OTASA

Occupational Therapy Association of South Africa

SOUTH AFRICAN JOURNAL OF OCCUPATIONAL THERAPY

VOLUME 54, NUMBER 3, DECEMBER 2024, ISSN ONLINE 2310-3833

South African Journal of Occupational Therapy (SAJOT)

EDITORS

OTASA ADDRESS
Postal: OTASA Office P.O. Box 1165, Hatfield 0028
Street: 1A Hatfield Bridge Office Park, 213 Richard Street (c/o Stanze Bopape Street), Hatfield, Pretoria, 0028
Telephone: +27 (12) 362-5457
Email: otoffice@otoffice.co.za
Web Site: www.otasa.org.za
Journal Web site: https://sajot.org.za/index.php/sajot
ISSN Print: 0038-3887
ISSN On-line: 2310-3833

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ISSN On-Line 2130-3883
ISSN Print 0038-233

[EDITORIAL COMMENT]

DOI: https://doi.org/10.17158/2310-3833/2024/vol54no3a1

Since going online in 2011, the SAJOT has been hosted on its own unique platform. This edition of the SAJOT, Volume 54 no 3, will be the last one that will be published on the SAJOT website. As mentioned in our announcements on the landing site, our Journal will now be hosted and managed on the ASSAf/KHULISA platform. We trust that this move will provide greater exposure and visibility to the work that we publish, as our journal now also has Diamond Open Access status. We extend our sincere gratitude to OTASA for their financial support towards this transition. For further details regarding articles currently in the workflow as well as regarding new submissions, please read our announcement by clicking here.

Overview of this issue:

'Contextual, diagnostic and cultural relevant practice', features strongly in in this issue of the SAJOT. In their integrative review, McAdam et al.[1] point out that, as most instruments for assessing functional capacity, ADL and iADL are developed in the Global North, the lack of household amenities and other constraints in rural settings in our country, limit the use of these instruments in such areas. The authors strongly advocate for the development of more contextually relevant assessment instruments for the assessment of ADL and that students are made aware of the limitations of existing ones in more rural areas.

Generally, in public health care in low and middle-income countries such as South Africa, mental health care interventions are notoriously low on budget and resource allocation[2]. A rapidly expanding area of practice, psychiatric day hospitals, was the focus of a scoping review by Masango et al.[2]. The authors set out to explore the modes of intervention used by occupational therapists in these centers globally. They found that no contextually explicit practice guidelines for interventions in psychiatric day hospitals exist in the literature and recommend that the specific role and scope of practice in this area requires further development and investigation.

South Africa's unique palliative burden of care due to illnesses that shorten the life expectancy and impede the quality of life for persons with life-limiting diseases, was explored by Van Biljon et al.[3]. The unique global scope of occupational therapy practice in this context is outlined in this article and highlights the need for incorporating local beliefs around death and dying that exist in our country into our under and post graduate training.

A blended approach in education is explored by Abbas et al.[4] in a rapid review. This approach combines online, and face-to-face learning and the results showed that it may be a feasible option for students to become more self-directed in their learning process. The authors do point out however, that for the successful and effective implementation of this approach, further training of educators is required as meticulous planning, time management and experience are essential to reach better outcomes in student learning when using this approach[4].

The outcomes of an online approach versus task-orientated intervention for addressing functional, cognitive deficits in patients with mild to moderate traumatic brain injuries (TBI), were assessed and compared longitudinally at three intervals by Franzsen and Msengana[5]. This study found that cognitive retraining using an online programme or task-oriented activities resulted in positive changes in a therapist-directed in-patient programme, but that a structured, graded, online programme was more effective in supporting significant improvement in cognitive functional performance when used together with an outpatient home programme[5].

The use and effects of splints to immobilize affected joints in the hand is common practice in many clinical settings. The factors influencing therapists' decision on the most effective splint design when describing orthoses are investigated by Mathenjwa et al.[6] with specific reference to the orthotic management of stenosing flexor tendon tenosynovitis (trigger finger). The authors found that, irrespective of the therapists' background, experience or setting, their considerations when deciding on splint type are consistent. They do, however, recommend that evidence-informed guidelines be made available regarding aspects such as the splint regime, exercises and longer-term management as large discrepancies in participant responses emerged in this regard.

Multi-sensory environments (MSE) are often used in conjunction with sensory integrative techniques in the paediatric field. Solomon and Botha[7] explored therapists' and teachers' perceptions of children's performance in the classroom after therapy in one such MSE, the Snoezelen® room. Both therapists and teachers agreed that learners' level of arousal, focus, academic performance and task-centeredness improved significantly after a session in this area, and strongly recommend that school-based therapists motivate for the establishment of an MSE at their schools[7].

This issue also includes two OTASA position statements, one on pain management to enable occupational engagement[8] and another on neonatal care[9]. Both papers reflect our Association's practice directives and guidelines for therapists working in these two specialised fields and were both ratified by the OTASA Council meeting in 2024.

The unique role and the contribution the occupational therapy support staff can play and make to expand the occupational therapy workforce in all settings and areas of practice (including those published in this issue), is addressed by the 24th Vona du Toit Memorial Lecture (2016) by Theresa Lorenzo[10]. However, the number of occupational therapy technicians and assistants have dwindled – as reflected in the title of this lecture "Where have all the OTTs gone?". She urges the profession to "continue, and where feasible, to increase its bold efforts in championing for the development of National Qualification Framework (NQF) accredited career laddering pathways of OTTs"[10:4]. Lorenzo also points out that research is crucial to provide evidence of their contribution and to investigate the contribution they could make to a wider population. For this to be possible, the training curricula need to be evaluated and monitored to effectively map the outcomes and impact of national training programmes and services.

A review of the book: Children in Mind. Their mental health in today's world and what we can do to help written by Jenny Parker[11] concludes this edition. It provides valuable insights on how the modern, techno-centered world impacts our children's mental health and it provides valuable guidelines for teachers,

parents, and health workers alike on how to protect our children and simply, to let a child be a child.

In conclusion, may I express my sincere gratitude to our technical support staff, Anna Dani (2011-2021) and Mark Letley (2021-2024) for their continued and valued technical support on the SAJOT website. Your knowledge, assistance and especially your patience in all things technical is much appreciated and made a huge contribution to the success and technical quality of our journal.

Blanche Pretorius
https://orcid.org/0000-0002-3543-0743
Editor in Chief: SAJOT

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THE 24TH VONA DU TOIT MEMORIAL LECTURE

Where have all the Occupational Therapy Technicians gone? Creating a responsive and inclusive Occupational Therapy workforce in Africa July 2016

PRESENTED BY:
Theresa Lorenzo [a]
https://orcid.org/0000-0002-6523-8189

[a]Division of Disability Studies, Inclusive Practices Africa research unit, Department of Health & Rehabilitation Sciences; Research Centre for Health through Physical Activity, Lifestyle and Sport, Faculty of Health Sciences, University of Cape Town, South Africa

HOW TO CITE:
Lorenzo, T. 24th Vona du Toit Memorial Lecture: Where have all the OTT's gone? *South African Journal of Occupational Therapy*. Volume 54 Number 3. December 2024. DOIhttps://doi.org/10.17159/2310-3833/2024/vol54no3a2

ABSTRACT

This lecture places the work of occupational therapy support staff on the national workforce development agenda. It argues that the reach of occupational therapy in advancing social transformation can be extended through certified capacitation of different levels of occupational therapy staff. Evidence based perspectives of the competences of support staff are shared to foreground their contribution to disability inclusive development. Recommendations for securing their formal training and recognition in the South African health workforce are offered and suggestions are made to extend their sense of belonging to the OT profession in meaningful and purposeful ways so that their role is unequivocally addressed in practice, education, and research.

INTRODUCTION

Dear friends and colleagues, I thank you for the invitation to present the 24th Vona du Toit Memorial Lecture. It is an honour to contribute to the memory of Vona du Toit whose ground-breaking contributions put South African occupational therapy on the national and international map. Her professional focus was on theorizing the creative human and developing therapeutic practice guidelines for using activity to enable human doing and promote human well-being. As the occupational therapy profession has developed, the importance of facilitating human belonging and enabling people to become their human potential has received more attention. Such a focus by the profession is significant, especially in Africa, where the collective consciousness of 'doing together' is present in African knowledge systems. In the 23rd Vona du Toit Memorial Lecture in 2014, Professor Alfred Ramakumba[1] raised the vision of occupational therapists addressing poverty and unemployment through seeing economic occupations as the hidden key to social transformation. He challenged us to 'get our hands dirty'[1]. in the domain of work practice and to use occupations to help improve people's livelihoods.

My purpose with this lecture is to place the work of occupational therapy support staff back on the national workforce development agenda. I believe that the reach of occupational therapy in advancing social transformation can be extended through certified capacitation of different levels of occupational therapy workforce. By referring to support staff I include occupational therapy technicians (OTTs), occupational therapy assistants (OTAs) and community rehabilitation workers (CRWs) that partner with rehabilitation professionals in delivering community-based rehabilitation (CBR) services. The literature uses different terms to describe similar support staff functions[2-5]. Table I (adjacent) provides an overview of the different categories of support staff. In this lecture I will use the acronym OTT as inclusive of all these categories of support staff.

Table I : Categories of support staff

Category	Alternative titles	Description
Community rehabilitation worker (CRW)[3] or Community rehabilitation facilitator (CRF) (two year training)[4]	Rehabilitation care worker (RCW) (1 year training)[2] Community disability worker (CDW)[13]	A mid- level health worker that is trained to identify persons with disabilities at community level and facilitate intervention in the health sector. They promote the inclusion, empowerment and participation of persons with disabilities and their families[3].
Occupational Therapy Assistant (OTA)[4]	Occupational Therapy Auxilliary (OTA[4]	Person trained to assist the occupational therapist with certain tasks. They work directly under the guidance of the occupational therapist[3]. This category of occupational therapy support staff has been phased out[4].
Occupational Therapy Technician (OTT)[5]	CRWs/CRFs were registered as OTT-Community (OTT-C) for purposes of HPCSA registration[5]	Person registered with HPCSA that is trained to implement intervention prescribed by the occupational therapist for the management of individuals and group programmes within different settings. This category of worker is appointed to assist the occupational therapist in the provision of therapeutic and rehabilitative services[5].

I will share my experiences of support staff participation in occupational therapy service systems and human resource structures to address the benefits of their contribution to social change. I will also consider the challenges they face in securing formal training and recognition in the South African health workforce. By sharing my perspectives, I hope that we perceive

their need for a sense of belonging to the occupational therapy profession in meaningful and purposeful ways so that their contribution is recognized, appreciated and formalised. In short, I view this lecture as an opportunity to advocate on behalf of OTTs.

In the 1940s legendary folk singer and social activist Pete Seeger wrote songs about social change which some of us may remember singing when we were children. He wrote songs to champion the cause of people who could not speak for themselves, to promote the things he believed in, and to protest things he opposed. Social advocacy and activism are part of occupational therapy DNA. Occupational therapists and OTTs champion social action for sustained social change to promote human well-being, prevent disability and improve the lives of persons with disability. Such a vision is only possible when occupational therapists and OTTs have capacity for disability inclusion in public and private sector service programmes at all levels of society. However, where have all the OTTs gone to help this vision materialize? I have invited my young niece, nephew and one of their friends to sing a well-known Seeger melody with adapted lyrics that raise protest questions about the status of support staff.

Where have all OTTs gone, long time passing?
Where have all OTTs gone, long time ago?
Where have all OTTs gone?
Grown older everyone
Oh, when will we ever learn?
Oh, when will we ever learn?

Where has all the training gone, long time passing?
Where has all the training gone, long time ago?
Where has all the training gone?
Time for new curriculum
Oh, when will we ever learn?
Oh, when will we ever learn?

Where has all curriculum gone, long time passing?
Where has all curriculum gone, long time ago?
Where has all curricula gone?
Gone to the OT board
Oh, when will we ever learn?
Oh, when will we ever learn?

Where has OTASA gone, long time passing?
Where has OTASA gone, long time ago?
Where has OTASA gone?
Planning for the NHI
Oh, when will we ever learn?
Oh, when will we ever learn?

BEGINNINGS

This lecture is by no means a historical overview of the development or position of OTTs but rather memories of my different engagements with support staff in occupational therapy. My journey of working with OTTs started in 1983 and 1984 during my fourth-year undergraduate fieldwork placements in general hospitals for physical and psychiatric rehabilitation practice learning. My experience of the role of OTTs continued at Natalspruit Hospital where I started my working life. When I moved to a rural hospital in 1997, there was little community outreach, and the OTA was the only person running activity programmes for in-patients, a rich source of 'beginnings' in my appreciation of the contribution of support staff in occupational therapy services.

The advent of community-based rehabilitation (CBR) in the 1980s was part of the primary health care (PHC) approach championed by the World Health Organization (WHO) that generated a new cadre of mid-level health workers called CRW[5]. The occupational therapy department of the University of Witwatersrand (Wits) was the first academic programme to invest in the training of CRWs5. I was appointed in 1991 as the first CRW programme co-ordinator located at Tintswalo Hospital, Acornhoek, in the then homeland of Gazankulu, now Mpumalanga. The CRW training programme covered aspects of occupational therapy, physiotherapy and speech and hearing therapy in rehabilitation to enable graduates to work in communities and at peoples' homes. The Wits certificated programme was converted to a two-year diploma offered formally by the University in 1998[5]. It was then the intention to make this diploma part of a laddering process into the undergraduate occupational therapy degree programme. At the same time training for occupational therapy assistants (OTAs) was offered, also as part of this laddering proposal. Changes in higher education legislation and reluctance of the occupational therapy and physiotherpy Professional Boards and the Department of Health to support the training and work of support staff led to the demise of these diplomas[6]. Indeed, where have the OTTs gone?

I want to pay homage to the 'Big Five', the five occupational therapy stalwarts that championed the initial role of the profession in CBR and the inclusion of support staff in CBR.

- Dr Pam McLaren-Haynes pioneered rural rehabilitation in Manguzi in the 1980s, co-founder of Rural Action Group on Disability (RURACT) and currently still active in RuReSA.
- Prof Marj Concha had the vision in the mid-1980[s] to extend occupational therapy student fieldwork experience at Wits to rural areas of the then homelands of Lebowa and Gazankulu that has been sustained until today in Limpopo and Mpumalanga provinces.
- A/Prof. Robin Joubert started CBR in the Valley of a Thousand Hills in KwaZulu-Natal for undergraduate students at the University of Durban-Westville, now the University of KwaZulu- Natal.
- Ms. Christa Meyer and A/Prof Estelle Shipham at the Medical University of South Africa (MEDUNSA) (now Sefako Makgatho Health Sciences University) started student placements in Winterveldt in 1992, which involved the CRFs that had been trained at the Institute of Urban Primary Health Care, working with occupational therapy students.

Besides these five visionary occupational therapists, there were practitioners at three other pilot training programmes for CRWs in South Africa, namely, South African Christian Leadership Alliance (SACLA) Health Project in Khayelitsha and the Wits-Tintswalo Community Rehabilitation Worker Programme in Acornhoek, later to be renamed the Community Rehabilitation Research and Education (CORRE) programme. There was RURACT which was coordinated by Lidia Pretorius, an occupational therapist in Mpumalanga who developed a progressive and pro-active network of professionals and activists that transformed each other through dialogue, debate, and friendship with people like the late Maria Ranthu, Shuaib Chalklein, Michael Masutha, Mzoilisi ka Toni, Thulani Tshabalala, Mike du Toit, together with the late Kirstie Rendall and the rehabilitation team at Tintswalo, among many others.

The initial training of CRWs equipped them to do home based rehabilitation focused on impairment. This training evolved over time to include skills in the development of community support networks for early childhood education and skills in entrepreneurship and livelihoods development. Since those early beginnings CBR in South Africa has grown into a strategy for community-based, disability inclusive development to equalize opportunities for participation by addressing poverty reduction and social inclusion. Innovations in practice by CRWs have responded to the needs of persons with disabilities in ways that are relevant to the African context by meeting the United Nations Sustainable Development Goals (SDGs) in inclusive and responsive ways so that

initiatives are sustained. Against this background, the next part of the lecture presents my perspectives on support staff based on the stanzas of the song.

Where have all the OTTs gone? Disrupting practice through success stories

Here I share research-based stories of the ways in which support staff enable inclusive development of persons with disability, highlighting the service gap that is created when they are not included in primary level services.

The first story commenced during my seven years working in the Mhala district of then homeland Gazankulu during 1987-1993. This period produced a shift in my professional identity from being a hospital-based occupational therapist to becoming a community-based occupational development practitioner. Two highlights of disrupting conventional occupational therapy practice in partnership with support staff were firstly, starting the CBR Development Trust which spearheaded the capacity building of a network of teachers in inclusive early childhood development by two colleagues, Alison Collinson, an occupational therapist, and Judy McKenzie, a speech and hearing therapist. I created skills development programmes for youth and adults with disabilities to initiate self-help groups in collaboration with CRWs. Secondly, I was involved with the in-service training of CRWs in collaboration with the Occupational Therapy Department at Wits. I followed up the impact of these two initiatives in 1994 when I researched the continuing education needs of CRWs and their supervisors in the Mhala district (now part of Bushbuckridge)[8]. Two participatory methods for data gathering were used. These included the Nominal Group Technique (NGT) with CRWs and their supervisors at the end of training and five months after graduating and focus group discussions (FGDs) with the CRWs and disabled persons and their families. The results from both data sources revealed that community development was rated as the top priority. Spinal cord injuries and cerebral palsy were only rated in the first NGT. In the second NGT, socio-economic development and self-development were the two priorities. The priorities of the supervisors of CRWs were work organisation, problem-solving skills and time management, recordkeeping, report writing skills and facilitation skills. The findings of FGDs correlated with the NGT results, and included socio-economic needs, learning problems, mental illness, and community resources.

Table II: Results of nominal group technique by CRWs[8]

	1992		1993	
Item	Mean of ranked scores	*Priorities*	Mean of ranked scores	*Priorities*
Community development	2.2	*1*	1.5	*1*
Spinal cord injuries	3.5	*2*	4.7	*4*
Cerebral palsy	3.8	*3*	5.1	*6*
Stroke	3.8	*3*	-	
Assistive devices	4.0	*4*	5.3	*8*
Fundraising	4.1	*5*	2.7	*3*
Campaign skills	4.9	*6*	4.8	*5*
Mental illness	5.1	*7*	5.2	*7*
Manual skills	5.3	*8*	2.7	*3*
Respiratory	5.7	*9*	-	
Speech	6.0	*10*	-	
Intellectual disability	6.2	*11*	5.6	*9*
Albinos	7.3	*12*	6.9	*11*
First aid	-		6.2	*10*
English improvement	-		1.6	*2*
Parkinson's disease	-		-	

The range of in-service training needs identified by support staff and supervisors in Table II (adjacent) point to the scope of their work in the community[7]. None of these needs are addressed when OTTs are gone. Likewise, these needs are only addressed when occupational therapists prioritise the occupational dimensions of disability inclusive community development, in particular the spiritual benefits of being, having, doing, and interacting as Manfred Max-Neef, a Chilian economist, highlights in his theory of Human Scale Development[9]. Max-Neef claimed that deprivation becomes a resource to meet our fundamental human needs[9]. Becoming an occupational development practitioner paved the way for me to think about human deprivation differently and in so doing, shifting the focus of my work towards the reduction of human poverties in partnership with support staff. My doctoral research with women with disabilities investigated their participation in socio-economic development[10]. It revealed that their human occupations were synergistic satisfiers of fundamental human needs that reduce human poverties[9]. Spirituality was an integral part of being human for the women in my study[11]. I came to appreciate that CRWs recruited from and working in their own local communities contribute insights into the rich diversity of belief systems, forms of worship, alternative healing methods and occupational profiles of residents, thereby paving the way for contextually responsive and socially inclusive occupational therapy interventions.

A second success story of the contribution of support staff to inclusive development comes from a collaborative study I led between 2008-2013, titled Disabled Youth Enabling Sustainable Livelihoods (DYESL[12].

The research team consisted of occupational therapy colleagues from six universities in South Africa, together with a CRW and a disabled person from each province. We investigated the role of CRWs as catalysts for disability-inclusive youth development through service learning across five provinces where fourth year occupational therapy students did their practice learning placements. The study explored access to health, education, and livelihoods for youth with disabilities in sites with and without CRWs. A cross-sectional survey using a structured questionnaire was undertaken in nine sites, and a snowball sample of 523 youth with disabilities of both sexes, aged between 18 and 35 years, was selected. The survey found that a significantly larger proportion of youth with disabilities living in sites with CRWs were seen at home, and that there was a large difference in educational access by youth between sites with and without CRWs. The study confirmed that CRWs are well positioned to remove barriers to participation in economic development of youth with disabilities together with occupational therapy students through service learning[12]. Enabling access to work opportunities promotes the citizenship of youth, an important social and occupational development objective for the profession in South Africa and one that we cannot attain when OTTs are gone.

A third success story is a three-country study in 2013 on the competences of community disability workers in rural communities in South Africa, Botswana and Malawi[13]. Findings indicated that community disability workers helped persons with disabilities across the lifespan to negotiate numerous transitions. When faced with difficult barriers a community disability worker provided the necessary support to facilitate participation in schooling or work as well as play, sport, cultural, recreation and political activities.

A fourth story that illustrates the successful engagement of CRWs/OTT-Cs at Tintswalo hospital with persons with disability and their families, which focused on their role as disability inclusive catalysts through the implementation of community-based inclusive development projects. Nine CRWs/OTT-Cs gathered at Wits Rural Facility for a one-day narrative action reflection workshop14 to reflect on their work over a period of 25 years since their training. Participants were asked to make a creative timeline using farm animals to reflect any significant change or

achievements that they had initiated or experienced. The timeline indicated that the CRWs/OTT-Cs were able to address inequities in public sector systems through awareness-raising and advocacy at a community level. They coordinated access to resources for persons with disabilities and their family or caregivers. They were effective in removing barriers to participation through provision of assistive devices and equipment, created networks of support and relationships, and made connections between health, education, livelihoods development and family and community support systems.

Participatory research about these inclusive implementation practices provided evidence that the interventions by CRWs/OTT-Cs are more client-centred and effective when they are supported by occupational therapists, physiotherapists, speech therapists and audiologists in the district health teams. Many of the district health teams were led by nurses that had little understanding of rehabilitation from a human occupation, activity-limitation, or inclusive participation perspective. Participants reported that nurses seemed to have minimal appreciation of their contribution in the continuity of care and referral system, in particular their competences in rehabilitative and disability management when doing home visits. Respect for the role of support staff and appreciation of their expertise that was developed over years of practice was largely absent. The experiences of participants in the three-country study echoed the experiences of OTTs that were shared during OTASA National Dialogues in the Western Cape during 2015. Indeed, where have the OTTs gone? These success stories reveal a need for curriculum change and pathways for articulation so that we build a coherent and cohesive training and continuing professional development (CPD) system that generates an inclusive and responsive occupational therapy workforce, which will be discussed in the next two sections:

Where has all the training gone? Disrupting mindsets by building a coalition for curriculum change

In this section I share some thoughts on the need for a transdisciplinary approach to the training of occupational therapists and OTTs. I draw on Max-Neef's definition of transdisciplinarity[9:16] to mean an approach that is used to gain greater understanding by reaching beyond the fields outlined by strict disciplines i.e. beyond the traditional boundaries of occupational therapy knowledge. I argue that a mindset change towards inclusive development will position the profession inclusive of occupational therapists and OTTs as a significant stakeholder in helping citizens bridge the gap between ability and disability.

The students at South African institutions of higher education in 2015 and 2016 will go down in history as the generation that revitalized student activism. They are the youth that realized that while there may have been political freedom post-1994, there is still a struggle for real economic freedom from poverty and oppression of the masses. Occupational therapy has an obligation to contribute to poverty alleviation and community development in South Africa. In 2013 McConkey[15:2], writing about disability inclusion, posed the following question: "In a world that has recently seen barriers disintegrate between East and West in Europe; between black and white in Africa; is it too much to hope that in this new millennium, the barriers between ability and disability will also disappear? What is stopping us? Put simply, we lack the human resources and will-power to make it happen". With McConkey's observation in mind, I ask *"where has all the training gone"*?

The World Health Organisation policy on task shifting[16] highlights the need for a interdisciplinary approach to inform workforce training and to bridge the shortage of human resources to meet population health and inclusive development needs. There is not consensus on the roles that 'mid-level' health workers fulfill and their relationships with existing health professional staff in mainstream and specialist services. It is time for consensus to be sought. Particularly appealing is the marrying of community development functions with rehabilitation functions to create a worker who embodies the skills needed to fulfill the intentions of community-based inclusive development services to persons with disabilities. A mindset change in human resource planning is needed to re-evaluate the value for money to be gained by investing in new staffing models in health, education, employment and social development services and systems. This debate is also the sticking point in the rehabilitation strategy framework for the National Health Insurance (NHI) as the OTT-Cs expressed an ongoing struggle for a sense of belonging to a PHC team[17]. It is time to build a coalition for change in the way that training is done. One change could be to make the task shifting and task sharing synergies between undergraduate occupational therapy curricula and OTT curricula explicit.

Other examples flow from the findings of research and workshops related to the competences of OTT-Cs discussed in the previous section. These data sources provide evidence that OTTs, in collaboration with occupational therapists, can implement inclusive occupational development that seeks to equalize opportunities for persons with disabilities through:

- Rehabilitation – for example, provision of play equipment, mobility devices and Appropriate Paper Technology (APT), checking splinting, and organizing psycho-social activity-based groups.
- Poverty reduction – for example, starting poultry projects for income generation, doing needs assessment and resource mobilization related to early childhood development at creches and day care centres, where they can screen and make relevant referrals and follow up so that there is a continuum of care across public sectors. OTTs also recognize the importance of nutrition and food security. These interventions by OTTs need to be extended from the primary level of healthcare to partnering with occupational therapists working in district school-based health teams.
- Social inclusion – for example, contributing to HIV prevention, assisting orphans and vulnerable children to access promotive and preventative health and development services, promoting community disability awareness, and serving as members of School Governing Boards. OTT/Cs also engage with local tribal chiefs and local municipal structures together with community leadership structures of religious organisations or women's groups, stokvels, disabled people's organization (DPOs) to help create the political will to change health, education, and social development systems.

These and other interventions by OTT/Cs have generated agency in persons with disabilities and their families so that they experience therapy spaces as empowering themselves to meet their needs. In short, the reach of occupational therapy is extended when occupational therapists partner with OTT/Cs in service design and delivery. Reflecting on CBR within an African context and the absence of different services, Asindua[18] argued that families and communities were always a source of care and training for persons with disabilities long before the 'officialisation' of the strategy. Sustainability of training initiatives will only happen if there is agreement about the transdisciplinary conceptual frameworks that are authentically rooted in African knowledge systems to inform occupational therapy practice.

Where have all the curricula gone? Disrupting hierarchies by responding to career aspirations and creating laddering pathways

In this section, I urge the profession to continue, and where feasible, to increase its bold efforts in championing for the development of National Qualification Framework (NQF) accredited career laddering pathways for OTT-Cs.

OTT-Cs and community service occupational therapists have helped create a bridge between hospital and community practice. A challenge that has arisen is the attrition of OTAs and OTT-Cs through retirement and the fact that there are no current NQF certified OTT-C education programmes. The experiences of OTT-Cs reveal that flexibility and managing uncertainty are critical skills in dealing with the complex nature of problems faced by persons with disabilities and their families that need inter-sectoral collaboration so that they stay healthy and well. Creativity on the part of the Occupational Therapy Board of the Health Professional Council of South Africa (HPCSA) is essential in responding to the disability inclusive development needs of the population through the National Health Insurance (NHI). The Board has an opportunity to provide intentional leadership in two aspects:

- First, there is the call from the Department of Higher Education and Training (DoHET) to enable articulation of young graduates in the Technical and Vocational Education and Training (TVETS) sector that have a certificate in Primary Health Care and Early Childhood Development at NQF 4 (vocational) into the one-year NQF 5 Higher Certificate in Disability Practice (HCDP) offered at the Department of Health and Rehabilitation at the University of Cape Town. After successful completion of the HCDP, it is proposed that graduates can articulate into a NQF 6 Diploma for profession specific technicians (hospital or community), proposed to be offered by Universities of Technology. Such career articulation pathways are advocated in the White Paper for Post-school Education and Training[17]. This envisaged career laddering articulation would require the OT Board to re-open the OTT/C register to allow the registration of community development practitioners or home-based carers who have upgraded their skills to become rehabilitation care workers (RCWs). There is a need for more advanced certificates and PG diploma programmes that provide pathways of articulation. The vision of support staff career laddering is not new. As mentioned earlier, the OT Department at Wits developed and successfully implemented an accredited CRW programme in 1990s and 2000's. It enabled horizontal mobility in learning opportunities where practitioners aspired to deepen their knowledge and practice in a certain area. Such pathways created a stronger sense of belonging that disrupted hierarchies and generated respect for the meaningful contributions that OTT/Cs made to the populations being served. It is a debate that has been on the agenda of the OT Professional Board for decades and is now more relevant and urgent with the introduction of the NHI.
- Second, to date there has also been no coherent CPD programme, and little evidence of comprehensive human resource planning in the NHI. The CPD points system for OTT-Cs has addressed their career aspirations and mobility. A strong and vibrant continuing professional education (not just for the sake of gathering certificates/qualifications) can be established through a strong coalition between Universities of Technology and Universities that would be able to provide support in curriculum, teaching, research, and service development. Courses could be offered by any of the University Occupational Therapy Departments through their involvement in the practice and service-learning placements of undergraduate occupational therapy students. The Practice and Service Learning book[18] needs to have a second edition that reflects the critical role of OTT-C staff in the training of undergraduate and even postgraduate students. Such capacity building could enable OTT-Cs to be competent co-supervisors of undergraduate occupational therapy students.

