the study.

Abstract

Occupational therapists rely on information gained from standardised assessments, screening instruments, and clinical observations to determine a client's strengths and weaknesses (American Occupational Therapy Association [AOTA], 2020; Brown, 2010; Foxcroft & Roodt, 2013; Kramer et al., 2009; Richardson, 2010). The information gained from the assessment will be used for planning of intervention and discharge, writing of reports and documentation, as well as applying for funding from medical aids (Alotaibi et al., 2009; Asaba et al., 2017; Benson & Clark, 1982; Scott et al., 2006; Unsworth, 2000). Clinical practice is therefore demanding assessments that are not only psychometrically sound but are appropriate to the context in which they are used (Bossuyt et al., 2012; Foxcroft et al., 2004; Glover & Albers, 2007; Nalder et al., 2017). Clinical utility can be described as how useful and appropriate the assessment is within a specific setting (Benson & Clark, 1982; Lesko et al., 2010; Macy, 2012; Nalder et al., 2017). This is especially important within the South African context, where occupational therapists often use assessments that were developed in the Global North. During assessment development, validity and reliability are often the only factors determined to establish the psychometric properties of an assessment (Benson & Clark, 1982; Salmond, 2008; Switzer et al., 1999). However, it is essential to determine the clinical utility of an assessment during the psychometric testing phase in assessment development. This will allow the developer to adjust the assessment to suit the characteristics and needs of the population and context (Bowyer et al., 2012).

A scoping review was conducted to determine whether there is evidence of clinical utility being determined as part of psychometric testing during assessment development in occupational therapy. The study aimed to map the available literature on clinical utility in occupational therapy and identify possible gaps within the existing literature. A comprehensive search of published and unpublished literature between January 2005 and December 2020 was conducted. The search yielded 38 applicable studies.

The results of the study indicated an increase in the number of studies done on the clinical utility of assessments within the last 10 years. The majority of the studies were conducted in Global North countries including Australia, the United States of America, and the United Kingdom. The included studies used a variety of study designs, including qualitative, quantitative, and mixed method research designs. The study also

included both systematic and literature reviews. However, these designs often did not include the context for which the clinical utility was being determined. A wide variety of components of clinical utility were included within the research, emphasising the lack of a standardised definition as well as a process for establishing the clinical utility. Limited studies on clinical utility were conducted during the assessment development process. Studies were mostly conducted when an already developed assessment was used in a different context to which it was initially developed. None of the included research was conducted in South Africa. Therefore, the results from the Global North cannot be generalised to the diverse context and rich cultural population of South Africa, which forms part of the Global South.

TABLE OF CONTENTS

Declaration.....	i
Plagiarism Declaration.....	ii
Acknowledgements.....	iii
Abstract.....	iv
List of Tables.....	ix
List of Figures.....	x
List of Appendices.....	xi
Operational Definitions.....	xii
List of Abbreviations.....	xv
Chapter 1 : Introduction.....	1
1.1 Introduction & background.....	1
1.2 Problem statement.....	2
1.3 Research question.....	3
1.4 Research aims.....	3
1.5 Research objectives.....	3
1.6 Significance of the study.....	3
1.7 Outline of this research report.....	4
Chapter 2 : Literature Review.....	5
2.1 Introduction.....	5
2.2 The role of assessment in occupational therapy.....	5
2.2.1 Occupational therapy.....	5
2.2.2 Assessments in occupational therapy.....	7
2.3 Development of contextually appropriate assessments.....	8
2.3.1 Assessment development.....	8
2.3.2 Psychometric testing in assessment development.....	10
2.3.3 Contextual considerations in assessment development.....	13
2.4 Clinical utility.....	16
2.4.1 Clinical utility as a concept.....	17
2.4.2 Clinical utility in assessment development.....	17
2.4.3 Clinical utility in therapeutic and rehabilitative healthcare services.....	19
2.5 Clinical utility in occupational therapy.....	21

2.6 Summary	23
Chapter 3 : Methodology	25
3.1 Introduction.....	25
3.2 Study design.....	25
3.3 Inclusion and exclusion criteria.....	26
3.3.1 Inclusion criteria.....	26
3.3.2 Exclusion criteria.....	26
3.4 Data collection procedure	27
3.4.1 Search strategy.....	27
3.4.2 Summary of data collection	29
3.5 Data extraction	30
3.6 Data analysis and synthesis	30
3.7 Ethical considerations.....	32
3.8 Conclusion.....	32
Chapter 4 : Results.....	33
4.1 Introduction.....	33
4.2 Distribution of studies	33
4.2.1 Distribution of articles by year of publication.....	33
4.2.2 Distribution of articles by country	34
4.3 Research design, methodology, sample size and population of included articles	34
4.3.1 Research design and methodology	34
4.3.2 Sample size	35
4.3.3 Population.....	36
4.4 Clinical utility investigation within occupational therapy	36
4.4.1 Domains of occupational therapy included in clinical utility studies	36
4.4.2 Inclusion of clinical utility within assessment development	37
4.4.3 Components of clinical utility	38
4.5 Conclusion.....	41
Chapter 5 : Discussion	43

5.1	Introduction.....	43
5.2	Demographics, research design, sample size and population.....	43
5.2.1	Demographics of the included literature	43
5.2.2	Research design and methodology used.....	44
5.2.3	Sample sizes	46
5.2.4	Population.....	46
5.3	Clinical utility within occupational therapy.....	47
5.3.1	Clinical utility as a concept in occupational therapy	47
5.3.2	Domains in occupational therapy assessments included in clinical utility studies 51	
5.3.3	Evidence of clinical utility studies in assessment development	52
5.4	Conclusion.....	53
Chapter 6	: Conclusion and Recommendations	55
6.1	Conclusion.....	55
6.2	Implications for practice	57
6.3	Recommendation for future research	58
6.4	Limitations of this study	59
6.4.1	Limitations of the included studies	60
6.5	Conflict of interest.....	60
6.6	Funding.....	60
References	61
Appendices	72

List of Tables

Table 3.1 Search terms for Step two of data collection.....	27
Table 3.2 Articles found per database.....	29
Table 4.1 Average sample size per research design.....	36
Table 4.2 Components of clinical utility assessed.....	39

List of Figures

Figure 1.1 Outline of the research report.....	4
Figure 2.1 The domain of occupational therapy according to the Occupational Therapy Practice Framework: 4 rd edition (AOTA, 2020: p.7).....	6
Figure 2.2 The proposed steps to determine clinical utility alongside the psychometric properties of an assessment tool (Bowyer et al., 2012: p.21).....	18
Figure 3.1 PRISMA flow diagram (Page et al., 2021: p.5).....	30
Figure 4.1 Distribution of articles by year of publication.....	33
Figure 4.2 Distribution of articles by country.....	34
Figure 4.3 Distribution of articles by research design.....	35
Figure 4.4 Distribution of articles by domains of occupational therapy.....	37

List of Appendices

Appendix A: Record of literature searches.....	75
Appendix B: Data extraction tables.....	76
Appendix C: Ethical waiver.....	93
Appendix D: Turnitin report.....	94

Operational Definitions

Assessment	A tool or instrument that is used to describe a client's current functioning in terms of their occupational profile, client factors, performance skills, performance patterns and environmental factors (AOTA, 2020)
Client factors	"Specific capacities, characteristics, or beliefs that reside within the person and that influence performance in occupations. Client factors include values, beliefs, and spirituality; body functions; and body structures" (AOTA, 2020: p. 75)
Clinical utility	Clinical utility can be described as how useful and appropriate the assessment is within a specific setting (Benson & Clark, 1982; Lesko et al., 2010; Macy, 2012; Nalder et al., 2017).
Context	"Construct that constitutes the complete makeup of a person's life as well as the common and divergent factors that characterize groups and populations. Context includes environmental factors and personal factors." (AOTA, 2020: p. 76)
Environmental factors	"Aspects of the physical, social, and attitudinal surroundings in which people live and conduct their lives." (AOTA, 2020: p. 76)
Occupation	"Everyday personalized activities that people do as individuals, in families, and with communities to occupy time and bring meaning and purpose to life. Occupations can involve the execution of multiple activities for completion and can result in various outcomes. The broad range of occupations is

categorized as activities of daily living, instrumental activities of daily living, health management, rest and sleep, education, work, play, leisure, and social participation.” (AOTA, 2020: p. 79)

Occupational performance “Accomplishment of the selected occupation resulting from the dynamic transaction among the client, their context, and the occupation.” (AOTA, 2020: p. 80)

Occupational profile “Summary of the client’s occupational history and experiences, patterns of daily living, interests, values, needs, and relevant contexts” (AOTA, 2020: p. 80)

Performance patterns “Habits, routines, roles, and rituals that may be associated with different lifestyles and used in the process of engaging in occupations or activities. These patterns are influenced by context and time and can support or hinder occupational performance.” (AOTA, 2020: p. 80)

Performance skills “Observable, goal-directed actions that result in a client’s quality of performing desired occupations. Skills are supported by the context in which the performance occurred and by underlying client factors.” (AOTA, 2020: p. 80)

Psychometric properties “The properties of the instrument as it functions within the context.” (Switzer et al., 1999: p.399). This provides information about how accurate the assessment tool is and the quality of results that can be expected from the assessment (De Souza et al., 2017; Salmond, 2008). This construct usually only included the reliability and validity of assessments (Bowyer et al., 2012; Switzer et al., 1999).

Reliability

Reliability refers to the ability of the assessment tool to provide a true score of the constructs being assessed and that the scoring is not altered by the examiner or environmental conditions (Salmond, 2008; Switzer et al., 1999).

Validity

The validity of an assessment tool refers to the ability of the tool to assess the construct for which it was developed (Salmond, 2008; Switzer et al., 1999).

List of Abbreviations

AOTA	American Occupational Therapy Association
CAP-M	Comparative Analysis of Performance – Motor
COPM	Canadian Occupational Performance Measure
CVI	Content validity index
DASH	Disability of the Arm Shoulder and Hand
FLACC	The Face, Legs, Activity, Cry, Consolability
HART	Handicap Assessment and Resource Tool
HIV	Human immunodeficiency virus
HPCSA	Health Professions Council of South Africa
I-HOPE	In Home Occupational Performance Evaluation
IRO	Inventory of Reading Occupations
JBI	Joanna Briggs Institute
MATCH-ACES	Matching Assistive Technology and Child with augmentative communication evaluation simplified supplement
MET	Multiple Errands Test
NICU	Neonatal Intensive Care Unit
PAT	Pain Assessment Tool
PICU	Paediatric Intensive Care Unit
PPR profile	Pleasure, Productivity and Restoration Profile
PRISMA	Preferred Reporting Items for Systematic reviews and Meta-Analyses
PRISMA-ScR	Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews

SARA	Self-Assessment of Role-performance and activities of daily living Abilities
SASISI	South African Sensory Integration Screening Instrument
SCOPE	Short Child Occupational Profile
SDO	Satisfaction with Daily Occupations
SEQ	Sensory Experiences Questionnaire
SIPT	Sensory Integration and Praxis Tests
SP	Sensory Profile
SPM	Sensory Processing Measure
UK	United Kingdom
USA	United States of America
WRI-S	Worker Role Interview Swedish version

1.1 Introduction & background

As part of the therapeutic process, occupational therapists rely on information gained from standardised assessments, screening instruments, and clinical observations to determine a client's strengths and weaknesses (American Occupational Therapy Association [AOTA], 2020; Brown, 2010; Foxcroft & Roodt, 2013; Kramer et al., 2009; Richardson, 2010). Clinical practice is therefore demanding assessments that are not only psychometrically sound but are appropriate to the context in which they are used (Bossuyt et al., 2012; Foxcroft et al., 2004; Glover & Albers, 2007; Nalder et al., 2017). During psychometric testing, determining the validity of an assessment should include determining the clinical utility and thus whether it is relevant to the context (Switzer et al., 1999). Even though no formal definition of clinical utility is available in the literature (Smart, 2006), clinical utility can be described as how useful and appropriate the assessment is within a specific setting (Benson & Clark, 1982; Lesko et al., 2010; Macy, 2012; Nalder et al., 2017). Occupational therapists often use internationally developed assessments and adapt them to the context and needs of the population (Pascoe & Norman, 2011). This could result in an assessment that is not appropriate to the culture, nor useful within the context (Alotaibi et al., 2009; Foxcroft, 2012; Foxcroft & Roodt, 2013). In South Africa, it is especially important to ensure that assessments are appropriate for our unique context. Occupational therapists in South Africa work in a variety of settings, including private and public hospitals and clinics, rehabilitation centres, insurance companies, nursing homes, care centres, and schools (Jansen van Vuuren et al., 2020). Services are provided to people of different ages, cultural backgrounds, and socio-economic standings (Jansen van Vuuren et al., 2020; van der Linde, 2019; Van Stormbroek & Buchanan, 2017).

Research in determining and/or investigating the clinical utility of assessments has been emerging within therapeutic and rehabilitative healthcare services over the last 20 years (Burton & Tyson, 2015; Higa et al., 2002; Nalder et al., 2017; Tyson & Connell, 2009a; Voepel-Lewis et al., 2008). It is therefore important and relevant to determine the clinical utility in the development of assessments in the field of occupational therapy.

1.2 Problem statement

Assessments are often developed internationally and used within different contexts, resulting in assessments that are not contextually appropriate or suited for the culturally diverse population (Foxcroft, 2012; Pascoe & Norman, 2011). Bowyer et al. (2012) highlighted a limitation during traditional assessment development. They noted that only the validity and reliability of new assessments are determined, and the test developer does not investigate the clinical usefulness of the assessment for health care practitioners specific to their context. Using an assessment in a context that is different from the initial context for which it was developed, impacts the accuracy and usefulness of the results (Jorquera-Cabrera et al., 2017; Van Jaarsveld et al., 2012; Wren & Benson, 2004). Measurable and reliable outcomes are required to determine the effectiveness of treatment in all settings, motivate for funding, and emphasise the need for occupational therapy services in different contexts (Alotaibi et al., 2009; Asaba et al., 2017; Benson & Clark, 1982; Rudman & Hannah, 1998; Scott et al., 2006; Unsworth, 2000). It is thus essential for occupational therapists to select an assessment that is appropriate for their therapeutic goals, population, and setting (Darzins et al., 2016; Rudman & Hannah, 1998; Unsworth, 2000). Limited studies have been done to determine clinical utility in not only therapeutic and rehabilitative healthcare services (Bowyer et al., 2012), but also in the field of occupational therapy. Consequently, occupational therapists from the Global South, use assessments that have been developed in the Global North, resulting in contextually inappropriate assessments (Pascoe & Norman, 2011). In a country with a multicultural population and diverse contexts such as South Africa, it is essential to select contextually appropriate assessments to provide a service that is fair and just (Health Professions Council of South Africa [HPCSA], 2008). Using assessments that are not contextually appropriate will impact not only clinical practice but also research (Brown, 2010). The use of inappropriate assessments may result in clients not receiving the appropriate services, lack of funding for therapeutic intervention and poor record keeping. Research containing data from inappropriate assessments will contain questionable results (Brown, 2010), impacting the usefulness of the research in evidence-based practice. It is thus important to determine whether research into the clinical utility of assessments is conducted during the assessment development process, for the context in which the assessment is intended to be used.

1.3 Research question

The study aimed to answer the following research question:

- What is the evidence available for determining clinical utility in the development of assessments in occupational therapy?

1.4 Research aims

- To map the evidence available for determining clinical utility in the development of assessments in occupational therapy.
- To identify possible gaps within research and the development of assessments.
- To use the results of this study to advocate for the importance of determining the clinical utility of assessments.

1.5 Research objectives

The following objectives were used to guide the study:

- To determine whether clinical utility is included in psychometric testing during assessment development in occupational therapy.
- To map the available literature on clinical utility in occupational therapy assessments.

1.6 Significance of the study

An assessment with good clinical utility should be used to gain appropriate and accurate results in order to provide a service that aligns with the Health Professions Council of South Africa (HPCSA) good practice guidelines and that is fair and just to the population (Foxcroft, 2012; HPCSA, 2008; Van Jaarsveld et al., 2012). Clinical utility is an emerging field that should be included within the development of assessments to ensure that an assessment is applicable to the population for which it is being used. This is important, as the results of assessments impact the practitioners' clinical decisions, such as planning appropriate interventions, monitoring progress and planning discharge (Bowyer et al., 2012; Foxcroft & Roodt, 2013; Kramer et al., 2009). This study will investigate the evidence available for determining clinical utility within occupational therapy assessments. This aims to help identify possible gaps within

research and the development of assessments. The results of this study could be used to advocate for the importance and need of determining clinical utility of assessments. This is essential within the diverse context of South Africa and would ultimately assist in ensuring that appropriate, efficient assessments are used for the South African population.

1.7 Outline of this research report

The research report consists of six chapters in total. Chapter one provided the introduction. Chapter two will provide an in-depth literature review on the key components of the study. Chapter three will report on the methodology used for this research report, including the search strategy and the data collection process. In Chapter four the results will be illustrated through the use of table and figures to summarise the key findings. In Chapter five, the results will be discussed based on the research objectives of the study. Lastly, Chapter six will provide a conclusion of what the results of this study mean for clinical practice and recommendations will be made for future research. The following diagram indicates the outline of this research report.

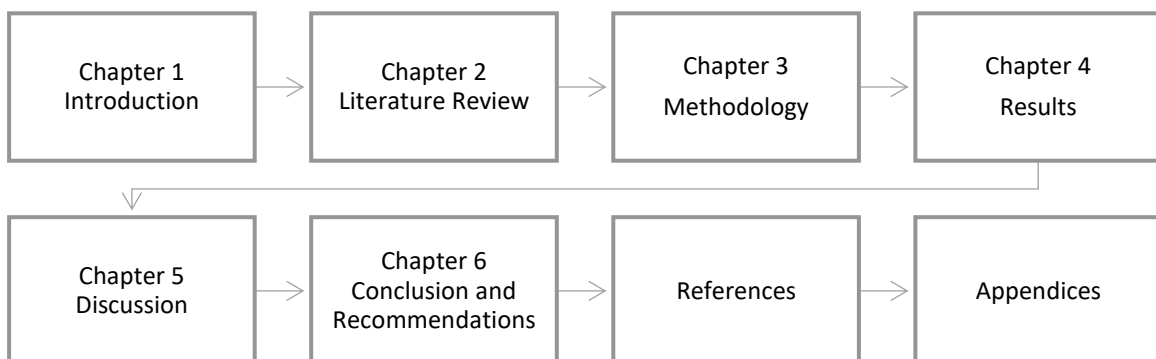


Figure 1.1 Outline of the research report

2.1 Introduction

This study aims to report on the current evidence available for determining the clinical utility in the development of assessments in occupational therapy, in order to identify possible gaps and advocate for inclusion of clinical utility studies within research. Chapter two includes a critical review of the literature on the role of assessments in occupational therapy, assessment development and the importance of considering the context in this process. Clinical utility as a concept will be explored, as well as where it fits into the assessment development process. Lastly, this chapter will investigate whether clinical utility has been established within assessment development in therapeutic and rehabilitative healthcare services.

2.2 The role of assessment in occupational therapy

2.2.1 Occupational therapy

Occupational therapy aims to improve the engagement and participation in daily occupations of individuals and groups (AOTA, 2020). The key focus in occupational therapy is the interaction between the person, occupation and environment (AOTA, 2020; Wong & Fisher, 2015). The occupational therapy process consists of evaluating the client, his occupational performance, as well as his environment, in order to plan and provide client-centred intervention to address specific outcomes (AOTA, 2020). Figure 2.1 illustrates the domain of occupational therapy.

Occupation stands central to the profession and is defined as everyday activities that a person engages in that adds meaning and purpose to their lives (AOTA, 2020; Gallagher et al., 2015). During the evaluation step of the therapeutic process, an occupational therapist would determine a client's occupational profile in addition to their occupational performance (AOTA, 2020). A client's occupational profile includes the occupations that they need and want to do, whereas the occupational performance is determined by whether a person can engage, as well as how well they are able to engage in those occupations (AOTA, 2020).

Whilst assessing a client to determine strengths and weaknesses, the occupational therapist will assess performance patterns, performance skills, and client factors (AOTA, 2020). Performance patterns include factors that could either hinder or aid occupational engagement including habits, routines, roles, and rituals (AOTA, 2020). Performance skills include the motor, process, and social skills that a person needs to perform an occupation within a social context (AOTA, 2020). Client factors are defined as the factors pertaining to a client which will impact their occupational performance and include their beliefs and values, body functions, and body structures (AOTA, 2020).

The context in which the occupation takes place, impacts the nature of the occupation. This could either hinder or aid a person's occupational performance (Whiteford, 2010). Context includes both environmental and personal factors which impact a client's engagement in occupations (AOTA, 2020). Thus, it is essential to include the contextual and environmental factors in the assessment process, as an occupation does not occur in isolation (AOTA, 2020; Whiteford, 2010). South African occupational therapists are required to navigate the impact of diverse contexts; whether working in private facilities with medical funding or providing services in rural communities with limited resources (Jansen van Vuuren et al., 2020).

Occupations	Contexts	Performance patterns	Performance skills	Client factors
<ul style="list-style-type: none"> •Activities of daily living (ADLs) •Instrumental activities of daily living (IADLs) •Health management •Rest and sleep •Education •Work •Play •Leisure •Social participation 	<ul style="list-style-type: none"> •Environmental factors •Personal factors 	<ul style="list-style-type: none"> •Habits •Routines •Roles •Rituals 	<ul style="list-style-type: none"> •Motor skills •Process skills •Social interaction skills 	<ul style="list-style-type: none"> •Values, beliefs and spirituality •Body functions •Body structures

Figure 2.1 The domain of occupational therapy according to the Occupational Therapy Practice Framework: 4rd edition (AOTA, 2020: p.7).

An occupational therapist thus needs to determine if there are any barriers or facilitators that may impact engagement in occupation. Assessments in occupational therapy are used for this purpose (AOTA, 2020; Brown, 2010; Foxcroft & Roodt, 2013; Kramer et al., 2009; Richardson, 2010).

Assessments in occupational therapy can be occupation-centred or assess specific body functions and performance skills (Asaba et al., 2017). Occupational therapists assess and provide services to clients across their lifespan, including newborn babies, school-going children, adults, and the elderly (Jansen van Vuuren et al., 2020). Occupational therapy thus services a large and diverse population group including fields such as paediatrics, physical rehabilitation, mental health, hand therapy, and vocational rehabilitation (AOTA, 2020). Assessments used can overlap between different fields or can be unique to the specific field depending on the client's need (Alotaibi et al., 2009).

2.2.2 Assessments in occupational therapy

Assessments are used to determine barriers and facilitators to occupational engagement and performance (Alotaibi et al., 2009; AOTA, 2020; Brown, 2010; Kramer et al., 2009). An assessment predominantly assesses one or more attributes. This is used to determine a client's level of functioning at various points in time (Scott et al., 2006; Unsworth, 2000). Assessments are not only used at the start of the therapeutic process to determine therapy goals but also to monitor progress, determine the effectiveness of an intervention, apply for medical aid benefits, and determine discharge from therapy (Alotaibi et al., 2009; Asaba et al., 2017; Benson & Clark, 1982; Scott et al., 2006; Unsworth, 2000).

An occupational therapist relies on theory-driven clinical reasoning to determine the most appropriate assessment needed for the situation (Alotaibi et al., 2009; AOTA, 2020). They make use of outcome measurements such as standardised assessments, screening tools, questionnaires, and clinical observations. Alotaibi, Reed and Nadar (2009) conducted an exploratory study to determine the reasons therapists choose specific assessments in occupational therapy. The findings of the study indicated that availability, time efficiency, ease of administration and scoring, as well as standardisation were the main factors considered when selecting an assessment

(Alotaibi et al., 2009). The choice of assessment is also influenced by the cost of the assessment (purchasing of materials or scoring) and medical aid expectations for reimbursement (Kramer et al., 2009). When selecting an assessment it is thus essential to select an assessment that is suitable to the client, practice setting, context and population (Darzins et al., 2016; Unsworth, 2000).