Lastly, I applaud the work of the Occupational Therapy Africa Regional Group (OTARG) across the continent to implement evidence-based practice, informed by innovative teaching, research and lifelong learning. Utilization of OTT-Cs, curriculum development and career laddering should be factored into occupational therapy services across Africa. Championed by Rose Crouch and now led by younger generation of occupational therapists, OTARG is well positioned to provide the necessary leadership across the continent to disrupt role hierarchies in service delivery.

Where has OTASA gone? Transforming leadership and planning for National Health Insurance (NHI)

In this section, I consider some of the change management challenges facing OTASA and I offer suggestions to strengthen the utility of OTTs in workforce planning for the NHI.

The challenge to overcome our divided past saw the South African Association of Occupational Therapists (SAAOT) become the Occupational Therapy Association of South Africa (OTASA) in 1995, a process ably led by the late Professor Ruth Watson together with Professor Alfred Ramukumba. The profession of occupational therapy still struggles with the dominance of White privilege and power that are vested in professional hierarchies. The ongoing challenge of many occupational therapists and OTT-C[s] to join OTASA may be more structural and cultural in nature than financial constraints.

There is a challenge for OTASA to make the interests of public sector occupational therapists and OTT-Cs more visible. A partnership between OTASA and the provincial and national occupational therapy forums needs to be strengthened as these forums seem to play a support rather than leadership role in advancing the national interests of the profession. A stronger sense of belonging in OTASA still needs to be created for OTT-Cs and occupational therapists alike. Occupational therapists in public service and private practice are well positioned to give ongoing support to the initiatives of the OTT-Cs so that these can be sustained. The World Report on Disability[20] arguably underplayed the significance of human resources as a vital component to progress. There was little critical examination in the report of staffing arrangements in disability services. OTASA can champion the role of the profession in disability inclusive community development in partnership with appropriately trained support staff.

Research needs to be part of the process so that we learn how to upscale the OTT-Cs programmes to reach a wider population. We need more documentation of experiences to look at the outcomes and impact of rehabilitation services on the quadruple burden of disease and disability prevention. OTASA and the Occupational Therapy Board at HPCSA could develop a Theory of Change as part of an integrated planning, monitoring, evaluation and learning system to effectively map the outcomes and impact of our national training programmes and services. Evidence-based advocacy by OTASA could contribute to effective disability prevention if non-communicable diseases were identified and treated earlier, as would be the case if OTT and other support staff were appropriately trained. I suggest the following components be considered in a Theory of Change:

- Emergent change – Little was known about the role or contribution of CRWs to the occupational therapy profession before the training was started by the Tintswalo Hospital rehabilitation team in collaboration with the Wits occupational therapist. In 2006, CRW training was stopped and CRWs were reregistered as OTT-C with the Occupational Therapy Board of HPCSA. OTT-Cs have appreciated the sense of belonging and that it offers them more job mobility across provinces.

- Transformative change - The stories of the OTT-Cs require many of us in academia to unlearn how we have been socialized in the values of the profession that conflict with the values and needs of the populations we are meant to serve. Sustained change will only happen if significant curricular changes are made, and staff is representative of those we serve.
- Projected change - an inclusive occupational therapy workforce with clearly articulated pathways for CPD and specialization through postgraduate diplomas and clinical Masters Programmes for OTT-Cs is required to ensure we are able to build an inclusive and responsive workforce for NHI.

Where to from here? Lighthouses for social change

To summarize the key points of this lecture, I have identified five lighthouses that could serve as beacons of hope that I believe Vona du Toit would have offered if she was alive today. A lighthouse is designed to emit light from a system of lamps and lenses to serve as a navigational aid. Lighthouses mark dangerous coastlines, hazardous shoals, reefs, and safe entries to harbours. Vona would have made a call for action by all occupational therapists and OTT-Cs to engage in addressing the environmental barriers that prevent creative participation to promote inclusion and well-being for all. Collective action is required before we become obsolete or overtaken by technology or electronic systems or new professional groupings. I pose a question for collective reflection about each lighthouse.

- **First lighthouse: Available and appropriate products and technology**
  The major challenge for occupational therapists and OTTs is the provision of assistive devices and equipment because procurement processes present unnecessary barriers. Funding and administrative staff do not seem to understand the requirements for or supply of equipment. OTT-Cs do not have offices with basic office equipment and have had to share offices with either nurses or social workers. Some of them have been working from their home. How can OTASA be supported by its members to shine a light on these structural issues in the appropriate governance forums?

- **Second lighthouse: Making natural environments accessible**
  The NHI will fail to be available, accessible, and affordable to all disabled persons, especially children and youth, unless we address the transport and mobility needs of both staff and disabled persons and their families. There is huge opportunity to forefront innovations in disability and rehabilitation in the development of the NHI system through the district teams with OTTs at community level. For example, creative and innovative partnerships with corporate and private sector could ensure disabled persons have access to health services and social development to address food security and sustainable development. Accessible and affordable transport also helps parents of disabled children to manage their child's transitions through the different life stages. Accessible and affordable transport is a synergistic satisfier of human needs. It is pivotal in overcoming human poverties across all levels of care and all sectors, including ensuring that therapists can get out into communities and OTTs are able to do home visits and work on projects across the community. Partnerships with the private sector may help to address the transport needs of occupational therai and OTT-Cs, for example, quad bikes could be donated to OTT-Cs that would enable to see more clients in their homes and visit more schools or projects for groups. In what ways can the OT fraternity become more actively involved in the transport industry to shine a light on the critical role of transport in social change?

- **Third lighthouse: Creating networks of reciprocal support and relationships**
  Coalitions for curriculum change may create pathways for specialization for OTTs across hospital and community practice. Universities could do participatory research with public sector health service managers to develop academic pathways for OTTs. There is also a collective of other occupational therapy academics, practitioners and researchers who are leading the way in Occupational Science that will undoubtedly strengthen the work of OTT-Cs and community-based occupational development, research, and practice. We also need networks of support to ensure wellness and well-being of all staff so that they can give optimal service to individuals and their families, or the different staff we work with across sectors. How can the mental health competences of occupational therapists and OTTs shine a light in the workplace?

- **Fourth lighthouse: Dismantling power, privilege, dominance, and hierarchies**
  OTTs have been on the margins of the OT profession as evident in the recent draft World Federation of Occupational Therapy Education Position Paper[21], the HPCSA graduate attributes, and the World Federation Occupational Therapy Minimum Standards for Occupational Therapy Support Staff[21]. Explicit mention of the finer details of task sharing and task shifting would bring OTTs closer to the professional fold[16]. There is also marginalization of OTTs in rural areas that warrants focused attention. Since registration as OTT-Cs, they feel that they are mobile across provinces, which will also help extend the occupational therapy profession into under-serviced and under-resourced areas in a developmental and sustainable way.

  OTASA and the HPCSA have a critical leadership role to play in creating reciprocal relationships through private-public partnerships in the NHI and coalitions for curriculum change with NGOs, government departments, and higher education institutions (HEIs) including Universities of Technology (UoTs) and Technical and Vocational Education and Training colleges (TVETs). CPD needs to be expanded by offering a wider range of academic entry points that are interdisciplinary and transdisciplinary. Focus of curriculum content should be on life course development and managing life stage transitions. In what ways could these proposed collaborations sustain and upscale the groundwork that has already been done by various occupational therapy stakeholders to shine a light that dismantles siloed action?

- **Fifth lighthouse: Embed monitoring the implementation of policies, services and systems for sustained social change**
  Two additional strategies of monitoring participation of disabled persons related to OTT/C practice have been identified.
  - Firstly communication. We need to have more conversations and dialogues about the contribution of occupational therapists and OTTs in the National Development Plan, National Health Insurance and Sustainable Development Goals. WFOT reported on the United Nations Conventions for Persons with Disability and other similar international policies. However, as collective members of OTASA we too

need to contribute to national policy development that translates these international policies into action on the ground. How could professional communication and marketing be more vibrant? What light can technology shine on sharing current stories from practice in clinical settings?

- Secondly, disability and rehabilitation information systems in the NHI. To do effective communication and reporting, we need efficient and generative disability and rehabilitation information systems. Provincial managers and universities could collaborate on human resource planning and using the evidence from practice gathered through a disability and rehabilitation information system to create posts and community, district, regional and provincial level. Having robust data systems will contribute to reciprocal learning and collective action to strengthen occupational therapy identify in the NHI and increased recognition of our active participation and the meaningful contribution we make. How could long-overdue epidemiological studies be used to strengthen and shine a light on the population-focussed approach of occupational therapy to health and wellbeing?

A final take home message.

My take home message from this lecture: Sustainability is about building relationships and mutual accountability to ensure the growth and continuing professional development of an inclusive workforce delivering occupational therapy. Our excellence will be seen in the relevance of our practice that enables the people we work with to meet and sustain their fundamental human needs through the individual and collective occupations they engage in.

My gratitude

I am forever grateful to the late Prof Marj Concha for the initial research opportunity in rural health district of Tintswalo Hospital in 1987, which lead to the development of community based rehabilitation programmes and the training of community rehabilitation workers from 1991 by the rehabilitation team at the hospital, in collaboration with the Occupational Therapy Department at Wits University.

I have enjoyed working with Emeritus Prof Madie Duncan on recrafting my paper presentation at the national OTASA congress in 2016 for this publication.

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[RESEARCH ARTICLE]

South African occupational therapists' orthotic management of trigger finger and factors influencing their decision regarding splint type

AUTHORS

*Kuhlekonke V. Mathenjwa[a]
https://orcid.org/0009-0007-1211-9382
December M. Mpanza[b]
https://orcid.org/0000-0003-2777-9256
Chantal Christopher[b]
https://orcid.org/0000-0002-4959-7288

AFFILIATIONS

[a]Ngwelezana Hospital, Ngwelezana Thandisiwe Road, Empangeni, Durban, KwaZulu Natal, South Africa
[b]Discipline of Occupational Therapy, School of Health Sciences, University of KwaZulu Natal (Westville Campus), University Road, Westville, Durban, KwaZulu Natal, South Africa
*Post-graduate student at the University of KwaZulu-Natal, South Africa, at the time of study.

CORRESPONDING AUTHOR

Kuhlekonke Mathenjwa
Email: mathenjwakuhlekonke@gmail.com

KEYWORDS

trigger digit, stenosing flexor tenosynovitis, orthotic management, hand splint, joint-blocking splint

HOW TO CITE THIS ARTICLE

Mathenjwa KV, Mpanza DM, Christopher C. South African occupational therapists' orthotic management of trigger finger and factors influencing their decision regarding splint type. *South African Journal of Occupational Therapy*. Volume 54 Number 3. December 2024. DOI: https://doi.org/10.17159/2310-3833/2024/vol54no3a3

ARTICLE HISTORY

Submitted: 2 November 2023
Reviewed: 22 April 2024
Revised: 13 August 2024
Accepted: 14 August 2024

EDITOR

Blanche Pretorius
https://orcid.org/0000-0002-3543-0743

DATA AVAILABIITY

Upon reasonable request, from corresponding author.

FUNDING

No funding was obtained for this study

ABSTRACT

Background: Orthotic management of trigger finger refers to the use of splints to immobilise affected joints. The prevalence of trigger finger and the assessment and treatment practices utilised by occupational therapists for this affliction in South Africa, are not yet documented.
Aim: To explore occupational therapists' orthotic management for clients with trigger finger in KwaZulu-Natal, and the factors influencing the therapists' decision when prescribing orthoses.
Methods: A quantitative cross-sectional study design was implemented with a sample size of 102 via a stratified random sampling approach. A survey questionnaire was administered. Data were coded using frequencies and then descriptively analysed using SPSS.
Results: Findings indicated that trigger finger is common in clinical settings and the majority (99%) of the occupational therapists use splints when managing trigger finger and as a first line of treatment (69.9%). The joint-blocking splint is preferred by 96.6% of the participants with the MCP joint-blocking splint being favoured by 55.0%. The most considered factors when deciding on the splint type are clinical presentation (99.1%), and the client's occupation (92.4%), and the most preferred measures of the effectiveness of treatment are pain (97.1%) and range of motion (97%).
Conclusion: The study has demonstrated that the inconsistencies noted in global research also apply in KwaZulu-Natal. Therefore, further investigations on the effectiveness of splinting and a guide on deciding on splint type as well as appropriate outcome measures are necessary to ensure that clients receive optimal care through evidence-informed practice.

Implications for occupational therapy practice

- This study informs further understanding of the current assessment prior to splinting and treatment practices that occupational therapists in the South African context provide for their clients with trigger finger.
- The study demonstrates that irrespective of the participant's level of experience and their clinical settings, the considerations when deciding on splint types remain the same.
- The results are consistent with available literature particularly with which splint type to issue. However, the development for a guide regarding the orthotic management of trigger finger covering aspects like the splint regime and the recommendations of exercises is vital as discrepancies emerged largely from these areas. The type of exercises, stages at which they may be introduced, duration and frequency should be considered for deeper engagement.
- The development of this protocol will ensure consistency of treatment and evidence-informed practice.

INTRODUCTION

Trigger finger, also known as stenosing flexor tenosynovitis or trigger digit, is a sudden release or locking of a finger during flexion and extension which can be characterised by painful snapping and/or locking during flexion[1]. This leads to functional limitations and affects engagement in meaningful and purposeful activities. Trigger finger can occur in one or more fingers in each hand and can be bilateral. The mostly affected digits are said to be the thumb followed by the ring finger, middle finger, little finger and lastly, the index finger[2].

There are several treatment approaches for persons with trigger finger; including conservative or surgical treatment[3] and modalities such as activity modification and corticosteroid injections. Conservative treatment by occupational therapists includes exercises and immobilising the affected fingers through wearing orthoses[4] and in most cases, conservative treatment is recommended before surgical intervention[5]. Although this is the case, there is limited literature available globally that examines splinting as a primary treatment modality for trigger finger and no literature was found with regard to the South African context. Colbourn et al.[6] conducted a study in Northern Ontario on the effectiveness of the metacarpophalangeal joint-blocking splint for trigger finger and it was noted that, unlike steroid injections and/or surgery, splinting had no complications.

A study by Langer et al.[5] found that with conservative management of persons with trigger finger, there is limited evidence when comparing the efficacy of one intervention to the other. Furthermore, the study illustrated that treatment is inconsistent amongst occupational therapists in terms of the type of orthoses they use for the MCP, DIP, and PIP joint-blocking splints their considerations when issuing these orthoses, their outcome measures used to determine the effectiveness of treatment and the regimen for the orthoses prescribed. Thus there is a gap in treatment guidelines for trigger finger. In the South African context, there is limited research on hand assessment practices used by occupational therapists[11]. There are currently no studies available that refute or support the findings of global research[2, 4, 5, and 6] which therefore indicates the need to establish what works within the South African context.

This research will establish the current orthotic management practices by occupational therapists in KwaZulu-Natal. It will therefore explore the occupational therapists' approach to the treatment of trigger finger, and their preferred splint designs when treating clients with trigger finger. Furthermore; the factors considered by occupational therapists before and/or during treatment of this condition will be explored as well as the outcome measures used by occupational therapists to evaluate their treatment.

LITERATURE REVIEW

Trigger finger is a hand condition in which flexor tendons "trigger" with movement[6] .Triggering often occurs at the fibro-osseous tunnel[5] in which the flexor digitorum profundus and flexor digitorum superficialis glide[6]. Due to irritation and inflammation of the flexor tendons and/or sheath, a nodule may be formed leading to abnormal excursion of the tendons under the pulleys[6]. Trigger finger is frequently seen in clinical practice; however, no standard treatment protocol has been established as best practice[8]. The aim of splinting for trigger finger is to decrease the tendon's mechanical friction within the tendon sheath through immobilisation allowing the inflamed sheath to heal[8]. A survey conducted by Langer et al.[5] in Israel and the United States of America, indicated that all occupational therapists reported using orthoses such as a splint during treatment. Although splinting is considered as the lightest form of treatment for trigger finger, it was highlighted to have a success rate of 40-70% in cases with symptom onset of less than six months duration[9]. When Colbourn et al.[6] evaluated the efficacy of the metacarpophalangeal joint-blocking splint, 92.9%(n=28) of these clients felt their symptoms resolved after 6-10 weeks of splinting. The metacarpophalangeal (MCP) joint-blocking splint and the distal interphalangeal (DIP) joint-blocking splint were compared by Tarbhai et al.[10]; and the MCP joint blocking splint had a success rate of 77% (n=30) while the DIP joint-blocking splint had a success rate of 47% (n=30). The MCP joint-blocking splint was reported to have good outcomes[6] and Huisstede et al.[8] also identified it as a preferred splint.

Clinical considerations on the splint type to issue and outcome measures involve several factors. Tarbhai et al.[10] reported deciding on the splint design based on the client's clinical presentation, vocation and leisure activities. In addition, range of motion, grip strength, severity and frequency of triggering were used to measure the splint's effectiveness. At the same time, another study had the participant's perceived improvement of symptoms as an outcome measure[6]. A survey was conducted where 79% (n=61) of occupational therapists reported considering the client's symptoms while 38% (n=61) reported considering occupational concerns when deciding between splint designs to use[5]. Noteworthy is that the client's clinical presentation and occupation predominantly influence therapists' decisions on the splint design to use. Pain, range of motion, triggering symptoms and grip strength appear to be the common outcome measures.

In the South African context, no studies were found to support or refute the international trends on the management of trigger finger. There are, nonetheless, studies on hand conditions such as hand assessment practices and occupation-based hand therapy[11, 12]. These studies highlighted the need for more research on assessment practices by South African occupational therapists[11].

Study aim and objectives

The study sought to explore occupational therapists' orthotic management for clients with trigger finger in a South African context, and the factors influencing the occupational therapists' decision when prescribing orthoses.

METHODS

Research design

A quantitative cross-sectional study design was used allowing for the use of a questionnaire survey to provide numerical description of opinions, trends, or attitudes of occupational therapists[13]. The cross-sectional study design ensured collection of data from various participants at one point in time[14] through collecting the participants' perceptions. The descriptive nature of the cross-sectional study design was suitable in revealing connections and patterns that might otherwise not be established, such as the factors that therapists in the different clinical settings consider when deciding on an orthosis and their considerations for measuring effectiveness of treatment.

Population and sampling

As the population size of occupational therapists in KwaZulu-Natal currently treating clients with hand conditions is unknown, an equation for large populations was applied as the size of the population. Using the Cochran sample size calculator to determine the sample size, the precision level was set at +-5%, confidence level at 90% and estimated proportion set to 0.516. The stratified random sampling approach was applied allowing for the identification of a representative sample through the use of inclusion and exclusion criteria therefore enabling the identification of a sample frame to which the results may be generalised. The criteria were as follows:

Inclusion criteria:

- Qualified occupational therapists including community service therapists.
- Occupational therapists currently registered with HPCSA.
- Occupational therapists currently practising in KwaZulu-Natal.
- Occupational therapists with access to gadgets (i.e. Smartphone, tablet, laptop) and internet.

Exclusion criteria:

- Occupational therapists practicing for the Department of Education.

The survey questionnaire developed in Google Forms was distributed via email to 271 occupational therapists and/or occupational therapy departments from the 22nd of September 2022 until the 22nd of November 2022, and a sample size of 102 was achieved. Therapists were from both the public and the private sector in KwaZulu-Natal. This was done to ensure that both sectors are represented thus allowing for results to be generalised across both sectors. The email addresses were obtained from the Department of Health communiqué mailing list for those in the public sector following being granted gatekeeper permission. Occupational therapists in the private sector were contacted through emails obtained from their professional websites and through referrals from colleagues. Telephonic reminders and emails were sent after two weeks to increase the return rate of the survey.

Research tools

Questionnaire on management of trigger finger

The occupational therapy orthotic management of trigger finger survey questionnaire (please see Supplementary File 1) was used for data collection. This was distributed to occupational therapists who met the inclusion criteria through personalised emails. The documents included the consent form, information sheet and the link to access the questionnaire. The 23-item self-administered questionnaire comprised of one 'yes' or 'no' question for the consent, six multiple choice questions focusing on the therapists' demographic information such as age, gender, level of education, as well as the sector in which they are currently working at. Six questions explored orthotic treatment prescribed; these were multiple choice, Likert scale, or checkbox questions.

In addition; six questions explored the factors considered during prescription and four explored treatment outcome measures. Questions in these sections compromised of Likert scale questions, multiple choice questions as well as open ended questions. This survey questionnaire was in English and the expected duration for participation was 25 minutes. It was developed by the first author and was informed by literature[5, 6, 8] and the objectives of the study.

Data analysis

The data collected and analysed were of ordinal or nominal data. All responses were transferred from Google Forms to Google Sheets and then downloaded into an Excel spreadsheet. With the guidance of a statistician, data were coded and then descriptively analysed using SPSS. Descriptive statistics were used to analyse the data which included the frequencies of the demographical data and the survey data. To explore the differences between the different sectors, and level of experience, the Pearson chi-square test was used with the confidence level set at 95%. Responses to open-ended questions and those with multiple responses were coded and grouped into categories such as the splint type and regimen. Variable sets were then defined such as *theSplintT, OtherCons, SplintReg, Exercises, OtherMes and Duration*, after which frequencies were calculated.

Ethical consideration

Ethical clearance was obtained from Biomedical Research Ethics Committee (BREC) of the University of KwaZulu-Natal (BREC/00004347/2022). Gatekeeper permission was received from the KwaZulu-Natal Provincial Department of Health Disability and Rehabilitation programme office. Informed consent was obtained from all participants electronically. During the research process, the researcher adhered to ethical principles which included confidentiality, informed consent, beneficence, non-maleficence, autonomy and justice[17].

Validity and reliability

This study's reliability and validity were ensured by having the principal researcher input the data according to allocated numerical coding on the SPSS system software, ensuring consistency, reliability, and validity of data collection.

Through the pilot study, reliability and validity were also ensured. For content validity of the questionnaire a pilot study was conducted with two occupational therapists who met the inclusion criteria. Through the results obtained; it was noted that the research tool was measuring the relevant and appropriate concepts related to trigger finger management, taking into consideration the objectives of the study. Irrelevant questions were deleted such as the precautionary measures relayed to clients regarding the splints and whether or not they invited clients for follow-up appointments.

For internal validity of the study, the stratified random sampling approach allowed for participants to be selected randomly through extending the invitation to participate to the members that met the inclusion criteria, thereby ensuring that both sectors were represented and this further allowed for generalisation of the findings within the sample as discussed above.

To increase external validity of the study, the researcher had clearly defined the target population through the inclusion and exclusion criteria which therefore defined the sample in which the results may be generalised to[15]. To increase external validity of the study, the selected sampling approach (stratified random sampling) ensured that all the groups (public sector and private sector) were represented and allowed for comparisons. Reliability was ensured through the use of clear and easy-to-follow instructions and the same email content being sent out to all participants.

RESULTS

Results represent the 102 responses that were received from participants. This includes the demographics of participants shown in Table I (below).

Demographics

Table I: Demographics of the participants (n=102)

Gender	N	%
Female	71	69.60%
Male	31	30.40%
Highest Qualification		
B. OT/B.Sc OT	88	86.30%
M.OT	14	13.70%
Attended hand-related CEU course		
Yes	82	80.40%
No	20	19.60%
Sector		
Public sector	60	58.80%
Private sector	38	37.30%
Public and Private	4	4.00%
Work Experience		
0 - 2 year	30	29.40%
3 - 5 years	38	37.30%
6 - 10 years	22	21.60%
10 + years	12	11.80%

The results are skewed towards occupational therapists working in the public sector (58.88%, n=102) with a high proportion of female participants (69.6%, n=102). In particular, 86.3% possessed basic level degree and 80.40% (n=102) of the participants have engaged in continuous professional development for hand-related conditions. Furthermore; more than half of the participants (70.7%) reported experience of three years and above practising as occupational therapists.

Orthotic treatment methods for trigger finger

All the participants reported treating clients with trigger finger in their specific practice settings. According to their clinical experience, the thumb (83.3%) and the index finger (71.6%) are the more commonly affected digits with the little finger being a rarely affected digit (72.5%) (Table II, below).

Table II: Most affected digit (n=102)

Digits	Rarely	Sometimes	Often	Very often	Always
Thumb	8.8%	7.8%	8.8%	64.7%	9.8%
Index finger	9.8%	18.6%	41.2%	29.4%	1.0%
Middle finger	37.3%	36.3%	21.6%	4.9%	0.0%
Ring finger	38.2%	38.2%	17.6%	4.9%	1.0%
Little finger	72.5%	19.6%	5.9%	1.0%	1.0%

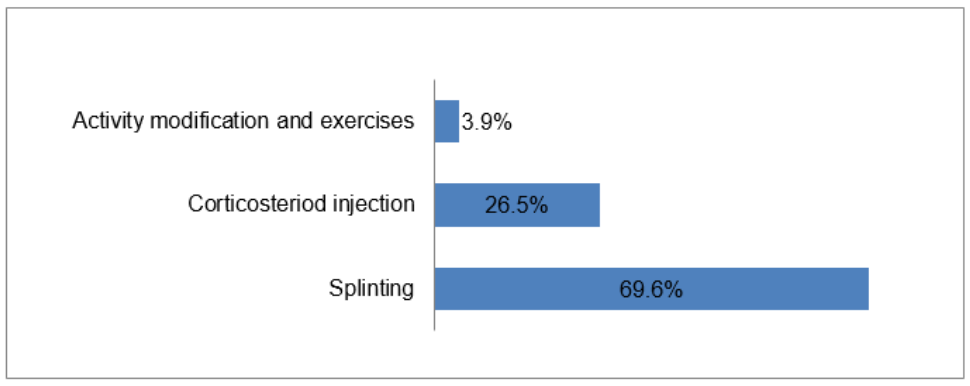

Figure 1: Treatment methods used as first line of treatment (n=102)

Of the four treatment modalities for trigger finger presented to participants; 99% of the participants reported using splints as part of treatment for trigger finger with 69.6% using it as the first line of treatment (Figure 1, above). For the 1.0% who reported to not be using splinting, activity modification and exercise was the first line of treatment in their practice setting.

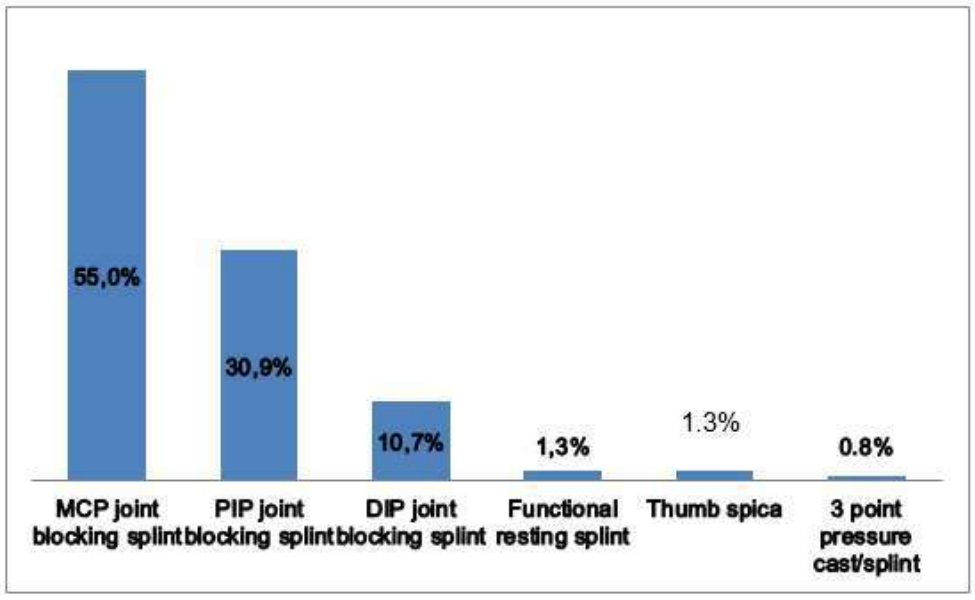

Figure 2: Types of splints prescribed (n=102)

From the open-ended question focusing on the splint type that the participants issued to clients, six types of splints were reported. Some participants named more than one splint type thus indicating that certain factors influence their decisions when deciding on a splint type to issue. The joint-blocking splint (96.6%) was the most preferred splint with the MCP joint-blocking splint being mostly favoured by 55.0% of the participants.