2.3 Development of contextually appropriate assessments

When considering the appropriateness of assessments, it has been noted that assessments should not only have good psychometric properties (Nalder et al., 2017) but should also be contextually appropriate (Darzins et al., 2016; Lecuona et al., 2016; Unsworth, 2000). Occupational therapists often rely on assessments developed by other professions, however, there has been a steady increase in the development of assessments specifically for the occupational therapy domain (Asaba et al., 2017).

2.3.1 Assessment development

Contextually appropriate assessments are described in the literature as assessments that have been developed for a specific population within a specific context (Pascoe & Norman, 2011). If no contextually appropriate assessments are available, internationally developed assessments are often adapted to suit the needs of the therapists (DeVellis, 2017; Pascoe & Norman, 2011). The assessment development process is dynamic and further investigations into the use of an assessment could result in adapting the assessment tool in order to make it more appropriate for a specific setting (Foxcroft, 2012). The limited information and training in assessment development has an impact on the willingness of therapists to develop new assessment tools. Therapists would often rather adapt an existing assessment to suit the situation (DeVellis, 2017). Foxcroft (2012), noted that a risk of this practice is that it may result in the use of assessments that might not be culturally appropriate and useful within the context. When using a standardised assessment, the clinician is expected to conduct the assessment in a standardised manner according to the manual and will compare the client's results to the norms of the assessment (Pascoe & Norman, 2011). If the assessed client is from a different population or context than the clients from whom the normative data was collected, it could impact on the fairness and usefulness of the information (Evetts et al., 2021; Jorquera-Cabrera et al., 2017; Van Jaarsveld et al., 2012).

Switzer et al. (1999) justify the creation of a new assessment if there are no appropriate established measures available or if a nearly appropriate measure cannot be adjusted. When developing a new assessment it is important to note that the assessment tool should provide better outcomes than the existing alternative assessments available (Bossuyt et al., 2012). Benson and Clark (1982) explained that assessment development occurs within four phases, including planning, construction, quantitative evaluation, and validation, with each phase containing multiple steps. Multiple authors have relied on the four-step process to develop and validate assessments (Desrosiers et al., 1993; Kirby et al., 2010; Kruger et al., 2021; Rosenberg et al., 2010; Tungjan et al., 2021; Wren & Benson, 2004). In this proposed model for assessment development, limited emphasis is placed on external or contextual factors that should be incorporated in the development process. In a study done by Tungjan et al. (2021), while using the development process as described by Benson and Clark (1982) they added an additional step to determine the feasibility of the training within a specified population and context.

Guidelines such as the Instrument Evaluation Framework (Rudman & Hannah, 1998) as well as the Outcome Measure Rating Form Guidelines (Law, 1987) have been developed to evaluate assessments and ensure a good fit between client, context and assessment. Both the guidelines emphasise the importance of clinical utility as the first phase, which allows the therapist to investigate the clinical utility of an assessment to determine its usefulness (Law, 1987; Rudman & Hannah, 1998). Together, the American Educational Research Association, the American Psychological Association, and the National Council on Measurement in Education developed a Standards for Educational Psychological Testing that was published in 1999 (Salkind, 2015). This document provides a baseline of criteria that could be used to evaluate assessments. However, there is no legislation that binds assessment developers to abide by the criteria (Salkind, 2015). Evidence-based practice however requires therapists to use assessments that are psychometrically sound (Nalder et al., 2017). As part of the development of an assessment, it is imperative to determine the psychometric properties to ensure that reliable and valid information is gained from the assessment and to make the assessment suitable for the context in which it is used (Switzer et al., 1999)

2.3.2 Psychometric testing in assessment development

Switzer et al. (1999: p.399) describes psychometric properties as “the properties of the instrument as it functions within the context.” These authors indicate that at a minimum, psychometric requirements when evaluating research instruments or assessments should include reliability and validity (Switzer et al., 1999).

The psychometric properties of an assessment tool provide insight into how accurate the assessment tool is and the quality of results that can be expected from the assessment (De Souza et al., 2017; Salmond, 2008). Evaluation of the psychometric properties, mostly including reliability and validity, occur within the different phases of test development and result in continuous refinement (Benson & Clark, 1982).

2.3.2.1 Reliability

Reliability refers to the ability of the assessment tool to provide a true score of the constructs being assessed and that the scoring is not altered by the examiner or environmental conditions (Salmond, 2008; Switzer et al., 1999). A reliable assessment tool will allow for accurate interpretation of the results and will allow the examiner to track progress within the same population (Salmond, 2008).

Reliability pertains to the stability, equivalence and internal consistency of the assessment (De Souza et al., 2017; Salmond, 2008). The stability of the assessment is determined by test-retest reliability, where it is assumed that the attribute being assessed should remain constant over a period of time (Devon et al., 2007; Salmond, 2008). Test-retest reliability is not relevant where an attribute is expected to change, such as skill improvement following an intervention (Devon et al., 2007). The equivalence of the assessment is determined by inter-rater reliability. Inter-rater reliability is especially important in tests where the examiner is asked to score observations to ensure that different examiners have consistent results (Salmond, 2008). Lastly, if the assessment shows consistency in all items being assessed and the items fit together conceptually, it will have good internal consistency (Devon et al., 2007; Salmond, 2008). Internal consistency can be determined by using Cronbach’s alpha, Kuder Richardson or the Split-half statistical tests (Salmond, 2008). Cronbach’s alpha coefficient is the most commonly used statistical test as it only requires one administration of an assessment (Devon et al., 2007). New assessments should have

a coefficient alpha of 0.7 to ensure reliability (Devon et al., 2007). Reliability of an assessment is expressed as Observed Score = True Score +/- Error (DeVellis, 2017; Devon et al., 2007). As no assessment is perfect, the true score can only be assumed (DeVellis, 2017). The method to calculate the error score is dependent on the type of data collected (DeVellis, 2017). The analysis of variance is one method that can be used to determine the error score (DeVellis, 2017). By ensuring good reliability, it will result in an assessment that is predictable and that will provide consistent results (DeVellis, 2017; Devon et al., 2007; Salmond, 2008).

2.3.2.2 Validity

The validity of an assessment tool refers to the ability of the tool to assess the construct for which it was developed (Salmond, 2008; Switzer et al., 1999). DeVellis (2017) adds to the definition, by noting that the validity of an assessment can be deduced from how the assessment was constructed, how accurately it can predict specific outcomes, and how it relates to other assessments. There are three types of validity most commonly determined during assessment development include construct validity, content validity, and criterion-related validity (Brown, 2010; DeVellis, 2017; Devon et al., 2007; Salmond, 2008). The various components of validity have, however, been reconceptualised into one concept known as construct validity (Brown, 2010). This has been done to simplify the concept and eliminate the confusion in research between the three different types (Brown, 2010). For the purpose of this literature review, the three types of validity will be explored. However, it is important for occupational therapists to take note of the changes in research terminology.

Construct validity determines whether the assessment measures only the construct for which it was developed or whether other constructs are measured as well (Devon et al., 2007; Salmond, 2008). If an assessment measures closely related concepts, the construct validity of the main concept will decrease (Devon et al., 2007). Contrasted groups, testing of hypotheses, factor analysis, and the multitrait-multimethod approach can be used to determine the construct validity of an assessment (Devon et al., 2007). Devon et al. (2007) note the importance of construct validity in assessment development in the field of nursing. Nurses often have to assess concepts that are more abstract in nature and it is essential to ensure that the assessment only measures the intended constructs (Devon et al., 2007). This also relates to occupational therapy

assessment development, as this field requires assessment of complex factors to provide holistic intervention (AOTA, 2020).

Content validity refers to whether the assessment is measuring all the major components or aspects of the construct (Salmond, 2008; Yusoff, 2019). To ensure that all components are being addressed, the researcher should determine the main components of the construct being measured before developing the assessment (Devon et al., 2007). A panel of experts will review the content of the assessment by scoring each of the items in the assessment (Yusoff, 2019). The researcher will then be able to calculate the content validity index (CVI) and adapt the assessment content accordingly (Devon et al., 2007; Yusoff, 2019). The acceptable CVI scores differ depending on the number of experts used; for two experts the CVI should be at least 0.8, with three to five experts the CVI should be 1 and with nine experts the CVI should be at least 0.78 (Lynn, 1986; Yusoff, 2019).

Criterion-related validity refers to whether there is proof of a relationship between the constructs in the assessment and another variable, and if it can predict an outcome (DeVellis, 2017; Devon et al., 2007). Terms such as predictive validity, concurrent validity and postdictive validity are often used synonymously with criterion-related validity (DeVellis, 2017). An assessment shows good criterion-related validity when there is a strong correlation between the predictor and the criterion to support the predicted performance in each criterion (Devon et al., 2007). It is important that criterion-related validity is correctly calculated as criterion contamination leads to poor validity (Devon et al., 2007). The confirmatory factor analysis and the multitrait-multimethod approach can be used to determine the criterion-related validity of an assessment (Devon et al., 2007). The confirmatory factor analysis will result in chi-square value and the multitrait-multimethod approach will provide insight into the convergent and discriminant validity (Devon et al., 2007).

Validity is not an all or nothing measurement and each type of validity should be investigated (Devon et al., 2007). Switzer et al., (1999) emphasised that the validity of an assessment tool is dependent on the context in which it is used. It is thus crucial to investigate whether the test is valid and applicable to different groups of people (Salmond, 2008). Bowyer et al. (2012) highlight that a limitation during assessment development is that often only the validity and reliability are included in the

psychometric testing and that the assessment developed does not consider the context and investigate the clinical utility of the assessment for healthcare practitioners.

2.3.3 Contextual considerations in assessment development

In order to provide client-centred services, the occupational therapist should understand the contextual factors that impact a person's performance and engagement (Barbara & Whiteford, 2005; Švajger & Piškur, 2016). This is especially important in a multicultural and diverse country such as South Africa (Foxcroft, 2012; Foxcroft & Roodt, 2013; Jansen van Vuuren et al., 2020; Pascoe & Norman, 2011). Occupational therapists in South Africa work in a variety of settings including public and private hospitals, clinics, rehabilitation centres, non-profit organisations, insurance companies, psychiatric institutions, therapy centres, schools, and nursing homes. In each setting, they provide services to clients from different cultural and socio-economic backgrounds (Jansen van Vuuren et al., 2020; Van Stormbroek & Buchanan, 2017;). They have to navigate many contextual considerations, such as poverty, malnutrition and HIV (Jansen van Vuuren et al., 2020; Visser et al., 2016), lower educational levels (Jansen van Vuuren et al., 2020; van der Linde, 2019), as well as minimal funding and resources (Jansen van Vuuren et al., 2020; van Niekerk et al., 2019; Van Stormbroek & Buchanan, 2017). Contextual factors impact the importance of occupations and skills to clients (Bunting, 2016) and need to be included during assessment development.

Context includes the social and environmental factors external to the person or assessment (Bunting, 2016; Switzer et al., 1999). This includes the population characteristics for which the assessment is developed, the goal of the assessment, as well as barriers impacting on the administration and scoring of the assessment (Switzer et al., 1999).

2.3.3.1 Population characteristics

During assessment development, the population for whom the assessment is developed should be identified and described (DeVellis, 2017). When considering the characteristics of the population, it is important to take into account the age, gender, education level, and life experiences of the prospective clients, as this will impact the administration of the assessment as well as the responses (Evetts et al., 2021; Switzer et al., 1999). Prior to the development of the In Home Occupational Performance

Evaluation (I-HOPE), a need for an assessment within the elderly population was noted (Stark et al., 2010). Identifying the population aided the item development phase of assessment development. The authors selected an appropriate method to administer the assessment and included photographic images to be used as visual cues and aid the memory of the older population (Stark et al., 2010). In another article, the language abilities of children with cerebral palsy were noted to have an impact on the way an assessment was administered and that it was more effective to rely on movement observations (Rae et al., 2010). Similarly, Barbara and Whiteford (2005) observed that the language abilities of the population affected the time needed to conduct the Handicap Assessment and Resource Tool in acute hospital settings as it is based on an interview with the client (Barbara & Whiteford, 2005). Van der Linde (2019), ensured that the South African Sensory Integration Screening Instrument (SASISI) included multiple languages for administration as it was specifically developed for low socio-economic communities in South Africa (van der Linde, 2019).

It is also essential to consider the cultural appropriateness of an assessment; specifically considering the assumptions, norms, and values of the intended population (Evetts et al., 2021; Switzer et al., 1999). A concern is raised when an assessment was developed using one population and applied to another population (Evetts et al., 2021; He & van de Vijver, 2012). The development of contextually appropriate assessment tools should allow for potential cultural variation and cultural bias (Evetts et al., 2021; Foxcroft & Roodt, 2013). These authors note that culture, however, cannot be separated from the person's environment and influences how a person thinks and performs tasks (Foxcroft & Roodt, 2013). A culture-free measurement cannot necessarily be developed but the examiners can be sensitive to cultural differences during the assessment development (Foxcroft & Roodt, 2013). Cultural fairness should be strived for to prevent a person from a different cultural background to perform badly in an assessment due to tasks that are unfamiliar to them (Evetts et al., 2021). Assessments are, unfortunately, often developed in the Global North and include minimal cultural variety or diversity in the samples used for normative data (Evetts et al., 2021; Jorquera-Cabrera et al., 2017) .

Lastly, when considering the population, historical events and experiences which play a vital role when developing assessments, are often excluded. This impacts the importance of items in an assessment and how the results are interpreted (DeVellis,

2017; Switzer et al., 1999). Foxcroft and Roodt (2013), noted that children from low socio-economic backgrounds often scored poorly in psychological measures due to the tasks being unfamiliar and not being seen as important within their circumstances. During the development of the I-HOPE, the authors conducted research to determine the occupations that are most meaningful to the older population (Stark et al., 2010). Munnik (2018) noted that in the process of developing a contextually appropriate school readiness assessment, emphasis had to be placed on the social context as it affected the general development of children. Assessments should include constructs that are meaningful and purposeful for the client (Aplin & Ainsworth, 2018; Munnik, 2018; Stark et al., 2010). Assessments should accommodate for the diverse population and varying socio-economic context within South Africa (Munnik, 2018).

2.3.3.2 Characteristics of the assessment pertaining to administration and scoring

The context and resources available within a setting, impact the therapists choice of assessments (Alotaibi et al., 2009). During assessment development, the method of administration and scoring should be adapted to suit the context and the goal of the assessment (Switzer et al., 1999).

The cost of the assessment (Bañas & Gorgon, 2014; Chien et al., 2014; Darzins et al., 2016; Ireland & Johnston, 2012; Perlmutter et al., 2013), as well as the time needed to administer the assessment (Atler et al., 2017; Barbara & Whiteford, 2005; Bowyer et al., 2012; Darzins et al., 2016; Ireland & Johnston, 2012; Perlmutter et al., 2013), should be appropriate for the context. If an assessment is too expensive or takes too long to administer in a low socio-economic environment, it will create a barrier to the services rendered (Foxcroft & Roodt, 2013). In the field of paediatric occupational therapy, assessments are often developed in the Global North (Jorquera-Cabrera et al., 2017), resulting in expensive assessments that are not appropriate in the South African context (van der Linde, 2019). The socio-economic status of the proposed population should be assessed and considered in the assessment development process (Foxcroft & Roodt, 2013).

The language in which an assessment is administered should be evaluated (Foxcroft & Roodt, 2013). It is noted that assessment results could be altered if an assessment is conducted in a language other than a client's home language. Even if a client has

working knowledge of the language the test is conducted in, it may still affect the processing speed (Foxcroft & Roodt, 2013). Translation has been seen to be appropriate and applicable within certain assessments, however should be used with caution as not all languages have the same concepts or expressions (Foxcroft & Roodt, 2013). Bilingual or multilingual assessments are seen as the best solution, however hold challenges regarding psychometric properties (Foxcroft & Roodt, 2013).

It is essential to identify the physical resources and environmental barriers in the context during assessment development. During the development of a contextually appropriate basic Wheelchair Service Provision Test, it was essential to consider the knowledge of physical components that the healthcare providers needed in order to provide effective wheelchair training (Gartz et al., 2016). All aspects of the context, including the socio-economic status, physical resources and language spoken, should be considered and accounted for in assessment development to ensure that a fair and just method of evaluation is used (Carter et al., 2005; Foxcroft & Roodt, 2013; Pascoe & Norman, 2011).

The assessment development process should include psychometric testing to ensure that the assessment provides valid and reliable information to aid the therapeutic process (De Souza et al., 2017; Salmond, 2008; Switzer et al., 1999). It is also essential to determine the context in which the assessment will be conducted and ensure that the assessment is applicable to the population, the needs of the setting, as well as the resources available within the setting in order to develop a contextually appropriate assessment (Alotaibi et al., 2009; Foxcroft, 2012; Foxcroft & Roodt, 2013; Switzer et al., 1999).

2.4 Clinical utility

Clinimetric properties, is a term that has been noted in the latest research in therapeutic and rehabilitative healthcare services and is used to describe the combination of the psychometric properties, as well as the clinical utility of an assessment (Bañas & Gorgon, 2014; Miller et al., 2014; Romli & Wan Yunus, 2020; Slater et al., 2010;). Clinical practice is moving towards a more evidence-based practice (Nalder et al., 2017), resulting in a larger emphasis on assessments that are not only psychometrically sound but also have good clinical utility (Bossuyt et al., 2012; Glover & Albers, 2007; Nalder et al., 2017).

2.4.1 Clinical utility as a concept

Clinical utility is a developing concept and has recently been appearing in healthcare research with regards to assessments and interventions (Bowyer et al., 2012; Smart, 2006). Clinical utility of an assessment can be described as how useful and appropriate the assessment is within a specific setting or context (Benson & Clark, 1982; Darzins et al., 2016; Lesko et al., 2010; Macy, 2012; Nalder et al., 2017). Clinical utility impacts the use of assessments within clinical practice (Law, 1987; Tyson & Connell, 2009b), as clinical utility is specific to a context, as well as the stakeholders involved (De Souza et al., 2017; Lesko et al., 2010; Smart, 2006). If an assessment has good clinical utility it will result in good clinical management (Law, 1987), and positive health outcomes for patients (Bossuyt et al., 2012; Nalder et al., 2017) by guiding clinical decision-making and treatment plans (Darzins et al., 2016; Nalder et al., 2017).

2.4.2 Clinical utility in assessment development

Assessments are usually developed for a specific context and purpose. The appropriateness of an assessment in a different context cannot be assumed without investigation into the clinical utility (Foxcroft & Roodt, 2013). Bowyer et al. (2012) note that very few studies on clinical utility have been carried out. It is, however, noteworthy that no formal guidelines are available regarding the process of investigating or determining the clinical utility of an assessment (Bowyer et al., 2012; Smart, 2006). Randomised controlled trials are seen as the best method to determine the clinical utility of diagnostic tests, especially in haematology and genetics testing (Peabody et al., 2019). However, in in therapeutic and rehabilitative healthcare services, researchers often conduct qualitative research to determine clinical utility (Glover & Albers, 2007; Nalder et al., 2017; Toomey et al., 1995). Qualitative research in determining clinical utility would focus on: challenges or barriers experienced during administration and scoring, the time needed for the assessment, costs involved and training needed as well as how the results guided their clinical practice (Foxcroft, 2012; Glover & Albers, 2007; Nalder et al., 2017; Toomey et al., 1995). There has also been an increase in meta-data analyses determining the clinical utility of assessments by extracting specific data from the user manuals of the assessments (Bañas & Gorgon, 2014; Bellagamba et al., 2020; de Klerk et al., 2018; Ireland & Johnston, 2012; Jorquera-Cabrera et al., 2017; Kruger et al., 2021). Meta-data analyses are however mostly conducted after an assessment has been developed and researchers want to

determine the applicability of the assessment (Bañas & Gorgon, 2014; Bellagamba et al., 2020; Chien et al., 2014). As noted from studies done on clinical utility, there is limited consensus on what the components of clinical utility are, and no set standard of what components to include within research (Barbara & Whiteford, 2005; Bowyer et al., 2012; Corben, Downie & Fielding, 2011; Darzins et al., 2016; Gustafsson et al., 2010; Smart, 2006).

However, when determining clinical utility, a judgement is made about the effectiveness, economic impact and work practices needed to conduct the assessment (Smart, 2006; Toomey et al., 1995). Smart (2006) proposed a multidimensional model for investigating clinical utility in healthcare, specifically determining the appropriateness, accessibility, practicability and acceptability of an assessment. Bowyer et al. (2012) suggest that clinical utility should be determined on every level during assessment development and changes made accordingly. Figure 2.2 illustrates the process of how to incorporate establishing clinical utility within each step of the assessment development process.

During the initial test development, researchers should take into account the type of data that practitioners require, the method of administration, and the impact that the results will have on clinical practice (Bowyer et al., 2012). The initial assessment should be piloted and feedback from practitioners should be used to bring adaptations where needed (Bowyer et al., 2012). Once the final assessment has been developed, an in-depth analysis of the clinical utility should be done (Bowyer et al., 2012). This will provide insight into how the test is being used in clinical practice and the impact of the results on intervention planning (Bowyer et al., 2012).

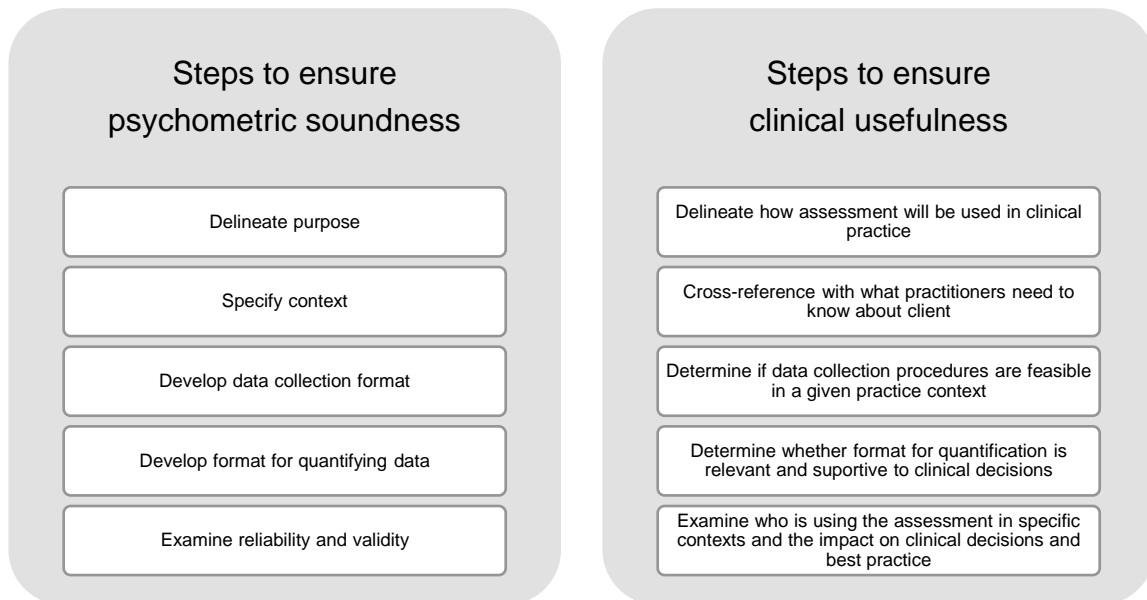


Figure 2.2 The proposed steps to determine clinical utility alongside the psychometric properties of an assessment tool (Bowyer et al., 2012: p.21). Published with permission from the author.

Assessments can be critically evaluated using the Instrument Evaluation Framework (Rudman & Hannah, 1998) or the Outcome Measure Rating Form Guidelines (Law, 1987). The Instrument Evaluation Framework encourages therapists to evaluate the clinical applicability, specificity, availability, time demands, and acceptability to clients, before determining the psychometric properties of an assessment (Rudman & Hannah, 1998). The Outcome Measure Rating Form Guidelines focus on the format and clarity of the assessment, the training needed, the cost of the assessment, as well as the acceptability of the assessment to the clients (appropriateness for the age and developmental level of the clients and the time needed to administer the assessment) (Law, 1987). Since development, these guidelines have not been updated, however set a valuable starting point for the evaluation of assessments in therapeutic and rehabilitative healthcare services.