Table III: Recommended splint regime

Regime	%
Day splint	32.1%
2 hours on - 2 hours off	25.9%
Night splint	13.4%
Full time use - remove for hygiene and exercises	11.6%
As per need	8.0%
At rest	7.1%
4 hours on, 2 hours off	0.9%
3 to 4 months	0.9%

With prescribing splints, a regime is necessary to ensure that it is correctly worn so as to improve effectiveness of the splint as well as prevent secondary complications. Presented with an open-ended question in a fill-in format on their recommended splint regimen; there seemed to be confusion regarding splint regime and for how long clients should wear the splint. Table III (above) reflects the seven splint regimens that emerged. The most preferred splint regime was for the splint to be worn during the day (32.1%) and on 2 hours on-2 hours off intervals (25.9%).

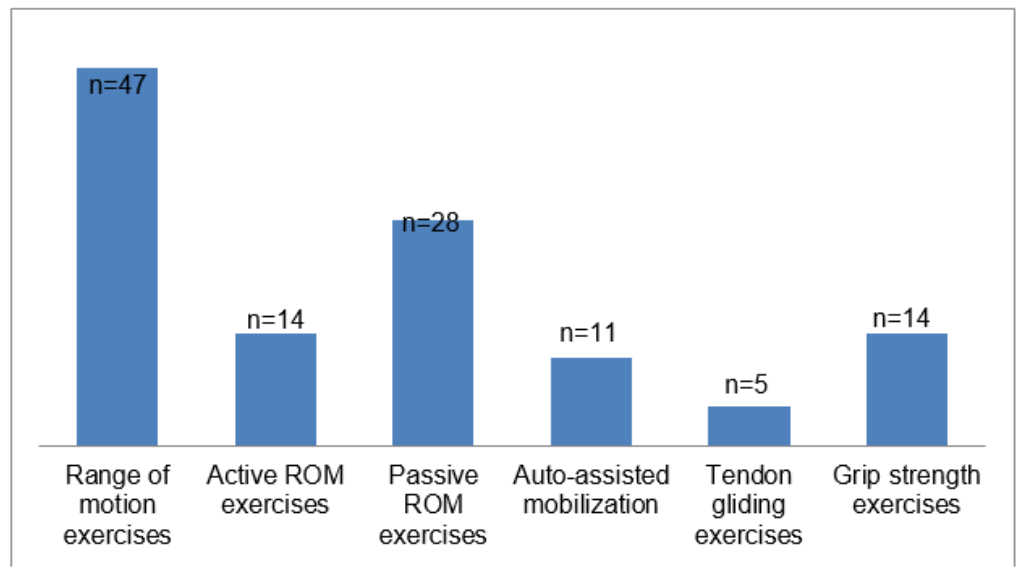

Figure 3: Recommended exercises(n=102)

A mode of treatment can be used singularly or in conjunction with others. The majority of the participants (96%) recommended exercises as part of treatment with a splint. Presented with an open-ended question which allowed participants to express themselves regarding exercises that they recommended, six exercises emerged. Most participants recommended more than one type of exercise hence the presentation being in numbers rather than percentages. Overall, the recommended exercises were categorised into range of motion and grip strength exercises. The majority of the participants recommend range of motion exercises.

Considerations when prescribing splints

Evidently, the participants prescribe different splint types as depicted in Figure 2 (adjacent) and different regimens (Table III, above) and use it at different stages of treatment. Hence, certain factors influence the participants' decision. As shown in Table IV (page 12), the most considered factors when deciding on the splint type are clinical presentation (99.1%) and the client's occupations (92.4%). Occupations in this regard being set duties and responsibilities; and vocation referring to the client's employment.

Table IV: Considerations when deciding on the type of splint to issue (n=102)

Consideration	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Clinical presentation	0.0%	0.0%	1.0%	11.8%	87.3%
Leisure	1.0%	5.9%	34.3%	43.1%	15.7%
Vocation	0.0%	0.0%	31.4%	53.9%	14.7%
Occupations	0.0%	0.0%	7.8%	41.2%	51.0%

Leisure is however not recommended by 6.9% of the participants thus alerting to the application of a more holistic and client-centred treatment approach.

Other considerations when issuing splints

Although participants considered the four factors as reflected in Table IV (above), they indicated other considerations that influence their decisions. Figure 4 (below) illustrates the grouped considerations as this was an open-ended question, 59.4% of the participants still included factors that are under clinical presentation of the clients focusing on sensation, affected joint and/or digit, and oedema, 14.5% considered hand dominance as this may influence compliance with the regime especially if it is the dominant hand being affected, whilst 5.8% consider the ADLs participated in and 1.4% consider the clients' expectations and preferences.

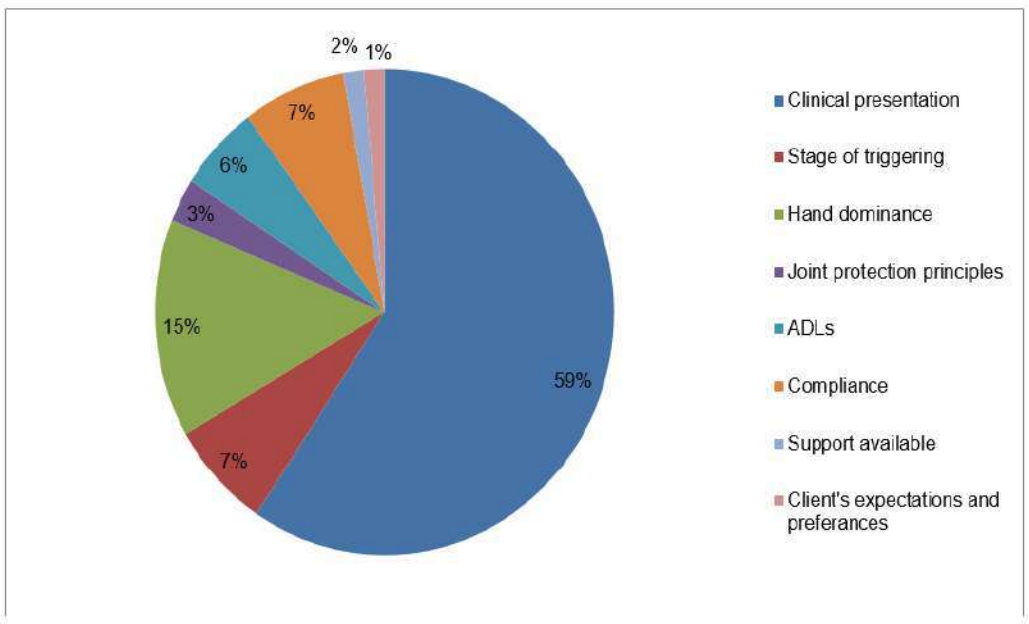

Figure 4: Other considerations by participants when issuing splints(n=102)

No statistically significant relationship was found between the participants' sector and their considerations when deciding on a splint type to issue (chi-square=1.311; p=1.000) There was also no statistically significant relationship (p>0.05) between the participants' level of experience (chi-square=4.818; p= 0.619) and their considerations when deciding on a splint type to issue. This could possibly indicate that both experienced and less experienced individuals consider similar factors.

Outcome measures used for evaluation of treatment

The participants prescribed different splint types (as noted in Figure 2, page 10), had different splint regimens (Table III, page 4), and recommended different exercises (Figure 3, page 4). Therefore; their measures of the effectiveness of treatment are likely to vary. The participants all appeared to use pain, range of motion, stage of triggering, and grip strength as measures as reflected in Table V (page 14). However, the degree at which these are used varies. As indicated above, the mostly preferred measures are pain (97.1%) and range of motion by 97% of the participants.

Table V: Treatment outcome measures (n=102)

Measurement	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Pain	0.0%	0.0%	2.9%	27.5%	69.6%
Range of motion	0.0%	0.0%	2.9%	22.5%	74.5%
Stage of triggering	0.0%	0.0%	28.4%	44.1%	27.5%
Grip strength	0.0%	0.0%	10.8%	27.5%	61.8%

Although participants used the four factors on Table V (above) to measure the effectiveness of treatment, they also have other measures that they use. Figure 5 (below) illustrates the grouped and coded measures. A higher percentage (44%) of the participants use improved hand function

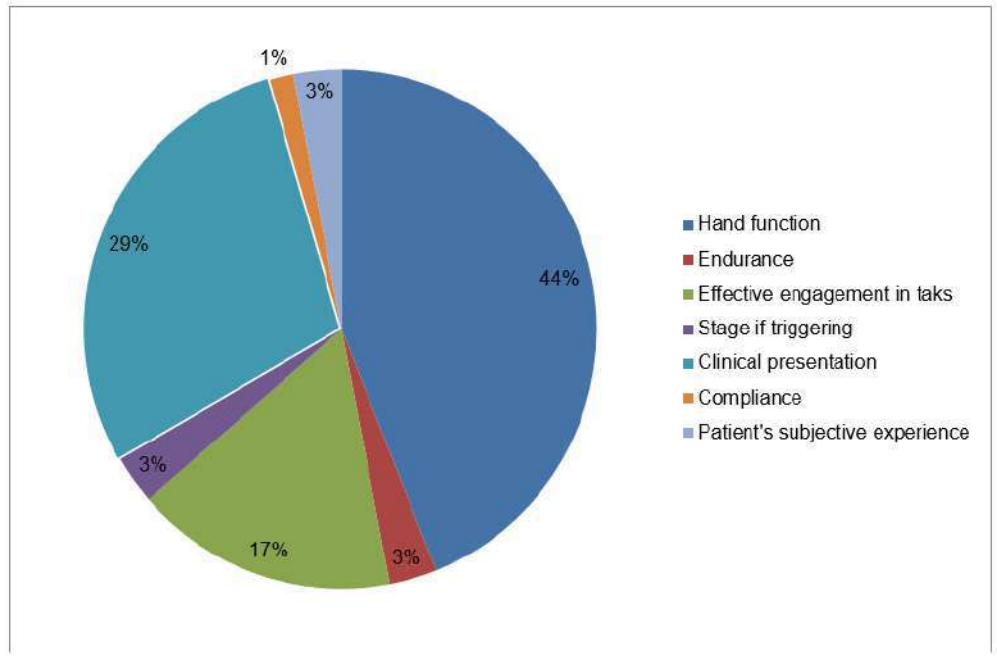

Figure 5: Other outcome measures used to evaluate the effectiveness of treatment (n=102)

and clinical presentation (29%) to measure the effectiveness of treatment. This leads to effective engagement in tasks which is used as a measure by (17%) of the participants. No standardized assessment tools were indicated and/or mentioned. A statistically significant relationship was found between the use of pain as a measure of effectiveness of treatment and the participants' level of experience (chi-square=16.067; p=0.013). However; there is no statistically significant relationship between the participants' level of experience and the use of ROM, stage of triggering and grip strength (p>0.05).

DISCUSSION

The study results revealed that all participants do treat clients with trigger finger in their settings with 35% treating them often which supports available literature on trigger finger being frequently included in the range of practice in clinical settings[8].

Considering that any digit can be affected by trigger finger, the findings establish that the thumb is the most frequently affected digit. Available literature[1,2] supports the present findings and therefore the results are consistent with the existing research. However; the ring finger was reported to be rarely affected while available research revealed it as the second most affected digit. The index finger which is second in line in this study's findings was identified as the least affected finger in literature[2].

Trigger finger treatment methods used in a South African context

The results of the study support findings by Langer et al.[5] that all therapists make use of orthoses during treatment. Similarly, our

findings demonstrated that the majority (99%) of the participants use splints. The majority of the participants (69.6%) use splinting as their first line of treatment and none of the participants identified surgery as their first line of treatment (Figure 1, page 4). Hence, this indicates that even though splinting may not be first line, other conservative treatment methods are considered before the doctors explore the surgical option. These findings are consistent with previous research on conservative management being recommended before surgical management[5].

Preferred splint type, regime and recommended exercises

Several splint types are available and/or recommended for the management of trigger finger. These include the MCP joint-blocking splint, the DIP joint-blocking and PIP joint-blocking splint. The effectiveness of these splints has been explored in various studies[5, 10]and the results showed that participants who had the MCP joint-blocking splint had a higher success rate of 77%[5,10]. Similarly; Langer et. al.[5] also reported a higher success rate of the MCP joint-blocking splint when compared to the DIP joint-blocking splint. This could explain why more than half of the participants of this study (55.0%) use the MCP joint-blocking splint as it is considered the most effective splint in literature. Furthermore; the MCP joint blocking splint allows for better hand function as the inter-phalangeal joints are left free, thus allowing for continuous engagement in tasks which positively influences compliance with the splint regime and leads to greater splint effectiveness. This further highlights the importance of considering the client holistically when deciding on the splint type to issue. The current study introduces the use of the functional resting splint in the management of trigger finger which was used by 1.3% of the participants. In a systematic review study18 it was noted that even though a single joint may be immobilized during treatment in adults; for paediatric patients, finger-based splints were not used as they presented a choking hazard for the patients in the age range of two years. Orthoses for paediatric trigger finger patients were said to position finger(s), hand, and/or wrist of children in neutral[18].Although, 1.3% of the participants said to issue the functional resting splint, the demographics of patients being seen by the participants were not explored; this then limited the ability to determine if the said participants do treat pediatric patients with trigger finger in their respective settings.

The lack of standardised guidelines regarding the splint regimen that have been highlighted in previous studies have also been evident in this study. The most recommended regimen is for the splint to be worn as day splint with at wo-hours-on-and-two-hours-off regime. The rationale may potentially be that the focus of conservative treatment has been reported to be more effective on reducing symptoms[5], therefore immobilising the affected joint prevents the snapping of the joint. Consequently, the irritation and inflammation of the flexor tendon will be minimal, reducing pain which is evidently strongly considered as a measure of effectiveness of treatment. The majority of the participants recommended exercises as part of treatment with a splint to focus on maintaining the range of motion of the affected digits and to maintain and/or improve grip strength. These factors - range of motion and grip strength - are also used to measure the effectiveness of treatment by all the participants. The use of these factors as a measure of the effectiveness of treatment was supported in literature[5, 6, 10].

Factors considered by occupational therapists when prescribing orthosis for trigger finger in a South African context

There are marked inconsistencies in literature concerning considerations when issuing splints and outcome measures. There is more emphasis on body structures and body functions with less emphasis being placed on activity participation5. Due to limited research in South Africa and KwaZulu-Natal regarding orthotic management of trigger finger, no studies could refute or support these findings. It was noted in this study that 6.9% of the participants do not consider the clients' leisure activities when deciding on splint type while majority agreed to be considering the clients' occupation and vocation. When exploring the considerations on deciding on the splint type to issue further, the results revealed that all the participants do consider the client's clinical presentation, vocational activities and their occupations.

Outcome measures used for trigger finger in South African context

When exploring the assessments used to measure the effectiveness of treatment, only 17% of the participants use effective engagement in tasks. The majority of therapists measure effectiveness of treatment based on body structures and functions. This is validated in available literature on emphasis being less on activity participation[5,6,19]. This further demonstrates the need for a treatment guideline and protocol to ensure evidence-based practice. Although research on the orthotic management of trigger finger is limited, the available literature measured the effectiveness of the splints based on them being able to reduce the symptoms that the client presented with[5]. This explains the high percentage of participants who strongly agreed to consider clinical presentation when deciding on a splint type. In a survey that was conducted in 2014[5] the most commonly used outcome measures were grip strength, range of motion, and pain. This is in line with the findings of this study as all participants agreed on using these measures when evaluating their treatment. All participants of the current study agreed to using stage of triggering as a measure of the effectiveness of treatment provided. Other outcome measures that were highlighted included, but were not limited to, improvement in hand function (47%), effective engagement in tasks (17%) and client's subjective experience (3%).

In summary, the study has reported that the majority of the occupational therapists in a South African context make use of splints in the management of trigger finger with the MCP joint blocking splint being the most prevalent one. Although there are discrepancies with regards to the regime and whether or not exercises are recommended; their preferences are distinctive. In addition, the factors considered when issuing splints as well as the treatment outcome measures used were identified.

CONCLUSION

The study focused on orthotic management of trigger finger practices by the occupational therapists in a South African context. It has established that the inconsistencies in global research on orthotic management of trigger finger are also applicable in the study setting. This is a result of the lack of research and guidelines on assessment and treatment procedures which occupational therapists have at their disposal to use as treatment and to determine the effectiveness of the treatment provided. The prevalence of trigger finger remains common in clinical settings for both sectors. The majority of the participants reported the use of splints in treatment of trigger finger. In addition, it was also used by most occupational therapists as the first line of treatment. Therefore, due to a lack of evidence, further investigations on the effectiveness of this treatment method as well as a guide on deciding on splint type, treatment and appropriate outcome measures for the study population is necessary to ensure that clients receive optimal care through evidence-based practice.

Limitations and Recommendations

Limitations of this study included a low response rate from the occupational therapists and the sample size being skewed towards occupational therapists working in the public sector. There seemed to be confusion in the questionnaire regarding recommended splint regimen and for how long clients should wear the splint for, therefore a description of a precise and descriptive regimen is essential for further studies as this negatively affects content validity.

In addition; the study was conducted in one province out of the 9 provinces in South Africa, therefore results should be generalized with caution in the said province and further studies on trigger finger in the South African context are recommended so to provide valuable insight into various aspects of this condition. Studies should mainly focus on evaluating the effectiveness of splinting. Additionally, comparative studies should be conducted to determine the most effective treatment through exploring long-term outcomes for the different modalities. Studies may also explore the rationale behind recommending exercises as part of treatment, stages at which the exercises are introduced; their frequency and duration.

It is recommended that the Occupational Therapy Association of South Africa and the South African Society of Hand Therapists conduct seminars, workshops and/or educational programmes for occupational therapists to keep them updated on developments on trigger finger management and current therapeutic techniques as well as increase awareness on resources available on trigger finger management. These programmes may be inclusive of not only therapists but hand surgeons as well. This will ultimately enhance the therapists' knowledge and skills in managing this condition. Furthermore; this will ensure consistency in treatment approaches thus ensuring better continuity of care as client's transition between different therapists and/or setting i.e. when referred from a tertiary hospital to other levels of care. Moreover; a development of a guideline for the treatment of trigger finger is recommended to ensure evidence-based practice. The results of this study should be interpreted with caution and may only be generalised to the population defined in the inclusion criteria.

Author contributions

Kuhlekonke V. Mathenjwa conceptualised the study, developed the data collection tool, and conducted data collection and analysis of the raw data as well as the completion of the manuscript. December M. Mpanza and Chantal Christopher organised and held meetings to discuss the structure of the manuscript, were involved in conceptualisation of the manuscript and in writing up of some sections of the manuscript. All listed authors regularly held meetings to review the direction of the manuscript, revised the manuscript, guided the first author on key concepts, revised the final documents and feedback from reviewers and the editor, and lastly; accepted the revised final manuscript.

Acknowledgements, sources of funding and conflict of interest

We would like to express our deepest gratitude the occupational therapists who participated in the study, the biostatisticians from the University of KwaZulu-Natal for generously providing their knowledge and expertise, and lastly, the University of KwaZulu-Natal for their tuition fee remission without which this work could have not begun.

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[RESEARCH ARTICLE]

AUTHORS
Denise Franzsen[a]
https://orcid.org/0000-0001-8295-6329
Zukiswa Msengana[b]
https://orcid.org/0000-0001-7302-8088

AFFILIATIONS
[a]Department of Occupational Therapy, School of Therapeutic Sciences, Faculty of Health Sciences, University of the Witwatersrand,7 York Rd, Parktown, Johannesburg, Gauteng, South Africa.
[b]Occupational Therapist - Acute Stroke Unit, Assessment and Rehabilitation Unit, Whangārei Hospital, 2 Hospital Road, Whangārei New Zealand.

CORRESPONDING AUTHOR
Denise Franzsen
Email: denise.franzsen@wits.ac.za

KEYWORDS
online programme, task-oriented activities, mild to moderate TBI, inpatient, outpatient home programme, Bay Area Functional Performance Evaluation (BaFPE)

HOW TO CITE
Franzsen D, Msengana Z. Changes in cognitive functional performance and basic activities of daily living in patients with traumatic brain injury after two methods of cognitive retraining *South African Journal of Occupational Therapy*. Volume 54 Number 3 December 2024.
DOI: https://doi.org/10.17159/2310-3833/2024/vol24no3a4

ARTICLE HISTORY
Submitted: 9 December 2023
Reviewed: 16 December 2023
Revised: 22 March 2024
Accepted: 8 April 2024

EDITOR
Hester M. van Biljon
https://orcid.org/0000-0003-4433-6457

DATA AVAILABILITY
Upon reasonable request from corresponding author

FUNDING
No funding was received for this research

ISSN On-Line 2310-3833
ISSN Print 0038-2337

Changes in cognitive functional performance and basic activities of daily living in patients with traumatic brain injury after two methods of cognitive retraining

ABSTRACT

Introduction: Evidence supports a bottom-up approach to assist in addressing functional cognitive deficits in patients with traumatic brain injury (TBI). There is however, little evidence supporting the use of online programmes for this purpose. The aim of this research was to describe the outcomes for cognitive functional performance and basic activities of daily living (bADL) or self-care functioning after cognitive retraining using an online programme versus task-oriented intervention for patients with acute mild and moderate traumatic brain injury.
Methods: A quantitative, quasi-experimental, longitudinal research design was used for determining within-group and between-groups changes for cognitive functional performance and bADL functioning in two sample groups with mild to moderate TBI. Intervention using an online programme (n=7) or task-oriented activities (n=15) was evaluated at three assessment intervals: on recruitment into the study (Assessment 1), on completion of inpatient hospital intervention (Assessment 2) and after four weeks of home programme intervention and fortnightly outpatient intervention (Assessment 3).
Results: Results for both groups showed a statistically significant change for cognitive functional performance assessed on the Bay Area Functional Performance Evaluation (BaFPE) while the task-oriented cognitive training group also achieved a statistically significant change in bADL scores during the first inpatient assessment period. Only the online programme group had statistically significant improvement during the home programme in the third assessment period.
Conclusion: Cognitive retraining using an online programme or task-oriented activities resulted in positive change in a therapist-directed inpatient programme but a structured, graded, online programme was more effective in supporting significant improvement in cognitive functional performance when used together with an outpatient home programme.

Implications for practice

- Cognitive retraining using an online programme or task orientated activities have a positive outcome for cognitive functional performance in patients with mild or moderate TBI in a therapist directed inpatient intervention.
- A task orientated approach for cognitive retraining appears to have positive effect on bADL outcomes.
- Cognitive retraining using an online programme intervention should be considered as a home programme to improve cognitive functional performance in patients with mild or moderate TBI.

INTRODUCTION AND LITERATURE REVIEW

Traumatic brain injury (TBI) is an "alteration in brain function, or other evidence of brain pathology, caused by an external force"[1:1368] Individuals with TBI are treated by the multi-disciplinary team (MDT), including occupational therapists[2], and frequently present with a combination of physical, cognitive, perceptual and emotional deficits which lead to occupational dysfunction[3]. The cognitive sequelae of TBI often affect all components of occupational performance such as work, social participation, and engagement in basic activities of daily living (bADL) including self-care functioning. Individuals may not return to their previous level of functioning which impacts the quality-of-life for TBI survivors and their caregivers[4]. Accurate assessment of cognitive functioning following TBI is critical for directing rehabilitation and evaluating treatment effectiveness[5].

A 2020 study by Nowell et al.[6] found international current practice for cognitive rehabilitation following TBI most commonly involved cognitive retraining and functional restoration or compensation. This concurs with Poulin et al.[7] who in 2021 stated that best practice in cognitive rehabilitation after acquired brain injury should be based on the evidence-based guidelines from the Canadian Stroke Best Practices Recommendations[8] and the Ontario Neurotrauma Foundation (ONF) Clinical Practice Guideline[9]. These guidelines support the occupational therapy philosophy for intervention for TBI, which include the client-centred nature of functional treatment goals, adaption to the patient's cognitive and communication profile and should, if possible, include family involvement. Focus on education and support for caregivers of patients should be a priority, as well as collaboration with mental health professionals in providing intervention for mood disturbances or other behavioural changes[7].

Both international and national best practice guidelines support cognitive retraining associated with impaired self-awareness and personalised life skills training, as well as facilitating learning and internal and external compensatory strategies for memory[8,9]. Visual perceptual deficits, apraxia, and visual neglect should be addressed using remedial-based strategies. Technology such as computers have been recommended for improving working memory and attention[8,9]. Other techniques such as mirror therapy for unilateral inattention can also be considered[7]. Intervention should occur in a structured and distraction-free environment[7]. Functional restoration or compensatory cognitive rehabilitation is also indicated in best practice guidelines to facilitate resumption of desired activities and participation in all occupations or aspects of daily life using functional activities[7].

These best practice guidelines support occupational therapy intervention in understanding the impact of functional cognition on everyday task performance for both assessment and intervention[10] since this has been shown to lower hospital readmission[10]. A number of different approaches have been suggested to address cognitive rehabilitation[11]. Alternative cognitive retraining approaches based on best practice include remediation of specific cognitive deficits directly or using tasks targeting cognitive skills that allow engagement with the environment in goal-directed ways. A top-down occupation-based approach in which performance in activities of daily living such as bADL and engagement in other meaningful occupations is prioritised[12] may also be used to compliment cognitive retraining. Studies by Giles[13] and Radomski et al.[14] support the use of cognitive retraining and occupation-based approaches which have been reported to yield improvements in cognitive functional performance in the intervention for patients with acute TBI.

There is also evidence that cognitive retraining supports the ability to accomplish daily life functional activities that rely on cognitive abilities or functional cognition[5,15]. However, the effect of cognitive retraining on functional performance is not clear. Radomski et al.[14] attributed this lack of clarity to the fact that occupational performance in research studies, if assessed, is not considered a primary outcome to be measured. They recommend that future research reports on both daily life occupational performance and bADL outcomes. They also reported very little published evidence for the use of computer or phone-based online programme for cognitive retraining[14]. The use of online programmes to assist in compensating for cognitive deficits such as memory and attention[16] has limited evidence and this has not been extended to occupation-based outcomes and information processing[6]. Questions remain around the dosage, content and duration this intervention for improving cognitive performance[16].

In their systematic review of computer-based cognitive interventions in TBI in 2020, Lopéz and Antoli[17] reported only on the improvement in visual and verbal working memory. This type of intervention did not support any change in attention, processing speed, executive functions and memory. They also supported the importance of using daily living assessments since it is unknown what effect intervention using cognitive online programmes have on these outcomes in patients with acute TBI. It has been recommended that research–practice studies should be used to investigate cognitive interventions in relation to clinically feasible functional performance outcomes[14] which include activities that allow engagement with the environment in goal-directed ways. Reliable, valid performance-based functional outcome measures related to cognition such as the Bay Area Functional Performance Evaluation (BaFPE)[18], the Cognitive Performance Test (CPT)[19]. and the Executive Function Performance Test (EFPT)[20] should be used. Since cognitive function after TBI has been associated with the awareness of and ability to complete bADLs[21], occupational performance in this regard should be considered as part of the functional outcomes after TBI. Standardised assessments such as the Modified Barthel Index (MBI)[22] allow for objective evaluation of this outcome.

This study investigated interventions that are in keeping with evidence-based practice to support treatment modalities used in the cognitive rehabilitation of individuals with mild to moderate TBI in the South African public health care service. The purpose of the study was to compare outcomes for cognitive functional performance and bADL using two methods of cognitive retraining intervention.

METHODOLOGY

Research Design

A quantitative quasi-experimental longitudinal research design was used in order to compare cognitive functional performance and bADL outcomes in patients with mild and moderate acute TBI. Intervention for cognitive retraining included either an online programme or a task orientated approach in conjunction within a routine occupational therapy intervention programme[23].

Research setting

The study took place at tertiary hospital in South Africa. The occupational therapy department at the research site serves patients with a variety of neurological deficits, including patients with TBI. The TBI survivors are referred by the multidisciplinary team or by routine screening of the neurosurgical wards. Patients include those who survived traumatic external insults to the brain such as assaults, falling from heights and motor or pedestrian vehicle accidents as well as those with internal brain insults due to tumours.

The patients are hospitalised for periods varying from five days to over a month depending on the extent of physical injury or the need for surgery. A multidisciplinary team, consisting of doctors,

nurses, occupational therapists, physiotherapists, speech therapists and dieticians, provides comprehensive intervention. Occupational therapy intervention occurred either in the ward or in the occupational therapy department. Therapists were using an eclectic approach which addresses cognitive and physical deficits as well as independence in activities of daily living. On discharge, TBI patients were booked for follow up appointments with the multi-disciplinary team. The waiting time for an outpatient post-discharge appointment was approximately two weeks.

Research population and sample

The population for this study consisted of potential participants that were referred to occupational therapy with mild or moderate TBI who met the inclusion criteria during the 10-month research period.

Inclusion criteria included males and female patients aged between 18 and 60 years, with mild or moderate TBI based on the Glascow Coma Scale (GCS) ≥ 12 on admission to hospital. Participants needed to be medically stable and required adequate motor skills of the non-affected hand to perform tasks successfully[24]. The treating occupational therapists, all licenced to administer the Saint Louis Mini Mental Status Examination (SLUMS), used the patient's score to determine their eligibility for the study. If the patients had a score of ≤ 24 on SLUMS and now had a GCS =15, they were deemed to need rehabilitation for cognition and were invited to participate in the study. Those with receptive aphasia, as confirmed by a speech therapist, and those who were unable to speak were excluded from the study since the assessment tools required patients to give verbal responses. Patients with a history of mental illness were also excluded from the study.

The sample size for this study was based on an 18 points difference with an SD of 15, between Assessment 1 when recruited into the study to Assessment 2 on completion of inpatient treatment[22] on the Modified Barthel Index (MBI), set at a significance of 0.10 and a power of 80%. A sample of 11 participants per group were required for the study[25]. While 50 participants were recruited and consented to participate only 22 returned for their follow-up appointment, post discharge.

Measuring instruments

Demographic Questionnaire

A demographic questionnaire was specifically designed for this study. With participants' permission the family was contacted for collateral information if the participant could not give sufficient information.

Saint Louis Mini Mental Status Examination (SLUMS)

The SLUMS[26] was used at Assessment 1 to determine the patient's eligibility for the study and was repeated at Assessment 2 and 3 to confirm the continuing need for intervention. The SLUMS measures cognitive dysfunction and need for intervention. This screening assessment has 11 items and is more sensitive to mild cognitive deficits than the Mini-Mental State Examination (MMSE)[27]. The test takes seven minutes to administer and assesses orientation, attention, memory and executive function[28]. There is limited evidence for the reliability and validity of the SLUMS but the test has a one-factor structure with few floor or ceiling effects, and the internal consistency is adequate (0.78)[29]. Zhang et al.[30] report SLUMS is suitable for the evaluation of cognition in patients with TBI but places the cutoff for normal function at 22.5 and compared with the MMSE, the evaluation of verbal fluency, abstract thinking and executive function is superior[31].

Bay Area Functional Performance Evaluation (BaFPE)

The BaFPE[32] consists of a task-oriented assessment (TOA) which evaluates components of functioning that are needed for daily living as well as a Social Interaction Scale (SIS) that was not used in the current research study.

The BaFPE TOA is consistent with a functional perspective and evaluates functional parameters reflected by productive and active use of skills for successful interaction with the environment[32]. This scale has five tasks:- sorting shells, money and marketing, home drawing, block design and kinetic person drawing[18]. A combined score for each task provides a parameter total for the TOA. Each task is also assessed on 12 functional parameters which are grouped into three areas: cognitive, performance and affective parameters[32]. Low scores indicate areas of difficulty.

The validity of the BaFPE has been reported from different research findings. Kaufman[33] reported concurrent validity with the Kohlman Evaluation of Living Skills (KELS) at r =0.8433 and with the Comprehensive Evaluation of Basic Living Skills at r=0.63. This suggests that BaFPE is a good predictor of functional performance[34]. The construct validity was determined by significant correlations between the internal parameters[34,35].

Modified Barthel Index (MBI)

The Modified Barthel Index[22] (MBI) is a self-report or direct observation assessment with a five-point scoring system for self-care or bADL such as feeding, bathing, grooming, toileting as well as bowel and bladder control, transfers, walking, and climbing stairs. The MBI is more sensitive to small improvements in functional independence than the original Barthel Index[36]. Items are scored from 0-15, 0-10 and 0-5, with a score of 99 indicating slight dependence, a score below 90 indicating moderate dependence, a score below 60 indicating severe dependence and a score below 20 indicating total dependence. The MBI can be completed as a 20-60 minutes direct observation tool[36]. Validity and reliability of MBI includes inter and intra-rater reliability of 0.99 and strong criterion related validity when compared with original Barthel Index[37] and the instrument has been validated for the South African context[38].

The components of the SLUMS used to assess cognition, the BaFPE for functional performance and the MBI for self-care are represented in Figure 1, (below).

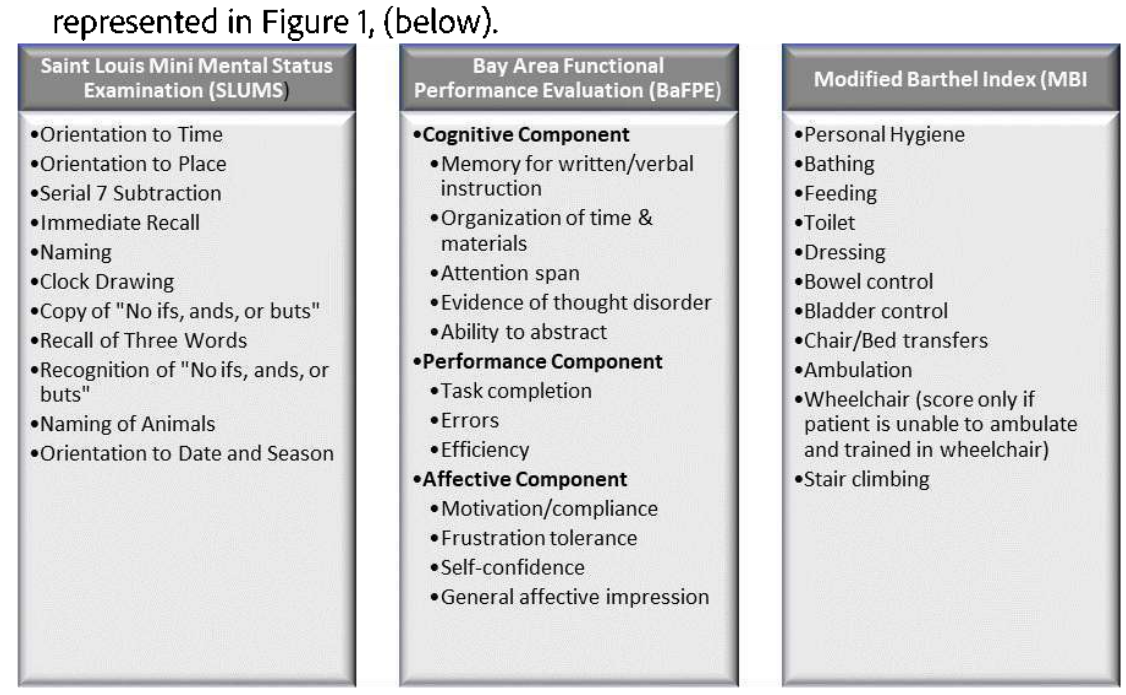

Figure 1. Components of the three research instruments used to assess cognition, functional performance and basic activities of daily living.

Data collection

Treating occupational therapists identified patients who met in the inclusion criteria and recruited patients into the study. Signed informed consent for participation in study and permission to access to medical records was obtained from either the patients or their family members if the patient was functioning at a level of self-presentation or below according to the Vona du Toit Model of Creative Ability (VdTMoCA)[39] which has similar descriptors to Rancho Los Amigos Level VII[40].

The first author who was the primary researcher collected the demographic information from the participants, or their relatives and the medical history was obtained from the patients' medical

record. She also administrated and scored the BaFPE and MBI to establish baseline cognitive functional performance skills and bADL function within 24 hours after referral to the study (Assessment 1). Participants were allocated to either the online programme group if they indicated that they had access to a smart phone or the task orientated group if they did not. All participants formed part of the second author's patient load to ensure consistent routine therapy for each group. The routine occupation-based intervention focussing on assisting them in reducing or compensating for motor fallout for hemiplegia present in all participants, as well as achieving emotional and behavioural goals. Participants received treatment a minimum of four times per week for 45 minutes as inpatients.

After discharge from the hospital, participants followed a daily home programme using the online programme or task-oriented home programmes for a minimum of four weeks with an out-patient appointment every two weeks. The second author reassessed their cognition using the SLUMs to confirm continuing impairment and need for intervention. Cognitive functional performance skills and bADL functions were reassessed using the BaFPE and MBI on the completion of inpatient treatment (Assessment 2) and at four weeks post discharge. (Assessment 3).

Intervention

Online programme group

The online programme intervention group used Luminosity[41] - a free online programme available for a computer or cell phone - while in hospital and at home in addition to their routine out-patient occupational therapy programme. The programme is graded from a low to higher level of cognitive functioning. It identifies the level at which the participant is functioning on their first attempt and allows 30 minutes of training a day. Lumosity presents problems on the participants' current level and contains the most important aspects of cognition: speed, memory, attention, flexibility, and problem solving. This programme was chosen even though evidence for generalisation across tasks in everyday life in healthy subjects is limited[41]. Studies on elderly people with mild cognitive impairment did find improvement in cognitive skills such as visual attention after using Lumosity with significant correlations to executive function skills on the CANTAB assesssment[42].

Task-oriented activities group

The task-oriented activities intervention which was completed by participants as in-patients and as a home programme, aimed to improve learning, memory, awareness, problem solving and attention as well as addressing any identified visual perceptual problems, using purposeful tasks and recreation activities to maintain patient motivation[43]. The activities required cognitive performance skills and the participants practiced whole tasks with the aim of restoring cognition and function. Feedback was focused on the critical features of the task as well as on specific cognitive impairments[44].

Home programme

All participants were provided with a home programme on discharge. The online programme group continued with the Luminosity programme once a day while the task-oriented activities group were provided with a schedule for 30-minute task orientated activities to complete each day. All participants were asked to keep a diary of their compliance to both home programmes. They received daily messages on their phones reminding them to complete the programme via WhatsApp or SMS and the log for completion of Luminosity tasks was checked on participants phones during their outpatient visits.

Ethical Considerations

The research protocol was approved by the Medical Advisory Committee at the Chris Hani Baragwanath Hospital and the head of the occupational therapy department at the research site. Ethical clearance was gained from University of the Witwatersrand, Human Research Ethics Committee (M200883). Patients with TBIs were identified by treating occupational therapists who provided the approved information sheets to all the participants or a family member. The research was verbally explained in three languages (English, isiZulu and Sesotho) as they applied to the participants or their family. All participants or family members gave signed informed consent for participation in the study and review of the patients' medical records. Participation was voluntary and participants or their family had the right to withdraw from the study at any time without consequence. Autonomy was ensured by respecting the decisions of the participants or their family about participating in and continued participation in the study beyond discharge from the hospital. Within this research study there was an exchange of information between the researcher and participants keeping the participants (and the family with the participants' permission) fully informed throughout the study period.

Data Analysis

Descriptive statistics were used for the demographic data, SLUMS, BaFPE and MBI for this study. The outcomes of online programme and the task-orientated group were compared using statistics that suited the small sample size and ordinal data[45]. Medians and interquartile ranges (IQRs) were calculated for observations made. The Mann-Whitney U test compared the changes in the outcome measures of online programme and task-orientated groups using means and SD[46]. A relationship between the change in the MBI scores at discharge and after the home programme and the SLUMS and BaFPE scores was calculated using Spearman's rank order correlation[47].

RESULTS

The analysis of the data was completed on 22 participants who all scored in the moderate range for cognitive function on the SLUMS on referral to occupational therapy. Five participants had smart phones and made up the online programme group while 17 were in the task-orientated group.

Table I Demographic and medical characteristics

		Total Group (n=22)	Online programme group (n=5)	Task-orientated group (n=17)
		Mean (SD)		
Age - years		32.45 (9.89)	38.8 (12.31)	30.58 (8.62)
Years of education		10.04 (1.83)	9.20 (1.48)	10.29 (1.89)
		n%		
Gender	Male	20(91%)	3 (60%)	17 (100%)
	Female	2 (8%)	2 (40%)	0
Cause of TBI	Trauma	17(77%)	3 (60%)	14 (82%)
	Internal insult	5 (23%)	2 (40%)	3 (18%)

Most participants were male (91%), and the mean age of participants was 32.45 years. On average participants had nine years of education and trauma (77%) was the most frequent cause of the TBI (Table I. above).

Within-Group Results

The online programme group presented with lower SLUMS scores on Assessment 1 indicated participants presented with severe cognitive deficits even though they had a GCS indicating mild to moderate TBI when recruited into the study. At Assessment 2 on discharge than the task-orientated group had further improvement but both groups had mild impairment with median scores of 20 and 22 respectively at Assessment 3 after four weeks home programme (Table II, below):

Table II. The Saint Louis University Mental Status (SLUMS)

		Online programme group		Task-orientated group	
		Median (IQR)	Interpretation	Median (IQR)	Interpretation
Saint Louis University Mental Status	SLUMS Assessment 1	10 (10-10)	Severe impairment	15 (9-16)	Moderate impairment
	SLUMS Assessment 2	11 (10-12)	Moderate impairment	19 (12-22)	Moderate impairment
	SLUMS Assessment 3	20 (19-21)	Mild impairment	22 (17-24)	Mild impairment

The BaFPE total TOA scores improved for both groups during therapist guided intervention in-hospital programme between Assessment 1 and Assessment 2 and greater improvement was seen in the online programme group during the home programme between Assessment 2 and Assessment 3. Both groups scored standard z scores of -2.0 on Assessment 1 when recruited into the study indicating moderate dysfunction. The total change within both groups was statistically significant and both groups had standard scores close to 0 at Assessment 3 (Table III, below):

Table III. The Bay Area Functional Performance Evaluation (BaFPE) and Modified Barthel index (MBI) scores

		Online programme group		Task-orientated group	
		Median (IQR)	Standard score	Median (IQR)	Standard score
Bay Area Functional Performance Evaluation	BaFPE TOA Assessment 1	142 (141-158)	-2.00	146 (121-167)	-2.00
	BaFPE TOA Assessment 2	188 (179-193)	0	172 (149-195)	-0.5
	BaFPE TOA Assessment 3	212 (210-218)	0.50	190 (161-206)	0
	p value: Total within group change	0.002**		0.016*	
	BaFPE Cognitive Assessment 1	64 (60-65)	>-2.00	62 (50-71)	>-2.00
	BaFPE Cognitive Assessment 2	75 (72-82)	-1.50	73 (64-81)	-1.50
	BaFPE Cognitive Assessment 3	91 (90-93)	0	80 (67-86)	-1.25
	p value: Total within group change	0.030*		0.130	
	BaFPE Performance Assessment 1	30 (29-32)	>-2.00	28 (22-35)	>-2.00
	BaFPE Performance Assessment 2	38 (34-39)	-1.5	35 (26-43)	-1.5
	BaFPE Performance Assessment 3	48 (44-49)	0	39 (30-47)	-1.25
	p value: Total within group change	0.041*		0.179	
	BaFPE Affective Assessment 1	55 (45-65)	>-2.00	53 (48-63)	>-2.00
	BaFPE Affective Assessment 2	73 (73-74)	1.25	62 (57-72)	-0.55
	BaFPE Affective Assessment 3	75 (75-75)	1.45	69 (61-74)	0.55
	p value: Total within group change	0.073		0.147	
		Median (IQR)	**Interpretation**	**Median (IQR)**	**Interpretation**
Modified Barthel index	MBI Assessment 1	77 (58-88)	Moderate dependence	59 (19-100)	Severe dependence
	MBI Assessment 2	87 (79-95)	Moderate dependence	93 (81-105)	Mild dependence
	MBI Assessment 3	103 (101-105)	Independent	105 (103-105)	Independent
	p value: Total within group change	0.052		0.003**	

Significance p≤ 0.05*, 0.01**

Results for BaFPE cognitive, and performance parameters found that scores for the two groups were similar for the Assessment 1 when recruited into the study and Assessment 2, but the online programme groups had higher scores at Assessment 3 after a four-week home programme. with a statistically significant change for both parameters. The total change for the affective component was not statistically significant for either group.

The MBI scores were lower for task-orientation group on Assessment 1 when recruited into the study but were nearly equal for both groups at Assessment 2 with scores the online programme group still having moderate dependence at this stage. All participants were independent at Assessment 3 with the total change for the task orientation group being statistically significant (Table III. adjacent).

Between-Group Results

Change in functional performance scores.

Bay Area Functional Performance Evaluation (BaFPE)

Functional performance in the total TOA indicated greater change in the online programme group during in-hospital-based programme from Assessment 1 when recruited into the study compared to Assessment 2, but this did not differ significantly from the task orientated group (Table IV, below). However, the change when completing the home programme from Assessment 2 to Assessment 3 and the total change from Assessment 1 when recruited into the study to Assessment 3 was statistically significant between the two groups with the online programme group having a greater change. The results for changes in cognitive scores and performance scores were similar. Affective functional performance did not differ significantly between the two groups.

Table IV Between-group comparison of change for the Bay Area Functional Performance Evaluation (BaFPE)

		Online programme group (n=5)		Task-orientated group (n=17)		Change between groups
		Mean	SD	Mean	SD	p value
TOA	Change from Assessment 1 to Assessment 2	35.00	15.01	20.76	16.65	0.099
	Change from Assessment 2 to Assessment 3	30.00	14.88	7.17	37.08	0.041*
	Total change	65.00	22.43	27.94	44.23	0.037*
Cognitive	Change from Assessment 1 to Assessment 2	13.60	6.77	9.18	6.21	0.158
	Change from Assessment 2 to Assessment 3	15.20	6.30	4.82	3.92	0.005**
	Total Change	28.80	1.64	14.00	6.16	0.001**
Performance	Change from Assessment 1 to Assessment 2	7.60	5.18	9.18	6.21	0.480
	Change from Assessment 2 to Assessment 3	9.60	4.51	4.82	3.92	0.020*
	Total Change	17.20	5.16	9.65	6.17	0.031*
Affective	Change from Assessment 1 to Assessment 2	16.00	11.73	7.94	8.18	0.136
	Change from Assessment 2 to Assessment 3	3.20	3.96	4.23	4.04	0.666
	Total Change	19.20	13.31	12.17	9.09	0.272

Significance p≤ 0.05*, 0.01**

Change in Basic Activities of Daily Living scores

The change between Assessment 1 when recruited into the study to Assessment 2 (discharge) was greater for the task-orientated group who had lower MBI scores indicating severe dependence on Assessment 1 when recruited into the study. The online programme group showed less improvement while in hospital and greater improvement at home when completing the home programme on Assessment 3 with no significant difference found between the groups at any assessment period (Table V, page 6).

Table V Between group comparison of change for the Modified Barthel index (MBI)

	Online programme group (n=5)		Task-orientated group (n=17)		Change between groups
	Mean	SD	Mean	SD	p value
Change from Assessment 1 to Assessment 2	15.40	7.89	23.88	24.91	0.468
Change from Assessment 2 to Assessment 3	15.20	12.70	11.00	14.68	0.570
Total change	30.60	19.14	34.88	32.54	0.784
Significance p≤ 0.05*, 0.01**					

Correlations between basic activities of daily living and cognitive/functional performance scores

All low and moderate non-significant corrections indicated 16%-20% of variation in bADL assessed with the MBI can be accounted for by variation in functional performance assessed by the BaFPE and cognition assessed by the SLUMS for the Assessment 1 when recruited into the study scores and for overall change (Table VI, below).

Table VI Change in Modified Barthel index (MBI) correlated to change in Bay Area Functional Performance Evaluation (BaFPE) and The Saint Louis University Mental Status (SLUMS)

	MBI Change from Assessment 1 to Reassessment1	MBI Change from Assessment 2 to Assessment 3	MBI Total Change
	Rho		
BaFPE Functional parameters Change from Assessment 1 to Assessment 2	0.29		
Task Oriented Assessment (TOA) Change from Assessment 1 to Assessment 2	0.37		
SLUMS Change from Assessment 1 to Assessment 2	0.40		
BaFPE Functional parameters Change from Assessment 2 to Assessment 3		0.01	
Task Oriented Assessment (TOA) Change from Assessment 2 to Assessment 3		0.10	
SLUMS MBI Change from Assessment 2 to Assessment 3		0.05	
BaFPE Functional parameters Total Change			0.31
Task Oriented Assessment (TOA)Total Change			0.38
SLUMS Total Change			0.35

DISCUSSION

The aim of the research was to describe the outcomes of cognitive retraining using an online programme or task orientated interventions on daily living cognitive functional performance and bADL functioning, in patients with mild or moderate TBIs.

The demographics of the patients did differ in the two groups for gender with both females in the online programme group. The sample did however reflect the profile for patients with mild and moderate TBI reported for South Africa by Malale et al[48] in that the majority were young males and the cause of injury was assault due to interpersonal violence, alcohol and other substance abuse or motor vehicle accidents.

All participants were identified with cognitive impairment based on a SLUMS score below 24 set as a cutoff for TBI patients. The SLUMS examination has been found to be more accurate than other cognitive screening tools for identifying cognitive impairment in TBI patients with less than 12 years formal education[26] and was therefore an appropriate tool for screening in this study even if the cutoff score of 22.5 suggested by Zhang et al.[30] was considered. The ease of use and time needed for administration of the SLUMS in the initial screening to recruit participants was a consideration for the current study[29], and discrimination issues with this assessment[49] were not apparent when used with these TBI patients. Even though minimally clinically important differences (MCID) are not available for the SLUMS, improvement was found on the progression from severe/moderate cognitive impairment on Assessment 1 when recruited into the study to mild cognitive impairment at Assessment 3 after a four-week home programme.

The within-group results for all the scores on the BaFPE indicated a significant improvement overall for the online programme group while only the TOA and the MBI indicated a significant improvement overall within the task orientation group. This result appears to indicate that both interventions were effective in addressing task based functional performance over the in-patient study period. Only the online programme group had significant improvement for the cognitive and performance parameters on the BaFPE, indicating improvement in memory for instructions, organisation, ability to abstract, task completion and efficiency as well as reduction in errors during task completion. The improvement in these skills were supported by Finn et al.[42] using the Luminosity programme, where they found significant correlations between improved reasoning and processing speed indicating the importance of a structured approach in retraining of specific cognitive deficits to reduce cognitive and functional disability[6] for persons with TBI in the post-acute period as part of a comprehensive occupational therapy intervention[50]. The moderate correlations found in this study for the change in scores may affirm the conjecture by Douglas et al.[51] that the BaFPE contains elements such as the block design task which are not transferable to everyday living but that support the direct retraining of cognitive deficits.

It appears that when using the online programme which targeted specific cognitive components there was carry-over particularly in the cognitive and performance parameters assessed by the BaFPE. The BaFPE cognitive parameters included memory for instructions, organisation of time and materials, attention span, thought progression and ability to abstract. These findings are supported by Dams-O'Connor and Gordon[52] who reported that the restoration of basic cognitive functions using training and repetition allows the processing of more complex input. This result was supported by evidence of the increase in accuracy and speed for participants using the online programme for cognitive retraining[52].

The between group change in scores from Assessment 1 to Assessment 2 did not differ between the two groups when they completed the intervention while in hospital. In the second assessment period while using the home programme, a significant change was found for all scores on the BaFPE, when the online programme group was compared to the task-orientated group, with a highly significant total change between the groups over the study period. The results of this study support the use of the online programme for effective intervention within a home programme. The app provides a structured graded programme which patients can easily follow.

The task orientated intervention was effective when it was therapist-directed in hospital but as a home programme, the support required to facilitate performance and application of cognitive skills in everyday activities may have been lacking. Thus, the implementation of this type of home programme was less effective. The standard z scores of the task-orientated group indicated participants were still at risk for dysfunction in both cognitive and performance parameters on the BaFPE after completing their home programme for four weeks post discharge.

The affective parameter which assesses motivation, compliance, frustration tolerance, self-confidence as well as general affective and behavioural impression[32] did not indicate any significant changes

for the participants with moderate to mild TBI. Both groups showed improvement from a standard z score of -2.00 to 0 or normal during their in-hospital intervention period from Assessment 1 when recruited into the study to Assessment 2 as this aspect was addressed during therapy for both groups.

A highly significant within-group change on the MBI was found for the task-orientated group while in hospital on Assessment 2. This change was greater than that reported by Shah et al.[22] for patients with TBI receiving post-acute rehabilitation and was supported by limited literature which indicates evidence for intervention addressing a task-oriented approach translating into improvement in bADL functioning tasks[50].

The online programme group achieved similar change to the task-orientated group for bADL functioning during the home programme to Assessment 3. This may have occurred since there was no control over what activities participants engaged in once they were discharged and the online programme group may well have been involved in similar activities to those suggested for the task-orientated group in this time. The final MBI scores indicate that participants in this sample were independent in bADL functioning despite their residual motor deficits. However, based on the BaFPE cognitive and performance parameter scores, the participants in the task-orientated group still required reminders to complete activities. Although the MBI is identified as suited to assessment of bADL it does need to be administered as an observed assessment for TBI patients when cognition affects bADL. It is possible that other assessments which consider habits and routines and evaluate a broader aspect of functional cognition considering tasks in bADL functioning and instrumental activities of daily living (iADLs) should be considered[38].

Limitations of the study

The second author who collected the data was not blinded to the participant groups and for logistical reasons had to complete both the assessments and the treatment for all participants. The resource constrained context from which the participants were recruited resulted in only a small number of participants with access to a smart phone or computer. This was in line with the about one third of the country's population who use smart phones[53] but should have been considered when setting the sample size.

CONCLUSION

This study considered the effectiveness of cognitive retraining interventions using an online programme as compared to a task-oriented activity approach with patients with mild or moderate TBI. The outcomes for daily life cognitive functional performance and bADL function indicated both intervention approaches were effective for an inpatient hospital programme which was therapist directed. Both the online and task orientated interventions supported the assumption that intervention for basic cognitive functions may be a prerequisite for improving higher-order cognitive skills to achieve outcomes for performance and cognition in tasks.

However, this assumption appears to be better supported by the online intervention in home programmes where engagement in therapy is patient-directed. The use of an online programme with daily reminders facilitated significant improvement in the cognitive and performance parameters required for task completion as assessed by the BaFPE. The task-oriented activities approach did not achieve similar results when only a task-based home programme was used with participants post discharge.

Author contributions

Denise Franzsen and Zukiswe Msengana conceptualised the project and Zukiswe Msengana collected the data. Denise Franzsen analysed the data. Both authors wrote and revised the article to completion and approved the final version.