2.4.3 Clinical utility in therapeutic and rehabilitative healthcare services

Therapeutic and rehabilitative healthcare services have shown emerging literature on clinical utility. In the field of physiotherapy, various studies have been conducted to determine the clinical utility of gross motor assessments in children with cerebral palsy (Chrysagis et al., 2014), balance tests (Tyson & Connell, 2009b), as well as walking and mobility tests (Tyson & Connell, 2009a). Toomey et al. (1995) and Glover and Albers (2007) confirm that factors influencing clinical usefulness include the clarity of

administration procedures, the ease of the administration and scoring as well as the time needed for the assessment.

A systematic review by Tyson and Connell (2009) investigated the clinical utility of assessment tools used for measuring balance. They placed emphasis on the cost of the assessment, the time needed to complete the assessment, the need for specific training or equipment, and the ease with which the assessment tool can be transported to the client (Tyson & Connell, 2009b,a). Another author also noted the importance of investigating the applicability of the methods of administration, as well as the language in which the test is administered (Foxcroft, 2012).

In the field of nursing, the clinical utility of pain scales has been investigated. Lempinen et al. (2020) investigated the clinical utility of the Finnish Version of The Face, Legs, Activity, Cry, Consolability (FLACC) scale in a Paediatric Intensive Care Unit (PICU) in Finland. The study indicated that the pain scale had good clinical utility as the results impacted the clinical decisions made by the nurses (Lempinen et al., 2020). It also noted that the intubation of children did not impact the clinical utility of the scale (Lempinen et al., 2020). The clinical utility of the Pain Assessment Tool (PAT) was determined in a Neonatal Intensive Care Unit (NICU) in Australia in neonates who were ventilated, sedated, and who received muscle-relaxants (Devsam & Kinney, 2021). Surveys and focus groups were used and focused on the administration, scoring, interpretation and impact of results on clinical judgement (Devsam & Kinney, 2021). Clinical utility of pain assessments for people with dementia requires further testing as limited evidence was noted in a scoping review (Zwakhaleh et al., 2006).

Literature searches indicate that psychology has investigated the clinical utility of the Personality Assessment Inventory (Karlin et al., 2005), the Strengths and Difficulties Questionnaire (Murray et al., 2021) and the Inventory of Depression and Anxiety Symptoms (IDAS) (Stasik-O'Brien et al., 2019); and in social medicine the clinical utility of the Migraine Disability Assessment (MIDAS) (Lipton et al., 2001). Often no specific context or population is provided in these studies, and even though clinical utility is used in the title, no reference is made to clinical utility in the article (Karlin et al., 2005; Lipton et al., 2001; Murray et al., 2021; Stasik-O'Brien et al., 2019). Thus, not providing quality evidence of the clinical utility of assessments in therapeutic and rehabilitative healthcare services.

2.5 Clinical utility in occupational therapy

In the development of assessments, occupational therapists have become more aware of the value of standardised assessments complementing clinical observations, and have subsequently increased their technical knowledge of assessment development (Asaba et al., 2017; Benson & Clark, 1982;). Ensuring that the assessments have good psychometric properties is included in the development process (Bowyer et al., 2012). However, with the recent shift to include context-appropriate assessments (Foxcroft, 2012), research in exploring the clinical utility of assessments has increased. Assessments are often developed by academics who place emphasis on sound psychometric characteristics, rather than developing an assessment that is useful and applicable within the context for which it has been developed (Bowyer et al., 2012). Having an assessment that is psychometrically sound and has good clinical utility, will be beneficial to therapists' report writing, justification of services, and motivating for services or equipment (Kramer et al., 2009).

In occupational therapy, numerous assessments have been developed specifically for the need of each field as well as assessments that can be used across various fields (Asaba et al., 2017). However, limited research has been conducted in determining the clinical utility of assessments in occupational therapy (Bowyer et al., 2012).

In the field of paediatric occupational therapy, sensory integration forms a large part of assessment and treatment (Ayres, 1995). The normative data of sensory integration assessments were collected from children living in the United States of America (USA) (Jorquera-Cabrera et al., 2017; Van Jaarsveld et al., 2012). None of the most commonly used paediatric assessments had data regarding the validity and reliability relevant to the South African context (Jorquera-Cabrera et al., 2017; van der Linde, 2019), and only the Sensory Integration and Praxis Tests (SIPT) have been adapted for use within the South African context (Van Jaarsveld et al., 2012; van der Linde, 2019). The SASISI is a newly developed screening tool that has been developed for use within low socio-economic environments within South Africa (van der Linde, 2019). During assessment development, the clinical utility of the SASISI in public schools was investigated by conducting in-depth interviews with the research assistants (van der Linde, 2019). Recently a study was conducted to determine the clinical utility of the Sensory Profile (SP), the Sensory Processing Measure (SPM) and the Sensory Experiences Questionnaire (SEQ) (Evetts et al., 2021). These sensory modulation

measurements were not specifically developed for the South African context, however, they are a good fit due to the costs involved and the time required (Evetts et al., 2021). This study determined the clinical utility of the three assessments for children with autism spectrum disorder in South Africa based on the dimensions of clinical utility as set out by Smart, (2006). An electronic survey was used to determine the perspectives of occupational therapists trained in sensory integration (Evetts et al., 2021).

Bowyer et al. (2012) conducted a mixed methods study to determine the clinical usefulness of the Short Child Occupational Profile (SCOPE). The study included occupational therapists from the Global North with 12 years of experience as their expert group; however, the focus groups included other disciplines including physical therapy, social work, speech and language therapy, as well as teachers. The researchers aimed to determine the benefits of using the SCOPE, as well the barriers preventing stakeholders from using the SCOPE (Bowyer et al., 2012).

A qualitative research study was conducted to determine the clinical utility of the Canadian Occupational Performance Measure (COPM) in Ottawa-Carleton's Home Care Programme (Toomey et al., 1995). It was investigated whether the type of assessment (semi-structured interview) was applicable to the setting, whether it was applicable to the population (elderly residents with and without cognitive impairments), and whether the outcomes were of value to the therapist (Toomey et al, 1995). Burton and Tyson (2015) conducted a systematic review to investigate the assessments available for screening cognitive impairments after a stroke. The authors scored each assessment's clinical utility based on predetermined criteria such as training needed, the time needed to administer, as well as costs involved (Burton & Tyson, 2015). The specific context for which the clinical utility was determined was not mentioned in the study, making the results not as valuable as clinical utility is context-specific.

Nalder et al. (2017) conducted a qualitative study with clinicians working in Canada and the United Kingdom (UK) to determine the clinical utility of the Multiple Errands Test (MET). Semi-structured interviews were held with clinicians and topics such as the ease of administration and scoring, as well as challenges experienced, and how the results guided their clinical practice were addressed (Nalder et al., 2017). Investigation into the clinical utility of each assessment should be done when used in

a different context than the context for which it was developed, however, limited literature is available on clinical utility in occupational therapy (Bowyer et al., 2012).

2.6 Summary

Occupational therapy is a holistic profession that is focused on the transactional relationship between the person, occupation, and environment in order to determine facilitators and barriers to occupational engagement (AOTA, 2020; Brown, 2009; Wong & Fisher, 2015). The initial step of the occupational therapy process is to conduct an evaluation (Alotaibi et al., 2009; AOTA, 2020). Standardised assessments and clinical observations are crucial in guiding intervention, in order to provide effective and just treatment within all fields of occupational therapy (Alotaibi et al., 2009; AOTA, 2020; Lecuona et al., 2017; Van Jaarsveld et al., 2012). An assessment is conducted to determine the areas that require intervention and is based on the domains of occupational therapy, including occupations, contexts, performance patterns, performance skills and client factors (AOTA, 2020). The appropriate assessment is chosen based on the availability, time, and effort required to administer and score the assessment, the cost of the assessment and whether it is standardised; as well as the expectations of the medical aids (Alotaibi et al., 2009).

Literature indicates that there has been a recent shift in evaluating diagnostic assessment tools, as the assessments are not only expected to provide accurate information but also useful information relevant to the context in which it is used (Bañas & Gorgon, 2014; Bossuyt et al., 2012; Darzins et al., 2016; de Klerk et al., 2018; Glover & Albers, 2007; Miller et al., 2014; Nalder et al., 2017; Romli & Wan Yunus, 2020; Slater et al., 2010). Occupational therapists often rely on assessments created by other professions (Asaba et al., 2017) and most assessments are developed in the Global North. However, the literature indicates an increase in assessment development within the field of occupational therapy (Alotaibi et al., 2009; Asaba et al., 2017; Benson & Clark, 1982). The increase in newly developed assessments will result in an increase in profession-specific assessments. Occupational therapists rely on the available guidelines to develop assessments (Benson & Clark, 1982; DeVellis, 2017; Devon et al., 2007; Switzer et al., 1999). These guidelines include clear steps on how to conduct psychometric testing, including the testing of the validity and reliability of the assessment (Bowyer et al., 2012; DeVellis, 2017; Devon et al., 2007). These guidelines note that the context should be taken into account (DeVellis, 2017; Switzer

et al., 1999), however, no clear guidelines are available for investigating the clinical utility of an assessment tool during the development process (Bowyer et al., 2012; Lesko et al., 2010).

Occupational therapists in South Africa mostly rely on assessments that have been developed in the Global North (Jorquera-Cabrera et al., 2017; Pascoe & Norman, 2011). This often results in assessments having to be adapted to suit the needs of the South African population (Foxcroft, 2012; Foxcroft & Roodt, 2013; Pascoe & Norman, 2011). South African therapists work in a variety of settings and provide services to clients who come from different cultural and socio-economic backgrounds (Jansen van Vuuren et al., 2020; Pascoe & Norman, 2011). Very limited research has been conducted to determine the clinical utility of occupational therapy assessments within the South African context.

This study will provide a comprehensive summary of the available literature on determining clinical utility in occupational therapy and emphasis possible research gaps in order to advocate for further research.

3.1 Introduction

This chapter provides the methodology used in this research project in order to address the following objectives:

- To determine whether clinical utility is included in psychometric testing during assessment development in occupational therapy.
- To map the available literature on clinical utility in occupational therapy assessments.

3.2 Study design

A scoping review was selected for this research study. A scoping review allowed the researcher to examine and map the available research on clinical utility within occupational therapy (Munn et al., 2018; Peters et al., 2020; Tricco et al., 2018). It also allowed the researcher to identify gaps within the literature and advocate for future research studies to aid assessment development within occupational therapy (Munn et al., 2018; Peters et al., 2020; Tricco et al., 2018).

Clinical utility is an emerging topic within assessment development and no formal guidelines have been set with regard to investigating the clinical utility of an assessment (Bowyer et al., 2012; Smart, 2006). A scoping review is thus an ideal research design, as it could be used to identify the available research, and determine the methodology used to conduct the research (Munn et al., 2018; Peters et al., 2020). Synthesising the available literature will aid future research and occupational therapy assessment development (Munn et al., 2018; Tricco et al., 2018). Mapping the available data can provide guidelines for investigating clinical utility as it may also provide insight into the methodologies most commonly used in research. It will also provide a summary of the assessments that have been used in clinical utility research.

A scoping review entails a detailed search of the literature using various databases, evaluating articles based on predetermined inclusion criteria, and mapping the literature to create an overall view of the available resources and information (Munn et al., 2018). The Joanna Briggs Institute (JBI) Guidelines was used to guide the

methodology of this research project (Peters et al., 2020), in order to ensure good methodology and transparent reporting of the research project (Tricco et al., 2018).

3.3 Inclusion and exclusion criteria

3.3.1 Inclusion criteria

Prior to conducting the scoping review, inclusion criteria pertaining to the population, concept and context was set (Peters et al., 2020). This allowed the literature search to be concise and relevant to the research aim and objectives (Peters et al., 2020). The articles considered for this research study met the following inclusion criteria relating to population, concept and context.

3.3.1.1 Type of evidence sources

Published and unpublished (grey literature) literature between January 2005 and December 2020 including clinical utility within occupational therapy was reviewed for the study. A broad time period was selected to include the development of major assessments within occupational therapy.

3.3.1.2 Concept

The concept explored in this research study included clinical utility as part of validity testing in assessment development.

3.3.1.3 Context

Articles published specifically within the field of occupational therapy were used for the scoping review. Occupational therapy includes various domains such as paediatrics, physical rehabilitation, mental health, vocational rehabilitation and hand therapy, with specific assessments and questionnaires in each domain. All the domains of occupational therapy were included in the scoping review.

3.3.2 Exclusion criteria

Articles that were not freely available through the University of Witwatersrand library, as well as articles published in languages other than English, were excluded from the study.

3.4 Data collection procedure

3.4.1 Search strategy

The three-step search strategy as set out in the Joanna Briggs Reviewer's Manual was used to perform a comprehensive search of the literature (Peters et al., 2020). This included an initial limited search to determine keywords and search terms, an extensive literature search and lastly reviewing reference lists of included articles for additional articles (Peters et al., 2020). A librarian from the Wits Health Sciences Library was consulted to assist with selecting search terms and conducting a comprehensive search strategy. Throughout the literature search, record of the specific searches as well as changes made were kept in an Excel spreadsheet to ensure rigour in reporting. Only articles published in English were included in the search. The search process was reviewed by the researcher's supervisor.

3.4.1.1 Step one of data collection

Step one of data collection included an initial search to elaborate, and expand the keywords and index terms that were used for the search process. The initial search terms were derived by identifying the main concepts from the research question. Synonyms and words similar in meaning were used to expand the terms in order to have an all-inclusive search. The initial phase was conducted using CINAHL and Pubmed. Search terms were compiled in order to conduct Step two of the data collection.

Table 3.1 Search terms for Step two of data collection

Key concept	Clinical utility	Assessment	Occupational therapy
Search terms	Clinical utility Validity testing Ecological validity	Assessment Test Instrument Evaluation	Occupational therapy/OT

3.4.1.2 Step two of data collection

The search terms identified in step one of the data collection were combined into a search phrase; “Clinical utility” OR “Validity testing” OR “Ecological Validity” AND assessment* OR test* OR instrument* OR evaluation* AND “occupational therapy” OR “OT”. Boolean operators, truncation, parenthesis and wildcards were used whenever appropriate.

A comprehensive search of the following databases was conducted: Pubmed, CINAHL, ClinicalKey, ProQuest, MEDLINE, Cochrane Library and OT seeker. Grey literature from Mednar and Microsoft Academic were included. The full search history is included in Appendix A, however, a breakdown of the articles found per database can be seen in Table 3.2. The comprehensive search yielded a total of 810 articles. After duplicates were removed, article titles and abstracts were screened for relevance. The following inclusion criteria were used: (i) articles pertaining to clinical utility of assessments stated in either the title of the abstract, (ii) articles assessing the clinical utility of assessments (clinical utility of intervention methods were excluded), (iii) articles presenting information about occupational therapy specific assessment (articles related to medicine, pharmacology and other fields of therapeutic and rehabilitative healthcare services were excluded), (iv) meta-data analysis comparing the psychometric and clinimetric properties of assessments, and (v) only articles published between January 2005 and December 2020 were included.

Full-text articles were reviewed and non-relevant articles were excluded with reasons. Articles were excluded when the article only included other psychometric testing (n=31) such as validity, reliability, ecological validity, comparison of two tests to name a few. Articles were also excluded if clinical utility was stated in the title, but no investigation of clinical utility was made in the article (n=4). Clinical utility studies of intervention methods, learning programs and approaches were excluded (n=8). Lastly, studies including protocols, brief reports and column articles were excluded as they contained no results (n=3).

Table 3.2 Articles found per database

Database	Total articles
Pubmed	162
CINAHL	92
ClinicalKey	56
ProQuest	178
Cochrane Library	12
OT seeker	4
MEDLINE	158
Mednar	71
Microsoft Academics	77
	810

3.4.1.3 Step three of data collection

The reference lists of the included articles were reviewed for additional articles that met the inclusion criteria and a total of 25 articles were identified. The abstracts of the identified articles were reviewed; however, no full articles could be retrieved. No additional articles were included.

3.4.1.4 Inclusion of grey literature

User manuals of assessments, frequently used within the South African context, that were available from the University of the Witwatersrand were reviewed. From the available manuals, 10 user manuals were published within the timeframe of this study. The user manual review yielded one manual that provided insight into the clinical utility of the assessment (Squires et al., 2009), however, no formal clinical utility studies were included in the assessment manuals.

3.4.2 Summary of data collection

A scoping review was conducted using the three-step data collection process as set out in the Joanna Briggs Institute Guidelines (Peters et al., 2020). A comprehensive search of published and unpublished literature from nine databases, as well as a review of user manuals available from the occupational therapy department of the University of the Witwatersrand, was carried out. Applicable articles were selected, and the search yielded 37 included studies and one user manual. The overall data collection process, indicating the included and excluded articles, is summarised in the

Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) flow diagram (Figure 3.1) (Moher et al., 2009).

3.5 Data extraction

Data extraction was guided by the aims and objectives of the study. Thus, following the literature search, the included articles were charted in a table: specifically including the author, year of publication, field or domain of occupational therapy, aims or purpose of the study as well as the methodology and sample size of the study (Appendix B). Outcomes related to the study included extracted data of the various components of clinical utility that were addressed by the article. The key findings of the research specifically related to the study objective of whether the clinical utility was determined during the assessment development process or after the assessment had been developed. Data extraction was done by the primary researcher and checked by the supervisor.

3.6 Data analysis and synthesis

After extracting and charting the data according to the table, the data was analysed and synthesised by the primary researcher. Descriptive statistics were derived regarding the year of publication, the country where the research was conducted as well as the methodology and sample size used. Descriptive statistics were also used to present the representation of the different domains within occupational therapy, as well as whether the clinical utility study was conducted within assessment development. A qualitative content analysis was conducted using basic coding to categorise the data into overall components of clinical utility identified by the studies (Peters et al., 2020).

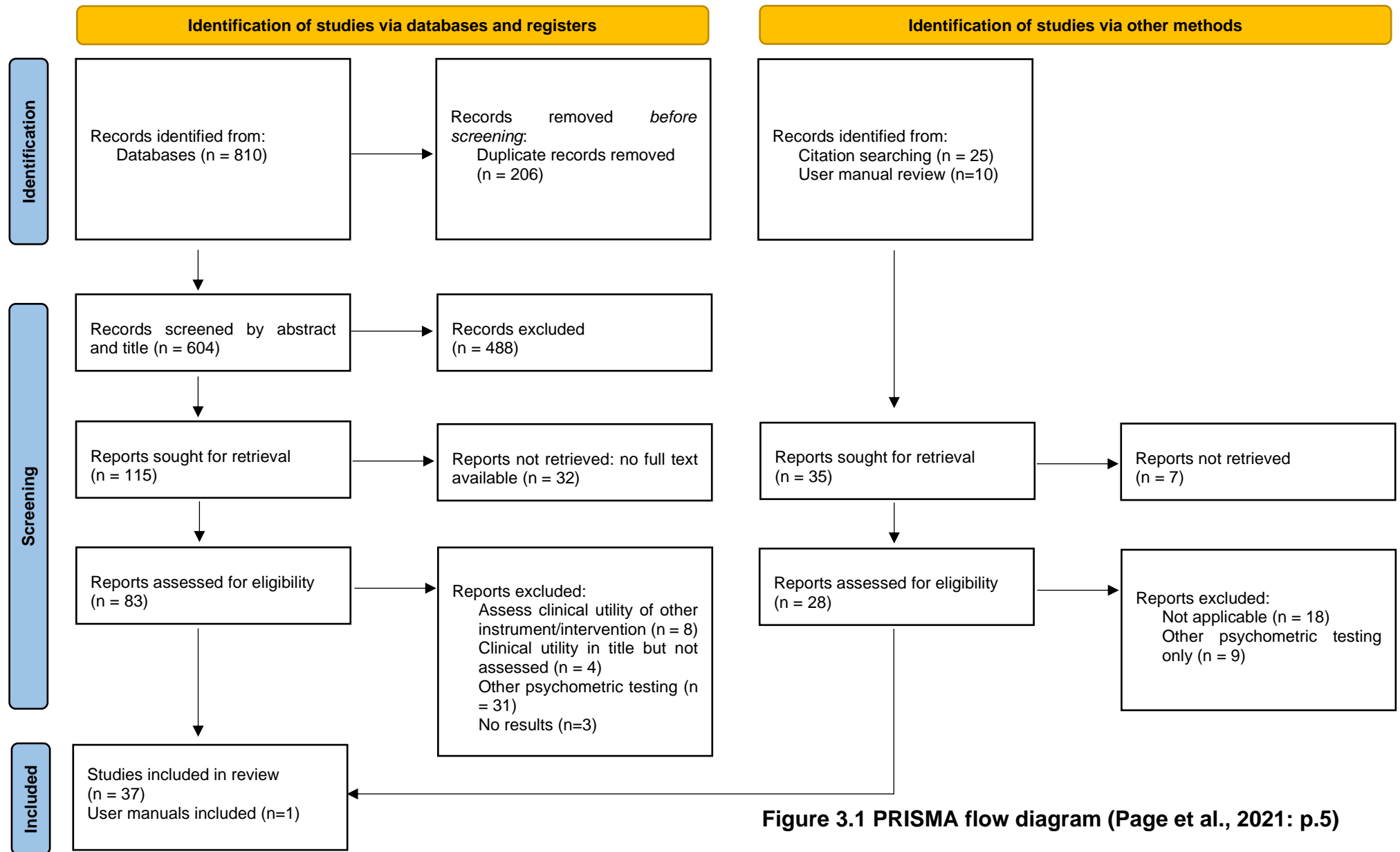


Figure 3.1 PRISMA flow diagram (Page et al., 2021: p.5)

3.7 Ethical considerations

Prior to conducting the scoping review, a protocol was completed and approved by the University of Witwatersrand. The protocol provided the plan for the scoping review and is important in limiting reporting bias and ensuring rigor (Peters et al., 2020). The researcher aimed to limit reporting bias by having clear guidelines for the intended procedures, having predetermined inclusion and exclusion criteria, as well as keeping record of any changes made during the literature search (Peters et al., 2020). A review pair is required during the search stages of a scoping review to ensure reliable inclusion and exclusion of articles and to limit reporting bias (Peters et al., 2020). As this was an individual research report, a review pair was not used, however, the search process was reviewed by the supervisor to compensate for this limitation. The PRISMA-ScR (Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews) Checklist was used to ensure methodological rigour and transparency in reporting the results of this study. The PRISMA-ScR Checklist is a revised version of the original PRISMA Checklist, developed specifically for scoping reviews (Tricco et al., 2018). It provides the researcher with clear guidance on what to report while doing a scoping review and aligns with the JBI guidelines (Tricco et al., 2018). An ethical clearance waiver was received from the Human Research Ethics Committee (Medical) of the University of Witwatersrand (Ref: W-CBP-211019-02) (Appendix C).

3.8 Conclusion

This chapter provided the methodology as guided by the JBI guidelines (Peters et al., 2020) in order to provide reproducible methods and rigorous reporting. The literature search yielded a total of 38 sources, including 37 articles and one relevant user manual. Relevant data from the articles were extracted and the results found using this methodology will be described in the next chapter.

CHAPTER 4 : RESULTS

4.1 Introduction

This study aimed to map the evidence available for determining clinical utility in the development of assessments in occupational therapy, to identify possible gaps within research and to advocate for the importance of determining clinical utility during assessment development. The first objective of the study was to determine whether clinical utility is included in psychometric testing during assessment development in occupational therapy. The second objective was to map the available literature on clinical utility in occupational therapy. This chapter provides the results of the literature review, that included studies and user manuals that determined and/or investigated the clinical utility of assessments in occupational therapy.

4.2 Distribution of studies

The literature search resulted in n=38 articles that addressed the objectives of this study. In order to provide an overview of the included literature, the distribution of the studies will be discussed with regards to the year of publication, as well as the country in which the research was conducted.

4.2.1 Distribution of articles by year of publication

Articles published between January 2005 and December 2020 were included in the literature search. Figure 4.1 provides a visual representation of the distribution of the included articles by the year of publication. Of the included articles, nine articles were published between 2005 and 2010, 15 articles between 2011 and 2015 and 14 articles between 2016 and 2020.