Conflicts of interest

Authors have no competing interests to declare

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[SCOPING REVIEW]

AUTHORS

*July Masango [a, b, d]
https://orcid.org/0000-0001-6982-003X
Daleen Casteleijn [b]
https://orcid.org/0000-0002-0611-8662
Fasloen Adams [c]
https://orcid.org/0000-0001-6742-3727
Tania Rauch van der Merwe [a]
https://orcid.org/0000-0002-5751-2707

AFFILIATIONS

[a] Department of Occupational Therapy, School of Therapeutic Sciences, University of the Witwatersrand, Parktown, Johannesburg, South Africa
[b] Department of Occupational Therapy, School of Health Care Sciences, Faculty of Health Sciences, University of Pretoria, 1 Bophelo Road, Gezina, Pretoria, South Africa
[c] Division of Occupational Therapy Department, Department of Health and Rehabilitation Sciences, Faculty of Medicine and Health Sciences, Stellenbosch University, South Africa
[d] Private practitioner, Masango Occupational therapy Services, Evexia Psychiatric Day Hospital, Mediclinic Midstream, Centurion, Pretoria
* PhD occupational therapy candidate at Department of Occupational Therapy, School of Therapeutic Sciences, University of the Witwatersrand, Parktown, Johannesburg, South Africa at the time of study

CORRESPONDING AUTHOR

July Masango
Email: julymasango76@gmail.com

KEYWORDS

evidence-based practice, mental health, scope of practice, principles and guidelines, day care centre, good health and well-being, therapeutic principles, practice approaches, programme content, resource allocation, good health and wellbeing

HOW TO CITE

Masango J, Casteleijn D, Adams F, Rauch van der Merwe T. Occupational therapy practice in psychiatric day hospitals: A scoping review. *South African Journal of Occupational Therapy.* Volume 54 Number 3 December 2024. DOI: https://doi.org/10.17159/2310-3833/2024/vol54no3a5

ARTICLE HISTORY

Submitted: 3 August 2024
Reviewed: 12 August 2024
Revised: 30 September 2024
Accepted: 1 October 2024

EDITOR

Hester van Biljon
https://orcid.org/0000-0003-4433-6457

DATA AVAILABILITY

Upon reasonable request from corresponding author

FUNDING

No funding was received for this research

ISSN On-Line 2310-3833
ISSN Print 0038-2337

Occupational therapy practice in psychiatric day hospitals: A scoping review

ABSTRACT

Introduction: The aim of this scoping review was to explore whether clear guidelines for the practice of occupational therapists in psychiatric day hospitals exist, both locally and globally.
Methodology: Searches were conducted in January 2024; 38 articles were screened and 22 were identified for data extraction. Articles were imported onto Covidence software. Data charting was done, and data were exported into a Microsoft Excel sheet, where content analysis was performed based on the review's objectives. Synthesis of the results was done through discussion and reported according to the PRISMA for Scoping Reviews guidelines.
Results: Thirty-eight articles were included but only 22 were relevant. Group therapy, individualised therapy, vocational and community workshops were identified as common modes of intervention in psychiatric day hospitals. Occupation-based activities are integral to intervention. However, there was no explicit definition regarding the role of occupational therapy and practice guidelines for psychiatric day hospitals.
Conclusion: The general scope of occupational therapy remains the same for overnight hospitals, day hospitals and community-based centres. It is mainly occupation-centred, function-orientated, and patient-centred. However, there remains ambiguity on specific practice principles and guidelines that clearly define the role of occupational therapists in day hospitals. There is a need for occupational therapy practice guidelines specific for psychiatric day hospitals.

Implications for Practice

- The study provides valuable insights into the current knowledge and availability regarding the role and scope of practice for occupational therapy in the rapidly expanding psychiatric day hospital setting, emphasising areas for further development.
- Tangible evidence was identified on therapeutic principles, practice approaches, program content, and guidance for resource allocation in psychiatric day hospitals, which can be translated into practical guidelines.
- Ultimately, the results inform occupational therapy service delivery, solidify the profession's role in psychiatric care, and contribute towards National Health Insurance (NHI) policy development.

INTRODUCTION

Mental health is an essential element to health and central to the well-being of individuals, and societies at large. As noted by the World Health Organization and highlighted in Prince et al.[1:1], "there is no health without mental health"[1, 2]. Globally, one in seven people has experienced and/or is living with a mental illness[3]. Generally, within healthcare, mental health interventions are notoriously low on budget and resource allocation[4]. This is especially so in low- and middle-income countries such as South Africa[5]. The South African healthcare system is socio-economically divided into public sector and private sector. The public healthcare sector, funded by the state, serves 84% of the South African population with 41% of its registered healthcare practitioners[6]. The private healthcare sector is

a profit-driven healthcare system available to insured South Africans and caters for the remaining 16% of the population.

To address this unsustainable and unconstitutional divide, the South African government has embarked on a process of implementing a National Health Insurance (NHI)[7]. The NHI has now been signed into law and officially promulgated on the 15th of May 2024. Treatment protocols that will be adopted by NHI need to be evidence-based. Central to the current and future healthcare systems in South Africa is the need for evidence-based practices. Both public and private healthcare systems require reputable evidence that justifies healthcare practices for remuneration, budget, and resource allocation. The South African healthcare system has also been burdened by the high prevalence of mental health care as reported in global literature; mental and behavioural disorders account for approximately 7.4% of the global burden of disease and are the leading cause of disability, accounting for 22.2% of the world's disability, yearly[8]. Thus, mental illnesses and disorders can be classified as a pandemic. This, however, has been greatly neglected, and should be considered in a new light[8]. It necessitates more accessible and innovative mental healthcare services, such as psychiatric day hospitals, to ensure continuity of care from inpatient treatment to outpatient treatment.

Day hospitals form part of primary healthcare, and a psychiatric day hospital is regarded as an effective, accessible and inexpensive way of meeting mental healthcare users' needs[9]. Although there is a lack of literature on day hospitals for mental health care, Heekeren et al.[10] argue that day-hospital treatment closes the gap between outpatient care and hospital admission. In South Africa, a psychiatric day hospital is characterized by day to day attendance of therapy, where patients do not sleep over in the hospital. The benefit for mental healthcare users in such facilities is that they can receive comprehensive therapy without being institutionalised and isolated from their personal and social environments and the latter can be incorporated into treatment and intervention[10, 11]. Similar to an inpatient programme, the psychiatric day hospital is typically run by a multidisciplinary team comprising a psychiatrist, clinical psychologist, occupational therapist, professional nurse, social worker and dietician[9].

Despite the involvement and featuring of occupational therapists in psychiatric day hospitals, evidence for occupational therapy programme development in psychiatric day hospitals in South Africa is not clear[12]. Lack of published evidence that could guide practice is notoriously problematic in occupational therapy epistemology[13]. The increase and availability of evidence ensures the refinement of treatment techniques and the development of new therapeutic options[13]. Law et al.[14] opine that evidence-based practice is important when discussing with other professionals; this attracts referrals. Moreover, the need for evidence is crucial when discussing healthcare spending and reimbursement[13].

As more ground is slowly gained by occupational therapists in the psychiatric day hospitals, there is a need to clearly define the scope of practice and have guidelines that are evidence-based to inform the intervention programmes that are used. Evidence-based guidelines will enable occupational therapists to have a better and unified understanding of their scope of practice and be aware of their boundaries when working in a psychiatric day hospital. Furthermore, the guidelines may enable occupational therapists to avoid grey areas, scrutiny, criticism, and possible litigation, as they will have researched guidelines that are based on evidence, to use at the developing psychiatric day hospitals.

This scoping review explored whether clear guidelines for the practice of occupational therapists in psychiatric day hospitals exist, both locally and globally. The objectives were: to provide a focused overview of occupational therapy practice; and to identify and map content areas, principles and guidelines that need to be considered in the development of an occupational therapy programme that can be applied in a psychiatric day hospital.

METHOD

This scoping review was part of a larger PhD study that aimed at developing evidence-based occupational therapy guidelines for a programme that can be applied to a psychiatric day hospital in South Africa.

A preliminary search was conducted using Google Scholar, and no similar reviews were found. The Joanna Briggs Institute (JBI) scoping review framework was followed15. The stages of the scoping review are shown in Table I (below). Stage 1 entailed development of the scoping review protocol, which can be accessed through the corresponding author. An information specialist from the University of the Witwatersrand Health Sciences Library assisted with stage 2 (search strings and identification of literature), and also assisted with aspects of stage 3 (data searches). EndNote was used to collate full texts of articles. The relevant articles were uploaded into Covidence software for management and screening of selected articles (stage 4), and data extraction and charting (stage 5). A data extraction template was developed and used in Covidence. The extracted data were summarised and interpreted during stage 6. Data were exported from Covidence software into a customised Excel template, and manually analysed by the reviewers through content analysis.

Table I: Stages, actions and timelines of the scoping review

Scoping review stages	Actions taken	Timeline
Stage 1. Developing the scoping review design	Develop the scoping review's question, aim, objectives, inclusion and exclusion criteria, search strategy, to draw up a protocol.	5 April – 15 May 2022
Stage 2. Identifying relevant literature	Iterative interaction, defining, and aligning the search strings, key, and index words, and confirming the exclusion-inclusion criteria.	30 May – 20 September 2022
Stage 3: Searching the evidence	Searches were run on the following databases: Google Scholar, Medline, Embase, PsychINFO, Central, and Scopus international.	15 January – 20 March 2024
Stage 4. Selection of eligible literature	Screening (titles and abstract) of 22 articles on Covidence software by reviewers, followed by full text screening. Conflicts were resolved through discussion on Teams, by two reviewers (first and second authors)	21 March – 30 April 2024
Stage 5. Data extraction and charting	Data were extracted and charted on Covidence software through data extraction template	April – May 2024
Stage 6. Collating, summarising, and interpretation	Data were exported from Covidence software into a customised Excel template, and manually analysed by the reviewers through content analysis.	May 2024
Stage 7. Interpreting, reporting of results	Results were interpreted, written into a scoping review journal article and submitted for publication in a peer review journal	June 2024

Eligibility criteria

The eligibility criteria of the review entailed 1) global primary research that is published in English; 2) peer-reviewed journal articles; and 3) relevant grey literature, dating from 2000 to 2020. The first author started his PhD study in 2021 and had hoped to review papers of the then past 20 years, however, a further search was conducted up to March 2024. Some of the articles were traced from the references' lists and included as part of the reviewed papers.

The inclusion criteria were peer-reviewed publications in English and non-English and that described day hospitals with mental health services which included an occupational therapy programme. Adolescent, adult and older patients receiving general, group or individual occupational therapy were included. Studies were excluded if translation of the non-English papers was not available, if there were no detail about the occupational therapy programme, if there was only one contact session per week or month, if overnight stay were offered and if the programme was not delivered by an occupational therapist

Population

For this scoping review, Population, Context and Concept (PCC) were as follows: the population was 'occupational therapy clinicians', the concept was 'occupational therapy practice', and the context was 'psychiatric day hospitals and facilities', globally. Therefore, the scoping review question was: what global published evidence is available on occupational therapy interventions and practice in psychiatric day hospitals and facilities?

Search strategy

Medical Subject Headings (MeSh), a thesaurus that assists with creation and refining of search strings and facilitates the searching process, together with the Participant, Context, Concept were used to develop the following search strings: "Occupational Therapy" OR "day hospital" OR "Art Therapy" OR "community centres" AND "outpatients AND practice" AND "guidelines". The search was conducted and completed in six databases (Google Scholar, MEDLINE, Embase, PsychINFO, CENTRAL and Scopus International). For additional articles, the reference lists of all included sources of evidence were screened. After the search, all identified articles (22 articles), were collated and uploaded into EndNote[16].

Selection process

The first five included articles were screened together by the two reviewers (first and second authors), to refine the selection criteria and enhance inter-rater reliability. As part of this process, reasons for excluding articles were inductively developed and captured on Covidence. Reviewers jointly met and embarked on thorough screening (Titles and Abstracts) of articles, which were subsequently moved either into full text screening or exclusion. Duplicates were removed. Conflicting votes were discussed between the two reviewers until consensus was reached. Using the same format and selection criteria, full text screening commenced between the reviewers.

Data extraction and analysis

In Covidence, the finally selected articles were identified, and were ready for data extraction. Data were extracted from the articles by the reviewers using a data extraction template. The template was developed collaboratively on Covidence software, which was informed by the review objectives. The Covidence data extraction template entailed: title of the article, author(s) names, year of publication, name of the journal, country of origin, study population, diagnostic criteria group, programme content (client factors and performance skills, occupations, roles, habits and routines as stated in the Occupational Therapy Practice Framework edition 4 (OTPF4)[17], programme process[17] (evaluation, intervention mode and content), outcomes (clinician and patient reported), theoretical approach, programme principles (layout, number of clients and frequency), facility and context of practice, practice detail, equipment and resources used. The template was not modified or revised; however, when the reviewers could not find suitable data under any category of the template, they used "none stated". When all data were extracted, quantitative extracted data were moved to Excel for analysis with SPSS. The two reviewers frequently met and, through collaborative discussion, refined the categories, identifying themes by consensus. Results of the review are presented in tables, and figures.

RESULTS

Study selection

A PRISMA 2020 flow diagram18, with information on the selected and included articles is shown as Figure1 (below).

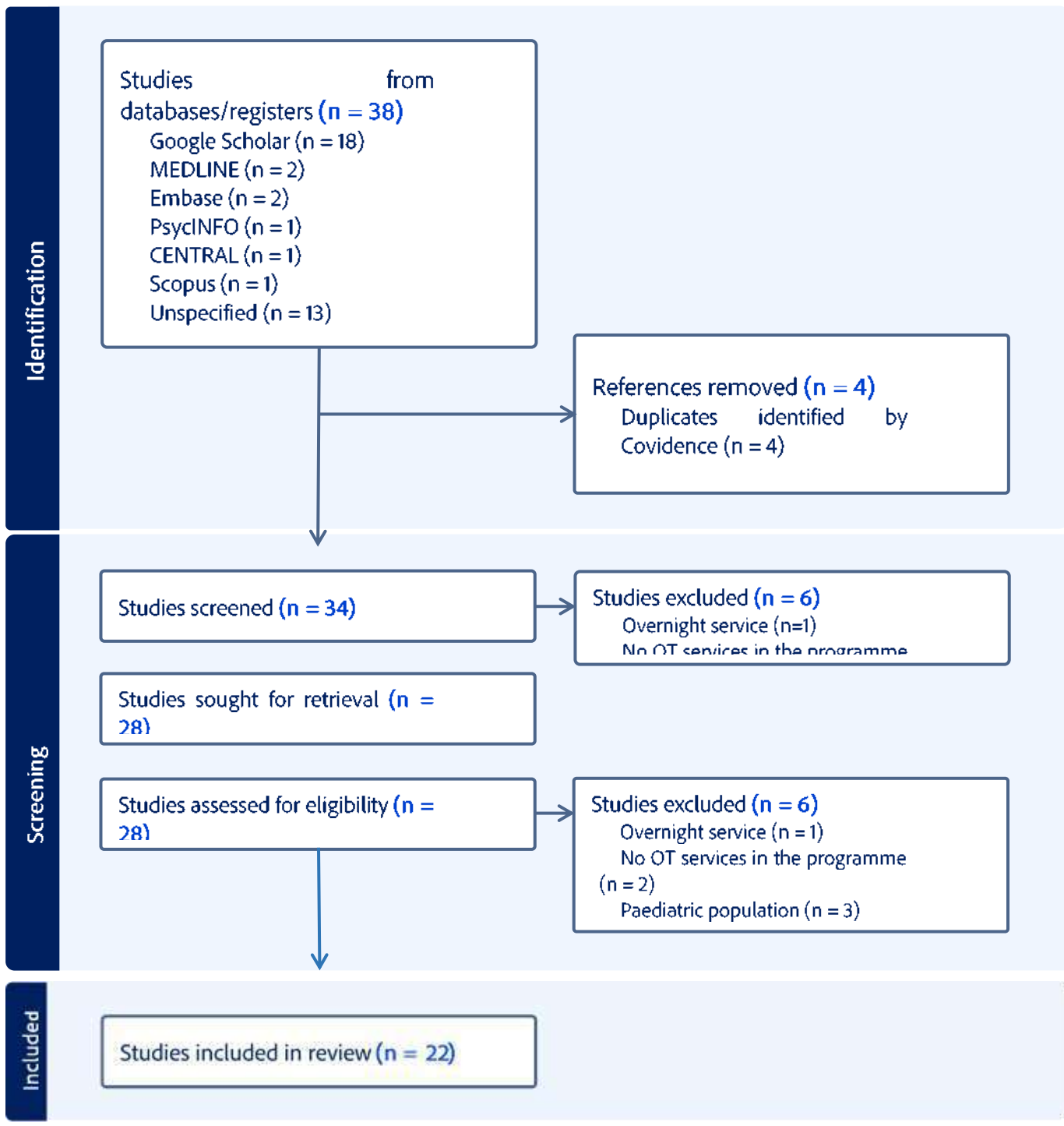

Figure 1: Prisma diagram of identified, screened and included papers on occupational therapy in psychiatric day hospitals

Demographics of articles

A total of 38 papers were identified during the database search. Four duplicates were identified and removed, while 6 papers were excluded as they did not contain relevant information. However, 12 papers were manually hand-searched through perusal of the articles' reference lists, which were included. Among the total of 38 papers, four were duplicates and removed, which led to a total of 34 papers undergoing initial screening. Out of the 34 papers, 6 papers were found to be irrelevant and did not contain necessary data and were removed, which led to a total of 28 papers. Of the 28 papers that were carefully screened, a further 6 papers did not meet the inclusion criteria and were excluded, resulting in 22 papers undergoing full-text review (see Figure 1, page 3 and Table II, below).

Table II: Summary of included articles

Author	Year	Journal	Description of Paper[19]	Diagnostic Groups
Maone et al.[19]	2002 Italy	International Journal of Mental Health	Day Programs in Italy for Persons with Severe Mental Illness	Severe mental illness: Schizophrenia, affective disorders, neurotic syndromes, personality disorders, mental retardation, abnormal development
Shek et al. [20]	2010 UK	John Wiley & Sons	Day hospital versus outpatient care for people with schizophrenia	Schizophrenia and other similar severe mental illness
Yazici et al. [21]	2007 Turkey	International Journal of Mental Health	Psychiatric Rehabilitation Services in Turkey	Mental illness
Yoshimasu et al. [22]	2002 Japan	Psychiatry and Clinical Neurosciences	Efficacy of day care treatment against readmission in patients with schizophrenia: A comparison between out-patients with and without day care treatment	Schizophrenia
Tjörnstrand et al. [23]	2013 Sweden	British Journal of Occupational Therapy	Participation in day centres for people with psychiatric disabilities – a focus on occupational engagement	People with psychiatric disabilities
Hultqvista et al. [24]	2017 Sweden	Scandinavian Journal of Occupational Therapy	Programme characteristics and everyday occupations in day centres and clubhouses in Sweden	Psychosis; mood & anxiety disorders; autism/neuropsychiatric disorders
Engelbrecht [25]	2019 South Africa	Disability and Rehabilitation	The effect of an occupational therapy mental health day treatment centre on the use of in-patient services in the Western Cape, South Africa.	Mental healthcare users
Tjörnstrand et al. [26]	2011 Sweden	British Journal of Occupational Therapy	Participation in day centres for people with psychiatric disabilities – Characteristics of occupations	Mental health problems
Eklund et al.[27]	2014 Sweden	Australian Journal of Occupational Therapy	Effectiveness of an intervention to improve day centre services for people with psychiatric disabilities	Psychiatric disabilities: psychosis, mood and anxiety disorders, autism/neuropsychiatric disorders, other
Flokén et al. [28]	2016 Sweden	Occupational Therapy in Mental Health	Occupational choices for people with psychiatric disabilities: comparing attendees and non-attendees at community-based day centres	People with psychiatric disabilities
Widerberg & Eklund [29]	2018 Sweden	Scandinavian Journal of Occupational Therapy	Gendering of day centre occupations as perceived by people with psychiatric disabilities in Sweden	People with psychiatric disabilities

Author	Year	Journal	Description of Paper[19]	Diagnostic Groups
Leufstadius et al. [30]	2014 Sweden	Occupational Therapy in Mental Health	Meaningfulness in day centres for people with psychiatric disabilities: Gender and empowerment aspects	Psychiatric disabilities: psychoses; mood and anxiety disorders; neuropsychiatric disorders
Bryant [31]	2011 UK	British Journal of Occupational Therapy	Mental health day services in the United Kingdom from 1946 to 1995: an 'untidy set of services'	People with mental health illness
Eklund et al.[32]	2015 Sweden	Journal of Occupational Science	Occupational value and associated factors among people attending psychiatric daycentres	People with psychiatric disabilities, depression, schizophrenia, mood disorders, anxiety disorders
Mackenzie et al. [33]	2006 Canada	International Psychogeriatrics	Evaluation of a psychiatric day hospital program for elderly patients with mood disorders	Mood disorders: MDD, dysthemia, bipolar disorder
Larivière et al. [34]	2009 Canada	Canadian Journal of Community Mental Health	A qualitative analysis of clients' evaluation of a psychiatric day hospital	Acutely ill clients; acute and subacute symptomatology of mental illness: psychotic disorders; MDD; cluster B PD; adjustment disorders; depression and anxiety disorders; cognitive disorders
Bartak et al.[35]	2011 Nether-land	Psychotherapy and Psychosomatics	Effectiveness of outpatient, day hospital, and inpatient psychotherapeutic treatment for patients with Cluster B personality disorders	Cluster B personality disorders - borderline and narcissistic. Overlap with other clusters
Gibson et al.[36]	2011 US	The American Journal of Occupational Therapy	Occupational therapy interventions for recovery in the areas of community Integration and normative life roles for adults with serious mental illness: A systematic Review	People with psychiatric disabilities
Eklund et al. [37]	2013 Sweden	Scandinavian Journal of Occupational Therapy	Psychiatric rehabilitation in community-based day centres: Motivation and satisfaction	People with psychiatric disabilities
Argentzell et al. [38]	2012 Sweden	Scandinavian Journal of Occupational Therapy	Factors influencing subjective perceptions of everyday occupations. Comparing day centre attendees with non-attendees	Psychiatric disabilities, PD, schizophrenia, mood disorder, anxiety
Eklund et al. [39]	2016 Sweden	Scandinavian Journal of Occupational Therapy	Adding quality to day centre activities for people with psychiatric disabilities: Staff perceptions of an intervention	Psychiatric disabilities
Lundqvist et al. [40]	2018 Sweden	Scandinavian Journal of Occupational Therapy	The attendees' view of quality in community-based day centre services for people with psychiatric disabilities	psychiatric disabilities

Terminology used for psychiatric day hospital

The review highlighted that there are different terminologies used in different countries, with regard to the naming of the psychiatric day hospital. Generally, there seems to be a consistent wording around 'day centres for people with psychiatric disabilities' in Sweden [24, 26, 30, 37, 40] and they mostly seem to ascribe to this terminology. . However, Bryant et al.[31] use 'mental health day services' in the article that reported on services in the United Kingdom, whereas an article from Canada uses 'psychiatric day hospital', as reported by Mackenzie et al.[33] . In South Africa, Engelbrecht[25] noted the use of 'mental health day treatment centres'.

Intervention mode

Eighteen articles out of 22 (82%) mentioned that occupational therapy practice at psychiatric day centres is predominantly provided through group therapy format. In some settings, the patients and/or group members in the programme were grouped according to their different levels of function. As elucidated in Table III (below), the wording of a group is rendered differently in different countries, namely: 'group therapy' [20, 25, 34] and 'group' [19, 24, 28, 32, 35, 37, 38, 40]. It is noted that there is also mention of individualised therapy in the UK [20, 31], the US[36], Canada[34], Netherland[35] and Sweden[28] while Gibson[36] and Flokén[28] expressed a need to complement group therapy with individualised sessions.

Table III. Articles mentioning group therapy as modes of intervention (n= 18)

Author(s),	Year and Country	Intervention Mode
Maone et al.[19]	2002 Italy	Group and individual, occupational therapy, vocational training
Shek et al.[20]	2010 UK	Group therapy, individual psychotherapy, counselling,
Tjörnstrand et al. [23]	2013 Sweden	Groups
Hultqvista et al.[24]	2017 Sweden	Group
Engelbrecht [25]	2019 South Africa	Group therapy, community, occupational therapy treatment is often provided in groups
Eklund et al.[27]	2016 Sweden	Work orientated programme
Flokén et al.[28]	2016 Sweden	Group and individualised
Leufstadius et al.[30]	2014 Sweden	Groups
Bryant et al.[31]	2011 UK	Group and individual approaches
Eklund et al. [32, 39]	2015; 2016 Sweden	Groups
Larivière et al.[34]	2009 Canada	Group therapy, individual, vocational program, family
Bartak et al.[35]	2011 Netherland	Group and individual
Gibson et al.[36]	2011 US	Groups, individual focus
Argentzell et al.[38]	2012 Sweden	Group
Eklund et al.[39]	2016 Sweden	Group, workshops at the centres
Lundqvist et al.[40]	2018 Sweden	Group, workshops

In Italy, Maone et al.[19] noted that a specific mode and service offering includes vocational training, or is referred to as 'vocational rehabilitation'; and by Larivière et al.[34] as 'vocational programmes'. These are consistent with the services that are offered in Sweden as work-orientated programmes, as noted by Eklund et al.[27] from Sweden. Workshops, as an intervention, are also one of the modes of intervention that were mentioned in the reviewed articles, as noted in Supplementary File 1: Programme content; programme process; programme principles and guidelines; programme format; overview of occupational therapy practice and intervention mode. However, in some places such as Sweden, there are specific work-orientated programmes and meeting-orientated places, workshops and community-based centres, and there are also large groups of people, who may be working independently on the same programme [23, 24, 37].

Programme content

Maone et al.[19] identified social skills, instrumental activities of daily living and leisure as among the areas of focus for the day hospital programme. Eight out of twenty-two (37%) articles identified social interaction and social networking as a theme. Work, productivity and transitioning employment are listed under occupations in the content of the programme[23, 24, 28]. Eklund et al.[37] note that, in Sweden, the daily schedule of the programme and the demands of the activities that the patients participate in, are adjusted according to their functional capacities and needs, to improve their occupational balance. In the UK, Bryant et al.[31] assert that there is structuring of time by engaging the patients in meaningful occupations in the organised programme. This is consistent with what is taking place in Canada, as noted by Larivière et al.[34], that the programme is structured as part of their daily routine. Lundqvist et al.[40] noted that there is a need to find the right type and amount of occupation and the right variation between occupations in the programme.

The reviewed articles show that among the client factors and performance skills[17], anxiety management and confidence, relaxation and planning skills have been addressed in the programmes [24, 27, 30, 32, 34, 38]. In South Africa, common client factors and skills such as problem-solving, self-esteem, cognitive abilities and life skills were identified by Engelbrecht[25], which is consistent in Swedish programmes[23]. Furthermore, motivation through contributing and being entrusted with responsibility, structuring time and setting goals, self-mastery and self-esteem, formulating goals, and strategy to reach goals, were also reported to be part of contents for the programme[37]. Larivière et al[34] mentioned several client factors and performance skills from their study in Canada which include being optimistic and hopeful, controlling impulsive behaviours, having self-acceptance, insight, and self-awareness, implementing life skills, and coping with losses.

Occupational therapy process

Engelbrecht et al.[25] noted that among the important aspects of the occupational therapy process, is the assessment of patients' needs, which should be differentiated (i.e. based on the unique needs, abilities, deficiencies, and environment of each mental health care user), by performing a functional assessment. Eklund et al.[37] noted the use of interviews and questionnaires to assess patients. This is consistent with the work of Bryant et al.[31], who reported that there must be a systematic approach to evaluation and the use of different methods such as questionnaires and interviews. Cognitive and functional evaluations are also being used as part of the occupational therapy assessment at a day hospital programme, as indicated by Larivière et al.[34] With all the different assessment methods, Argentzell et al.[38] identified observation as one of the useful assessment methods in the evaluation process.

In addition to assessment in the occupational therapy process, as noted in the OTPF[4], there are also intervention and outcomes[17]. Different components and ingredients of intervention are reported herein, however there was not sufficient evidence to harvest on outcomes and tracking change in performance in the reviewed articles.

Programme guidelines and principles

The review found that the occupational therapy programme at a psychiatric day hospital should involve family members[19] who play a critical role as a bridge between the hospital and the community[31]. Secondly, the programme should ensure that patients are engaged in social settings and actively participate in different occupations[23]. There should be opportunities for emotional reactions in various

settings to facilitate change; they should have occupational balance and structure in daily life and be mastering challenges and learning something new[23]. The programme should facilitate a sense of belonging; it should cultivate motivation through contributing and being entrusted with responsibility; it should enable individuals to make choices and acknowledge their power and abilities to decide[23]. In essence, the programme must be structured and presented at the 'just right challenge'[23]. Hultqvist et al.[24] emphasised that programmes should address the needs of the users as that will ensure "autonomy and a feeling of social inclusion, which are concepts of importance for well-being and recovery"[24](p 205)

The emphasis of the programme should be on the "here and now"[41] rather than on problems from the past. The rehabilitation that takes place at the day centre also needs to be individualised to account for individual differences within a general need to be actively engaged[28]. Leufstadius et al.[30] and Tjörnstrand et al.[23] noted the importance of being together with others and belonging to a group to facilitate a process of recovery. Experiencing a high level of empowerment increased with a high level of perceived meaning in the domain of personal development[38]. Argentzell et al.[38] noted that the programme should be client-centred and individually based. Eklund et al.[37] asserted that the programme should follow a set schedule, and this was as a comment from one of their participants, that doing things that were pleasurable were the strongest motives for coming to the day centre rehabilitation.

Programme format (structure, frequency, and length)

The format of the programme differs across different countries in terms of daily suggested operating times and frequency of group sessions in a day. The reviewed articles show that the occupational therapy programmes at the psychiatric day hospitals may take place every day, with daily attendance[19, 37], every day of the week[23],or during workdays[24]. Other reports included two to three days per week and that patients should be occupied throughout the day[25]; four hours per week[23]; 13 hours average per week[30]; daily[37], with four occupational therapy services per day for at least three days a week[31]; four to five days per week, on average for eight weeks[34]; one morning and/or one afternoon per week[35]. Literature suggests that there are greater benefits from longer intervention, more intensive intervention, [36], all day each day of the week[38].

Theoretical approaches

Engelbrecht et al.[25] reported that the commonly used theoretical approaches in South Africa include family orientated approach; psychoeducation; and Person–Environment–Occupation (PEO) model. The psychoeducation programme was also reported by Flokén et al.[28], as commonly practiced in Sweden. In the UK, there is a structured approach that is followed[31]. Larivière et al.[34] assert that Canada subscribes to Cognitive Behavioural Therapy (CBT), Interdisciplinary approach, Fundamentals of Human Occupation and Psychodynamic approach. In the US, Gibson et al.[36] noted the Behavioural and/or Cognitive-Behavioural approaches, which are the basis of the intervention programme, whereas articles from Sweden also include the Activity-Based Rehabilitation approach[32]. From our results it is evident that a variety of theoretical approaches are used across different countries, reflecting regional preferences and practices, with common models including psychoeducation, cognitive-behavioural approaches, and occupation-based frameworks.

Table IV: The Intervention Contents associated with 21 out of the 22 articles

Author(s)	Year	Intervention contents
Maone et al. [19]	2002	Expressive therapy: painting, music, handicrafts, theatre, photography, video, looking after one-self, managing the environment and daily life, preparing meals, housecleaning
Shek et al. [20]	2010	Productive activities, recreational activities
Yoshimasu et al. [22]	2002	Recreation therapy, social skills training, occupational therapy
Tjörnstrand et al.[23]	2013	Craft activities, productive activities
Hultqvista et al. [24]	2017	Manufacturing, playing cards
Engelbrecht et al. [25]	2019	Vocational rehabilitation, use occupation as basis of treatment, music therapy, recreational activities, social skills training and occupational engagement, vocational rehabilitation, psychoeducation, life skills training and social integration
Tjörnstrand et al. [26]	2011	Social activities, information orientated, maintenance and manufacturing tasks, crafts, repairing bicycles and furniture, creativity
Eklund et al. [27]	2014	Occupations that are meaningful, set goals with service users and implement strategies, gardening groups, small shop (to increase contact with surrounding community), increase shared decision-making in weekly meetings.
Flokén et al. [28]	2016	Physical occupations, aerobics exercises, crafts
Widerberg & Eklund [29]	2018	Carpentry work and textiles, or through services such as food catering, cleaning or gardening, work-like occupations, crafts
Leufstadius et al. [30]	2014	Empowerment and meaningfulness through individualised activities, kitchen activities, service tasks, and social activities, woodcraft, textile crafts
Bryant et al. [31]	2011	Social and recreational activities, practical and social activities, craftwork
Eklund et al. [32]	2015	Producing things and adding a sense of value, cognitive behavioural
Mackenzie et al. [33]	2006	Psychodynamic and interpersonal approaches
Larivière et al. [34]	2009	Psychoeducation and support, lifestyle management and balance of occupations
Bartak et al. [35]	2010	Non-verbal or expressive group therapy, psychosocial treatment, coaching for social problems
Gibson et al. [36]	2011	Social skills training, assertiveness training, communication skills, occupations related to self-management, home management, cooking, and community integration tasks, related to obtaining education and work, managing money, and maintaining healthier behaviours, work and education
Eklund et al. [37]	2013	Participation in work-like occupations in the day centre, meaningful activities
Argentzell et al. [38]	2012	Activity based and presented with occupations
Eklund et al. [32]	2015	Gardening, sell food, catering or car wash services, opening a small shop to increase contact with surrounding community, decision making, weekly meeting sessions to share ideas
Lundqvist et al. [40]	2018	Occupational balance

Despite one out of the 22 articles not reporting specific intervention content, all 22 (100%) articles report that there are occupation-based activities that are utilised in the occupational therapy programme, - client factors, performance skills and occupations - that form part of session content and focus of sessions, at the different psychiatric day hospitals and/or day centres. Table IV (page 7) elucidates the different activities, skills and occupations that were mentioned and captured from the articles. All articles agree that occupational therapy practice cannot be practiced without the use of activity, either as a means and/or as an end. Various occupations are also used such as cleaning, leisure and recreation, and work-like activities. There is also a consistent message around specific skills training and development and life skills, that are inherently facilitated as part of the programme. Therefore, by following the occupational therapy processes to select and analyse the necessary activities, patients can be meaningfully occupied and challenged to grow and increase their capacity for function.

DISCUSSION

This review synthesised information on occupational therapy practice in psychiatric day hospitals and mapped content areas, principles and guidelines that need to be considered in the development of an occupational therapy programme for a psychiatric day hospital. Different fragmented yet invaluable parts of the occupational therapy programme have been harvested from the reviewed articles to serve as a base for building an occupational therapy programme for a psychiatric day hospital in South Africa. Starting with the naming of the hospital setting, words such as psychiatric centres for people with mental health disabilities, mental health day centres, and psychiatric day hospital were used. Engelbrecht et al.[25] was the only study that reported on mental health day treatment centres for the South African context.

Regardless of the differences in the terminologies, there is a common and consistent theme of providing occupational therapy services at a 'day' setting and/or programme, and not at an 'overnight' setting. They come to the day hospital on a day-to-day basis and return to their community and homes to be with family, which allows the exercising of learnt skills from the programme. It is also noted that these types of day centres, and/or day hospitals, render services to people with mental illness, psychiatric illness and/or psychiatric disabilities, as noted in the reviewed articles. Although there is variation in the naming of the programme in different countries, there are certain elements and components that were found to be common and consistent.

The OTPF4[17] highlights the importance of operationalising the occupational therapy process when delivering occupational therapy services to patients. The first step of the occupational therapy process is evaluation. The evaluation comprises the occupational profile and the analysis of occupational performance, which are integrated to guide and shape the intervention plan. Despite the different methods of evaluation mentioned in the reviewed articles, there is no mention of specific standardised and/or non-standardised assessment tools that can be used at the psychiatric day hospital. Evaluation is crucial at a psychiatric day hospital and should inform intervention planning. This is consistent with the scope of the occupational therapy profession in South Africa[42], It is concerning that there is no mention of tools in the reviewed articles pertaining to the evaluation process. In South Africa, the Board of Occupational Therapy, Medical Orthotics, Prosthetics and Art Therapy in the Health Professions Council of South Africa (HPCSA) guides occupational therapists to a list of Formal Assessment Instruments relevant for the South African population[43]. This list may be helpful in identifying relevant tools for assessment in day hospitals.

Furthermore, the evidence from this review shows that certain patterns and frequencies of patient care are consistent with current occupational therapy practices at existing overnight psychiatric hospitals in the South African context. Patients are seen every day during their admission duration, at any psychiatric hospital (overnight and/or day hospital). This may vary between two to three groups a day, which are presented by occupational therapists. Although the context of overnight hospitals may be different from psychiatric day hospitals, the occupational therapists' capacity and patients' potential to handle the reported number of sessions should be similar. Therefore, there should be a minimum of two occupational therapy group sessions, with a maximum of three occupational therapy group sessions, for the entire week (Monday until Friday), at a psychiatric day hospital.

Intervention (planning, implementation and review) follows the evaluation phase of the OTPF4[17]. Group therapy, individualised therapy, vocational, and community workshops were identified as common modes of intervention in psychiatric day hospitals. Occupation-based activities are integral in the context of intervention. Group therapy was found to be the leading and common mode of intervention among the different countries, although the terminology was different. 'Group'/'groups', and 'group therapy' were among the terms that were utilised in the articles. The groups are reported on vaguely with fewer specific details regarding the layout of the group and principles of group therapy and/or how the sessions would be carried out. Furthermore, it was not clearly specified and explicitly unpacked in terms of group protocol, group layout, principles, style of facilitation, group structure and the contents of the group process and/or a typical group treatment session, with specific principles for treatment. The articles do not stipulate the style of group facilitation that should be used. Therefore, there remains a noticeable gap pertaining to group therapy and its principles for a psychiatric day hospital, which would explicitly enable occupational therapists to define their scope and role in these settings.

It is noted that 'group' may mean different things to different people in different countries. Patients who are 'grouped' do not automatically equate to and/or suggest that there is an inherent group cohesion and that there is intentional group formation. It is not explicitly clear in the articles how many people or group members are seen per group. In the South African context, Fouché, an occupational therapy group intervention expert, alluded to the fact that for the group to be interactive, have a good dynamic, and be experiential in nature, there should be a maximum of 12 patients. If there are more than 12 patients in a group, there will be less interaction and fewer experiential elements, especially for patients who function at least on a passive participation level of creative ability[44]. These kinds of groups are regarded as medium to intense and focus on developing insight into own behaviour, abstract thinking, problem solving, planning own recovery and applications of coping skills in own life[44]. This is valid for psychiatric day hospitals because the assumption is that these kinds of patients have consolidated the fundamental functional aspects as they are voluntarily admitted, and they bring themselves to the psychiatric day hospitals[45]. Therefore, it can be concluded that this should predominantly be the suitable population of patients for these settings.

In the South African context, closed groups are conducted in many overnight hospital settings and a few day hospitals, although they are not well reported. Meyer et al.[46] asserted that there is a strong correlation between closed groups and group dynamics, which hold power for healing. Although the reviewed articles report on the need for frequent contact sessions and the sense of belonging experienced by patients in the programme, they do not account for the consistency of group membership or how to develop a sense of group belonging. It is unclear whether the patients remain constantly, in the same group for the duration of admission at the psychiatric day hospital, or if they are placed in different groups every time and every day they attend the

programme. Considering Yalom's principles on group therapy, there is power in constant group membership, which permits certain therapeutic factors (group cohesion, altruism, universality, impartation of information) to develop and ensure healing[47].

In the South African context, there is also an Interactive Group Model (IGM) which is commonly used with patients when facilitating groups, in mental health[44]. This group model was strongly highlighted and reported by the participants (occupational therapists) in phase one of this research study; it is a group model that is used at the few existing psychiatric day hospitals in South Africa. The IGM model is based on Yalom's principles of group psychotherapy[47], and it employs engagement in activities and "here and now" interactions to promote healing in interpersonal relationships and social skills[44]. It fosters group cohesion and encourages therapeutic elements such as the feeling of universality[44, 47], which are crucial group principles for any groups-based programme[44, 47] and setting such as a psychiatric day hospital.

Occupational therapy literature provides evidence of the different types of groups that occupational therapists are qualified to offer and facilitate [12, 41, 44]. These include functional groups; activity groups; tasks groups; social groups (including role play); life skills groups; psychoeducation groups; socio-emotional groups and support groups[46, 48, 49] among others. The reviewed articles did not specify which types of groups should be presented at the psychiatric day hospitals. However, it was noted that there are various themes and topics that are facilitated with patients at the psychiatric day hospital settings, such as: occupations (leisure and recreation, self-care, work or prevocational skills, instrumental activities of daily living, domestic tasks, rest, and community living); performance patterns (structure and routine, structured time and structured programme); performance skills (life skills, anxiety management, and interpersonal skills); client factors (motivation, problem-solving, self-esteem, and cognitive abilities); and in consideration of patients' contexts (community, workshops and hospital contexts)[17]. Therefore, when considering these interventions from the review articles, although not all aspects of the occupational therapy domain are mentioned, the message is clear that the occupational therapy services at the psychiatric day hospitals should be deeply rooted and grounded on the OTPF[4] principles.

The literature lacks comprehensive descriptions of the occupational therapy process and explicit guiding principles for psychiatric day hospitals. Despite this, the role of occupational therapists in mental health remains essential, as indicated by the time allocation for patient interaction and the frequency of contact. The review offers valuable insights into the structure and delivery of programs, particularly in terms of session frequency, duration, and format. It suggests that patients should be seen daily, both in the morning and afternoon, five days a week, for a total of four hours each day. In the South African context, this equates to two 90-minute group sessions and one 60-minute session, aligned with current Medical Scheme billing codes[50].

Evidence-based practice is essential in occupational therapy, particularly in mental health, where it not only guides interventions but also justifies the cost implications of services. Mental health services involve both direct costs, such as healthcare delivery, and indirect costs like lost income and employment opportunities[51]. Given that inpatient care in South Africa accounts for 86% of mental healthcare expenditure, with nearly half of the total spending at the psychiatric hospital level[6], the cost-effectiveness of day hospitals becomes critical. Frequent readmissions, extended hospital stays, and the need for specialized treatments drive these high costs, especially when physical comorbidities are present[52]. This underscores the value of occupational therapy in day hospitals as part of an integrated care model. By offering early intervention and preventive strategies, day hospitals can reduce hospitalisations, improve patient outcomes, and lower healthcare costs. Occupational therapy, with its focus on functional recovery, coping strategies, and life skills development, plays a key role in this outpatient approach[53], providing a cost-effective solution that addresses both mental and physical health needs. Therefore, evidence-based occupational therapy in day hospitals not only enhances patient outcomes but also helps alleviate the financial burden on the healthcare system by reducing costly hospital readmissions and resource use.

The reviewed articles highlight key foundational principles of occupational therapy, particularly the focus on restoring function and fostering a sense of meaning and purpose through active engagement in meaningful occupations[54]. These principles are rooted in the belief that humans are inherently occupational beings, and that health and well-being are supported through participation in purposeful activities[55, 56]. However, despite the strong theoretical foundation, the review revealed a significant gap: there are no clear, evidence-based guidelines or comprehensive programs specifically tailored for occupational therapy in psychiatric day hospitals. This gap underscores the need for further research and development to support effective occupational therapy practices in these settings.

CONCLUSION

This scoping review explored and examined the practice of occupational therapists in psychiatric day hospitals. Occupational therapists have a special role to play in mental health, particularly in psychiatric day hospitals. Their language and terminologies may be different depending on the country, but the scope of work and core goals for therapy remain the same. The occupational therapy practice framework domain and process emerged alongside certain theories, frames of reference, models, and approaches, which affirm that quality service and evidence-based practice are crucial for occupational therapists.

Group therapy emerged as the main mode of intervention at the psychiatric day hospitals, although this was not vigorously unpacked in detail, for example, in terms of group structure, format and principles. The review findings reveal that there is a noticeable gap, and lack of a clearly defined occupational therapy programme for a psychiatric day hospital with specific guiding principles, despite the reported components and scope-specific related ingredients. Nevertheless, this scoping review provided a basis to consider when developing evidence-based occupational therapy guidelines for a psychiatric day hospital.

Strengths and limitations

Methodological rigour and a collaborative team approach were the key strengths of this scoping review. The protocol was developed using the latest evidence in scoping review methodology from the Joanna Briggs Institution (JBI)[15], and the PRISMA-ScR guidelines were used to report the findings[57]. Regular discussions and peer debriefing with co-authors have enhanced credibility and ensured the trustworthiness of the study. The results of the review informed the development of evidence-based practice guidelines for occupational therapists working in psychiatric day hospitals in South Africa.

A limitation of this scoping review was that non-English sources were excluded. The authors recognise the fact that this may have excluded some evidence from countries similar in context to South Africa. It is noted that there was a lack of published articles and evidence on the occupational therapy practice in psychiatric day hospitals, globally. Although this was one of the limitations, it also dictates the need for further research on psychiatric day hospitals.

Acknowledgements and conflict of interest declarations

The University of the Witwatersrand Medical School Librarian, Mr Nakedi Mphago is acknowledged for his assistance during the search and data charting processes. All authors declare that there is no conflict of interest to report in this project.

Author contributions

Mr July Masango was involved in the scoping review design, methodology, data collection and analysis, results and discussion, and finalisation of the scoping review research proposal, including as part of the conceptualisation of an overall PhD research proposal; critical review and writing up the article. Prof. Daleen Casteleijn assisted with writing up of the study, methodology, results and discussion, review of final drafts. Dr Fasloen Adams was involved in scoping review design in all drafts, and finalisation of the scoping review research proposal, including as part of the conceptualisation of an overall PhD research proposal; critical review and input to the writing of drafts and text to completion. Dr. Tania Rauch van der Merwe was involved in scoping review design in all drafts, and finalisation of the scoping review research proposal, including as part of the conceptualisation of an overall PhD research proposal; critical review and input to the writing of drafts and text to completion.

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[RESEARCH ARTICLE]

AUTHORS
*Mika Solomon [a, b]
http://orcid.org/0009-0002-9448-305X
Marica Botha [b]
http://orcid.org/0000-0002-6607-186X

AFFILIATIONS
[a]Paediatric occupational therapist at Innova OT, 40 East Road, Morningside, Johannesburg, Gauteng, South Africa.
[b]Occupational therapy department, Kanya Building, WITS Education Campus, 7 York Road, Parktown, Johannesburg, Gauteng, South Africa
*Was a post-graduate student at the University of the Witwatersrand at the time of the research

CORRESPONDING AUTHOR
Mika Solomon
Email: mikaashleysolomon@gmail.com

KEYWORDS
multisensory environment (MSE), scholastic performance, level of arousal, sensory integration therapy (SIT), self-regulation, transfer of knowledge and skills

HOW TO CITE
Solomon M, Botha M. Occupational therapy in the Snoezelen® Room: Teachers' and therapists' knowledge and perceptions of the changes in children's behaviour and performance. *South African Journal of Occupational Therapy*. Volume 54 Number 3. December 2024. DOI: https://doi.org/10.17159/2310-3833/2024/vol54no3a6

ARTICLE HISTORY
Received: 8 March 2024
Reviewed: 2 April 2024
Revised: 7 August 2024
Accepted: 17 August 2024

EDITOR
Blanche Pretorius
https://orcid.org/0000-0002-3543-0743

DATA AVAILABLITY
Upon reasonable request from the corresponding author

FUNDING
No funding was received.

ISSN On-Line 2310-3833
ISSN Print 0038-2337

Occupational therapy in the Snoezelen® Room: Teachers' and therapists' knowledge and perceptions of the changes in children's behaviour and performance

ABSTRACT

Introduction: The Snoezelen® room, a multisensory environment (MSE), is often used in conjunction with sensory integrative techniques. Therefore, it may be of support in school-based occupational therapy intervention. Research has documented positive changes in children's performance in the MSE. However, research to suggest that changes could be carried over to external environments is limited. This study aimed to investigate the knowledge and perception of teachers and therapists regarding changes in children's behaviour and performance after therapy in the Snoezelen® room.
Methodology: A descriptive quantitative cross-sectional survey design by purposive sampling was used. Teachers and therapists working with children who received occupational therapy intervention in the Snoezelen® room participated.
Results: Descriptive and inferential statistics were utilized to determine strong positive, significant correlations found between the total impact of the Snoezelen® room and the children's level of arousal, as well as their behaviour and scholastic performance, as conveyed by 30 participants. After therapy in the Snoezelen® room, improvement in level of arousal was ranked as the biggest change, which appeared to improve for hours upon return to the classroom.
Conclusion: Children's arousal levels changed positively due to sensory input, which carried over to the external environment. Due to this, most teachers and therapists perceived that the Snoezelen® room positively changed behaviour and scholastic performance, through improved level of arousal.

Implications for practice:

- The use of Snoezelen® rooms in schools, combined with sensory integration therapy (SIT), enhances children's self-regulation, which in turn positively impacts behaviour and academic performance.
- Strong, positive correlations were found between children's level of arousal and improvements in their behaviour and scholastic performance. Thus, Occupational therapy interventions in the Snoezelen® room significantly contribute to children's ability to self-regulate, a key factor in achieving positive classroom behaviour and learning outcomes.
- Teachers and therapists perceive Snoezelen® rooms as beneficial, with 96.7% supporting their presence on school campuses to improve child behaviour through better self-regulation.
- Consistent with extensive research surrounding self-regulation of children, acquiring self-regulation skills in the early years lays the foundation for positive classroom behaviour and academic performance later.

INTRODUCTION

The Snoezelen® room is specifically designed to allow adults and children to explore the quantity, nature, intensity, and arrangement of sensory stimuli[1]. Individuals are encouraged to explore the equipment in the environment to stimulate the senses of vision, hearing, smell, and touch, as well as proprioceptive and vestibular sensation[2]. The multisensory environment (MSE), such as Snoezelen®, emerged as a natural progression in sensory-based approaches and has become increasingly known for its benefit in therapeutic interventions that use a sensory integrative frame of reference. Research has been done on positive changes in performance within the MSE; however, little research has been done on the transfer of these changes into other environments, such as the school or classroom[3]. It is important to explore the transfer of knowledge, skills, and behaviour from the MSE to the classroom environment to validate the benefit of having an MSE within school environments. The aim of this study was to investigate the knowledge and perception of teachers and therapists about the change in child behaviour and performance, after occupational therapy in the Snoezelen® room, as a treatment modality in a specialised school environment. The broad areas of level of arousal, behaviour, and scholastic performance were explored to better achieve this aim[4].

LITERATURE REVIEW

Occupational therapists assist children to achieve maximum participation in daily activities, or occupations[5]. Jean Ayres was an occupational therapist and neuropsychologist who spent her career learning and determining how to treat children with behavioural and learning difficulties[6]. Learning disabilities are "unexpected, significant difficulties in academic achievement and related areas of learning and behaviour"[7:3]. Ayres emphasised that children with learning difficulties may also experience neurological dysfunction with respect to their ability to process sensory information[8]. To address these difficulties Ayres Sensory Integration® (ASI) theory was developed in 1972. ASI is "the neurological process that organizes sensation from one's own body and from the environment and makes it possible to use the body effectively within the environment"[9:3]. The ASI theory describes how the nervous system receives sensory input (sound, taste, touch, sight, vestibular, and proprioceptive) and adjusts it to allow for an appropriate adaptive behavioural outcome[4,6]. Adaptive responses are seen as successful interactions with the environment in response to an environmental input, which is a building block for successful participation in occupations[6]. These building blocks of function are targeted through sensory integration therapy (SIT), to improve a child's overall participation in occupations. Neuroplasticity, which refers to the ability of the nervous system to adapt in response to sensory stimulation, can be strongly associated with SIT[10]. Young children respond well to SIT because there is still opportunity for neuroplasticity and recent evidence suggests that this process is of highest maturation in the first 8 years of life[11]. As children grow, the less changeable the brain becomes. This highlights the benefit of making use of SIT in school-based occupational therapy intervention, to meet therapy aims when children are younger, and their brains can still adapt due to neuroplasticity[8]. Combining the theory behind sensory integration and neuroplasticity, it has become evident that providing a child with enhanced personalised sensation in the context of everyday activities or altering their environment would allow a child to succeed[11].

The concept of the multisensory environment (MSE) was introduced in 1987 by two scientists, Hulsegge and Verheul, in the Netherlands, with their original purpose being relaxation and leisure exploration for people with profound intellectual trademarked and introduced in the form of a specially designed room to encourage exploration of the quantity, nature, and intensity of sensory stimuli. Equipment that is often present can include white-coloured equipment, seating and walls that are soft and padded, mirror balls, bubble tubes, coloured lights, a projector, lava lamps, music, and colour-changing fibre-optic cables, all of which can be controlled by the individual to meet their sensory needs[14,15]. Individuals are invited to engage with the equipment of their choice, and according to their needs, to stimulate senses of vision, hearing, smell, touch, proprioceptive, and vestibular sensation[2]. The safe and relaxing environment reduces the notion of external emotional or physical pressure that might be experienced in other demanding environments[2]. The Snoezelen® room is windowless to reduce stimuli from the external environment. This creates a room that is more inviting for an individual who experiences sensory overload, such as a child who might be overwhelmed in a busy classroom or playground environment[16].

The sensory rich nature of a typical school environment can be overwhelming for certain children[17]. This could explain why some children have difficulties regulating themselves, sustaining attention, engaging in social scenarios, participating in scholastic activities, and most importantly, learning new skills[18]. Therefore, children with sensory integration challenges are at risk of experiencing difficulties participating in their education occupation[17]. According to Ayres, sensory integration challenges can negatively impact higher-order cognitive functions, such as executive functions, that allow for successful learning and academics, as well as the level of arousal needed for emotional regulation and self-regulation[6]. Therefore, the educational progress of a child with learning disabilities can be affected by their reduced ability to self-regulate their emotional and behavioural responses in a school setting[19]. Dunn's model of sensory processing describes neurological thresholds and how different thresholds affect self-regulation[20,21]. Self-regulation refers to the ability of a person to manage their own thresholds or level of arousal, using strategies[20]. For example, a child who is often on the go and presents with a high level of activity is likely to have a high threshold for vestibular, or movement, input. Thus, this child would have a high level of arousal. This may lead the child to be disruptive to others or to themselves. Occupational therapists help children, and their caregivers understand their thresholds and how to use sensory strategies to increase their engagement and learning[20]. Ultimately, children learn to recognise, change, and maintain their level of arousal, using sensory strategies, to increase their participation in the classroom. Research shows that Snoezelen® can influence one's level of arousal, particularly related to changing levels of relaxation, emotion, and well-being by providing the correct amount of sensory input[22]. Acquiring self-regulation skills in the early years sets the foundation for positive classroom behaviour and academic performance later[23]. Furthermore, for children with learning disabilities, academic skills such as reading, writing, and mathematics can be negatively impacted[4]. These difficulties may be compounded by comorbid sensory and arousal difficulties, thus other skills such as cognitive skills become difficult for these children. According to the fourth edition of the Occupational Therapy Practice Framework (OTPF), specific mental functions, or cognitive functions, include executive functioning skills, as well as attention, memory, perception, and thought[24]. Executive functioning skills refer to the cognitive skills that work together to help children solve intricate problem-solving tasks[25]. These difficulties may result in additional effort needed to achieve the same outcomes as peers and thus children with learning disabilities can also present with anxiety and behavioural changes that can further impact their participation in the classroom. Various research studies document the positive outcomes of the multisensory environment such as behavioural enhancement, reduced levels of

pain, a balanced heart rate, calming effects, and increased motivation and attention[14,26,27].

In 2008, Botts et al.[2] conducted a study to delve into these effects, however, only two studies that included children were found[2]. Chan et al.[28] found an increase in children's positive emotions after intervention in the Snoezelen® room; however, no change in aggression or adaptive behaviours was found[28]. In their research, Shapiro et al. [29] found that a child's behaviour seemed to be more adaptive in the Snoezelen® room compared to a playroom[29]. In a study completed in 2011 by Stephenson and Carter[26], teachers' perceptions of the use of the MSE in schools were explored. This study was carried out as there is a gap in research on the outcomes of the Snoezelen® room especially with respect to children and schools[26]. Many teachers agreed that the MSE allows children to receive an opportunity to focus on specific tasks, while being free of distraction. Many educational professionals agreed that MSEs can improve behaviour, leading to better learning opportunities within the controlled environment[30]. However, not many teachers suggested the notion of these skills being carried over from the MSE to the classroom environment or other environments like the home, which is a vital component to explore if MSEs are to become significant in contributing to education[26]. This depicts the research gap surrounding the carryover of improvements from the Snoezelen® room to other environments. A recent study by Graham[31] in 2019, explored the use of sensory rooms for students with special needs[31,32]. The study determined that an improvement in children's focus was most reported by teachers. Furthermore, 57.5% of teachers reported improved following of instructions, 38.8% found students were better on task, 55% observed fewer negative behaviours, and 27.5% found that students had higher levels of motivation following the use of the MSE[31]. This suggests that the improvements noted within the MSE may be associated with improved classroom functioning. However, more research worldwide, but importantly within a South African context, is required to build on these findings and determine which specific skill improvement is carried over from the MSE to the classroom. This will clarify the benefit of having an MSE in a school environment to positively impact children's learning experiences, particularly children with learning disabilities[32].

METHODOLOGY

Research Design

A descriptive, quantitative, cross-sectional survey design was used to address the aim of this study[33].