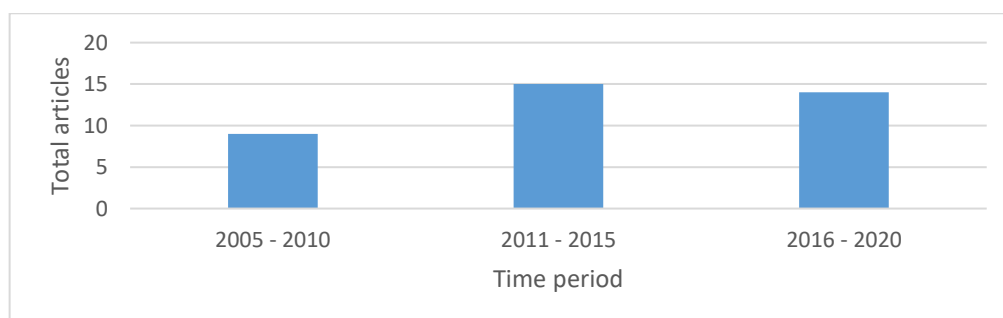


Figure 4.1 Distribution of articles by year of publication

4.2.2 Distribution of articles by country

Included articles reported research from various countries, including twelve articles from Australia, nine articles from the USA, three articles from the UK, two articles from Sweden and one article from Canada, Denmark, Slovenia and Spain, respectively. One article included participants from the UK and USA (Forsyth et al., 2011) and one article included participants from both the UK and Canada (Nalder et al., 2017). Meta-analysis articles were excluded from this section as the systematic and literature reviews were not limited to specific countries.

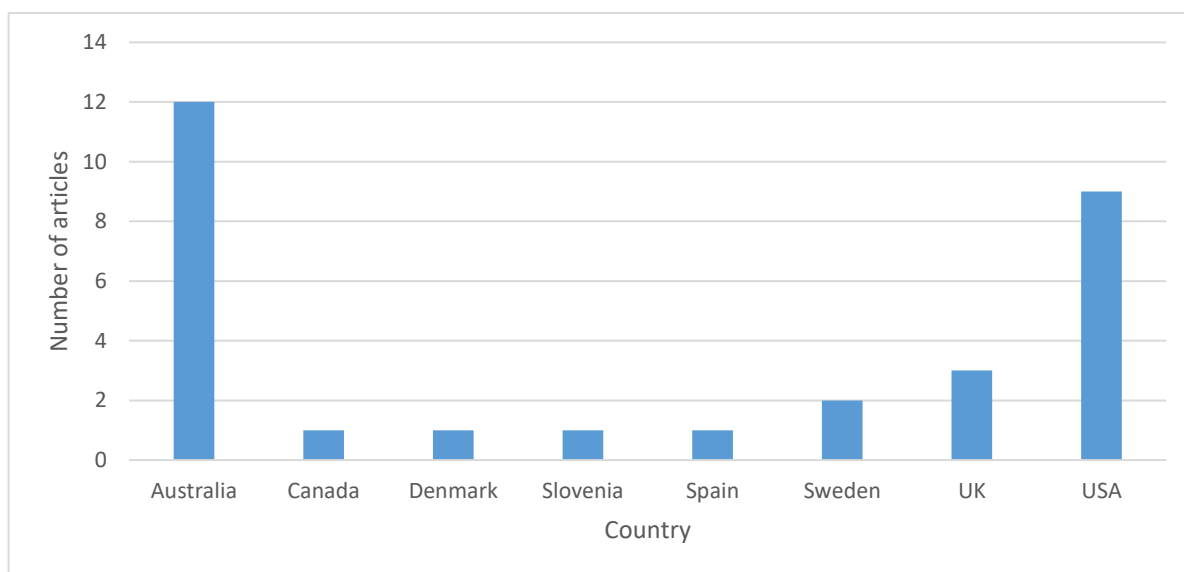


Figure 4.2 Distribution of articles by country

4.3 Research design, methodology, sample size and population of included articles

4.3.1 Research design and methodology

During the literature search, all research methodologies were included. This resulted in studies that used qualitative, quantitative and mixed method research designs as well as systematic and literature reviews. Figure 4.3 illustrates the distribution of articles by the methodology used. Of the included articles, 33% used a qualitative approach with either focus groups (Aplin & Ainsworth, 2018; Capdevila et al., 2020; Rodger et al., 2005; Gustafsson et al., 2010; Gustafsson et al., 2012; Rae et al., 2010; Stephans, 2015; Švajger & Piškur, 2016) or interviews (Atler et al., 2017; Barbara & Whiteford, 2005; Forsyth et al., 2011; Nalder et al., 2017). A mixed-method study design was used by 19% of the included articles (Bowyer et al., 2012; Darzins et al., 2016; Grajo, 2015; Hagelskjær et al., 2019; Hamm et al., 2019; Yngve & Ekbladh,

2015; Zapf et al., 2016) and a quantitative study design with a questionnaire was used by 16% of the included articles (Corben, Downie & Fielding, 2011; Eklund & Gunnarsson, 2008; Gustafsson et al., 2018; Perlmutter et al., 2013; Radia-George et al., 2014; Rowland et al., 2011). Of the included articles, 22% were systematic reviews and 5% were literature reviews. One study did not specify the research methodology (Watkins et al., 2016) and one study used a pre-test/post-test methodology (Doig et al., 2010).

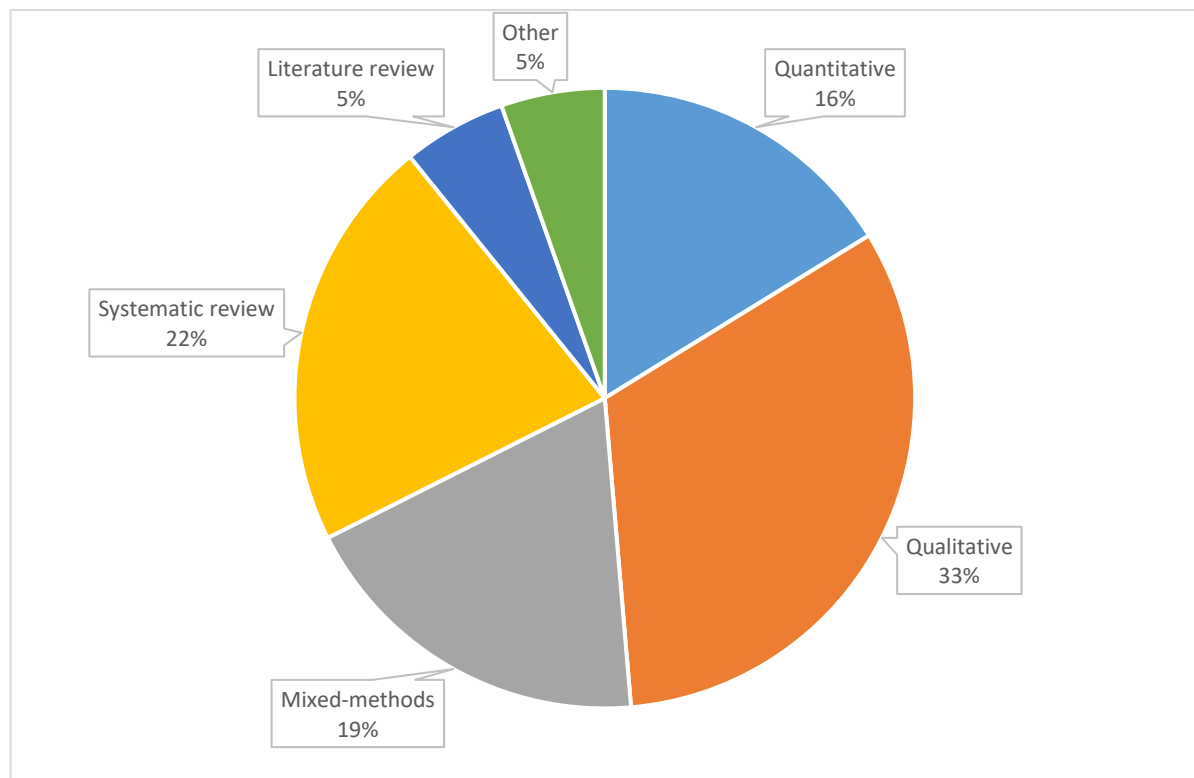


Figure 4.3 Distribution of articles by research design

4.3.2 Sample size

Scoping and literature reviews were excluded from the sample size calculations. Of the remaining 27 articles and one user manual, three did not specify the sample size used in the research (Doig et al., 2010; Squires et al., 2009; Watkins et al., 2016). The remaining 25 articles were used to provide statistical data on the sample size of the included data. The average sample size per research design is illustrated in Table 4.1.

Table 4.1 Average sample size per research design

	Research design		
	Qualitative	Quantitative	Mixed methods
Number of articles	12	6	7
Average sample size	10,8	17,3	53,6

4.3.3 Population

The included studies determined clinical utility either from the perspective of either the therapist or the client, or relied on information from the assessor's manual of the assessment. The majority of articles determined the therapist's perception of the appropriateness of the assessment (Aplin & Ainsworth, 2018; Barbara & Whiteford, 2005; Bowyer et al., 2012; Capdevila et al., 2020; Corben, Downie & Fielding, 2011; Darzins et al., 2016; Eklund & Gunnarsson, 2008; Forsyth et al., 2011; Grajo, 2015; Gustafsson et al., 2012; Hagelskjær et al., 2019; Hamm et al., 2019; Nalder et al., 2017; Perlmutter et al., 2013; Radia-George et al., 2014; Rae et al., 2010; Rodger et al., 2005; Rowland et al., 2011; Švajger & Piškur, 2016; Yngve & Ekbladh, 2015; Zapf et al., 2016). Two studies determined clinical utility from the perspective of the therapist and the client (Atler et al., 2017; Grajo, 2015) and one study only looked at the caregivers' perspective of the usefulness of the assessment (Stephans, 2015). Information from the user's manual of assessments was used to determine clinical utility in 11 of the included studies (Bañas & Gorgon, 2014; Bellagamba et al., 2020; Chien et al., 2014; de Klerk et al., 2018; Ireland & Johnston, 2012; Kingsnorth et al., 2015; Miller et al., 2014; Poulin et al., 2013; Romli & Wan Yunus, 2020; Rowland & Gustafsson, 2008; Squires et al., 2009).

4.4 Clinical utility investigation within occupational therapy

4.4.1 Domains of occupational therapy included in clinical utility studies

Occupational therapy includes different fields. However, assessments can often be used across fields depending on the goal of the assessment. Assessments are conducted to retrieve information about the various domains including occupations, client factors, performance skills, performance patterns as well as context and environments (AOTA, 2020). Assessments can include more than one domain. The included literature on clinical utility was distributed according to the domains of occupational therapy. This allowed the researcher to identify which assessments are

more likely to be included in clinical utility studies and which assessments require additional research.

The literature search indicated 20 assessments that evaluate occupations. These assessments specifically assess occupational performance, occupational engagement, as well as subjective experiences of occupational performance. Fifteen assessments focused on client factors; of which upper limb function (Chien et al., 2014; Corben, Downie & Fielding, 2011; de Klerk et al., 2018; Gustafsson et al., 2010; Rae et al., 2010; Rowland et al., 2011; Rowland & Gustafsson, 2008) and executive functions (Forsyth et al., 2011; Nalder et al., 2017; Poulin et al., 2013) were the most prominent. Five assessments included contextual and environmental factors, and one article included an assessment that pertained to client factors, performance skills, performance patterns, and the environment (Forsyth et al., 2011). The literature review indicated one assessment that is used as a screening tool for monitoring development (Squires et al., 2009). Figure 4.4 illustrates the distribution of the articles by the different domains in occupational therapy.

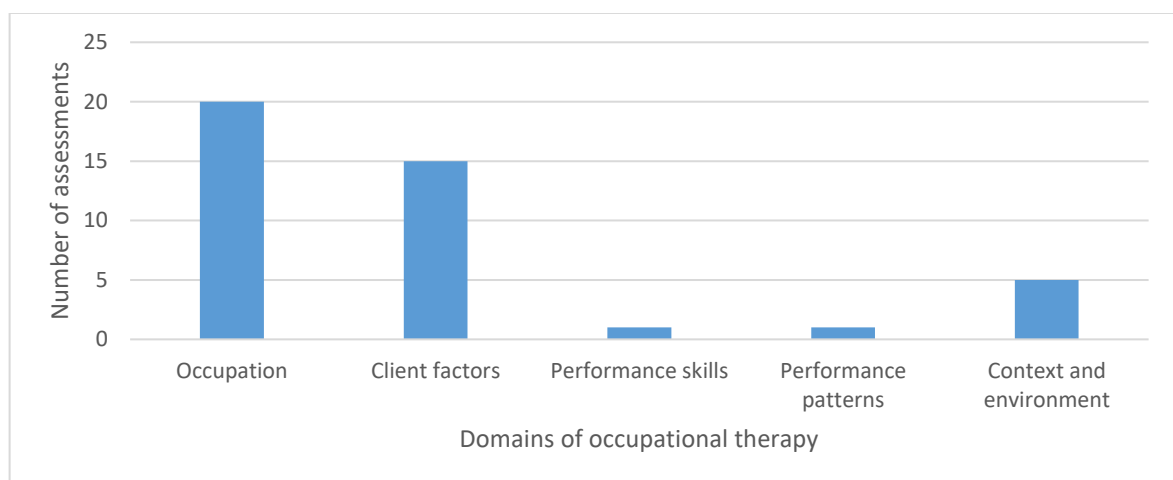


Figure 4.4 Distribution of articles by domains of occupational therapy

4.4.2 Inclusion of clinical utility within assessment development

The literature review yielded 27 articles specifically pertaining to determining or investigating the clinical utility of assessments within a specific context. This excludes meta-analyses as no context was indicated in the studies and only information from the user manuals was used. Of the included articles, 40,7% of the research (11 articles) provided evidence of clinical utility being established during the assessment

development process. One user manual provided clinical utility factors to consider during administration, however, no formal clinical utility study was conducted during assessment development (Squires et al., 2009). Fifteen articles provided evidence of clinical utility being established for a different context or population than the population or context for which the assessment was originally developed. One article did not consider the context or population and linked clinical utility only to the time required to administer the assessment in a pre-test/post-test research design (Doig et al., 2010).

4.4.3 Components of clinical utility

The included data indicated various components of clinical utility and each study assessed different components. Table 4.2 illustrates a summary of the extracted data to indicate which components of clinical utility are most included in the literature. The main components included in clinical utility studies included administration, scoring, presentation and layout, training, resources, the impact on clinical practice and the suitability to the context and population.

4.4.3.1 Administration

When looking at the administration component, 31,6% of the included literature investigated the ease of administration and 18,4% the comprehensiveness of the assessment. Of the included studies, 13,1% were concerned with whether the assessment was standardised and the impact standardization would have on the clinical utility. The set-up required prior to the assessment was investigated by 10,5% of the studies. The client's experience of the assessment was investigated in 7,9% of the studies and 5,3% determined whether the content of the assessment was applicable to the client. One study determined whether the aid of a supplement tool would aid the completion of the assessment.

4.4.3.2 Scoring

When investigating clinical utility, scoring of assessments was another component included. The ease and format of scoring were included in 34,2% of the studies, while 31,6% investigated the ease by which the scores can be interpreted and how useful the scores were in clinical practice. Lastly, only 2,6% of the studies determined whether the scoring was applicable within the setting.

Table 4.2 Components of clinical utility assessed

<i>Component</i>	<i>Sub-component</i>	<i>Total number of studies</i>
<i>Administration</i>	Ease of administration	12
	Comprehensiveness of the assessment	7
	Standardization of assessment	5
	Administration set-up	4
	Client's perception of administration	3
	Applicability of content	2
	Aiding completion of the assessment	1
<i>Scoring</i>	Ease and format of scoring	13
	Interpretation and usefulness of scores	12
	Appropriate scoring	1
<i>Presentation and layout</i>	Clarity of instruction and content	18
	Format and layout of assessment	17
	Possible changes to improve clarity and usefulness	5
	Comprehensiveness of the manual	4
	Language	2
<i>Training</i>	Assessor qualification or training required	10
	Ease of learning assessment	3
	Additional training needs of clinicians	3
	Additional clinical skills required	1
<i>Resources</i>	Time required and reasonable time use	26
	Costs involved	11
	Accessibility of the assessment	8
	Transport and storage of the assessment	1
<i>Impact on clinical practice</i>	Impacts intervention plan and goal-setting	11
	Impacts clinical reasoning and decision making	9
	Promotes insight into the client's experiences	7
	Contributes to professional confidence and collaboration with other health-care professions	7
	Improves client's engagement in assessment and intervention	6
	Facilitated therapeutic rapport	4
	Aids report writing and documentation (advocating for rehabilitation needs)	4
	Aids discharge planning	3
<i>Suitability to context and population</i>	Suitability to population	14
	Suitability to context and practice guidelines	10
	Flexibility	4
	Useful in practice	3
	Transferability between contexts	1

4.4.3.3 Presentation and layout

The presentation and layout of the assessment were key factors when determining clinical utility. Of the included studies, 47,4% investigated the clarity of the instructions and whether the content could easily be understood. Data regarding the format and layout of the scores were included in 44,7% of the studies. It was found that 13,1% of the included studies provided their participants with the opportunity to suggest future recommendations and changes to improve the clarity and usefulness of the assessment. The comprehensiveness of the assessment manual was included in 10,5% of the studies, and only 5,3% gathered information about the language used within the assessment.

4.4.3.4 Training

Training and skills required to administer an assessment was another component of clinical utility that was investigated in the research, however, only 26,3% of the included studies noted information about the assessor's qualification or training required in order to conduct the assessment. Information about additional training needs of the therapist was determined in 7,9% of the included studies. Only 2,6% of the literature determined whether therapists required additional clinical skills to successfully conduct the assessment. The extracted data indicated that 7,9% of the studies investigated whether the therapists found it easy to learn the assessment.

4.4.3.5 Resources

Some of the included literature pertained to the resources needed to conduct the assessment. 68,4% of the included literature investigated the time required to administer and score the assessment and whether it was reasonable; 28,9% determined the costs involved in conducting the assessment; 21% investigated how accessible the assessments are and 2,6% collected information on the transport and storage of the equipment needed for the assessment.

4.4.3.6 Impact on clinical practice

Various components were emphasised when determining the impact of the assessment on clinical practice. The impact of the assessment on planning the appropriate intervention as well as goal-setting was investigated in 28,9% of the studies. However, only 7,9% of the studies investigated the impact on discharge

planning. The literature review found that 23,7% of the studies investigated the impact of the assessment on clinical reasoning and clinical decisions made by the therapist. In 18,4% of the studies, information regarding the impact of the assessment on the professional confidence of therapists and how it improved their collaboration with other health-care professionals, came to light. The literature review found that 18,4% of the studies commented on how the assessment promotes insight into the client's experience, while 15,8% noted that the type of assessment improves the client's engagement in the assessment and intervention process. Of the studies, 10,5% noted information on the impact of the assessment on the therapeutic relationship. Some studies addressed the administrative processes in clinical practice, as 10,5% of the literature investigated the impact of the assessment in report writing and documentation.

4.4.3.7 Suitability to context and population

Another component of clinical utility that emerged in the literature, was the suitability of the assessment to the context and the population. The literature review indicated that 36,8% of the studies collected information regarding the suitability to the specific population and 26,3% regarding whether the assessment was suitable to the type of practice, the needs of the practice as well as the current practice guidelines. It was found that 10,5% of the studies collected information regarding the flexibility of the assessment, while 7,9% collected information about whether the assessment was useful within the specific practice. Only 2,6% of the studies determined whether the assessment could be used in more than one context.

4.5 Conclusion

This chapter illustrated the results of the information extracted from the 38 included articles. It provides insight into the demographics of the literature including the year of publication and the country in which the study was conducted, as well as the methodologies and sample sizes used. The extracted data was used to map the literature in relation to the domains of occupational therapy as well as the perspectives that were used to determine clinical utility. It was noted whether the investigation of clinical utility was done during assessment development or to determine whether an assessment is suitable to a context other than the context for which it was originally developed. Lastly, the extracted data was used to indicate the components of clinical

utility that were most frequently researched. The following chapter will discuss the results and how they can be utilised to answer the research question of the study.

5.1 Introduction

The research report set out to conduct a literature search in order to meet the aim of reporting the evidence available for determining clinical utility in the development of assessments in occupational therapy, identifying possible gaps within research and as a result advocate for the importance of clinical utility studies. The following chapter will discuss the results from the previous chapter to meet the aim as guided by the following research objectives:

- To determine whether clinical utility is included in psychometric testing during assessment development in occupational therapy.
- To map the available literature on clinical utility in occupational therapy assessments.

In Chapter five, the results will be discussed as it pertains to the demographics, methodology, sample size and population as it provides insight into possible ways to investigate clinical utility. Findings on clinical utility within occupational therapy will then be discussed to provide an overview of the available evidence.

5.2 Demographics, research design, sample size and population

5.2.1 Demographics of the included literature

The literature searches for the project included published and unpublished literature between January 2005 and December 2020. A broad timeframe was selected to include the new assessments that have been developed in occupational therapy over the last few years. The majority of the included literature was published after 2010. This indicated that there has been an increase in clinical utility studies in occupational therapy over the last 10 years. Assessment development in occupational therapy has shown a steady increase in the last 20 years (Asaba et al., 2017). Not only has there been more assessments developed, but there is also an increased awareness and need for contextually appropriate assessments. Therapists are more inclined to determine whether an assessment is suitable to the context and/or population, rather than using an assessment simply because it is available. Even though there is a need

for contextually appropriate assessments internationally, assessment development and clinical utility research has been mostly limited to the Global North.

The majority of the included literature showed research conducted in Australia and the USA. Other countries included were the UK, Sweden, Canada, Denmark, Slovenia and Spain. The included research originates from the Global North with a very different context to South Africa, making it challenging to apply the research findings to the South African context. The appropriateness of an assessment in a different context cannot be assumed without an investigation into the clinical utility (Foxcroft & Roodt, 2013). The user's manuals of the assessments available from the University of the Witwatersrand, included 10 assessments developed in the USA. These assessments were developed in the Global North; however, they are some of the most frequently used assessments in South Africa. These are also the assessments that South African occupational therapy students are trained to use. Based on the results of this study, very limited research has been conducted in the Global South to determine the clinical utility of the assessments. It is especially important to determine the clinical utility of assessments that are used in diverse populations and contexts such as South Africa (Foxcroft, 2012).

The demographics of the included articles thus indicate that there has been an increase in clinical utility studies in the last 10 years, however, most of the research is conducted in the Global North. Little information is available on the clinical utility of assessments used within the South African context.

5.2.2 Research design and methodology used

The findings of the study indicated that various research designs and methodologies e.g., qualitative studies, mixed method studies and quantitative study designs, were used to determine the clinical utility of assessments. These studies often included training in order to administer and score the assessment, using the assessment with a specific population or in a specific context, and then providing feedback on the clinical utility of the assessment, with the exception of the meta-data analyses. The results indicate that the most used research design for clinical utility studies is a qualitative design using either focus groups or interviews as the research methodology. The surveys sent out during the quantitative research designs could reach more

participants and provided valuable information on whether an assessment was applicable and useful within a specific context. However, the interviews and focus groups allowed for discussion and provided more insight into the barriers that the participants experienced when using the specific assessment.

5.2.2.1 Systematic reviews within clinical utility studies

The scoping review yielded ten meta-data analyses, including literature reviews and systematic reviews (Appendix B). The meta-data analyses provide summaries of the psychometric or clinimetric properties of assessments, such as the reliability, validity, and clinical utility of the assessments. The information presented in the studies was often extracted from the user manual of the assessments, including but not limited to the time required for the assessment, whether training was needed, and the cost of the assessment. The information was illustrated in tables for easy comparison between assessments.