Population/sampling

There are two special education primary schools in Johannesburg with a functional Snoezelen® room on their campus, so the availability of participants was limited. Therefore, this study made use of purposive non-probability sampling, as the sample of individuals was specifically chosen based on predetermined criteria[33]. The inclusion criteria required participants to be staff in special education primary schools who are teachers or therapists by profession and who work with children who have received occupational therapy intervention in the Snoezelen® room. The G*Power Version 3.1.9.4 statistics software was used to determine the sample size according to the aim of the study and the specificity of the sample. It was determined that enough relevant data was collected once a minimum of 30 participants had completed the survey.

Research setting

This study was conducted online. However, the research was based on information participants gained through working in special education schools, specifically those with Snoezelen® rooms on campus.

Research instrument

The research instrument was an author-developed survey created using current available literature. This four-part survey included Section A, that sought to obtain demographic data through multiple choice questions. This included personal demographic data such as age, gender, profession, and years of experience, as well as questions regarding the participant's existing knowledge about the Snoezelen® room. Sections B, C, and D were developed from literature on school-based occupational therapy and current knowledge on the benefits of the MSE related to SIT. These followed the same set of questions that included a four-point Likert scale, from very little effect to very effective, to measure the impact of the Snoezelen® room in improving a child's performance with respect to their 'level of arousal' (Section B), 'behaviour' (Section C) and 'scholastic performance' (Section D). Three-point Likert scales were used to measure changes in child performance following intervention in the Snoezelen® room (Becomes worse, Stays the same, Improves) as well as the duration (Minutes, Hours, Days) and frequency (Never, Sometimes, Always) of these changes. The outcomes that fell into each category were explored to determine the changes that were observed after intervention in the Snoezelen® room. Comment sections were included to enhance the richness of the data and allow participants to explain their answers. Concluding questions were asked to discover gender-based differences, as well as the participants' view on whether it is beneficial to have a Snoezelen® room on school campuses, in order to supplement the research findings. An expert panel of occupational therapists conducted a content validity check on the survey, prior to distribution to participants. This included having six occupational therapists who have specialties in paediatric and sensory integrative practice, answer questions related to the relevance, clarity, simplicity, and ambiguity of the survey. According to Polit and Beck[34], when there are six or more experts, the minimum requirements for excellent content validity of an instrument are I-CVIs of 0.78 or higher and an S-CVI of 0.80 or higher[34]. The I-CVIs for this study ranged from 0.83 to 1 and the S-CVI value was 0.98. Therefore, the survey had acceptable content validity and no changes were required prior to distribution. The online REDcap platform was used to design and distribute the survey. is A pilot distribution of the survey was conducted to allow for technical valuation.

Data Collection

Data collection commenced once the University's ethical clearance processes were followed and approval from the Gauteng Department of Education was obtained. The headperson or appointed representative of each school with a Snoezelen® room on their campus was contacted and an information sheet and a consent form were sent by email to each school representative. Following retrieval of these signed documents, the survey link was shared by email to the school representatives, who forwarded the link to each teacher and therapist employed at their school. Participants accessed the survey through the online REDcap platform. This allowed participants to maintain anonymity. Online informed consent was obtained from all participants. Surveys that were completed within a month were compiled and analysed using Microsoft Excel and later using SPSS 21 software. Data were collated, cleaned, and coded for descriptive analysis.

Means and standard deviations, as well as data normality, were used to provide descriptive statistics of the participant demographics, as well as their knowledge and perception of the use of the Snoezelen® room. Pearson's correlation coefficients were used for data analysis. Point-biserial correlations were run to make inferences about the association between components of knowledge, perception, and demographic information[35]. The

statistical significance of these correlations was also evaluated with the level of statistical significance established at p = 0.01. Furthermore, 95% confidence intervals were calculated. Data were organised and summarised into graphs and summary tables showing samples, percentages, means, correlation coefficients, and p-values to be more easily understood.

Ethics

Ethical clearance was obtained in 2021 from the Human Research Ethics Committee (Medical) at the University of Witwatersrand (HREC-M) (Certificate Number M210947). Approval was obtained from the Gauteng Department of Education, and informed consent from schools and individuals participating in this study. Participants were required to declare that they understood the research process and to provide voluntary consent to participate.

RESULTS

Demographic of participants

A total of 30 participants responded to the study and gave their consent. Referring to Table I (below), the participants comprised of 100% females (n = 30) whose ages ranged from 27 to 61 years, the mean age being 42.27. Most of the participants (60%) had known about the Snoezelen® room for 6-10 years, while 36.7% had known about the Snoezelen® room for only 1-5 years and 3.3% for more than 10 years. Most participants taught or gave therapy to more than one grade, between Grade R to Grade 7.

Table I: Participant demographics

	N = 30	%
Gender		
Female	30	100
Profession		
Teacher	13	43.3
Psychologist	2	6.7
Occupational Therapist	4	13.3
Speech and Language Therapist	5	16.7
Remedial Therapist	6	20.0
Years participants have been teaching or giving therapy		
1- 5 years	3	10.0
6-10 years	4	13.3
More than 10 years	22	73.3
Years participants have known about Snoezelen®		
1- 5 years	11	36.7
6-10 years	18	60.0
More than 10 years	1	3.3
Years participants have taught or given therapy to children who receive therapy in Snoezelen®		
Less than 1 year	3	10.0
1- 5 years	13	43.3
6-10 years	13	43.3
More than 10 years	1	3.3
Grades participants teach or give therapy to		
Grade R	6	20.0
Grade 1	11	36.7
Grade 2	14	46.7
Grade 3	14	46.7
Grade 4	12	40.0
Grade 5	8	26.7
Grade 6	6	20.0
Grade 7	6	20.0

Participants were asked about their perception of the benefits of the Snoezelen® room, as well as the diagnoses, age, and gender of the children who may benefit from the room.

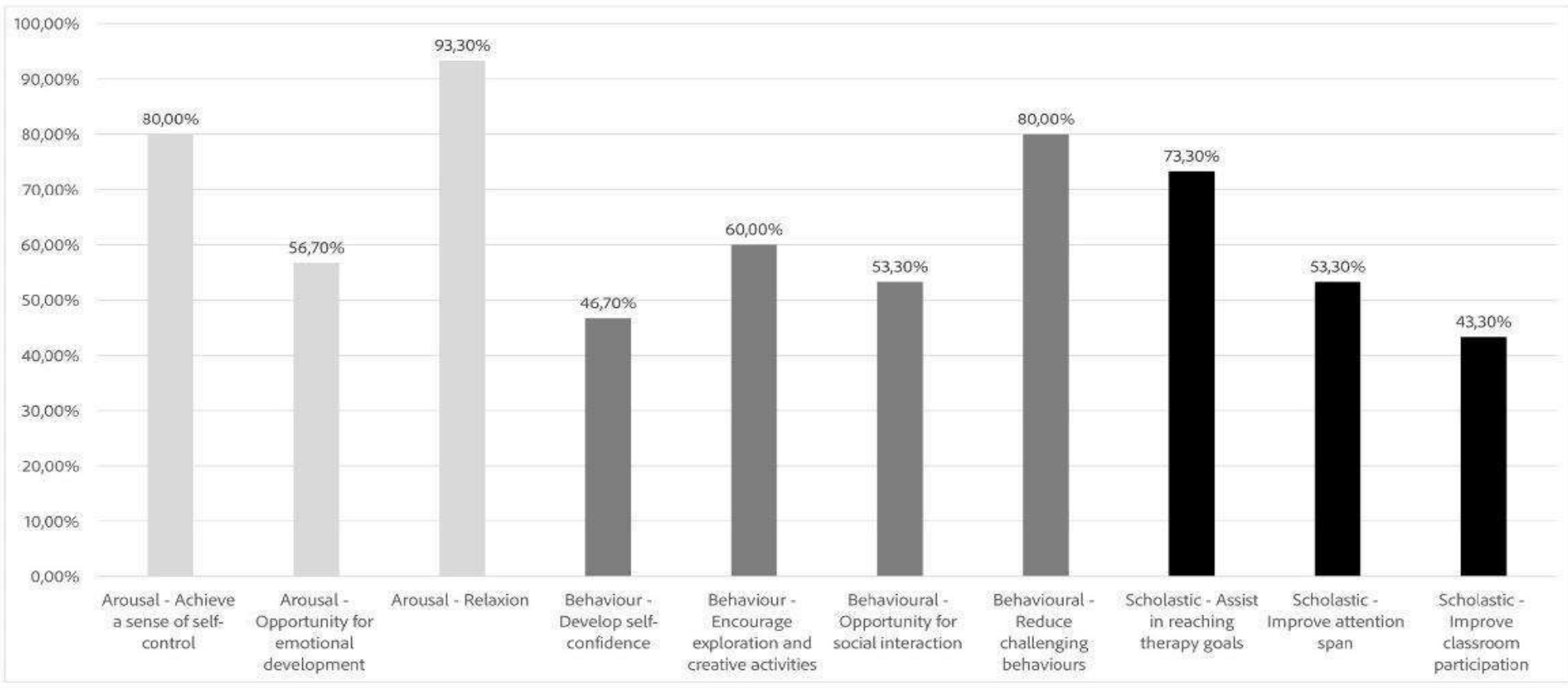

Figure 1: Benefits of the Snoezelen® room

Figure 1 (page 4) indicates the percentages of participants who selected various benefits of occupational therapy intervention within the Snoezelen® room, based on pre-existing knowledge of the subject. Relaxation was the highest benefit reported (93.3%) while improving classroom participation was reported to be the least beneficial (43.3%).

Table II: Identified benefits of occupational therapy in the Snoezelen® room.

	Count	%
Benefits for Level of Arousal	25	80.60
Benefits for Scholastic Performance	18	58
Benefits for Behaviour	20	65

In Table II (above), it is evident that most of the participants (80.6%) identified Snoezelen® as the most beneficial to improve a child's level of arousal, based on their existing knowledge. Furthermore, the least number of participants (58%) identified Snoezelen® as beneficial for improving scholastic performance.

Table III: Participants knowledge of diagnosis suitable for intervention in the Snoezelen® room

	N = 30 n	%
ADHD	28	93.3
Cerebral Palsy	14	46.7
ASD	24	80
Down Syndrome	13	43.3
Dyslexia	20	66.7
Learning difficulties	24	80
Sensory integration difficulties	27	90
Emotional difficulties	28	93.3
Speech related difficulties	17	56.7
Other	4	13.3

Based on their previous knowledge, the participants report on the diagnoses they believe are suitable to receive occupational therapy intervention in the Snoezelen® room (Table III, above). Emotional difficulties (93.3%), ADHD (93.3%) and sensory integration difficulties (90%) were selected as most suitable. Cerebral Palsy (46.7%) and Down syndrome (43.3%) were selected as the least suitable.

Table IV: Participants knowledge of age groups suitable for intervention in the Snoezelen® room

	N = 30 n	%
0 – 12 months	5	16.7
13 months – 6 years	18	60
7 – 12 years	30	100
13 – 18 years	18	60
19 – 25 years	13	43.3
26 years and older	13	43.3

In Table IV (above) the age group that was selected as the most suitable for intervention in the Snoezelen® room was 7 to 12 years, as 100% of the participants selected this age group. 60% of the participants selected age groups from 13 months to 6 years and 13 to 18 years. The age group of 0 to 12 months was selected as least suitable (16.7%).

Perceptions of the impact of the Snoezelen® room

The results of this section are presented according to the number of participants who answered the questions. The percentages do not reflect 100% since some participants did not answer all questions. Most of the participants (86.7%) reported that there are no differences in gender with respect to the changes observed after the occupational therapy intervention in the Snoezelen® room. Twenty-nine participants affirmed that they believe it is beneficial for schools to have a Snoezelen® room on their campus.

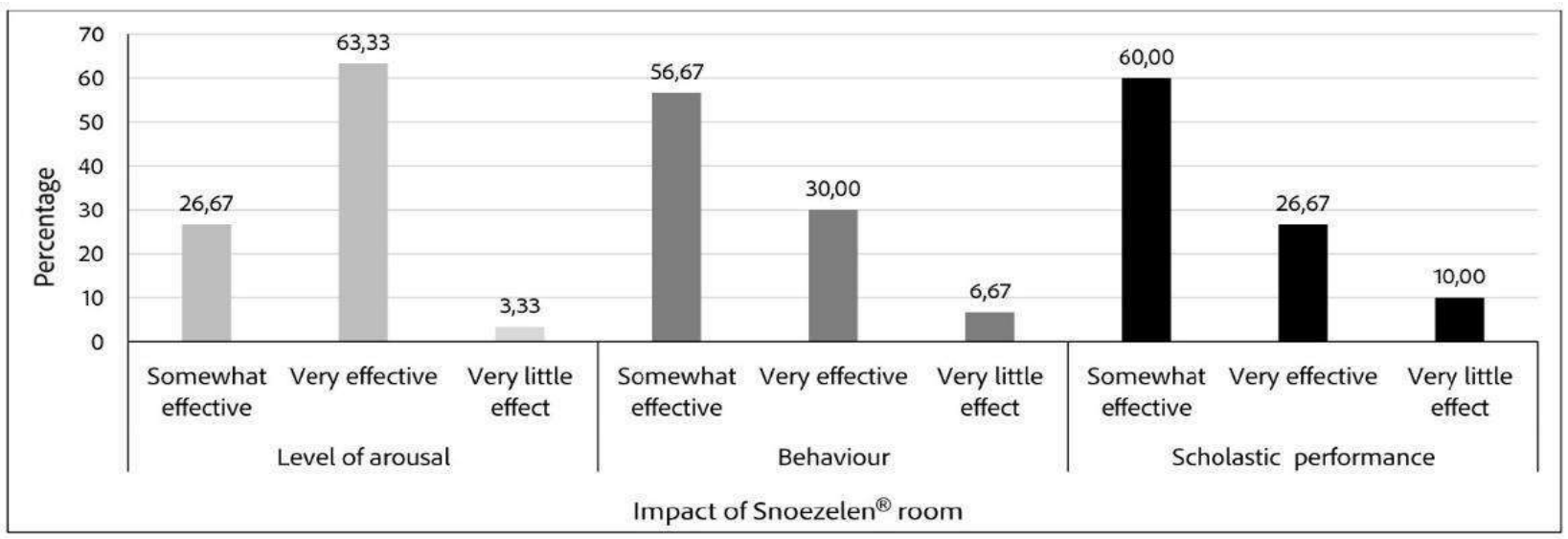

Figure 2: Participants perception of the impact of the Snoezelen® room on level of arousal, behaviour, and scholastic performance (n=28)

As can be seen in Figure 2 (page 5), the total impact of occupational therapy in the Snoezelen® room was perceived to be significantly better for improving a child's level of arousal (Chi squared 38.78, p =0.001) with 63% of the participants indicating 'very effective'. A higher percentage of participants reported that it was 'somewhat effective' for both behaviour (57%) and scholastic performance (60%).

The level of change, as well as frequency and duration of change of level of arousal, behaviour, and scholastic performance is shown in Table V (below).

Table V: Participants perception of the level, duration, and frequency of change in arousal, behaviour, and scholastic performance following occupational therapy intervention in the Snoezelen® room.

	Level of change			Frequency of change			Duration of change		
	n (%)								
Arousal	**Just right**	**Fast**	**Slow**	**Some-times**	**Always**	**Never**	**Hours**	**Days**	**Minutes**
Level of Arousal	28 (93.33)	1 (3.33)		24 (80.00)	4 (13.33)		20 (66.67)	6 (20.00)	1 (3.33)
Behaviour	**Improves**	**Stays the same**	**Become worse**	**Some-times**	**Always**	**Never**	**Hours**	**Days**	**Minutes**
Classroom disturbance	20 (66.67)	5 (16.67)	1 (3.33)	19 (63.33)	5 (16.67)		17 (56.67)	2 (6.67)	2 (6.67)
Impatience	18 (60.00)	8 (26.67)		16 (53.33)	6 (20.00)		13 (43.33)	1 (3.33)	6 (20.00)
Disrespect-defiance (mood changes)	14 (46.67)	10 (33.33)	1 (3.33)	17 (56.67)	4 (13.33)		12 (40.00)	4 (13.33)	5 (16.67)
External blame	11 (36.67)	13 (43.33)		15 (50.00)	5 (16.67)		11 (36.67)	6 (20.00)	2 (6.67)
Achievement anxiety (meltdowns)	20 (66.67)	4 (13.33)		11 (36.67)	7 (23.33)		15 (50.00)	2 (6.67)	1 (3.33)
External reliance (needs assistance)	13 (43.33)	11 (36.67)		14 (46.67)	7 (23.33)		14 (46.67)	3 (10.00)	4 (13.33)
Comprehension (cooperative, engaging)	11 (36.67)	14 (46.67)		12 (40.00)	9 (30.00)		15 (50.00)	5 (16.67)	1 (3.33)
Inattentive-withdrawn	20 (66.67)	5 (16.67)		17 (56.67)	4 (13.33)		17 (56.67)		3 (10.00)
Irrelevant responsive-ness	17 (56.67)	8 (26.67)		14 (46.67)	5 (16.67)	1 (3.33)	13 (43.33)	4 (13.33)	2 (6.67)
Creative initiative (self-confidence)	16 (53.33)	9 (30.00)		14 (46.67)	6 (20.00)	1 (3.33)	9 (30.00)	8 (26.67)	2 (6.67)
Need closeness to teacher	12 (40.00)	13 (43.33)		15 (50.00)	4 (13.33)	1 (3.33)	9 (30.00)	2 (6.67)	7 (23.33)
Mean % of behavioural subtests	**(52.12)**	**(30.30)**	**(6.67)**	**(49.70)**	**(18.73)**	**(3.33)**	**(43.94)**	**(15.67)**	**(7.58)**
Scholastic Performance	**Improves**	**Stays the same**	**Becomes worse**	**Sometimes**	**Always**	**Never**	**Hours**	**Days**	**Minutes**
Academic	16 (53.33)	9 (30.00)		14 (46.67)	6 (20.00)	1 (3.33)	8 (26.67)	7 (23.33)	5 (16.67)
Cognitive skills	19 (63.33)	6 (20.00)		16 (53.33)	3 (10.00)		9 (30.00)	6 (20.00)	2 (6.67)
Executive functioning skills	20 (66.67)	5 (16.67)		17 (56.67)	3 (10.00)				
Mean % of scholastic achievement subtests	**(61.11)**	**(22.22)**		**(52.22)**	**(13.33)**	**(3.33)**	**(28.33)**	**(21.67)**	**(11.67)**
p-value	**0.001**	**0.001**		**0.009**	**0.566**		**0.003**	**0.574**	**0.101**

Level of Change

The change in level of arousal was perceived by a significantly higher percentage (93%) of participants (n = 28, Chi-squared 13.52, df = 2, p = 0.001) to improve after occupational therapy in the Snoezelen® room, followed by scholastic performance (61%) and lastly, behaviour (52%), indicating that overall performance in the external environment improved. A significantly higher percentage of participants felt that behaviour (30%) and scholastic performance (22%) remained the same (Chi squared 20.98, p =0.001) compared to the percentage of participants who thought

the same for level of arousal (3%). Only behaviour was seen to deteriorate by 6% of participants. At least two thirds of the participants perceived certain aspects of behaviour to improve after occupational therapy in the Snoezelen® room and these were classroom disturbance, impatience or impulsivity, achievement anxiety (meltdowns) and inattentive withdrawal. Similar results were seen of cognitive and executive functioning skills under scholastic performance.

Frequency of change

The frequency of change of level of arousal was perceived by a high percentage of participants (80%) to change sometimes, with 13% of participants reporting change always occurred. Regarding the frequency of change in behaviour after occupational therapy in the Snoezelen® room, 49.70% of the participants noted change sometimes and 18.73% noted change always. Scholastic performance was observed to change sometimes by 52.22% of the participants and always by 13.33% of the participants. Only 3.33% of the participants noted that scholastic performance never changes after occupational therapy in the Snoezelen® room. Some aspects of behaviour were perceived by more than half of the participants to change, sometimes, after intervention, and these included classroom disturbance, impatience, external blame, inattentive-withdrawal, and need for closeness to the teacher, as well as cognitive and executive functioning skills under scholastic performance. Lower percentages of participants reported that changes always occur.

Duration of Change

Most of the participants (66.67%) reported the level of arousal of children to change for hours after the occupational therapy intervention in the Snoezelen® room. The change in level of arousal was observed for days by 20% of the participants and for minutes by only 3% of the participants. Similarly, 43.94% of the participants noted change in behaviour for hours, 15.67% noted change for days, and 7.58% for minutes. Regarding scholastic performance, 28.33% of participants noted a change for hours, 21.67% for days and 16.67% for minutes. The highest reported changes observed were for hours, which included level of arousal and behavioural aspects such as classroom disturbance, achievement anxiety, comprehension and inattentive-withdrawal.

Level of change and grade

The association between the grade and the total level of change was determined by point biserial correlations in Table VI (below). 'Total change in arousal, behaviour, scholastic' displayed a weak positive correlation with Grade 1 ($r(29) = 0.274$, $p = 0.150$) and Grade 2 ($r(29) = 0.266$, $p = 0.162$), however these were not statistically significant. Therefore, the change due to occupational therapy in the Snoezelen® room was not strongly associated with any particular grade.

Table VI: Correlations of impact scores

Variable 1	Variable 2	Statistic			
		Correlation	Count	Lower C.I.	Upper C.I.
Behaviour Impact	Level of Arousal Impact	0.60	27	0.28	0.80
	Behaviour Impact	1.00	28		
	Scholastic Impact	0.70	28	0.44	0.85
	Total Impact	0.90	28	0.80	0.95
Level of Arousal Impact	Level of Arousal Impact	1.00	28		
	Behaviour Impact	0.60	27	0.28	0.80
	Scholastic Impact	0.48	28	0.14	0.73
	Total Impact	0.82	28	0.65	0.91
Scholastic Impact	Level of Arousal Impact	0.48	28	0.14	0.73
	Behaviour Impact	0.70	28	0.44	0.85
	Scholastic Impact	1.00	29		
	Total Impact	0.86	29	0.73	0.93
Estimation is based on Fisher's I-to-Z transformation ** Correlation is significant at the 0.01 level (2-tailed)					

Table VI (adjacent) shows the correlations between the total impact of occupational therapy in the Snoezelen® room on level of arousal, behaviour, and scholastic performance of a child, as well as the impact in these areas individually. It was found that 'total impact' exhibited strong positive correlations with 'level of arousal impact' $r(28) = 0.821$, $p < 0.001$, 'scholastic impact' $r(29) = 0.863$, $p < 0.001$ and 'behaviour impact' $r(28) = 0.901$, $p < 0.001$. A strong positive correlation was observed between 'behaviour impact' and 'scholastic impact' $r(28) = 0.698$, $p < 0.001$. Moderately strong positive relationships were observed between 'behaviour impact' and 'level of arousal impact' $r(27) = 0.597$, $p = 0.001$ and 'level of arousal impact' and 'scholastic impact' $r(28) = 0.483$, $p < 0.001$. All these scores were statistically significant.

DISCUSSION

Much research has been done on positive changes in child performance within the MSE [14,26–28]. However, little research has been done on the transfer of these changes to other environments, such as the school environment[3]. This study aimed to review the perceptions of teachers and therapists about the use of MSE by identifying changes in the level of arousal, behaviour, and scholastic performance of children that they have observed within the classroom, therapy, or general school environment, after occupational therapy in the Snoezelen® room. For this study, it is assumed that occupational therapy sessions in the Snoezelen® room would follow an SIT approach as this reference frame coincides with the sensory rich nature of the MSE[36]. This study confirmed that teachers and therapists do observe changes in children's performance in other environments after occupational therapy in the Snoezelen® room. Strong positive and significant correlations were found between the total impact of the Snoezelen® room and the level of arousal of the children, as well as their behaviour and their scholastic performance, suggesting that changes in these areas are perceived by teachers and therapists as related. Of the total 30 female participants, the majority (60%) had known about the Snoezelen® room and taught or given therapy to children who receive intervention in the Snoezelen® room for around 6 to 10 years, indicating that they have had some prior exposure to the concept. This also highlights the fact that Snoezelen® is a relatively new concept in school environments, where the literature shows a large increase in the use of MSEs for children with learning disabilities in the past 15 years[12,22]. Furthermore, participants had a diverse range of professional backgrounds and extensive experience working with children, as 73% of participants had been doing so for more than 10 years. Their years of experience may have contributed to their knowledge and perceptions of the Snoezelen® room. Teachers' and therapists' diverse professional backgrounds, extensive experience, and understanding of suitable age groups and diagnoses align with the evidence commonly found in MSE research.

In a study by Graham[31] in 2019, it was determined that students with special needs who attended schools with an MSE on campus showed greater improvements in academic performance and behavioural performance compared to their peers at schools without an MSE on campus[31]. Interestingly, 96.7% of the participants in this study affirmed that they believe it is beneficial for schools to have a Snoezelen® room on their campus; however, 'improving classroom participation' was their least reported benefit of intervention in the Snoezelen® room. In fact, the highest reported category of benefits of the Snoezelen® room was the improvement of the level of arousal, followed by behaviour, and lastly, scholastic performance. This indicates that a substantial majority of teachers and therapists perceive that occupational therapy in the Snoezelen® room has a positive impact on arousal levels of children. Interestingly, participants found that the Snoezelen® room is most suitable for children diagnosed with ADHD, emotional difficulties, and sensory integration difficulties rather than diagnoses that are

typically known to impact school performance, such as dyslexia or learning disabilities[7]. Children with the former three diagnoses are all at risk of having trouble with regulation. There is existing evidence that Snoezelen® can affect one's level of arousal, particularly related to changing levels of relaxation, emotion, and well-being through the provision of the correct amount of sensory input[22]. Ultimately, through being in a controlled sensory environment, children learn to monitor, maintain, or change their state of arousal to increase participation and performance in the classroom, in other words, learn to self-regulate[20,37]. This study found that the children were observed to have a 'just right' level of arousal for hours upon returning to the classroom after the occupational therapy intervention in the Snoezelen® room[37]. Although all children naturally have changes in their level of alertness throughout the day, children with sensory integration difficulties find it more challenging to remain alert and focused consistently throughout the school day[38]. The lack of ability to self-regulate or maintain one's level of arousal has been shown to impact a child's participation in the classroom. In 2004, research by Raver[39] highlighted the fact that self-regulation in early development is as important as learning to read[39]. In fact, children who have better developed regulation skills show increased performance in academic activities such as maths and literacy[40]. Additionally, Post, Boyer, and Brett[41] define self-regulation as a learning tool that is highly predictive of academic success[41]. Similarly, in this study, a positive correlation was found between Snoezelen's® impact on a child's level of arousal and its impact on a child's scholastic performance. This suggests that changes in scholastic performance and arousal are perceived by teachers and therapists as being related. This evidence highlights two contributions to this growing body of research. First, the positive correlations suggest that as a child's level of arousal improves, so would their scholastic performance. Second, the sensory input a child receives through occupational therapy intervention in the MSE has a positive impact on improving the level of arousal of a child, which is then transferred to an external environment such as the classroom. Therefore, occupational therapy in the Snoezelen® room improves a child's scholastic performance through improving their level of arousal. Most participants (61%) reported that the overall scholastic performance of children improved after the occupational therapy intervention in the Snoezelen® room for hours upon return to the classroom. Most participants (80%) observed that this change occurs sometimes. At least two-thirds of the participants reported that cognitive skills such as attention and following instructions, and executive functioning skills such as problem-solving and pace had improved in an external environment following the intervention in the Snoezelen® room, while only half of the participants noted improvement in academic skills such as reading and handwriting[42,43]. However, the frequency of these changes was not explicit. This combination of evidence indicates that a child's ability to maintain their level of arousal is essential for their academic success, specifically their cognitive and executive functioning skills. This also shows that the participants had relatively good prior knowledge of the Snoezelen® room.