Literature indicated that various contextual factors should be considered when investigating the clinical utility of an assessment, including the population's characteristics (Evetts et al., 2021; Foxcroft & Roodt, 2013; Switzer et al., 1999), and the resources available within the context where the assessment is planned to be used (Carter et al., 2005; Foxcroft & Roodt, 2013; Gartz et al., 2016; Pascoe & Norman, 2011; Switzer et al., 1999).

The meta-data analyses often stated the intended population for which the assessment's clinical utility was determined; for example, Bañas and Gorgon (2014) summarised assessments for children with cerebral palsy, Bellagamba et al. (2020) specifically investigated fitness to drive assessments for people with cognitive impairments, and Ireland and Johnston (2012) investigated assessments of self-care skills in children under 12 years of age. Meta-data analyses omitted the contextual factors or settings in which the assessment would be used. As the clinical utility of an assessment is context-specific and includes all the stakeholders involved (Benson & Clark, 1982; Darzins et al., 2016; De Souza et al., 2017; Lesko et al., 2010; Macy, 2012; Nalder et al., 2017; Smart, 2006;), meta-data analyses do not provide a true reflection of an assessment's clinical utility. Only one study specified the population and the context within the meta-analyses. The clinical utility of the Disability of the Arm

Shoulder and Hand (DASH) assessment was investigated in clients with musculoskeletal hand injuries in developing countries (de Klerk et al., 2018).

There are, however, benefits of meta-data analyses within clinical utility research. A meta-data analysis provides a therapist with a summary of all the assessments pertaining to a specific population. However, it will then be the therapist's responsibility to determine which of the assessments would be most applicable to the specific context or setting. It provides the therapist with a toolbox, though, it is still essential to determine which tool will be the most appropriate for the specific job.

5.2.3 Sample sizes

The study findings include studies with ranging sample sizes. On average, the qualitative research studies used a sample size of 10,8 participants and quantitative study designs used an average sample size of 17,3. Mixed methods were able to use larger sample sizes to determine clinical utility. Borsci et al. (2013) noted that the total number of participants required to reliably determine the utility of an assessment is currently under investigation. They noted that an increase in participants will result in an increased likelihood of errors being noted. A study needs to include enough participants so that the number of new issues noted is saturated. Five participants will result in 80% of errors noted, however, 15 participants will result in most errors being identified (Borsci et al., 2013). The included literature contains only two studies with less than five participants (Barbara & Whiteford, 2005; Radia-George et al., 2014), meaning the number of barriers identified may be less than if a large sample size was used. The majority of the included studies had a sample size of five or more participants, resulting in a more thorough investigation into the clinical utility of the assessment. The findings of the studies could be generalised only if the population and context are the same as specified in the research studies.

5.2.4 Population

Clinical utility is determined by including all the stakeholders involved (De Souza et al., 2017; Lesko et al., 2010; Smart, 2006). The findings of the study showed evidence of clinical utility being investigated by considering the perspectives of both the therapists, and the clients on whether the assessment is appropriate for the context. The majority of articles included the perspectives of the therapists working within the setting. The

participants of the studies mostly consisted of occupational therapists, however, some studies also included teachers, as well as other therapeutic and rehabilitative healthcare service practitioners such as physiotherapists, and speech and language therapists (Bowyer et al., 2012; Capdevila et al., 2020; Grajo, 2015; Yngve & Ekbladh, 2015). It is essential to determine the usefulness of the assessment from the perspective of the healthcare practitioner who needs to administer the assessment and use the results to plan the appropriate intervention in order to meet the client's goals. The healthcare practitioner also needs to determine if the requirements of the assessment i.e., training and materials required, costs involved, and time needed to administer and score, are feasible within the setting. The healthcare practitioner should decide on whether the assessment would positively influence the clinical decisions that need to be made (Benson & Clark, 1982; Macy, 2012; Nalder et al., 2017).

Of the included literature, only three studies included the perspectives of the clients and whether they experienced the assessment as useful (Atler et al., 2017; Grajo, 2015; Stephans, 2015). It is important to determine whether a client feels that the assessment is applicable to their goals and whether the results would reflect the true limitations in their lives. The assessment should positively influence their engagement in the therapeutic process (De Souza et al., 2017; Lesko et al., 2010; Smart, 2006).

For the most holistic investigation into the clinical utility of an assessment, the perspective of both the therapist and the client should be determined.

5.3 Clinical utility within occupational therapy

5.3.1 Clinical utility as a concept in occupational therapy

Clinical utility is a newly developed concept within assessment development in therapeutic and rehabilitative healthcare services (Bowyer et al., 2012; Smart, 2006). Including clinical utility research in the development process, will aid the development of contextually appropriate assessments and allow occupational therapists to provide evidence-based services (Bossuyt et al., 2012; Evetts et al., 2021; Foxcroft, 2012; Glover & Albers, 2007; Nalder et al., 2017). From the findings of this study, it was evident that there is no formal definition or guidelines for determining the clinical utility of an assessment (Bowyer et al., 2012; Smart, 2006). It was noted that clinical utility was used interchangeably with clinical usefulness (Bowyer et al., 2012). During the

search process, it was noted that researchers used the term clinical utility to compare the scores or accuracy of two tests within a specific population. These studies provided information on the validity of an assessment (DeVellis, 2017) and were excluded from the results of this research report.

Researchers often created their own interpretation of the concept and approached the process of determining the clinical utility of an assessment in a different manner. This resulted in various components of clinical utility being investigated in the studies. Two authors (Capdevila et al., 2020; Romli & Wan Yunus, 2020) based their research on the multi-dimensional model of clinical utility as proposed by Smart (2006), specifically determining whether the assessment was appropriate, accessible, practicable and acceptable. Most of the other articles based their clinical utility investigation on one or a combination of factors, including administration, scoring, presentation and layout, training, resources required, the impact on clinical practice, and the suitability of the assessment to the context and population. These are all components or characteristics of an assessment that will determine whether it will be used regularly by the therapists within the specific context.

The time required to administer and score an assessment was the most frequently investigated component of clinical utility. Time is a valuable commodity within most work settings. An occupational therapist is expected to conduct an assessment and report the findings within a reasonable amount of time. It is, therefore, necessary to determine whether the time spent to perform an assessment correlates with the amount of information received from the assessment. It is important to determine whether the assessment is comprehensive enough or whether additional assessments will be required to provide additional results for a holistic clinical picture (Barbara & Whiteford, 2005; Corben, Downie & Fielding, 2011; Darzins et al., 2016; Gustafsson et al., 2010; Kingsnorth et al., 2015; Perlmutter et al., 2013; Yngve & Ekbladh, 2015).

Many articles focused on the ease of administration and scoring, as well as the clarity of instructions. Assessments that are easy to understand, administer and score will save the occupational therapist additional time and effort, while still providing them with valuable information to guide the intervention process. This is essential where there is a high turnover of clients or where limited funds are available. The language in which the assessment was conducted did not seem to be a priority in the research findings

as only two articles included this component (Barbara & Whiteford, 2005; Rae et al., 2010). Due to South Africa having 11 official languages, this would be an important factor to include when considering the clinical utility of assessments in this context.

The costs involved in the assessment, such as the costs to procure the equipment or materials, as well costs involved in scoring the assessment, play a vital role in the feasibility of an assessment. Occupational therapy departments in South Africa often have limited funds to procure equipment and assistive devices. It is important to consider whether the usefulness of the results justifies the cost of the assessment. Where there are limited funds available for occupational therapy services, either from the client or medical aids, effort should be focused on finding an assessment that provides valuable information for the least amount of time, money and effort. It is more beneficial to invest most of the resources into the intervention phase of the therapeutic process. A component considered by some studies was whether an assessment was accessible within the context. As most of the assessments are developed in the USA (Jorquera-Cabrera et al., 2017), other countries would need to import the assessments and pay additional import costs. When considering the resources required for an assessment, the ease of transporting and storing the assessment was only included in one study (Rowland et al., 2011). This might be important to consider where therapists are not only based in one setting, and are required to travel to provide services.

The findings indicate that the training required to administer and score is an important component to consider in determining the clinical utility of an assessment (Bañas & Gorgon, 2014; Bellagamba et al., 2020; Chien et al., 2014; Ireland & Johnston, 2012; Poulin et al., 2013; Romli & Wan Yunus, 2020; Rowland et al., 2011; Rowland & Gustafsson, 2008; Squires et al., 2009; Švajger & Piškur, 2016). Training required to administer and score an assessment plays a role in whether an assessment will be applicable to a setting. If the assessment requires post-graduate training it will be less valuable in a setting that mostly has community service occupational therapists that have only recently qualified (van der Linde, 2019; Van Stormbroek & Buchanan, 2017).

An important factor that was considered in the findings of the study included the impact an assessment had on clinical decision-making, clinical reasoning, and whether the assessment impacted the client's engagement in the therapeutic process. For an assessment to be applicable to a specific context, it should provide information that will

aid the occupational therapist's clinical reasoning and clinical decision making. It is important to consider whether the results gained from the assessments could be used to select the appropriate intervention plan, and if it aided goal-setting (Barbara & Whiteford, 2005; Bowyer et al., 2012; Capdevila et al., 2020; Corben, Downie & Fielding, 2011; Darzins et al., 2016; de Klerk et al., 2018; Forsyth et al., 2011; Gustafsson et al., 2012; Nalder et al., 2017; Rae et al., 2010; Rowland et al., 2011; Stephans, 2015; Švajger & Piškur, 2016; Yngve & Ekbladh, 2015; Zapf et al., 2016).

Occupational therapy is still considered an unknown profession and in countries such as South Africa, therapists are determined to create a defined scope and role within the multi-disciplinary team in various settings. It was fascinating that this was also considered an important factor in the process of determining the clinical utility of assessments. The findings emphasised whether the assessment results promoted the occupational therapist's role within the multi-disciplinary team, and whether the results from the assessment could be easily communicated to other members of the team (Barbara & Whiteford, 2005; de Klerk et al., 2018; Hamm et al., 2019; Gustafsson et al., 2012; Rowland et al., 2011; Švajger & Piškur, 2016; Yngve & Ekbladh, 2015). The assessment findings should promote the role of occupational therapists and provide them with professional confidence when engaging with other team members.

The results of assessments are required for monitoring progress, report writing, applying for medical aid benefits, as well as applying for funding for equipment and assistive devices (Alotaibi et al., 2009; Asaba et al., 2017; Benson & Clark, 1982; Kramer et al., 2009; Scott et al., 2006; Unsworth, 2000). It is thus essential to consider whether the assessment results would aid the therapist's report writing and provide them with evidence-based documentation (Corben, Downie & Fielding, 2011; Nalder et al., 2017; Rowland et al., 2011; Yngve & Ekbladh, 2015;). Limited studies included whether the assessment would aid discharge planning within the setting.

While investigating the clinical utility of an assessment, it is also important to consider how the client will respond to the assessment and whether it will positively impact their engagement in the therapy process (De Souza et al., 2017; Lesko et al., 2010; Smart, 2006). Some evidence of this component appeared within the included literature, as studies investigated whether the type of assessment improved the client's engagement in the assessment and intervention process (Gustafsson et al., 2012; Gustafsson et

al., 2010; Hagelskjær et al., 2019; Hamm et al., 2019; Stephans, 2015; Yngve & Ekbladh, 2015). If a client is more engaged in the therapeutic process, they are more likely to be involved in the goal-setting and intervention, aiding their motivation and making the process client-centred.

To determine whether an assessment is applicable and useable, the context and population of the specific setting should be taken into consideration. This component of clinical utility should be prominent within the research, however, was included the least within the research findings. Limited studies investigated whether the assessment was suitable to the specific population or whether it could be used on more than one population (Aplin & Ainsworth, 2018; Atler et al., 2017; de Klerk et al., 2018; Hagelskjær et al., 2019; Gustafsson et al., 2012; Gustafsson et al., 2010; Kingsnorth et al., 2015; Nalder et al., 2017; Rae et al., 2010; Rowland et al., 2011; Rodger et al., 2005; Squires et al., 2009; Yngve & Ekbladh, 2015). Some studies included information on whether the assessment is suitable to the type of practice, the current assessment guidelines, and whether it would fit the needs of the setting (Aplin & Ainsworth, 2018; Bellagamba et al., 2020; Capdevila et al., 2020; Darzins et al., 2016; de Klerk et al., 2018; Gustafsson et al., 2012; Gustafsson et al., 2010; Rodger et al., 2005; Švajger & Piškur, 2016; Zapf et al., 2016).

It is evident from the research findings that there is no standardised definition or protocol for when and how to determine the clinical utility of an assessment. To unify clinical utility research, a standardised process should be developed to guide establishing the clinical utility of an assessment.

5.3.2 Domains in occupational therapy assessments included in clinical utility studies

Within occupational therapy, there are domains including occupations, client factors and other, that are the focus of assessment and intervention in the therapeutic process (AOTA, 2020). These overlap in the various fields of occupational therapy, for example, an assessment that focuses on hand function which is part of the client factor domain, can be used in vocational rehabilitation, as well as physical rehabilitation. It is, however, imperative to determine whether the assessment is applicable to the context and the population.

Assessments that included occupations were most prominent in clinical utility studies. A person's occupational engagement and performance are dependent on the context, including the physical, cultural and social contexts (Jansen van Vuuren et al., 2020; Whiteford, 2000). It may be the same occupation in essence, such as preparing food, however, the way in which a person engages in the occupation varies depending on the context. It is thus important to determine whether an occupational assessment will be appropriate and provide useful information within the context. Švajger and Piškur (2016) wanted to specifically determine whether the COPM was applicable within the field of vocational rehabilitation. Aplin and Ainsworth (2018) aimed to determine whether the I-HOPE, that was initially developed to determine occupational functioning in the elder population, could be used to aid home modification in Australia.

Assessments including specific client factors also frequently occurred within the research findings. Even though client factors remain constant within contexts, the authors wanted to determine whether the assessment was applicable to the population. Rae, Copley and Ranka (2010), investigated the clinical utility of the Comparative Analysis of Performance – Motor (CAP-M), which was originally developed for post-stroke assessment, in children with cerebral palsy.

Assessments that were based on determining contextual and environmental barriers and facilitators were also noted. In order to effectively determine barriers and facilitators, the assessment needs to be applicable to the specific context in which it is planned to be used.

5.3.3 Evidence of clinical utility studies in assessment development

During assessment development, researchers or clinicians aim to produce an assessment that is psychometrically sound and appropriate to the specific context (Bossuyt et al., 2012; Glover & Albers, 2007; Lecuona et al., 2016; Nalder et al., 2017).

There is limited evidence available where clinical utility is established during assessment development. Only 11 articles published between 2005 and 2020 indicated that clinical utility was established during the development process. From the 10 user manuals that were screened during the literature review, only one article provided information to consider when using the assessment, however, no formal clinical utility study was included (Squires et al., 2009).

It is more common for researchers to determine the clinical utility of an already developed assessment in a different context or for a different population than which it was originally developed. Of the included articles, 15 articles established the clinical utility of an assessment within a different context or for a different population. This indicated that there is an increased awareness of the need for clinical utility studies to occur prior to use within a new context or population. However, considering the vast number of assessments available within the various fields of occupational therapy, very limited research has been conducted to establish the clinical utility of assessments.

5.4 Conclusion

Research in clinical utility has increased over the last 10 years, emphasising the importance of contextually appropriate assessments to provide evidence-based services. The clinical utility of an assessment is very seldom investigated during assessment development; however, some researchers have started to include clinical utility studies using small sample groups and the research team (Bowyer et al., 2012; Corben, Downie & Fielding, 2011; Eklund & Gunnarsson, 2008; Hagelskjær et al., 2019; Hamm et al., 2019; Perlmutter et al., 2013). Clinical utility is more frequently determined when an occupational therapist wants to use an already developed assessment in a different setting than what it was developed for.

The need for a standardised definition and process for determining the clinical utility of an assessment was evident from the research findings. Due to the lack thereof, the research results indicated the investigation into a variety of different components of clinical utility. Each researcher investigated characteristics or components of the assessment that they deemed important. Components pertaining to the administration and scoring, the presentation and layout, training and resource required as well as the impact on clinical practice, and the suitability to the context and population, were identified in the included literature. The time required to administer and score the assessment was the most included component within the research findings. Components that should be included more often include the suitability to the population and context, how useful it is within a specific context, the language in which the instructions are given, as well as whether the assessment aids discharge planning.

Clinical utility studies are often conducted in the Global North, however, these assessments are used worldwide (Evetts et al., 2021; Foxcroft & Roodt, 2013; Pascoe & Norman, 2011). None of the included research was conducted in South Africa and the results from Global North cannot be generalised to the diverse context and rich cultural population of South Africa.

6.1 Conclusion

Occupational therapists rely on information from assessments to set appropriate goals, select interventions plans, plan for discharge, and motivate for funds from government departments and medical aids (Alotaibi et al., 2009; Asaba et al., 2017; Benson & Clark, 1982; Scott et al., 2006; Unsworth, 2000). It is thus essential that the assessments used, not only has sound psychometric properties but also have good clinical utility (Foxcroft et al., 2004; Lecuona et al., 2016; Nalder et al., 2017; Pascoe & Norman, 2011). Clinical utility refers to the appropriateness and usefulness of an assessment within a specific context and population (Benson & Clark, 1982; Bowyer et al., 2012; Darzins et al., 2016; Lesko et al., 2010; Macy, 2012; Nalder et al., 2017), and has recently been included within research in therapeutic and rehabilitative healthcare services. If an assessment has good clinical utility it will result in positive health outcomes for patients (Bossuyt et al., 2012; Nalder et al., 2017) by guiding clinical decision-making and treatment plans (Darzins et al., 2016; Nalder et al., 2017).

This research study conducted a scoping review of published and unpublished literature between January 2005 and December 2020, in order to answer the research question about whether there is evidence available for determining clinical utility in the development of assessments in occupational therapy.

The comprehensive literature search of the literature yielded 38 articles that met the inclusion criteria for the study. The literature review indicated that there is limited research in clinical utility, however, there has been an increase in the last 10 years and mostly within Global North countries. Many of the clinical utility studies were conducted after the assessment development process; where the usability of an assessment was determined in a different context than the context for which it was originally developed. Some of the newly developed assessments included clinical utility studies within the assessment development process, however, this is still limited. Assessment development predominantly includes validity and reliability studies as the minimum requirement for psychometric testing.

Various research designs were noted in the research findings, including qualitative, quantitative, as well as mixed method research designs. The quantitative and mixed method research designs could include larger sample sizes. However, the qualitative design allowed for discussion which highlighted the barriers and facilitators that impacted the use of the assessment. All three research designs provided valuable information to determine whether an assessment was appropriate for the context or whether adjustments were needed. Whilst determining the clinical utility of an assessment, the perspectives of all the stakeholders involved should be obtained (De Souza et al., 2017; Lesko et al., 2010; Smart, 2006). The research findings indicated that the perception of the appropriateness and usefulness of the assessment was predominantly determined by that of the occupational therapist. Limited studies included the opinion of clients in the different contexts and whether they felt the assessment aided their therapeutic process.

The majority of clinical utility studies were conducted in the Global North, however, these assessments are used worldwide (Evetts et al., 2021; Foxcroft & Roodt, 2013; Pascoe & Norman, 2011). The included research did not include any studies done within South Africa and the results from the Global North cannot be generalised to the diverse context and rich cultural population of South Africa. This emphasises the question of whether the assessments used by South African occupational therapists are appropriate and useful for the population and context. Consequently, a gap is identified within the current literature. South African occupational therapists are encouraged to determine the clinical utility of an assessment, prior to use, in order to provide a fair and just service (HPCSA, 2008; Van Jaarsveld et al., 2012).

Clinical utility studies within occupational therapy focus on the administration, scoring, presentation and layout, training, resources required, the impact on clinical practice, and the suitability to the context and population. The aspect most considered within the literature was the time required for the administration and scoring of the assessment. This is an important factor to consider in a context with limited resources and staff, as well as a high turnover of clients. Components such as the suitability to the population and context, how useful it is within a specific context, the language in which the instructions are given, as well as whether the assessment aids discharge planning, were not often included within the research.

Occupational based assessments were predominantly included in the clinical utility studies. Occupations are mostly dependent on contextual factors. Whether the assessment will provide a true reflection of a client's strengths and weaknesses within the context is essential. Assessments focusing on client factors, performance patterns and skills, as well as contextual factors were also included in clinical utility studies.

There is a need for more research in the clinical utility of assessments, especially within the context of South Africa. South African occupational therapists often rely on internationally developed assessments and would use the available assessments, without considering the clinical utility within the context. Determining the clinical utility of an assessment would make the assessment more applicable to the context and the results gained from the assessment would be more valid and reliable, aiding evidence-based practice (Unsworth, 2000).

6.2 Implications for practice

The findings of the scoping review illustrated that even though there has been an increase in clinical utility studies being done within occupational therapy over the last 10 years, the amount of evidence is still limited. Psychometric testing during assessment development predominantly includes reliability and validity studies, and seldomly includes clinical utility studies. More clinical utility studies are being done to determine if an already developed assessment is applicable or could be adapted to a new context or population. This indicates an increasing awareness regarding clinical utility, as well as a growing need for contextually appropriate assessments. There is a large need for contextually appropriate assessments within the multi-cultural and contextually diverse South Africa. South African occupational therapists predominantly use assessments that have been developed internationally. When an assessment is used in a context for which it was not specifically developed, it impacts the results and information received from the assessment (Evetts et al., 2021). This brings into question the validity of the results and how they will impact the therapeutic process. It may result in clients that score well in assessments but are in need of therapeutic intervention or clients that score poorly in assessments but are functionally coping well within their contexts.

Formal investigation and research into the clinical utility of assessments should be done prior to using them. It is essential to determine whether the assessment truly is applicable to the context and population, and whether the information gained from the assessment will positively influence clinical decisions. Therapists should be encouraged to conduct research regarding the available assessments within various contexts.

The findings of this study will be used to advocate for the importance of clinical utility studies in occupational therapy, especially within the South African context, by publishing an article in the South African Journal of Occupational Therapy. Even though there is an increased awareness of the need for contextually appropriate assessments, research studies are limited to the Global North. South African occupational therapists should specifically be encouraged to determine the clinical utility of the most commonly used assessment tools, in order to determine whether they are applicable to diverse contexts. Therapists should critique the administration and scoring methods, to determine if for example, the language is appropriate and whether the time needed to administer and score the assessment is feasible in the setting.

6.3 Recommendation for future research

It was evident from the findings of the scoping review, that no standardised definition or process has been established for determining the clinical utility of assessments. This impacted the homogeneity of the research as each researcher prioritised different components of clinical utility or characteristics of an assessment in order to determine whether an assessment is applicable within the specific context. The lack of standardised methodology or guidelines on how to determine the clinical utility of assessments resulted in vague and irrelevant articles during the literature search.

The results indicated that clinical utility is a broad concept with many different components that need to be considered. Without a standardised process to determine clinical utility, each author determined their own concept of clinical utility. It is thus essential for researchers to establish a set definition and process to determine clinical utility, as this will result in more homogenous research that could be compared and perhaps generalised. Once a standardised process has been developed, it should be

included within the psychometric testing during assessment development. Occupational therapists should also be informed about clinical utility and be encouraged to conduct formal research before using international assessments within local contexts. Future research could also investigate the clinical utility of intervention methods to determine whether it is suitable for the population and whether it is feasible within the context.

6.4 Limitations of this study

The researcher aimed to include all the large online databases for data collection. However, using only some of the available online published and grey literature databases could have resulted in articles not being included in the study. Articles that were not freely available through the University of Witwatersrand library or where the full article could not be found were excluded from the study. The inclusion of more databases as well as purchasing of articles could result in a more comprehensive search. Establishing the quality of the included articles should be considered in future scoping reviews. Even though the search process and key terms were revised by the supervisor, the articles were also only reviewed by the researcher. Clear inclusion and exclusion criteria were used to guide the reviewing of articles in order to limit reporting bias and improve the rigour of the research. Having only one reviewer could be a possible limitation in the study.

The user manuals of assessments available from the University of Witwatersrand Occupational Therapy Department were included. These manuals were predominantly paediatric assessment manuals and did not include many assessments from other fields in occupational therapy. Including a larger variety of assessment manuals published between January 2005 and December 2020, could indicate clinical utility studies during assessment development.

Articles pertaining to the clinical utility of assessments range over the last 20 years. However, very few new articles have been published. The seminal articles were included in the literature review resulting in older articles being included. The lack of new articles was a concern and identified a gap in research. Consequently, it provided more reason to conduct a scoping review to identify any newly published research.

6.4.1 Limitations of the included studies

6.4.1.1 Inclusion of population and context

Clinical utility specifically pertains to the usefulness of an assessment within a specific context, including the practice guidelines and resources, the needs of the therapists as well as the applicability to the clients (Benson & Clark, 1982; Darzins et al., 2016; De Souza et al., 2017; Lesko et al., 2010; Macy, 2012; Nalder et al., 2017; Smart, 2006). During the literature search, many articles were found that collected characteristics of the assessments, however, did not relate it specifically to a context. Meta-data analyses stated the population for which the assessment was intended. However, no context was noted, nor did it include the perceptions of either the therapist or the client. De Klerk, Buchanan and Jerosch-Herold (2018) conducted the only meta-data analysis that included both a population and a context in the systematic review.

6.4.1.2 Psychometric testing often only includes validity and reliability

In the initial steps of the literature search, articles pertaining to the psychometric and clinimetric properties of assessments were included with the possibility that information regarding the clinical utility of an assessment could be included. It was however noted that these articles often only included reliability or validity testing of assessments. User manuals were screened during the search process and only one of the ten manuals provided factors to consider regarding the clinical utility. However, no formal investigation into the clinical utility of the assessments was done. Clinical utility studies have not yet been consistently included within the psychometric testing of assessments.

6.5 Conflict of interest

There was no conflict of interest while undertaking this study.

6.6 Funding

No funding was received for this research study. All costs incurred were funded by the researcher.

REFERENCES

- Alotaibi, N.M., Reed, K. & Nadar, M.S. 2009. Assessments used in occupational therapy practice: an exploratory study. *Occupational Therapy in Health Care*. 23(4):302–318. DOI: 10.3109/07380570903222583.
- AOTA (American Occupational Therapy Association). 2020. *Occupational therapy practice framework: Domain and process fourth edition*. 4th ed. V. 74 (Suppl. DOI: 10.5014/ajot.2020.74S2001.
- Aplin, T. & Ainsworth, E. 2018. Clinical utility of the In-Home Occupational Performance Evaluation (I-HOPE) for major home modification practice in Australia. *Australian Occupational Therapy Journal*. 65(5):431–438. DOI: 10.1111/1440-1630.12510.
- Asaba, E., Nakamura, M., Asaba, A. & Kottorp, A. 2017. Integrating occupational therapy specific assessments in practice: exploring practitioner experiences. *Occupational Therapy International*. 2017. DOI: 10.1155/2017/7602805.
- Assessments, A. 2017. *Test of Visual Perceptual Skills-4*. 4th ed. S. Frauwirth, J. Reeder, J. English, M. Amsler, J. Pescini, D. Anker, J. Arena, & J. Zwicky, Eds. USA: Academic Therapy Publications Inc.
- Atler, K.E., Barney, L., Moravec, A., Sample, P.L. & Fruhauf, C.A. 2017. Daily Experiences of Pleasure, Productivity, and Restoration Profile: a case study. *Canadian Journal of Occupational Therapy*. 84(4–5):262–272. DOI: 10.1177/0008417417723119.
- Ayres, A.J. 1995. *Sensory integration and the child*. WPS.
- Bañas, B.B. & Gorgon, E.J.R. 2014. Clinimetric properties of sitting balance measures for children with cerebral palsy: A systematic review. *Physical and Occupational Therapy in Pediatrics*. 34(3):313–334. DOI: 10.3109/01942638.2014.881952.
- Barbara, A. & Whiteford, G. 2005. Clinical utility of the Handicap Assessment and Resource Tool: an investigation of its use with the aged people in hospital. *Australian Occupational Therapy Journal*. 52(1):17–25. DOI: 10.1111/j.1440-1630.2005.00476.x.
- Barnett, A., Henderson, S.E., Scheib, B. & Schulz, J. 2010. *Dash 17+*. United Kingdom: Pearson Education.
- Beery, K. & Beery, N. 2006. *The Beery-Buktenica Developmental Test of Visual-Motor Integration (Beery VMI)*. 5th ed. USA: NCS Pearsons Inc.

- Bellagamba, D., Vionnet, L., Margot-Cattin, I. & Vaucher, P. 2020. Standardized on-road tests assessing fitness-to-drive in people with cognitive impairments: a systematic review. *PLoS ONE*. 15(5):1–26. DOI: 10.1371/journal.pone.0233125.
- Benson, J. & Clark, F. 1982. A guide for instrument development and validation. *American Journal of Occupational Therapy*. 36(12):789–800.
- Borsci, S., Macredie, R.D., Barnett, J., Martin, J., Kuljis, J. & Young, T. 2013. Reviewing and extending the five-user assumption: a grounded procedure for interaction evaluation. *ACM Transactions on Computer-Human Interaction*. 20(5). DOI: 10.1145/2506210.
- Bossuyt, P.M.M., Reitsma, J.B., Linnet, K. & Moons, K.G.M. 2012. Beyond diagnostic accuracy: the clinical utility of diagnostic tests. *Clinical Chemistry*. 58(12):1636–1643. DOI: 10.1373/clinchem.2012.182576.
- Bowyer, P., Lee, J., Kramer, J., Taylor, R.R. & Kielhofner, G. 2012. Determining the clinical utility of the short child occupational profile (SCOPE). *British Journal of Occupational Therapy*. 75(1):19–28. DOI: 10.4276/030802212X13261082051373.
- Brown, T. 2009. Assessing occupation: the importance of using valid tests and measures. *British Journal of Occupational Therapy*. 72(12):519. DOI: 10.4276/030802209X12601857794655.
- Brown, T. 2010. Construct validity: a unitary concept for occupational therapy assessment and measurement. *Hong Kong Journal of Occupational Therapy*. 20(1):30–42. DOI: 10.1016/S1569-1861(10)70056-5.
- Bruininks, R. & Bruininks, B. 2005. *Bruininks-Oseretsky Test of Motor Proficiency: Manual*. 2nd ed. USA: Pearson.
- Bunting, K.L. 2016. A transactional perspective on occupation: a critical reflection. *Scandinavian Journal of Occupational Therapy*. 23(5):327–336. DOI: 10.3109/11038128.2016.1174294.
- Burton, L. & Tyson, S.F. 2015. Screening for cognitive impairment after stroke: a systematic review of psychometric properties and clinical utility. *Journal of Rehabilitation Medicine*. 47:193–203. DOI: 10.2340/16501977-1930.
- Capdevila, E., Rodríguez-Bailón, M., Kapanadze, M. & Portell, M. 2020. Clinical utility of the Canadian Occupational Performance Measure in older adult rehabilitation and nursing homes: perceptions among occupational therapists and physiotherapists in Spain. *Occupational Therapy International*. 2020. DOI:

10.1155/2020/3071405.

- Carter, J.A., Lees, J.A., Murira, G.M., Gona, J., Neville, B.G.R. & Newton, C.R.J.C. 2005. Issues in the development of cross-cultural assessments of speech and language for children. *International Journal of Language and Communication Disorders*. 40(4):385–401. DOI: 10.1080/13682820500057301.
- Chien, C.W., Rodger, S., Copley, J. & McLaren, C. 2014. Measures of participation outcomes related to hand use for 2- to 12-year-old children with disabilities: a systematic review. *Child: care, health and development*. 40(4):458–471. DOI: 10.1111/cch.12037.
- Chrysagis, N., Skordilis, E.K. & Koutsouki, D. 2014. Validity and clinical utility of functional assessments in children with cerebral palsy. *Archives of Physical Medicine and Rehabilitation*. 95(2):369–374. DOI: 10.1016/j.apmr.2013.10.025.
- Corben, L., Downie, S. & Fielding, L. 2011. Development and trial of an upper limb assessment tool for the acute neurological patient. *British Journal of Occupational Therapy*. 74(2):95–105. DOI: 10.4276/030802211X12971689814160.
- Darzins, S.W., Imms, C., Stefano, M. Di & Radia-george, C.A. 2016. Personal Care Participation Assessment and Resource Tool: clinical utility for inpatient rehabilitation. *Canadian Journal of Occupational Therapy*. 83(4):237–248. DOI: 10.1177/0008417416648446.
- De Souza, A.C., Alexandre, N.M.C. & Guirardello, E. de B. 2017. Psychometric properties in instruments evaluation of reliability and validity. *Journal of Epidemiology and Health Services: Brasil*. 26(3). DOI: 10.5123/S1679-49742017000300022.
- Desrosiers, J., Hébert, R., Dutil, E. & Bravo, G. 1993. Development and reliability of an upper extremity function test for the elderly: The TEMPA. *Canadian Journal of Occupational Therapy*. 60(1):9–16. DOI: 10.1177/000841749306000104.
- DeVellis, R.F. 2017. *Scale development: theory and applications*. Fourth ed. L. Bickman & D.J. Rog, Eds. North Caroline, USA: SAGE Publications Inc.
- Devon, H.A., Block, M.E., Moyle-Wright, P., Ernst, D.M., Hayden, S.J., Lazzara, D.J., Savoy, S.M. & Kostas-Polston, E. 2007. A psychometric toolbox for testing validity and reliability. *Journal of Nursing Scholarship*. 39(2):155–164. DOI: 10.1111/j.1547-5069.2007.00161.x.
- Devsam, B.U. & Kinney, S. 2021. The clinical utility of the pain assessment tool in ventilated, sedated, and muscle-relaxed neonates. *Australian Critical Care*.

- 34(4):333–339. DOI: 10.1016/j.aucc.2020.09.005.
- Doig, E., Fleming, J., Kuipers, P. & Cornwell, P.L. 2010. Clinical utility of the combined use of the Canadian Occupational Performance Measure and Goal Attainment Scaling. *American Journal of Occupational Therapy*. 64(6):904–914. DOI: 10.5014/ajot.2010.08156.
- Dunn, W. 2006. *Sensory Profile school companion: User's manual*. 1st ed. Pearson.
- Dunn, W. 2014. *Sensory Profile-2*. 2nd ed. USA: Pearson.
- Eklund, M. & Gunnarsson, A.B. 2008. Content validity, clinical utility, sensitivity to change and discriminant ability of the Swedish Satisfaction with Daily Occupations (SDO) instrument: a screening tool for people with mental disorders. *British Journal of Occupational Therapy*. 71(11):487–495. DOI: 10.1177/030802260807101106.
- Evetts, K.L., Rencken, G. & Govender, P. 2021. Clinical utility of three sensory modulation measures for the child with ASD in South Africa: a practitioner's perspective. *South African Journal of Occupational Therapy*. 51(2):22–28. DOI: 10.17159/2310-3833/2021/vol51n2a4.
- Forsyth, K., Parkinson, S., Kielhofner, G., Kramer, J., Mann, L.S. & Duncan, E. 2011. The measurement properties of the Model of Human Occupation Screening Tool and implications for practice. *New Zealand Journal of Occupational Therapy*. 58(2):5–14.
- Foxcroft, C.D. 2012. Planning a psychological test in the multicultural South African context. *South African Journal of Industrial Psychology*. 30(4):8–15. DOI: 10.4102/sajip.v30i4.171.
- Foxcroft, C. & Roodt, G. 2013. *Introduction to psychological assessment in the South African context*. Fourth ed. Cape Town: Oxford University Press. DOI: 10.1017/CBO9781107415324.004.
- Foxcroft, C., Paterson, H., Le Roux, N. & Herbst, D. 2004. Psychological assessment in South Africa: a needs analysis. (July):1–219.
- Gallagher, M., Muldoon, O.T. & Pettigrew, J. 2015. An integrative review of social and occupational factors influencing health and wellbeing. *Frontiers in Psychology*. 6(September):1–11. DOI: 10.3389/fpsyg.2015.01281.
- Gartz, R., Goldberg, M., Miles, A., Cooper, R., Pearlman, J., Schmeler, M., Jonassen Bittman, S. & Hale, J. 2016. Development of a contextually appropriate, reliable and valid basic Wheelchair Service Provision Test. *Disability and Rehabilitation: Assistive Technology*. 12(4):333–340. DOI: 10.3109/17483107.2016.1166527.

- Glover, T.A. & Albers, C.A. 2007. Considerations for evaluating universal screening assessments. *Journal of School Psychology*. 45(2):117–135. DOI: 10.1016/j.jsp.2006.05.005.
- Grajo, L. 2015. The measurement properties of the Inventory of Reading Occupations: an assessment tool of children's reading occupations. Texas Woman's University.
- Gustafsson, L., Mitchell, G., Fleming, J. & Price, G. 2012. Clinical utility of the Canadian Occupational Performance Measure in spinal cord injury rehabilitation. *British Journal of Occupational Therapy*. 75(7):337–342. DOI: 10.4276/030802212X13418284515910.
- Gustafsson, L., Martin, A., Buijsman, L., Poerbodipoero, S., Liddle, J. & Ireland, D. 2018. Parallel-forms reliability and clinical utility of an application version of the Activity Card Sort Australia (18-64). *The American Journal of Occupational Therapy*. 72(6). DOI: 10.5014/ajot.2018.028688.
- Gustafsson, L.A., Turpin, M.J. & Dorman, C.M. 2010. Clinical utility of the Chedoke Arm and Hand Activity Inventory for stroke rehabilitation. *Canadian Journal of Occupational Therapy*. 77(3):167–173. DOI: 10.2182/cjot.2010.77.3.6.
- Hagelskjær, V., Krohn, M., Christensen, P.S. & Christensen, J.R. 2019. Canadian Occupational Performance Measure supported by Talking Mats: an evaluation of the clinical utility. *Occupational Therapy International*. 2019. DOI: 10.1155/2019/9367315.
- Hamm, J., Money, A.G., Atwal, A. & Ghinea, G. 2019. Mobile three-dimensional visualisation technologies for clinician-led fall prevention assessments. *Health Informatics Journal*. 25(3):788–810. DOI: 10.1177/1460458217723170.
- Hammil, D., Pearson, N. & Voress, J. 2014. *Developmental Test of Visual Perception: Examiner's Manual*. 3rd ed. USA: Pro-ed.
- He, J. & van de Vijver, F. 2012. Bias and equivalence in cross-cultural research. *Online Readings in Psychology and Culture*. 2(2):1–19. DOI: 10.9707/2307-0919.1111.
- Higa, C.K., Daleiden, E.L. & Chorpita, B.F. 2002. Psychometric properties and clinical utility of the School Refusal Assessment Scale in a multiethnic sample. *Journal of Psychopathology and Behavioural Assessment*. 24(4):247–258.
- HPCSA. 2008. *Guidelines for good practice in the health care professions*. Available: https://www.hpcsa.co.za/downloads/conduct_ethics/rules/generic_ethical_rules/booklet_1_guidelines_good_prac.pdf [2019, May 27].
- Ireland, P. & Johnston, L.M. 2012. Measures of self-care independence for children

- with osteochondrodysplasia: A clinimetric review. *Physical and Occupational Therapy in Pediatrics*. 32(1):80–96. DOI: 10.3109/01942638.2011.593619.
- Jansen van Vuuren, J., Okyere, C. & Aldersey, H. 2020. The role of occupational therapy in Africa: a scoping review. *South African Journal of Occupational Therapy*. 50(3):3–21. DOI: 10.17159/2310-3833/2020/vol50no3a2.
- Jorquera-Cabrera, S., Romero-Ayuso, D., Rodriguez-Gil, G. & Triviño-Juárez, J.-M. 2017. Assessment of sensory processing characteristics in children between 3 and 11 years old: a systematic review. *Frontiers in Pediatrics*. 5:1–18. DOI: 10.3389/fped.2017.00266.
- Karlin, B.E., Creech, S.K., Grimes, J.S., Clark, T.S., Meagher, M.W. & Morey, L.C. 2005. The Personality Assessment Inventory with chronic pain patients: psychometric properties and clinical utility. *Journal of Clinical Psychology*. 61(12):1571–1585. DOI: 10.1002/jclp.20209.
- Kingsnorth, S., Orava, T., Provvidenza, C., Adler, E., Ami, N., Gresley-Jones, T., Mankad, D., Slonim, N., et al. 2015. Chronic pain assessment tools for cerebral palsy: A systematic review. *Pediatrics*. 136(4):e947–e960. DOI: 10.1542/peds.2015-0273.
- Kirby, A., Edwards, L., Sugden, D. & Rosenblum, S. 2010. The development and standardization of the Adult Developmental Co-ordination Disorders/Dyspraxia Checklist (ADC). *Research in Developmental Disabilities*. 31(1):131–139. DOI: 10.1016/j.ridd.2009.08.010.
- de Klerk, S., Buchanan, H. & Jerosch-Herold, C. 2018. The validity and clinical utility of the Disabilities of the Arm Shoulder and Hand questionnaire for hand injuries in developing country contexts: a systematic review. *Journal of Hand Therapy*. 31(1):80-90.e1. DOI: 10.1016/j.jht.2017.10.004.
- Kramer, J., Bowyer, P., Brien, J.O. & Maziero-barbosa, V. 2009. How interdisciplinary pediatric practitioners choose assessments. *Canadian Journal of Occupational Therapy*. 76(1):56–64.
- Kruger, A., Strauss, M. & Visser, M. 2021. In-hand manipulation assessment instruments for children: a scoping review. *British Journal of Occupational Therapy*. (November):030802262110378. DOI: 10.1177/03080226211037859.
- Law, M. 1987. Measurement in occupational therapy: scientific criteria for evaluation. *Canadian Journal of Occupational Therapy*. 54(3):133–138. DOI: 10.1177/000841748705400308.
- Lecuona, E., Van Jaarsveld, A., Raubenheimer, J. & Van Heerden, R. 2017. Sensory

- integration intervention and the development of the premature infant: a controlled trial. *South African Medical Journal*. 107(11):976–982. DOI: 10.7196/SAMJ.2017.v107i11.12393.
- Lecuona, E.R., van Jaarsveld, A., van Heerden, R. & Raubenheimer, J. 2016. The developmental status and prevalence of sensory integration difficulties in premature infants in a tertiary hospital in Bloemfontein, South Africa. *South African Journal of Occupational Therapy*. 46(1):15–19. DOI: 10.17159/23110-3833/2016/v46n1a5.
- Lempinen, H., Pölkki, T., Kyngäs, H. & Kaakinen, P. 2020. Feasibility and clinical utility of the Finnish version of the FLACC pain scale in PICU. *Journal of Pediatric Nursing*. 55:211–216. DOI: 10.1016/j.pedn.2020.07.011.
- Lesko, L.J., Zineh, I. & Huang, S.M. 2010. Editorial: What is clinical utility and why should we care? *Clinical Pharmacology and Therapeutics*. 88(6):729–733. DOI: 10.1038/clpt.2010.229.
- Lipton, R.B., Stewart, W.F., Sawyer, J. & Edmeads, J.G. 2001. Clinical utility of an instrument assessing migraine disability : The Migraine Disability Assessment (MIDAS) questionnaire. *Headache*. 41:854–861.
- Lynn, M.R. 1986. DOI: 10.1097/00006199-198611000-00017.
- Macy, M. 2012. The evidence behind developmental screening instruments. *Infants and Young Children*. 25(1):19–61. DOI: 10.1097/IYC.0b013e31823d37dd.
- Miller, L., Ziviani, J. & Boyd, R.N. 2014. A systematic review of clinimetric properties of measurements of motivation for children aged 5-16 years with a physical disability or motor delay. *Physical and Occupational Therapy in Pediatrics*. 34(1):90–111. DOI: 10.3109/01942638.2013.771720.
- Moher, D., Liberati, A., Tetzlaff, J. & Altman, D.G. 2009. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *British Medical Journal (Online)*. 339(7716):332–336. DOI: 10.1136/bmj.b2535.
- Munn, Z., Peters, M.D.J., Stern, C., Tufanaru, C., McArthur, A. & Aromataris, E. 2018. Systematic review or scoping review? Guidance for authors when choosing between a systematic or scoping review approach. *BMC Medical Research Methodology*. 18(1):1–7. DOI: 10.1186/s12874-018-0611-x.
- Munnik, E. 2018. The development of a screening tool for assessing emotional social competence in preschoolers as a domain of school readiness. University of the Western Cape. Available: <http://journals.sagepub.com/doi/10.1177/1120700020921110%0Ahttps://doi.or>

g/10.1016/j.reuma.2018.06.001%0Ahttps://doi.org/10.1016/j.arth.2018.03.044
%0Ahttps://reader.elsevier.com/reader/sd/pii/S1063458420300078?token=C0
39B8B13922A2079230DC9AF11A333E295FCD8.

- Murray, C.A., Hastings, R.P. & Totsika, V. 2021. Clinical utility of the parent-reported Strengths and Difficulties Questionnaire as a screen for emotional and behavioural difficulties in children and adolescents with intellectual disability. *British Journal of Psychiatry*. 218(6):323–325. DOI: 10.1192/bjp.2020.224.
- Nalder, E.J., Clark, A.J., Anderson, N.D. & Dawson, D.R. 2017. Clinicians' perceptions of the clinical utility of the Multiple Errands Test for adults with neurological conditions. *Neuropsychological Rehabilitation*. 27(5):685–706. DOI: 10.1080/09602011.2015.1067628.
- Page, M.J., McKenzie, J.E., Bossuyt, P.M., Boutron, I., Hoffmann, T.C., Mulrow, C.D., Shamseer, L., Tetzlaff, J.M., et al. 2021. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *British Medical Journal (Online)*. 372:1–9. DOI: 10.1136/bmj.n71.
- Pascoe, M. & Norman, V. 2011. Contextually relevant resources in speech-language therapy and audiology in South Africa – are there any? *South African Journal of Communication Disorders*. 58:2–5.
- Peabody, J., Tran, M., Paculdo, D., Valdenor, C., Burgon, T. & Jeter, E. 2019. Establishing clinical utility for diagnostic tests using a randomized controlled, virtual patient trial design. *Diagnostics*. 9(3). DOI: 10.3390/diagnostics9030067.
- Perlmutter, M.S., Bhorade, A., Gordon, M., Hollingsworth, H., Engsborg, J.E. & Baum, M.C. 2013. Home lighting assessment for clients with low vision. *American Journal of Occupational Therapy*. 67(6):674–682. DOI: 10.5014/ajot.2013.006692.
- Peters, M., Godfrey, C., Mclnerney, P., Munn, Z., Tricco, A. & Khalil, H. 2020. Chapter 11: Scoping reviews. In *JBI Manual for Evidence Synthesis*. JBI. 406–451. DOI: 10.1891/9780826152268.0012.
- Poulin, V., Korner-Bitensky, N. & Dawson, D.R. 2013. Stroke-specific executive function assessment: a literature review of performance-based tools. *Australian Occupational Therapy Journal*. 60(1):3–19. DOI: 10.1111/1440-1630.12024.
- Publications, A.T. 2006. *Test of Visual Perceptual Skills*. 3rd ed. N. Martin, J. Youens, J. Arena, S. Shea, & B. Gatter, Eds. USA: Academic Therapy Publications Inc.
- Radia-George, C., Imms, C. & Taylor, N.F. 2014. Interrater reliability and clinical utility of the personal care participation assessment and resource tool (PC-PART) in

- an inpatient rehabilitation setting. *American Journal of Occupational Therapy*. 68(3):334–343. DOI: 10.5014/ajot.2014.009878.
- Rae, N., Copley, J. & Ranka, J. 2010. The clinical utility of the Comparative Analysis of Performance - Motor (CAP-M) for children with cerebral palsy. *British Journal of Occupational Therapy*. 73(12):579–588. DOI: 10.4276/030802210X12918167234163.
- Richardson, P.K. 2010. Use of standardized tests in paediatric practice. In *Occupational therapy for children*. Sixth ed. J. Case-Smith & J.C. O'Brien, Eds. Mosby Elsevier. 216–218.
- Richman, J. 2009. *The Developmental Eye Movement Test Version 2.0 Examiner's Manual*. Version 2. ed. Bernell Corporation.
- Rodger, S., Daley, E., Hughes, K. & Ziviani, J. 2005. Dynamic Occupational Therapy Cognitive Assessment for Children: perceived utility in Australian occupational therapy practice. *Australian Occupational Therapy Journal*. 52:337–349. DOI: 10.1111/j.1440-1630.2005.00516.x.
- Romli, M.H. & Wan Yunus, F. 2020. A systematic review on clinimetric properties of play instruments for occupational therapy practice. *Occupational Therapy International*. 2020:1–19. DOI: 10.1155/2020/9475025.
- Rosenberg, L., Jarus, T. & Bart, O. 2010. Development and initial validation of the Children Participation Questionnaire (CPQ). *Disability and Rehabilitation*. 32(20):1633–1644. DOI: 10.3109/09638281003611086.
- Rowland, T.J. & Gustafsson, L. 2008. Assessments of upper limb ability following stroke: a review. *British Journal of Occupational Therapy*. 71(10):427–437. DOI: 10.1177/030802260807101006.
- Rowland, T., Gustafsson, L., Turpin, M., Henderson, R. & Read, S. 2011. Chedoke Arm and Hand Activity Inventory-9 (CAHAI-9): a multi-centre investigation of clinical utility. *International Journal of Therapy and Rehabilitation*. 18(5):290–297. DOI: 10.12968/ijtr.2011.18.5.290.
- Rudman, D. & Hannah, S. 1998. An instrument evaluation framework: description and application to assessments of hand function. *Journal of Hand Therapy*. 11(4):266–277. DOI: 10.1016/S0894-1130(98)80023-9.
- Salkind, N. 2015. Standards for Educational and Psychological Testing. *Encyclopedia of Measurement and Statistics*. (September). DOI: 10.4135/9781412952644.n432.
- Salmond, S.S. 2008. Evaluating the reliability and validity of measurement instruments.

- Orthopaedic Nursing*. 27(1):28–30.
- Scott, F., Unsworth, C.A., Fricke, J. & Taylor, N. 2006. Reliability of the Australian Therapy Outcome Measures for Occupational Therapy self-care scale. *Australian Occupational Therapy Journal*. 53:265–276. DOI: 10.1111/j.1440-1630.2006.00584.x.
- Slater, L.M., Hillier, S.L. & Civetta, L.R. 2010. The clinimetric properties of performance-based gross motor tests used for children with developmental coordination disorder: a systematic review. *Pediatric Physical Therapy*. 22(2):170–179. DOI: 10.1097/PEP.0b013e3181dbeff0.
- Smart, A. 2006. A multi-dimensional model of clinical utility. *International Journal for Quality in Health Care*. 18(5):377–382. DOI: 10.1093/intqhc/mzl034.
- Squires, J., Twombly, E., Bricker, D. & Potter, L. 2009. *ASQ-3 User's guide*. 3rd ed. Baltimore: Paul H. Brookes Publishing Co.
- Stark, S.L., Somerville, E.K. & Morris, J.C. 2010. In Home Occupational Performance Evaluation (I-HOPE). *American Journal of Occupational Therapy*. 64(4):580–589.
- Stasik-O'Brien, S.M., Brock, R.L., Chmielewski, M., Naragon-Gainey, K., Koffel, E., McDade-Montez, E., O'Hara, M.W. & Watson, D. 2019. Clinical utility of the Inventory of Depression and Anxiety Symptoms (IDAS). *Assessment*. 26(5):944–960. DOI: 10.1177/1073191118790036.
- Stephans, L.E. 2015. Users' perspectives of clinical utility of the Daily Experiences of Pleasure, Productivity and Restoration Profile in a caregiver support group. Colorado State University.
- Van Stormbroek, K. & Buchanan, H. 2017. Community Service Occupational Therapists: thriving or just surviving? *South African Journal of Occupational Therapy*. 46(3):63–72. DOI: 10.17159/23103833/2016/v46n3a11.
- Švajger, A. & Piškur, B. 2016. The clinical utility of the Canadian Occupational Performance Measure in vocational rehabilitation: a qualitative study among occupational therapists in Slovenia. *Work*. 54(1):223–233. DOI: 10.3233/WOR-162287.
- Switzer, G.E., Wisniewski, S.R., Belle, S.H., Dew, M.A. & Schultz, R. 1999. Selecting, developing, and evaluating research instruments. *Social Psychiatry and Psychiatric Epidemiology*. 34:399–409. DOI: 10.1007/s001270050161.
- Toomey, M., Nicholson, D. & Carswell, A. 1995. The clinical utility of the Canadian Occupational Performance Measure. *Canadian Journal of Occupational*

- Therapy*. 62(5):242–249. DOI: 10.1177/000841749506200503.
- Tricco, A.C., Lillie, E., Zarin, W., Brien, K.K.O., Colquhoun, H., Levac, D., Moher, D., Peters, M.D.J., et al. 2018. PRISMA Extension for Scoping Reviews (PRISMA-ScR): Checklist and Explanation. *Research and reporting methods*. (August 2016). DOI: 10.7326/M18-0850.
- Tungjan, P., Corrado, R. & Munkhetvit, P. 2021. Development of a computer-based cognitive training game and usage feasibility with Thai stroke patients. *Journal of Associated Medical Sciences*. 51(1):12–23.
- Tyson, S. & Connell, L. 2009a. The psychometric properties and clinical utility of measures of walking and mobility in neurological conditions: a systematic review. *Clinical Rehabilitation*. 23:1018–1033.
- Tyson, S. & Connell, L. 2009b. How to measure balance in clinical practice . A systematic review of the psychometrics and clinical utility of measures of balance activity for neurological conditions. *Clinical Rehabilitation*. 23:824–840.
- Unsworth, C. 2000. Measuring the outcome of occupational therapy: tools and resources. *Australian Occupational Therapy Journal*. 47(4):147–158. DOI: 10.1046/j.1440-1630.2000.00239.x.
- Van der Linde, J. 2019. The development of a screening instrument to identify sensory integration difficulties in children from low socio-economic environments (doctoral thesis). University of Witwatersrand.
- Van Jaarsveld, A., Mailloux, Z. & Herzberg, D.S. 2012. The use of the Sensory Integration and Praxis tests with South African children. *South African Journal of Occupational Therapy*. 42(3):12–18. Available: <http://www.sajot.co.za/index.php/sajot/article/view/194/94>.
- van Niekerk, K., Dada, S. & Tönsing, K. 2019. Influences on selection of assistive technology for young children in South Africa: perspectives from rehabilitation professionals. *Disability and Rehabilitation*. 41(8):912–925. DOI: 10.1080/09638288.2017.1416500.
- Visser, M., Nel, M., la Cock, T., Labuschagne, N., Lindeque, W., Malan, A. & Viljoen, C. 2016. Breastfeeding among mothers in the public health sector: the role of the occupational therapist. *South African Journal of Occupational Therapy*. 46(2):65–72. DOI: 10.17159/2310-3833/2016/v46n2a11.
- Voepel-Lewis, T., Malviya, S., Tait, A.R., Merkel, S., Foster, R., Krane, E.J. & Davis, P.J. 2008. A comparison of the clinical utility of pain assessment tools for children with cognitive impairment. *Anesthesia and Analgesia*. 106(1):72–78.

DOI: 10.1213/01.ane.0000287680.21212.d0.

- Watkins, S.L., Lounsbury, P.A. & Fleming-Castaldy, R.P. 2016. The Self-Assessment of Role-Performance and Activities of Daily Living Abilities (SARA™): development and clinical utility of a client-centered screening tool and outcome measure. *Occupational Therapy in Health Care*. 30(1):42–57. DOI: 10.3109/07380577.2015.1050621.
- Whiteford, G. 2000. Occupational deprivation: global challenge in the new millennium. *British Journal of Occupational Therapy*. 63(5):200–204.
- Whiteford, G.E. 2010. Occupation in context. In *Occupational therapy and physical dysfunction: Enabling occupation*. 6th ed. M. Curtin, M. Molineux, & J. Supyk-Mellson, Eds. Elsevier.
- Wong, S.R. & Fisher, G. 2015. Comparing and using occupation-focused models. *Occupational Therapy in Health Care*. 29(3):297–315. DOI: 10.3109/07380577.2015.1010130.
- Wren, D.G. & Benson, J. 2004. Measuring test anxiety in children: scale development and internal construct validation. *Anxiety, Stress and Coping*. 17(3):227–240. DOI: 10.1080/10615800412331292606.
- Yngve, M. & Ekbladh, E. 2015. Clinical utility of the worker role interview: a survey study among Swedish users. *Scandinavian Journal of Occupational Therapy*. 22(6):416–423. DOI: 10.3109/11038128.2015.1007161.
- Yusoff, M.S.B. 2019. ABC of content validation and content validity index calculation. *Education in Medicine Journal*. 11(2):49–54. DOI: 10.21315/eimj2019.11.2.6.
- Zapf, S.A., Scherer, M.J., Baxter, M.F. & H. Rintala, D. 2016. Validating a measure to assess factors that affect assistive technology use by students with disabilities in elementary and secondary education. *Disability and Rehabilitation: Assistive Technology*. 11(1):38–49. DOI: 10.3109/17483107.2015.1104559.
- Zwakhalen, S.M.G., Hamers, J.P.H., Abu-Saad, H.H. & Berger, M.P.F. 2006. Pain in elderly people with severe dementia: a systematic review of behavioural pain assessment tools. *BMC Geriatrics*. 6. DOI: 10.1186/1471-2318-6-3.

APPENDICES

Appendix A: Record of literature searches

The following table provides record of the databases searched; search terms used; the total amount of articles found as well as the total amount of articles excluded based on no full-text available. The following limits were used on the databases:

- Only articles published between January 2005 and December 2020
- Only articles published in English

Database	Search terms	Total number of articles	Articles excluded: no full-text
Pubmed	((("Clinical utility" OR "Validity testing" OR "Ecological Validity") AND (assessment* OR test* OR instrument* OR evaluation*)) AND ("occupational therapy" OR "OT"))	162	10
CINAHL	("Clinical utility" OR "Validity testing" OR "Ecological Validity") AND (assessment* OR test* OR instrument* OR evaluation*) AND ("occupational therapy" OR "OT")	92	15
Cochrane Library	"Clinical utility" OR "Validity testing" OR "Ecological Validity" in Title Abstract Keyword AND assessment* OR test* OR instrument* OR evaluation* in Title Abstract Keyword AND "occupational therapy" OR "OT" in Title Abstract Keyword	12	1
ProQuest	("Clinical utility" OR "Validity testing" OR "Ecological Validity") AND (assessment* OR test* OR instrument* OR evaluation*) AND ("occupational therapy" OR "OT"); specifically within the OT field	178	0
OTseeker	"Clinical utility" OR "Validity testing" OR "Ecological Validity" AND assessment* OR test* OR instrument* OR evaluation* AND "occupational therapy" OR "OT"	4	0
ClinicalKey	"Clinical utility" OR "Validity testing" OR "Ecological Validity" AND assessment* OR test* OR instrument* OR evaluation* AND "occupational therapy" OR "OT"	56	1
MEDLINE	"Clinical utility" OR "Validity testing" OR "Ecological Validity" AND assessment* OR test* OR instrument* OR evaluation* AND "occupational therapy" OR "OT"	158	1
Microsoft Academic	"Clinical utility" OR "Validity testing" OR "Ecological Validity" AND assessment* OR test* OR instrument* OR evaluation* AND "occupational therapy" OR "OT"	71	4
Mednar	"Clinical utility" OR "Validity testing" OR "Ecological Validity" AND assessment* OR test* OR instrument* OR evaluation* AND "occupational therapy" OR "OT"	77	0

Appendix B: Data extraction tables

Author(s)	Year of publication	Country	Field/domain of OT	Aims/ purpose	Methodology & sample details	Outcomes related to objectives: Components of clinical utility investigated	Key findings relating to objectives:
Aplin T & Ainsworth E	2018	Australia	I-HOPE determines occupational functioning in home environment	To investigate the clinical utility of the I-HOPE for major home modification practice in Australia	Exploratory study; descriptive qualitative approach Focus groups with OTs (pre- and post home modification) 4 OTs and 1 OT student initial group; 3 OTs second group	Themes emerged from qualitative analysis of focus groups: <ul style="list-style-type: none"> • OTs perspective on client experiences • Training received and resources available <ul style="list-style-type: none"> ○ Ease of administration and scoring ○ Assessment manual information to aid administration & scoring • Suitability for major home modification practice • Improvements and future use 	I-HOPE developed in 2010 in the US for an older population
Atler KE, Barney L, Moravec A, Sample PL & Fruhauf CA	2017	USA	Subjective experiences of occupational engagement	To report the utility of the Daily Experiences of Pleasure, Productivity and Restoration Profile (PPR profile) from the perspective of practitioners and caregivers in a community-based setting (drop-in group for caregivers of people with cognitive decline or dementia)	Descriptive, qualitative, single-case-study design Individual interviews with OT and focus group with caregivers. Sample size of 1 OT and 5 caregivers.	Themes emerged from focus groups and interviews: <ul style="list-style-type: none"> • Format of the PPR Profile • Benefits and challenges to using the PPR 	PPR Profile was developed in 2014; clinical utility determined after development

Author(s)	Year of publication	Country	Field/domain of OT	Aims/ purpose	Methodology & sample details	Outcomes related to objectives: Components of clinical utility investigated	Key findings relating to objectives:
Barbara A & Whiteford G	2005	Australia	The Handicap Assessment and Resource Tool (HART) assesses a person's occupational performance.	Explore the clinical utility of the HART for elderly people admitted to acute hospitals	Qualitative research Individual, in-depth interviews with 4 therapists	<p>Themes emerged from interviews:</p> <ul style="list-style-type: none"> • Structural features of the HART <ul style="list-style-type: none"> ○ Layout of the HART ○ Time to administer ○ Language • Process of administration <ul style="list-style-type: none"> ○ Standardised assessment ○ Facilitating reasoning ○ Facilitating discharge planning • Benefits for client management <ul style="list-style-type: none"> ○ Thoroughness ○ Usefulness ○ Facilitating family communication • Clinical utility in context <ul style="list-style-type: none"> ○ Professional confidence ○ Challenges of bringing about change in habits 	HART developed for aged population in 2000; clinical utility assessed within community practice during development (Vertesi)
Bowyer P, Lee J, Kramer J, Taylor RR & Kielhofner G.	2012	USA / international	SCOPE	Proposal of a process to study clinical utility and illustrate implementation during the development of the SCOPE.	Mixed method approach: exploratory qualitative/quantitative approach. Focus groups with experts conducted using SWOT analysis. (14 OTs, 2 PTs, 1 SLT and 4 other). Surveys 60 participants	<p>Various contexts included: school-based setting, community-based/private clinic and hospital-based settings.</p> <p>Themes emerged:</p> <ul style="list-style-type: none"> • Benefits of using the SCOPE <ul style="list-style-type: none"> ○ Top-down approach ○ Facilitates family-centred intervention 	Designed a process to study clinical utility within assessment development

Author(s)	Year of publication	Country	Field/domain of OT	Aims/ purpose	Methodology & sample details	Outcomes related to objectives: Components of clinical utility investigated	Key findings relating to objectives:
						<ul style="list-style-type: none"> • Barriers to use the SCOPE <ul style="list-style-type: none"> ○ Content was too broad ○ Layout of the assessment ○ Time needed for assessment ○ Not widely recognised ○ Not standardised 	
Capdevila E, Rodríguez-Bailón M, Kapanadze M & Portell M	2020	Spain	Occupational performance in adult rehabilitation and nursing homes	Determine clinical utility of the COPM in Spanish social healthcare centres and nursing homes:	Qualitative study design with focus groups; 30 participants (22 OTs & 8 PTs)	<p>Aims of study based on Smart (2016):</p> <ul style="list-style-type: none"> • Perspectives of OTs & PTs about use of COPM (acceptable & appropriate) • Documenting experience of administration and usability, and determining training (practicable) • Opinions of accessibility of assessment 	Not assessed during assessment development
Corben L, Downie S & Fielding L	2011	Australia	Upper limb function	Development of a composite upper limb assessment tool and feedback from clinicians after the initial trial to determine clinical utility	Quantitative approach (questionnaires); 6 OTs; assessment trialled on 14 clients	<ul style="list-style-type: none"> • Usefulness in measure specific client factors • Comparing assessment to others • Effect of assessment on treatment planning, reporting and clinical reasoning • Ease of access to equipment • Ease of use • Administration time • Applicability to patients 	Clinical utility of the assessment was included in the development process

Author(s)	Year of publication	Country	Field/domain of OT	Aims/ purpose	Methodology & sample details	Outcomes related to objectives: Components of clinical utility investigated	Key findings relating to objectives:
Darzins SW, Imms C, Stefano MD & Radia-George CA.	2016	Australia	Participation restrictions (unmet needs) in ADLs of adults	Determine clinical utility of Personal Care Participation Assessment and Resource Tool in inpatient rehabilitation	Explanatory, sequential, mixed-design (qualitative & quantitative questionnaires; expanded with focus group); 9 OTs completed the questionnaire; 6 OTs attended focus group	<p>Questionnaires focused on:</p> <ul style="list-style-type: none"> • Time and effort needed for assessment • Type and completeness of gathered information • Phrasing of items • Response and scoring • Item layout and ordering • Assessment cost • Acceptability to clients • Training required <p>Themes emerged from focus groups:</p> <ul style="list-style-type: none"> • Type of information gathered • Instrument familiarity • Effort and time required • Item phrasing, interpretation and presentation • External influences on clinical use 	Clinical utility not determined in assessment development
Doig E, Fleming J, Kuipers P & Cornwell PL.	2010	Australia	Occupational performance and quantifiable goal-setting	Investigating the clinical utility of the combined use of the COPM and GAS in a community rehabilitation setting with people with TBI.	Pretest-posttest design	<p>Focused more on sensitivity to change, degree of client-centeredness. Component of clinical utility assessed:</p> <ul style="list-style-type: none"> • Time required to administer the two tests 	OT perspectives not considered; authors did not base conclusion on the needs of centre.
Eklund M & Gunnarsson AB	2008	Sweden	Satisfaction with daily occupations	To investigate the clinical utility of the Satisfaction	Quantitative research approach;	Content validity and clinical utility assessed	Clinical utility established

Author(s)	Year of publication	Country	Field/domain of OT	Aims/ purpose	Methodology & sample details	Outcomes related to objectives: Components of clinical utility investigated	Key findings relating to objectives:
				with Daily Occupations (SDO) within mental health care	questionnaires; 9 OTs in mental health care	simultaneously. Clinical utility focused on: <ul style="list-style-type: none"> Ease of understanding content Time required to complete SDO Reasonable the use of time was General comments on SDO (improved clarification) 	during assessment development (2004)
Forsyth K, Parkinson S, Kielhofner G, Kramer J, Mann L, Summerfield, Duncan, E.	2011	UK & USA	Occupational participation (volition, habituation, communication and interactive skills, process skills, motor skills and environment)	The aim of the study was to empirically test the MOHOST, including clinical utility	Anecdotal data was systematically sought from OTs; 9 OTs (5 from UK and 4 from USA)	Information gathered regarding: <ul style="list-style-type: none"> Data gathering method (flexible) Time to administer Impact on the MDT Impact on clinical reasoning (occupation-focused) 	Context varied (34% physical disability; 56% mental health; 10% learning disabilities)
Grajo L	2015	USA	The Inventory of Reading Occupations (IRO) measures participation in reading occupations	To determine the clinical and classroom utility of the IRO To determine possible adaptations to improve usefulness to teachers and clinicians	Mixed-methods study design; quantitative approach to determine clinical utility; 38 participants (21 OTs, 2 SLT, 7 teachers, 8 parents); 20 children to provide feedback on experience	Themes emerged regarding: <ul style="list-style-type: none"> Type of format Impact on children (self-awareness of abilities) Possible changes Administration time Administration set-up (individually) 	Clinical utility determined as part of assessment development (2014)
Gustafsson L, Martin A, Buijsman L, Poerbodipoero S, Liddle J, Ireland D.	2018	Australia	Limitations in activity engagement in adults (18 – 64)	To determine the clinical utility of the application version of the Activity Card Sort Australia for Adults aged 18 to 64 in Australia.	Exploratory research; questionnaire; sample of 48 healthy adults	Clinical utility based on comparison between the app and the card version. Focused on:	Clinical utility determined as part of the assessment development; however, no

Author(s)	Year of publication	Country	Field/domain of OT	Aims/ purpose	Methodology & sample details	Outcomes related to objectives: Components of clinical utility investigated	Key findings relating to objectives:
						<ul style="list-style-type: none"> • Experience using different versions • Preferred version <ul style="list-style-type: none"> ○ Ease of completion ○ Time of completion ○ Kept attention or put more thought into answering • Suggestions for changes <ul style="list-style-type: none"> ○ Layout ○ Interaction face 	specific context or population was used
Gustafsson L, Mitchell G, Fleming J & Price G	2012	Australia	Limitations to occupational performance	To explore the clinical utility of the COPM in goal setting with clients in a spinal cord injury unit	Exploratory study using a qualitative design; focus group; 6 OTs	<p>Themes emerged from focus groups:</p> <ul style="list-style-type: none"> • Timing of when assessment should be administered • Guidelines and needs of the unit and MDT • Therapist skill and experience • Impact of assessment on goal setting (client motivation, functional independence) • Terminology used in the assessment 	Clinical utility not part of development
Gustafsson LA, Turpin MJ, Dorman CM.	2010	Australia	Upper limb ability on bilateral functional tasks	To explore the clinical utility of the Chedoke Arm and Hand Activity Inventory in stroke rehabilitation	Qualitative research; focus groups; 13 OTs working in stroke rehabilitation in metropolitan area	<p>Themes emerged from focus group:</p> <ul style="list-style-type: none"> • Instructions and scoring • Design and constructs • Administration time • Transferability to range of settings 	Clinical utility not part of development (1993, Canada), revised in 2004

Author(s)	Year of publication	Country	Field/domain of OT	Aims/ purpose	Methodology & sample details	Outcomes related to objectives: Components of clinical utility investigated	Key findings relating to objectives:
						<ul style="list-style-type: none"> Useful information impacting clinical practice 	
Hagelskjær V, Krohn M, Christensen PS & Christensen JR.	2019	Denmark	Occupational performance in clients with brain injuries	To determine the clinical utility of the COPM supported by Talking Mats in clients with cognitive and communicative impairments after brain injury	Mixed methods; quantitative questionnaires; qualitative focus groups; 3 OTs, manager at the centre & project team	<ul style="list-style-type: none"> Aiding completion of the assessment Increased client-centredness though increased engagement Positive impact on the quality of communication during the assessment 	Clinical utility assessed of supplement tool to aid assessment
Hamm J, Money AG, Atwal A & Ghinea G	2017	UK	Environmental assessment for assistive equipment	To develop an 3D measurement aid prototype and then determine OT's perception of using an application within assistive equipment provision process	Mixed methods; think-aloud technique, System Usability Scale Questionnaire & semi-structured interviews; 10 OTs	<ul style="list-style-type: none"> Usability (ease to use, complexity) Usefulness (stakeholder involvement, inform assessments) Learnability Accessibility 	Clinical utility assessed throughout development process
Nalder EJ, Clark AJ, Anderson ND, Dawson DR.	2017	Canada & UK	Occupational performance limitations due to executive function impairments	Examined the clinical utility of the Multiple Errands Test (MET) from semi-structured interviews to determine the perspectives of OTs and neuropsychologists working with adults who have neurological conditions	Qualitative descriptive study with semi-structured in-depth interviews; 8 OTs (7 Canada, 1 UK)	<p>Themes emerging from analysis:</p> <ul style="list-style-type: none"> The MET reflects real-life functioning (ecological validity) Flexibility to suit rehabilitation goals (i.e. assessment informs goals & administration process) Administration & scoring 	Not linked to specific practice context; population specified
Perlmutter MS, Borhade A, Gordon M, Hollingsworth H, Engsborg JE, Carolyn Baum M.	2013	USA	Environmental assessment (lighting in the homes of elderly)	To determine the clinical utility of the Home Environment Lighting Assessment of occupational therapists in low vision rehabilitation and home	Quantitative research; questionnaire; 5 OTs & research team	<p>Aspects rated on the feedback form:</p> <ul style="list-style-type: none"> Availability of materials Cost Ease and efficiency of use Format 	Clinical utility determined during development to allow for changes to occur

Author(s)	Year of publication	Country	Field/domain of OT	Aims/ purpose	Methodology & sample details	Outcomes related to objectives: Components of clinical utility investigated	Key findings relating to objectives:
				health as a step in the development process		<ul style="list-style-type: none"> Administration time Ease of learning administration Client receptiveness Usefulness of information 	
Radia-George C, Imms C, Taylor NF.	2014	Australia	Participation in self-care	To expand the psychometric properties of the Personal Care Participation Assessment and Resource Tool and determine its clinical utility in a rehabilitation setting	Reliability design, quantitative; 4 OTs	<ul style="list-style-type: none"> Time taken to administer the assessment 	Clinical utility not determined during development
Rae N, Copley J, & Ranka J.	2010	Australia	Upper limb impairments during daily tasks	To investigate the clinical utility of the CAP-M in children with cerebral palsy.	Qualitative design; focus groups; 8 OTs	<ul style="list-style-type: none"> Administration process (administration, scoring, time required) Presentation and layout (instructions, language, layout) Usefulness of information obtained Whether assessment is suited for setting/caseload 	Clinical utility not determined during development (developed for post-stroke assessment)
Rodger S, Daley E, Hughes K & Ziviani J,	2005	Australia	Cognitive skills of 6 to 12 years	To explore the clinical utility of the Dynamic Occupational Therapy Cognitive Assessment for Children in the Australian context.	Qualitative research; focus groups; 23 OTs	<p>Factors related to clinical utility included:</p> <ul style="list-style-type: none"> Ease of administration <ul style="list-style-type: none"> Practise required prior to administration Time required for administration 	Newly developed test (Israel), clinical utility determined in Australia (context community, education and private practice)

Author(s)	Year of publication	Country	Field/domain of OT	Aims/ purpose	Methodology & sample details	Outcomes related to objectives: Components of clinical utility investigated	Key findings relating to objectives:
						<ul style="list-style-type: none"> ○ Scoring (including ceilings, separate norms) ● Suitability to clients, groups and setting <ul style="list-style-type: none"> ○ Suitable to assessment procedures (top-down vs bottom-up approach) ○ Age-range of clients ○ Diagnosis/clinical profile of clients ○ Needs of the setting (education vs MDT practice) 	
Rowland T, Gustafsson L, Turpin M, Henderson R & Read S	2011	Australia	Upper limb abilities in real life tasks	To examine the clinical utility of the Chedoke Arm and Hand Activity Inventory-9 from the perspective of the therapist working with clients post-stroke	Multi-centre, exploratory study; questionnaire; 32 OTs from metropolitan hospitals	<p>Questionnaires focused on:</p> <ul style="list-style-type: none"> ● Administration time and set-up ● Patient suitability ● Impact on clinical decision making <ul style="list-style-type: none"> ○ Therapist and client communication ○ Procedural decision making ○ Decision regarding intervention ● Practicality of administration <ul style="list-style-type: none"> ○ Duration ○ Transporting ○ Scoring ○ Reporting 	Not determined during assessment development

Author(s)	Year of publication	Country	Field/domain of OT	Aims/ purpose	Methodology & sample details	Outcomes related to objectives: Components of clinical utility investigated	Key findings relating to objectives:
Stephans LE.	2015	USA	A person's experience of pleasure, productivity and restoration	Aim of the study was to determine the clinical utility of the PPR profile from the perspective of the user	Qualitative single case study design; 5 participants (caregivers from drop-in support group)	<p>Themes emerged from interviews:</p> <ul style="list-style-type: none"> • Perspectives of the caregivers on completing the PPR profile <ul style="list-style-type: none"> ○ Easy to understand ○ Format ○ Number of items included • Benefits and challenges of completing the PPR profile • Effects of using the PPR profile <ul style="list-style-type: none"> ○ Goals ○ Greater awareness • Recommendations for future use 	Not part of assessment development
Švajger A & Piškur B	2016	Slovenia	Occupational performance in vocational rehabilitation	To determine the clinical utility of the COPM in vocational rehabilitation from the perspective of occupational therapists in Slovenia	Qualitative inquiry; focus group; 10 OTs	<p>Themes emerged from focus groups:</p> <ul style="list-style-type: none"> • COPM facilitates collaboration with the client <ul style="list-style-type: none"> ○ Empowering OT ○ Aids treatment planning • Challenges when using the COPM <ul style="list-style-type: none"> ○ Appropriateness within the setting ○ Rating scale/scoring ○ Assessment guidelines • Training requires • Applicability of results 	Not part of assessment development; however need identified

Author(s)	Year of publication	Country	Field/domain of OT	Aims/ purpose	Methodology & sample details	Outcomes related to objectives: Components of clinical utility investigated	Key findings relating to objectives:
Watkins SL, Lounsbury PA & Fleming-Castaldy RP.	2016	USA	Abilities that create limitations to engagement in ADL and IADL	The paper describes the development, psychometric properties and clinical utility of the Self-Assessment of Role-performance and activities of daily living Abilities (SARA).	Not specified	Changes occurred during assessment development based on researcher feedback: <ul style="list-style-type: none"> • Rewording of rating scale • Renaming items to improve clarity • Changes to scoring 	Development of the SARA began in 1996, trialled during development and continuously adapted to ensure clinical utility
Yngve M, Ekbladh E.	2015	Sweden	Psychosocial and environmental factors impacting on ability to find a job, maintain a job or return to work after injury or disability	The aim of the study was to determine the clinical utility of the Swedish version of the Worker Role Interview (WRI-S) from the user's perspective.	Survey study (quantitative & qualitative); 187 participants (91% OTs)	Results from questionnaire: <ul style="list-style-type: none"> • Overall use of the WRI-S <ul style="list-style-type: none"> ○ Advantages of using assessment (ease of use, comprehensive information, holistic approach, client-centeredness) ○ Disadvantage of using the assessment (duration of assessment) ○ Results impacted practice ○ Applicableness to clients • Relevance of items • Clarity of instructions 	First version of WRI was developed in 1991 in USA
Zapf SA, Scherer MJ, Baxter MF, H Rintala D.	2016	USA	Environmental adaptations (assistive technology)	The follow-up study aimed to determine the clinical utility of the Matching Assistive Technology and Child	Quantitative & qualitative design (Clinical Utility Form); 19 participants	Components of clinical utility assessed: <ul style="list-style-type: none"> • Aligns with the protocols of setting • Results impact decisions 	Early research on MATCH-ACES

Author(s)	Year of publication	Country	Field/domain of OT	Aims/ purpose	Methodology & sample details	Outcomes related to objectives: Components of clinical utility investigated	Key findings relating to objectives:
				with augmentative communication evaluation simplified supplement (MATCH-ACES)		<ul style="list-style-type: none"> • Ease of use • Instructions • Efficiency • Flexibility • Need for additional information 	

Meta-analysis data extraction

Author(s)	Year of publication	Field / domain of OT	Aims/ purpose	Methodology & Sample size	Outcomes related to objectives	Key findings relating to objectives
Bañas BB & Gorgon EJR	2014	Sitting balance in children with cerebral palsy	Two phase literature review to determine published clinical measure used for assessment of sitting balance and to determine applicability through finding evidence of reliability, validity, responsiveness to change and clinical utility.	Systematic review: PubMed, MEDLINE, Embase, CINAHL, Web of Science, AMED, ScienceDirect, Physiotherapy Evidence Database, OTseeker	Information extracted regarding: <ul style="list-style-type: none"> • Clarity of instructions • Format of administration • Administration time • Assessor qualification • Cost 	Not related to context; the reported articles presented limited information available on assessor's qualifications or costs involved in the assessment.
Bellagamba D, Vionnet L, Margot-Cattin I & Vaucher P.	2020	Fitness to drive assessments for people with cognitive impairments	Literature review to determine costs, training requirements, accessibility and usability of fitness-to-drive assessments	Systematic review: PubMed, CINAHL, PsycINFO, Web of Science, ScienceDirect	Information extracted regarding: <ul style="list-style-type: none"> • Acceptability (2/12 tests) • Accessibility (4/12) • Cost (4/12) • Training required (6/12) 	Not related to specific context; specific population
Chien CW, Rodger S, Copley J & McLaren C.	2012	Measurements related to hand-use in children aged 2 to 12 with disabilities	Systematic review to determine availability of assessments to assess participation in life situations that require hand use in children. Validity, reliability and clinical utility of assessments were extracted.	Systematic review: MEDLINE, CINAHL, PsycINFO, ERIC, EMBASE	Information extracted regarding: <ul style="list-style-type: none"> • Administration format • Training required • Scoring interpretability • Time • Cost 	Not related to specific context; specified population
de Klerk S, Buchanan H, Jerosch-Herold C.	2017	Upper limb function in activity participation	Literature review to determine clinical utility of the DASH as a measure of participation in clients with musculoskeletal hand injuries in developing countries	Systematic review: MEDLINE (PubMed), EBSCOHost (Academic Search Premier, CINAHL, and Africa Wide), Scopus, Web of Science, and Google Scholar. Grey literature: World Health Organization Library	Clinical utility was based on: <ul style="list-style-type: none"> • Respondent burden and presentation <ul style="list-style-type: none"> ○ Time ○ Accessibility ○ Level of literacy • Appropriateness <ul style="list-style-type: none"> ○ Decision making 	Specified context: developing countries

Author(s)	Year of publication	Field / domain of OT	Aims/ purpose	Methodology & Sample size	Outcomes related to objectives	Key findings relating to objectives
				OpenGrey and OpenDOAR.	<ul style="list-style-type: none"> ○ Impact on existing treatment procedures • Acceptability by client and society 	
Ireland P & Johnston LM	2012	Self-care skills	Literature review to determine assessment measures for self-care skills within children under 12 and to evaluate the clinical utility of these measures	Systematic review: MEDLINE, CINAHL, PsychINFO, PubMed, Cochrane Library	Components of clinical utility extracted: <ul style="list-style-type: none"> • Cost of assessment (manual and sheets) • Administration time and methods • Training required • Number of items 	Specified population
Kingsnorth S, Orava T, Provvidenza C, Adler E, Ami N, Gresley-Jones T, Mankad D, Slonim N, Fay L, Joachimides N, Hoffman A, Hung R & Fehlings D	2015	Chronic pain assessment in children with cerebral palsy	A literature review of assessment for chronic pain in children with cerebral palsy and to recommend relevant assessments for health care professionals	Systematic review: MEDLINE, CINAHL and Embase	Clinical utility rated on: <ul style="list-style-type: none"> • Usability (format, length, scoring and suitability for population) • Comprehensiveness (impact of pain, consideration of gross motor abilities) • Other considerations 	Clinical utility discussed under team members for each specific assessment related to the population.
Miller L, Ziviani J & Boyd RN	2014	Motivation of children aged 5 – 16 years with physical disabilities of motor delays	A literature review to describe the psychometric properties of motivational assessments for children with physical disabilities of motor delays	Systematic review: MEDLINE, CINAHL, Embase, PsychINFO, Web of Science, ERIC	Information on clinical utility based on: <ul style="list-style-type: none"> • Ease of administration and scoring • Interpretability (what the scores mean) • Availability • Training required • Administration time • Format of assessment • Cost 	Population specified; no physical context

Author(s)	Year of publication	Field / domain of OT	Aims/ purpose	Methodology & Sample size	Outcomes related to objectives	Key findings relating to objectives
Poulin V, Korner-Bitensky N & Dawson DR.	2013	Executive functions in people who suffered a stroke	A literature review to identify performance-based executive function assessment and describe their psychometric properties	Literature review: MEDLINE, PsychINFO, CINAHL and EMBASE	Information extracted based on: <ul style="list-style-type: none"> • Testing situation/set-up • Time to administer • Therapist training • Cost 	Specific population and context (patients with stroke in clinical setting)
Romli MH & Wan Yunus F.	2020	Play	A literature review to provide climimetric properties of play assessments relevant to OT practice	Systematic review: Academic Search Complete, CINAHL, MEDLINE, Psychology and Behavioural Science Collection, Scopus and ASEAN Citation	Aspects of clinical utility noted as important (Smart 2006). Extracted data based on: <ul style="list-style-type: none"> • Administration method and time • Scoring • Training required • Accessibility 	Information extracted mostly based on administration time and training required.
Rowland TJ & Gustafsson L	2008	Upper limb function post-stroke	A literature review to provide clinicians with available literature on assessments for upper limb ability after stroke and to rate the psychometric properties of the assessment	Literature review: MEDLINE, CINAHL and Cochrane library	Information extracted on clinical utility: <ul style="list-style-type: none"> • Format • Duration of assessment • Examiner's qualifications • Cost 	Broad context: clinical practice; comparison made between the different assessments

User manual data extraction

Author(s)	Year of publication	Assessment	Psychometric testing	Outcomes related to objectives	Key findings relating to objectives
Squires J, Twombly E, Bricker D & Potter L (Squires et al., 2009)	2009	Ages & Stages Questionnaire	Validity and reliability of the assessment were determined during assessment development	Aspects to take into account prior to administration: <ul style="list-style-type: none"> Resources of family and clinicians must be considered Cost of home visits vs online completion Characteristics and skills of the family Preference of the family Training and support required 	No formal clinical utility study completed during assessment development
Academic Therapy Publications	2006	Test of Visual Perceptual Skills – 3 rd Ed	Reliability (internal consistency, temporal stability, standard error of measurement and confidence intervals) and validity (content validity, criterion-rated validity, construct validity, factor analysis)	N/A	No clinical utility assessment done
ATP Assessments	2017	Test of Visual Perceptual Skills – 4 th Ed	Reliability (internal consistency, temporal stability, standard error of measurement and confidence intervals) and validity (validity based on content, comparisons with other tests and relations with other variables)	N/A	No investigation into clinical utility of the assessment
Dunn	2014	Sensory Profile-2	Reliability (internal consistency, test-retest reliability, interrater reliability, confidence intervals) and validity (content validity, construct validity)	N/A	No investigation into clinical utility of the assessment
Hammil, Pearson & Voress	2014	Developmental Test of Visual Perception – 3 rd Ed	Reliability (coefficient alpha, test-retest, interscorer) and validity (content-description, criterion-prediction, construct-identification)	N/A	No investigation into clinical utility of the assessment

Author(s)	Year of publication	Assessment	Psychometric testing	Outcomes related to objectives	Key findings relating to objectives
Barnett et al.	2010	Detailed Assessment of Speed of Handwriting 17+	Reliability (inter-rater agreement, test-retest reliability, internal consistency, standard error of measurement) and validity (content validity, discriminative validity)	N/A	No investigation into clinical utility of the assessment
Bruininks & Bruininks	2005	Bruininks-Oseretsky Test of Motor Proficiency – 2 nd Ed	Reliability (internal consistency, test-retest, interrater reliability) and validity (test content, internal structure, clinical groups and relations with other measures)	N/A	No investigation into clinical utility of the assessment
Richman	2009	DEM: The Developmental Eye Movement Test Version 2.0	Reliability and validity testing	N/A	No investigation into clinical utility of the assessment
Beery & Beery	2006	Beery VMI	Reliability (content sampling, internal consistency, standard error of measurement, time sampling, interscorer reliability, overall reliability) and validity (content validity, concurrent validity, construct validity, predictive validity, controlling bias)	N/A	No investigation into clinical utility of the assessment
Dunn	2006	Sensory Profile School Companion	Reliability (internal consistency, test-retest reliability, standard error of measurement, confidence intervals) and validity (test content, relationship with other variables, special group studies)	N/A	No investigation into clinical utility of the assessment

Appendix C: Ethical waiver



HUMAN RESEARCH ETHICS COMMITTEE
(MEDICAL)

Human Research Ethics Committee (Medical)

Research Office Secretariat:
Faculty of Health Sciences, Philip Tobias Health Sciences Building, 3rd Floor, Office 301/2/4, 29 Princess of Wales Terrace, Parktown, 2193
Private Bag 3, Wits 2050
Office email: HREC-Medical.ResearchOffice@wits.ac.za
Website: www.wits.ac.za/research/about-our-research/ethics-and-research-integrity/

Ref: W-CBP-211019-02

19/10/2021

TO WHOM IT MAY CONCERN:

Waiver: This certifies that the following research does not require clearance from the Human Research Ethics Committee (Medical)

Investigator: Miss Dawson Lindsay

Supervisor: Dr Janine van der Linde

Department: Occupational Therapy

Project title: Evidence of determining clinical utility in the development of assessment in Occupational Therapy: a scoping review

Reason: A review of information in the public domain. No human participants will be involved in the study.

A handwritten signature in black ink, appearing to read 'Dr CB Penny', written over a horizontal line.

Dr CB Penny

Chairperson: Human Research Ethics Committee (Medical)

Copy – HREC (Medical) Secretariat: Ms Zanele Ndlovu, Ms Mapula Ramaila and Mr Rhulani Mkansi

Appendix D: Turnitin report

TURNITIN FINAL L Dawson

ORIGINALITY REPORT

6%	4%	4%	2%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	Annelize Kruger, Monique Strauss, Marieta Visser. "In-hand manipulation assessment instruments for children: A scoping review", <i>British Journal of Occupational Therapy</i> , 2021 Publication	<1 %
2	Bowyer, Patricia, Jenica Lee, Jessica Kramer, Renee R Taylor, and Gary Kielhofner. "Determining the clinical utility of the Short Child Occupational Profile (SCOPE)", <i>The British Journal of Occupational Therapy</i> , 2012. Publication	<1 %
3	"Occupational Therapy Scope of Practice", <i>The American Journal of Occupational Therapy</i> , 2021 Publication	<1 %
4	Ndl.ethernet.edu.et Internet Source	<1 %
5	Submitted to Oxford Brookes University Student Paper	<1 %
6	repository.up.ac.za Internet Source	<1 %

7	Submitted to University of Hull Student Paper	<1 %
8	A. Smart. "A multi-dimensional model of clinical utility", International Journal for Quality in Health Care, 09/01/2006 Publication	<1 %
9	Sarah M. Bagley, Samantha F. Schoenberger, Katherine M. Waye, Alexander Y. Walley. "A scoping review of post opioid-overdose interventions", Preventive Medicine, 2019 Publication	<1 %
10	researchbank.rmit.edu.au Internet Source	<1 %
11	Submitted to University of South Australia Student Paper	<1 %
12	otasa.org.za Internet Source	<1 %
13	"Handbook of Interdisciplinary Treatments for Autism Spectrum Disorder", Springer Science and Business Media LLC, 2019 Publication	<1 %
14	journals.sagepub.com Internet Source	<1 %
15	E.W.T. Ngai, Karen K.L. Moon, Frederick J. Riggins, Candace Y. Yi. "RFID research: An academic literature review (1995–2005) and	<1 %

future research directions", International
Journal of Production Economics, 2008
Publication

16	online.usciences.edu Internet Source	<1 %
17	staging-researchprotocols.jmir.org Internet Source	<1 %
18	Submitted to La Trobe University Student Paper	<1 %
19	Submitted to University of Wales Institute, Cardiff Student Paper	<1 %
20	elibrary.buse.ac.zw:8080 Internet Source	<1 %
21	Henna Lempinen, Tarja Pölkki, Helvi Kyngäs, Pirjo Kaakinen. "Feasibility and clinical utility of the Finnish version of the FLACC pain scale in PICU", Journal of Pediatric Nursing, 2020 Publication	<1 %
22	Submitted to University of Cumbria Student Paper	<1 %
23	dro.deakin.edu.au Internet Source	<1 %
24	dspace.lib.cranfield.ac.uk Internet Source	<1 %

25	openrepository.aut.ac.nz Internet Source	<1 %
26	scholar.sun.ac.za:443 Internet Source	<1 %
27	Shafiee, Mahmood, and Stefanka Chukova. "Maintenance models in warranty: A literature review", European Journal of Operational Research, 2013. Publication	<1 %
28	brief.land Internet Source	<1 %
29	Laura A. O'Rourke, Megan Morrison, Amy Grimsley, Valerie T. Cotter. "High - fidelity simulation and nurse clinical competence—An integrative review", Journal of Clinical Nursing, 2021 Publication	<1 %
30	Submitted to University of Birmingham Student Paper	<1 %
31	Submitted to University of Wales Swansea Student Paper	<1 %
32	eprints.utm.my Internet Source	<1 %
33	Submitted to Indiana University Student Paper	<1 %

34	Submitted to Uttar Pradesh Technical University Student Paper	<1 %
35	onlinelibrary.wiley.com Internet Source	<1 %
36	www.otcats.com Internet Source	<1 %
37	publish.kne-publishing.com Internet Source	<1 %
38	soundideas.pugetsound.edu Internet Source	<1 %
39	"Standards of Practice for Occupational Therapy", The American Journal of Occupational Therapy, 2022 Publication	<1 %
40	Alexandre Patry, Claude Vincent, Christian Duval, Emmanuelle Careau. "Psychometric properties of home accessibility assessment tools: A systematic review", Canadian Journal of Occupational Therapy, 2019 Publication	<1 %
41	Jordan C. Walter, Shelley D. Coleman Casto, Erin Gates. "Inpatient Occupational Therapy Management for a Pediatric Patient With COVID-19 and Multisystem Inflammatory Syndrome in Children: A Case Report",	<1 %

American Journal of Occupational Therapy, 2021

Publication

42	aut.researchgateway.ac.nz Internet Source	<1 %
43	ir.cuea.edu Internet Source	<1 %
44	researchspace.ukzn.ac.za Internet Source	<1 %
45	staging-mhealth.jmir.org Internet Source	<1 %
46	staging-pediatrics.jmir.org Internet Source	<1 %
47	studentsrepo.um.edu.my Internet Source	<1 %
48	www.aota.org Internet Source	<1 %
49	www.econstor.eu Internet Source	<1 %
50	www.researchgate.net Internet Source	<1 %
51	www.scielo.org.za Internet Source	<1 %
52	Submitted to Coventry University Student Paper	<1 %

53	Jalissa Shealey, Eric W. Hall, Therese D. Pigott, Heather Bradley. "Systematic review and meta-analysis to estimate the burden of fatal and non-fatal overdose among people who inject drugs", Cold Spring Harbor Laboratory, 2022 Publication	<1 %
54	Seulgi Jung, Yoojin Kim, Jeongok Park, Miyoung Choi, Sue Kim. "Psychosocial support interventions for women with gestational diabetes mellitus: a systematic review", Korean Journal of Women Health Nursing, 2021 Publication	<1 %
55	commons.und.edu Internet Source	<1 %
56	digitalcommons.ithaca.edu Internet Source	<1 %
57	doczz.net Internet Source	<1 %
58	edocs.maseno.ac.ke Internet Source	<1 %
59	hdl.handle.net Internet Source	<1 %
60	link.springer.com Internet Source	<1 %

61	uir.unisa.ac.za Internet Source	<1 %
62	wiredspace.wits.ac.za Internet Source	<1 %
63	www.sajot.co.za Internet Source	<1 %
64	www.slideshare.net Internet Source	<1 %
65	www.tandfonline.com Internet Source	<1 %
66	Khadijah Alshawush, Nutmeg Hallett, Caroline Bradbury - Jones. "The impact of transition programmes on workplace bullying, violence, stress and resilience for students and new graduate nurses: A scoping review", Journal of Clinical Nursing, 2021 Publication	<1 %
67	ajot.aota.org Internet Source	<1 %
68	repository.usfca.edu Internet Source	<1 %
69	Griffiths, Pauline, Mooney, Gail. "The Paramedic's Guide to Research: An Introduction", The Paramedic's Guide to Research: An Introduction, 2011 Publication	<1 %

70

Omar A. Al-Mohrej, Fawaz N. Alshaalan,
Thamer S. Alhussainan. "Is the modified
Ponseti method effective in treating atypical
and complex clubfoot? A systematic review",
International Orthopaedics, 2021

Publication

<1%