Researchers reason that the development of self-regulation skills is vital for younger children, as this lays the foundation for early childhood education and intersects with all aspects of behaviour and performance output[20,40]. Children who can self-regulate are more likely to stay focused, take turns, and follow instructions, and are less likely to show impulsivity or aggressive behaviour[40]. In this study, more than half the participants (52%) reported that the overall behaviour of children improved after the occupational therapy intervention in the Snoezelen® room upon returning to the classroom. Participants perceived changes in children's behaviour to occur sometimes and last for hours. This indicates that most teachers and therapists believe that occupational therapy in the Snoezelen® room has a positive impact on children's behaviour upon returning to the classroom. Examples of behaviour that at least two-thirds of participants reported to improve included classroom disturbance, impulsivity, achievement anxiety, and inattention or withdrawal[44]. However, changes in these behaviours were most often only observed sometimes. One recent study by Graham[31], explored the use of sensory rooms for students with disabilities[31,32]. The study determined that teachers reported the highest improvement in the focus of the children. Furthermore, 57.5% of teachers reported improved following of instructions, 38.8% found that students were better on task, 55% observed fewer negative behaviours, and 27.5% found that students had higher levels of motivation after the use of the MSE[31]. Evidence from both Graham's study and this study, suggests that MSEs contribute to improving behaviour, according to the perceptions of teachers and therapists of children in external environments. A strong positive correlation was found between the impact of Snoezelen® in improving the level of arousal and its impact in improving behaviour. Similarly, to the above-mentioned findings, this suggests that occupational therapy in the Snoezelen® room contributes to improving a child's behaviour in the classroom through improving their level of arousal. However, this study also found a strong positive correlation between Snoezelen's® impact on behaviour and its impact on scholastic performance. Thus, in agreement with Ashburner et al.[19], acquiring self-regulation skills in early years lays the foundation for positive classroom behaviour, and thus academic performance later.

On the topic of targeting these areas of development 'in the early years', it is beneficial to mention the relevance of neuroplasticity and early intervention in relation to school performance. Young children respond well to SIT because there is still an opportunity for neuroplasticity. This alludes to the fact that brain function is not permanent and can be changed. As children grow, the neuroplasticity decreases. Recent evidence suggests that changes in brain structure due to neuroplasticity have been observed from three to five months of age, with the process at highest maturation in the first 8 years of life[11]. In this study, the most common grades that teachers and therapists interacted with were Grade 2 and Grade 3, among Grade R to Grade 7. There was a weak positive correlation between Snoezelen's® total impact on a child's level of arousal, behaviour and scholastic performance and Grade 1, as well as Grade 2. However, this was not statistically significant. Making use of SIT in school-based occupational therapy intervention has been shown to be beneficial, as these aims can be more easily met in younger children whose brains can still adapt due to neuroplasticity[8]. Thus, with early intervention, specifically related to SIT, being a popular topic among research, it may be beneficial to continue to use the Snoezelen® room specifically for children in Grade 1 and Grade 2. However, more importantly, it poses questions for future studies on the impact of occupational therapy in the Snoezelen® room, for children under school age (6 years old), as well as how this type of intervention can impact their schooling performance if it were introduced earlier in development[45].

Based on the findings of this study, it could be foreseen that having a Snoezelen® room on school campuses would be beneficial for some pertinent reasons. Since strong positive and significant correlations were found between the total impact of the Snoezelen® room and the level of arousal of children, as well as their behaviour and their scholastic performance, it is evident that each component should not be targeted in isolation from the others, to achieve therapy or school-based aims. Importantly, a child's ability to self-regulate and maintain their level of arousal has been shown to be fundamental. Subsequently, the question around 96.7% of participants affirming that it is beneficial for schools to have a

Snoezelen® room on their campus, despite, 'improving classroom participation' being their least reported benefit of the Snoezelen® room, can be clarified. Consistent with extensive research surrounding self-regulation of children, acquiring self-regulation skills in the early years lays the foundation for positive classroom behaviour and academic performance later[19]. Specifically, in relation to the findings of this study, the self-regulation skills a child develops through SIT occupational therapy in the Snoezelen® room. Therefore, participants essentially alluded to the results of this study that it is beneficial to have a Snoezelen® room on school campuses not necessarily to directly enhance scholastic performance, but to improve it and the children's classroom behaviour, through improving their level of arousal. Furthermore, by having a Snoezelen® room on school campuses, school-based occupational therapy aims can be more readily met in sensory-controlled, non-distracting environments. Additionally aims can be more readily met in schools for younger children whose brains can still adapt due to neuroplasticity[8].

Limitations of the study

This study had a narrow sample size. Due to this sample size, the generalisation of these findings to other settings and the larger context of South Africa should be done with caution. It is not known if the research survey reached the whole potential population and only 30 responses were used. This could be due to participants having received the survey, but not completing it. These factors may have caused a non-response bias which could have skewed the results. Additionally, survey pilot testing was not completed due to time constraints.

This study presented generalised findings of the impact of the Snoezelen® room on children in Grade R to Grade 7. However, many participants reported in the survey comment box that the selected questions were difficult to answer confidently as the information may be applied differently to different children, and different children may respond differently to therapy in the Snoezelen® room. Additionally, the information gathered through participants' perceptions is subjective. Therefore, it is recommended that further research be carried out to explore the impact of the Snoezelen® room, where findings can be more child-specific and based on age, diagnosis, or additional demographic information and changes can be objectively measured.

CONCLUSION

The diverse professional background of teachers and therapists, extensive experience, and understanding of suitable age groups and diagnoses align with the principles and recommendations commonly found in MSE research. In this study, the impact of occupational therapy using an SIT approach in the Snoezelen® room is highlighted. Since strong positive and significant correlations were found between the total impact of the Snoezelen® room and the level of arousal of children, as well as their behaviour and their scholastic performance, it is evident that each component should not be targeted in isolation from the others, to achieve maximum therapy or school-based aims. Importantly, a child's ability to self-regulate and maintain their level of arousal has been shown to be fundamental. Although all areas were shown to improve in an external environment after occupational therapy intervention in the Snoezelen® room, a substantial majority of teachers and therapists perceived that occupational therapy in the Snoezelen® room has a positive impact on improving child behaviour and scholastic performance, through improving their level of arousal. Consistent with extensive research on self-regulation in children, the acquisition of self-regulation skills in the early years lays the foundation for positive classroom behaviour and academic performance later.

Acknowledgements

Due acknowledgement to the schools and participants in the study.

Author contributions

Mika Solomon completed the study towards a postgraduate degree. She was responsible for the conception and design of the research, the acquisition, analysis, and interpretation of data. Drafting the article and revising it critically for important intellectual content. She ensured final approval of the version to be submitted. Marica Botha revised and supervised the research from initial stage to final article. She was involved in the editing of the article throughout. She was also accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work were appropriately investigated and resolved.

Conflict of interests

The authors have no conflict of interest to declare.

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[RAPID REVIEW]

An exploration of undergraduate health science students' experiences of blended learning andragogy: A rapid review

AUTHORS
Iesrafeel Abbas[a]
https://orcid.org/0000-0001-5695-3976
Zarina Syed[a]
https://orcid.org/0000-0002-5849-9524
*Khanya Lujabe[b]
https://orcid.org/0009-0006-4562-8442
*Zintle Mdleleni[c]
https://orcid.org/0009-0002-1574-7898
*Mapule Mokoto[d]
https://orcid.org/0009-0000-2983-9270
*Bridget Pama[e]
https://orcid.org/0009-0000-9612-2587
*Baby Sinelizwi Somdaka[f]
https://orcid.org/0009-0001-2624-9723

AFFILIATION
[a]Division of Occupational Therapy, Department of Health and Rehabilitation Sciences, University of Cape Town, Rondebosch, Western Cape, South Africa
[b]Disa Primary School, Boesak Street, Imizamo Yethu, Western Cape, South Africa
[c]Karin Weskamp Occupational Therapists, Mediclinic Constantiaberg, Burnham Road, Plumstead, Western Cape, South Africa
[d]Epic Medico Legal, Unit 2, Cambridge Office Park, Highveld Technopark, Centurion, South Africa
[e]Bedford Provincial Hospital, 4 Maitland Street, Bedford, Eastern Cape, South Africa
[f]Protean Medico-Legal, 154 Rivier Street, Sunnyside, Pretoria, South Africa

*Final year students at Division of Occupational Therapy, Department of Health and Rehabilitation Sciences, University of Cape Town, South Africa at the time of the review,

CORRESPONDING AUTHOR
Iesrafeel Abbas
Email: iesrafeel.abbas@uct.ac.za

KEYWORDS
hybrid teaching, higher education institutions, student engagement, academic performance, online learning platforms, quality education

HOW TO CITE THIS ARTICLE
Abbas I, Syed Z, Lujabe K, Mdleleni Z, Mokoto M, Pama B, Somdaka BS. An exploration of undergraduate health science students' experiences of blended learning as andragogy: A rapid review. *South African Journal of Occupational Therapy.* Vol5 4 No 3.December 2024
DOI: https://doi.org/10.17159/2310-3833/2024/vol54no3a7

ARTICLE HISTORY
Received: 17 May 2024
Reviewed: 20 June 2024
Revised: 17 July 2024
Accepted: 18 July 2024

EDITOR
Hester M van Biljon
https://orcid.org/0000-0003-4433-6457

DATA AVAILABLITY
Upon reasonable request from the corresponding author.

FUNDING
No funding was received for this review.

ISSN On-Line 2310-3833
ISSN Print 0038-2337

ABSTRACT

Introduction: Blended learning is defined as the combined use of in-person and online learning, through interactive multimedia and face-to-face engagement with curriculum content. Recently, higher education institutions have experienced major inevitable changes in teaching and learning approaches, sparking interest in the exploration of these approaches- including blended learning.
Aim: To explore undergraduate health sciences students' experiences of blended learning.
Method: A rapid review of articles published in English was conducted between the 18th and 22nd February 2022, using the following databases: Pubmed, Ebscohost, Web of Science, Scopus, Africawide Information, and CINAHL. Articles found were exported to Endnote, version 20.2.1. The Preferred Reporting Items for Systematic Reviews and Meta-analysis flow chart was used to document the search. The Critical Appraisal Skills Programme was used to appraise the articles, which were analysed using thematic analysis.
Findings: Eight quantitative articles were analysed and categorised on the hierarchy of evidence. Three themes emerged: 1. Student engagement and perceptions of blended learning, 2. Student academic performance, and 3. Challenges of blended learning.
Conclusion: Positive experiences of blended learning were reported, including: significant improvement of student academic performance, higher levels of satisfaction and an increased student engagement. Ineffective online learning platforms and/or technological devices resulted in students experiencing anxiety and frustration.

Implications for practice
- Blended learning may be a feasible option to maintain and enhance students learning experience.
- Students' academic performance could improve with blended learning
- Blended learning could increase students' engagement within the andragogic field.

INTRODUCTION

A current notable interest exists in the investigation of eclectic teaching and learning methods used while combining traditional face-to-face with online methods of teaching and learning for students in higher education[1]. Many higher education institutions have recognised the need for students to shift from traditional methods of learning to a more creative, blended learning approach. Blended learning incorporates the conventional learning style with a synchronous and/or asynchronous online learning component. Blended learning significantly differs from that of online learning, where the face-to-face component does not exist[2]. By adopting the blended learning approach, students are innovatively exposed to curriculum content through the use of digital resources such as online lectures, quizzes, and narrated PowerPoint presentations to further their knowledge and consolidate their understanding of content within their curricula[3]. Blended learning thus encourages a

self-directed learning environment that grants continual access to information, knowledge, and practice tools[4].

With blended learning in effect globally, the need to evolve with changes within higher education is pivotal to curriculum planning. Blended learning has the potential to enhance students' learning experience, improve students' motivation, is an effective way for achieving learning objectives[5], and is cost effective[6]. Borba et al.[7] emphasise that as an advantage of blended learning, students' studying time is more flexible, allowing them to independently manage their time[7]. In contrast, Liu et al.[2] assert that, unless successfully planned and implemented, blended learning presents with limitations due to the dependence on technological resources or tools through which content is delivered[2]. Additionally, the expense of preparing the content and continuous costs for platform maintenance and updating may contribute further to challenges being experienced as a result of blended learning[2].

Due to a lack of exploration of blended learning amongst undergraduate health science education, a need to synthesise and thoroughly explore recent literature regarding students' experiences of blended learning is imperative. Our review aimed to explore undergraduate health science students' experiences of blended learning as andragogy. The review was guided by the following research question: What is the effectiveness of blended learning amongst undergraduate students in health science education? As such, this review highlights and offers insights into the strengths and limitations of the blended learning approach as andragogy.

METHOD

Study Design

A rapid review is a resource-efficient, and time-sensitive approach to knowledge synthesis[8]. The PICOT format[9] was used as a guide to formulate the research question. The Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) flow diagram[10] was utilised to keep record of the articles (see Figure 1 , page 3) that were included in the review process and ensure methodological rigour[11].

Search Strategy

The reviewers collaborated and conducted a search of article published in English, between 18th-22nd February 2022, using the following databases: Pubmed, Web of Science, Scopus, Africawide Information via Ebscohost and CINAHL via Ebscohost. The string used included the following search and Boolean terms: Blended learning OR hybrid learning OR computer aided learning OR integrated learning AND Undergrad* OR Bachelor's degree OR First degree OR baccalaureate OR Health Sciences OR Medical Sciences OR Allied Health Sciences (Education, Medical, Undergraduate [MeSH Terms] - only used on PubMed) AND Effectiveness OR Efficacy OR Usefulness (Outcome Assessment, Health Care [MeSH Terms] - only used on Pubmed) AND Tertiary institution OR Higher education OR Higher learning institutions.

Study Selection and Screening Process

The results found on the above-mentioned databases were exported to EndNote version 20.2.1, where duplicates were excluded. The remaining articles were then exported to Rayyan where the inclusion and exclusion criteria (see Table I adjacent) were applied for the title and abstract screening process. Articles were excluded based on the relevance of their title to the research question. Thereafter, the selected articles were divided amongst the researchers for abstract screening. The inclusion and exclusion criteria were once again applied in full-text screening to conclude the screening process and finalise the studies selected. These studies were critically discussed and evaluated for confirmation of inclusion amongst the researchers.

Table I: Inclusion and Exclusion Criteria

Inclusion	Exclusion
Qualitative and quantitative articles published from January 2017 to February 2022 were considered (a five year period)	All grey literature and articles published before 2017 were not considered
Published, peer-reviewed literature, written in English	Articles that do not align with blended learning as a concept, and is not related to the research question
Students that are registered for undergraduate health sciences education at a higher education institution.	Postgraduate students and students that are registered for education programs outside of health sciences education

ASSESSMENT OF METHODOLOGICAL QUALITY

Risk of Bias Appraisal

The researchers collectively appraised the selected articles in an effort to increase the confirmability of the rapid review and reduce its risk of bias11. Critical appraisal tools was applied to identify the risk of bias. This review made use of the Critical Appraisal Skills Programme (CASP) checklists[12] and the Mixed Method Appraisal Tool (MMAT)[13]. This provided a systematic process through which the strengths and weaknesses of the research studies were identified.

Data Extraction

The researchers used a data extraction table that included the following criteria: author, date, design, level of evidence, and key findings. The relevant data to the research question was unearthed and tabulated below, see Table II (page 3).

Data Analysis

Thematic analysis[14] was used to analyse the articles for review and focused on identifying common themes that answered the research question. Themes were formulated following the identification of common codes that addressed specific constructs in line with the research question and aim. Thereafter, the themes were used to synthesize the findings leading to the discussion and conclusions[14].

Ethics

No ethical clearance of this study was necessary as the article is a review of published literature.

RESULTS

Study Selection and Rationale

The total number of articles found from the initial search was 1018. From this, 87 duplicates were found on EndNote version 20.2.1 and excluded from the review, resulting in 931 articles. These articles were screened by title and abstract, and subsequently resulted in 34 articles eligible for full-text screening. These 34 articles were then screened and evaluated based on the relevance of each article to the research question and aim. From this, 15 articles remained after full-text screening. These remaining 15 articles underwent critical appraisal, of which eight of the articles were found to be trustworthy, valid, reliable, and relevant to the review. Therefore, eight articles were included in the rapid review and knowledge synthesis process (see Figure 1 page 3).

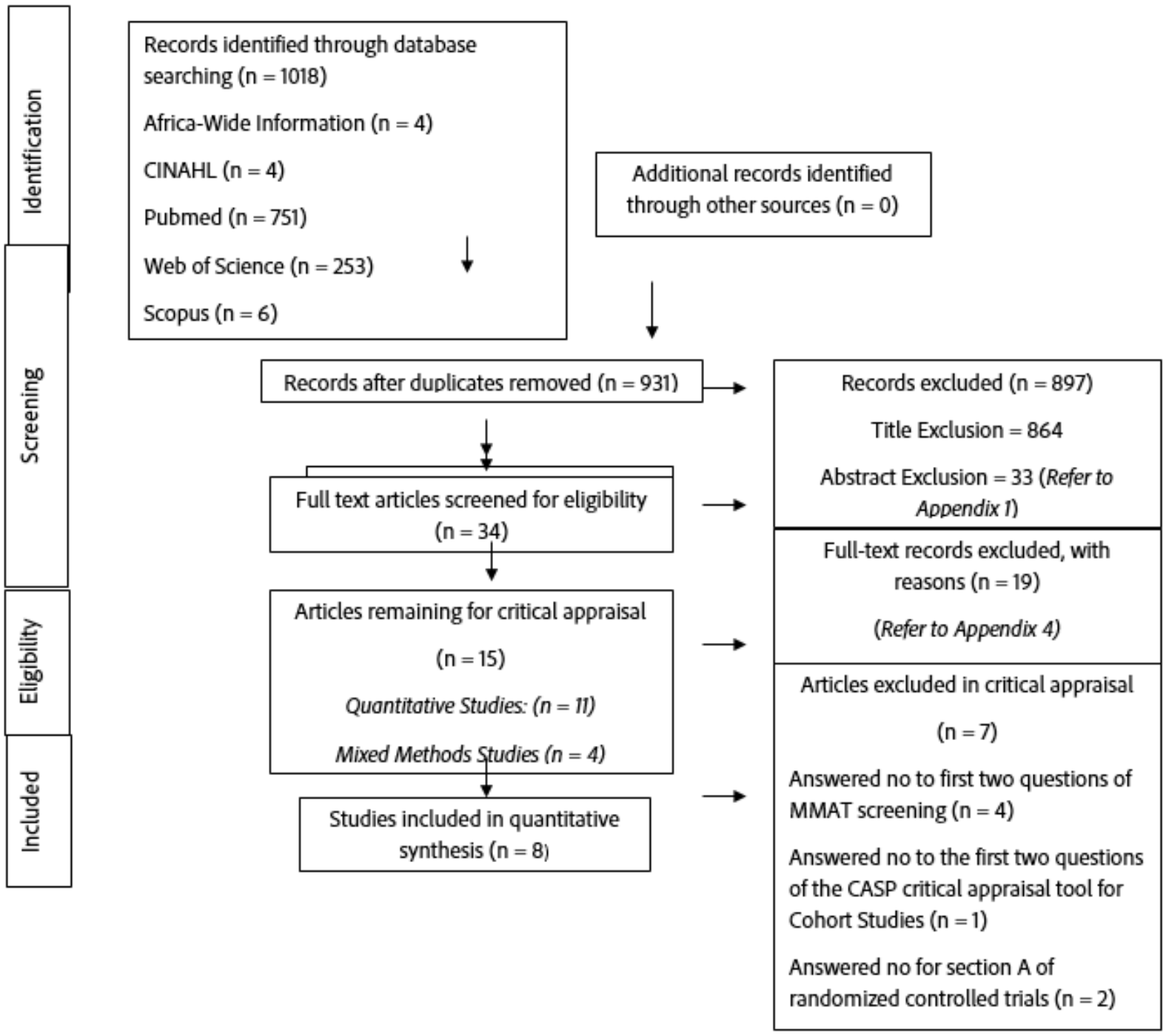

Figure 1: PRISMA Flow Diagram

Data Extraction/Characteristics of Included Studies

All eight articles were quantitative studies. One study was a prospective analytical intervention study, three were quasi-experimental studies, one non-randomised experimental trial, one longitudinal design, one cross sectional design and one randomised controlled trial. These articles were situated globally, namely: Saudi Arabia, Palestine, Norway, China, Singapore, Spain, Korea, and South Africa. The characteristics of the various studies are outlined in the data extraction Table II below.

Table II: Data Extraction

Author (year)	Title	Design	Level of evidence	Key findings
Alsharif et al. (2020)[15]	Effectiveness of WhatsApp as a part of a hybrid learning environment: An opportunity for post-COVID-19 pandemic pedagogy	Prospective analytical intervention study	Quantitative: Level (III-2) - Cohort study	Blended learning improved the academic performance of students compared to traditional learning environments
Alshawish et al. (2021)[16]	Comparison of blended versus traditional classrooms among undergraduate nursing students: A quasi-experimental study	Quasi-Experimental Study	Quantitative: Level (III-2) Cohort Study	Blended learning approach improved students' outcomes and that their level of satisfaction was higher Blended learning can be a viable option to maintain and increase students' satisfaction. Innovative environment positively influences students' engagement and success.
Grønlein et al. (2021)[17]	A blended learning teaching strategy strengthens the nursing students' performance and self-reported learning outcome achievement in an anatomy, physiology and biochemistry course – A	Quasi-experimental study	Quantitative: Level (III-2) Cohort Study	Students reported higher satisfaction with the blended learning approach Students scored higher on their national exams with the blended learning approach

Gong et al. (2021)[18]	Application of blended learning approach in clinical skills to stimulate active learning attitudes and improve clinical practice among medical students	Non-randomized experimental trial	Quantitative: Level (III-2) Cohort Study (Merlin et al, 2009)	The student satisfaction survey showed that blended learning was significantly more effective for acquiring relevant knowledge, enhancing student-centered learning and improving clinical practice.
Shorey et al. (2018)[19]	Blended learning pedagogy designed for communication module among undergraduate nursing students: A quasi-experimental study	Pre-test and post-test quasi-experimental design	Quantitative: Level (III-2) Cohort Study	Participants had enhanced satisfaction levels with blended learning pedagogy, better attitudes in learning communication skills, and improved communication self-efficacies
Lozano-Lozano et al. (2020)[20]	A blended learning system to improve motivation, mood state, and satisfaction in undergraduate students: Randomized controlled trial	Two-armed, prospective, single-blind, Randomized Control Trial	Quantitative: Level (II) - Random control trial	The blended learning method had significant improvements in motivation, mood state, and satisfaction compared to traditional teaching.
Yoo et al. (2021)[21]	Adaptations in anatomy education during COVID-19	Quantitative-longitudinal	Quantitative: Level (III-2) Cohort Study	Findings revealed that students preferred online lectures over traditional large group lecture-based teaching because it allowed them to acquire increased self-study time, study according to their individual learning styles, and repeatedly review lecture videos.
Ravat et al. (2021)[22]	Blended teaching versus traditional teaching for undergraduate physiotherapy students at the University of Witwatersrand	Cross-sectional	Quantitative: Level 5: prospective cohort	Blended teaching produced larger positive effect on students' performance in their theoretical examinations compared to the student performance when using traditional teaching methods

Risk of Bias

The quantitative hierarchy by the National Health and Medical Research Council (NHMRC)[23] was used to situate the eight articles according to their position on the hierarchy. These articles were classified as randomized controlled trials and cohort studies. None of the articles found were classified as systematic reviews. Seven studies reflected low bias with only one study displaying moderate risk.

Lozana-Lozana et al.[20] indicated low risk of bias as the participants were randomly assigned to groups using a statistics software as well as a blind evaluator to limit any bias. The study utilized a 5-point Linkert scale as well as a tool specifically designed for the study by two external lecturers who were not involved in the study. Similarly, Ravat et al.[22] displayed various indicators to suggest low bias. This included the 5-point Likert scale in addition to convenience sampling and student exam marks as an objective measure to reduce bias. Articles by Gronlien et al.[17] and Yoo et al.[21] both indicated low risk of bias as a result of the use of objective and subjective measurements. Both these studies included external evaluators to verify examination scores with the use of a 5-point Likert scale. These studies also made use of questionnaires as an additional form of data collection. Low risk of bias was also displayed by studies conducted by Shorey et al.[19] These studies made use of convenience sampling to eliminate selection bias as well as objective measures such as the Blended Learning Satisfaction Scale, the Communication Skills Attitude Scale and validated questionnaires respectively, both studies making use of a 5-point Likert scale to further minimize bias. and Alsharif et al.[15]. These studies made use of convenience sampling to eliminate and validated questionnaires respectively, both studies making use of a 5-point Likert scale to further minimize bias. Alshawish et al.[16] was another study that displayed low risk. The study was thorough in its methodology and analysis with objective measures used, anonymity in relation to evaluations conducted online as the noting of confounding variables that influenced the study results.

The study by Gong et al.[18] unearthed a moderate risk of bias. While the research made use of a 4-point scale formulated by researchers specifically for this study, there was no randomisation of participants since the participants could choose if they wanted to be part of the experimental group or not. This created potential systematic bias.

Synthesis of Results

Analysis of the eight included articles revealed the following themes: 1. *Student engagement and perceptions of blended learning*, 2. *Student academic performance*, and 3. *Challenges associated with blended learning*.

1. Student perceptions and engagement of blended learning

The current review found that undergraduate health science students had overall positive perceptions of blended learning, with high levels of enthusiasm, improved satisfaction levels, and an increase in self-efficacy, motivation and mood[15-20]. In addition, convenience and accessibility to curriculum content was

highlighted as some of the key findings and advantages of blended learning, allowing the students to access the content at their own leisure[16, 18, 21, 22]. In their study, Yoo et al.[21] further emphasized that students were able to repeatedly review the recorded lecture videos, and thus were able to tailor their learning to their needs and pace, ultimately enhancing their self-directed learning experience[15].

Three of the included articles reported that the use of social media, mobile learning applications as well as online resource platforms as part of blended learning contributed to students having positive perceptions of the blended learning approach[15,18,20]. In particular, Lozano-Lozano et al.[20] highlighted that the diversity in the delivery of curriculum content catered to the different learning styles of the students, essentially contributing positive perceptions of blended learning as an approach.

Five of the included articles found that student engagement had improved when using blended learning in comparison to traditional face-to-face approaches[16-19,20]. Students found the blended learning approach to be flexible, making it more convenient for their learning experience and understanding of content[15,16,21], resulting again in improved attitudes towards learning.

Students reported overall satisfaction with knowledge acquisition[18], as students were more actively engaged with their academic expectations when using the blended learning approach, both in the classroom and in online discussion activities[16-18,22].

2. Student Academic Performance

The current review found that blended learning was more effective and had consistently superior effects on knowledge acquisition and health science education outcomes when compared to traditional face-to-face approaches[15-18,21,22]. Students felt as though they were able to understand and conceptualise key concepts easier when using the blended learning approach[22]. Similarly, it found that students using the blended learning approach had a better understanding of theoretical content and obtained significantly higher theoretical marks as compared to those using the traditional face-to-face approach[15-17,21,22]. However, there was no significant difference in these students' clinical performance and marks, indicating that the transfer of theoretical knowledge to the clinical platform was not improved by the higher theoretical marks[18,21,22].

3. Challenges of blended learning

Some studies found that lecturer availability was one of the key challenges experienced by students using the blended learning approach. Since students were able to access curriculum content at their own time, they expected lecturers to be available for assistance at all times[15,19]. Some students found using the blended learning approach more difficult to navigate than using traditional approaches[16]. As a result of limited class time and the necessary clinical skills required within health science education, a lack of opportunity existed for students to practice these skills in a face-to-face manner, with students being expected to set aside time for this in their own learning environment[18]. However, Gong et al.[18] recognised the above as a challenge and prosed that methods within the curriculum be introduced to assist students in mastering their clinical skills.

Although one of the advantages of using blended learning was the use of technological devices[20], some students experienced anxiety and high levels of frustration when online learning platforms and/or technological devices were not working sufficiently[17], essentially hindering their learning process[15,19]. Similarly, connectivity challenges interrupted students' ability to learn, however since they were able to revisit the content at any time on various platforms they were able to overcome these challenges[22].

DISCUSSION

Higher levels of student satisfaction, increased student engagement in curriculum activities and an improved academic performance were found to support the use of blended learning. The current review found that blended learning provides students with an opportunity to learn in more conducive environments that aided their learning experience and enhanced their academic performance[15,16,22].

Geng et al.[24] found that blended learning provides students with the opportunity to be more self-directed in their learning process. Blended learning's integrated approach allows for student learning to go beyond the classroom environment, as students tailor their learning needs to their learning styles. This contributes to the improvement of student learning outcomes and overall satisfaction and experiences of blended learning[24].

The current review echoes a previous study[25] that highlighted how interactions between students, staff and curriculum influenced engagement with content[21], with technological platforms allowing for the improvement in these interactions[17,20]. Geng et al.[24] further elaborated that communication through these platforms encourages student's engagement and focus, contributing to collaboration between students and lecturers[24]. This collaboration further motivates students to be engaged in the learning process with peers to better consolidate curriculum content[25].

The findings indicated that the use of the internet as part of blended learning is opportune for the students as it is in sync with the current technological era[15,16,20]. The use of smartphones, for example, is considered an effective learning tool for improving academic performance within the blended learning approach[20]. However, it can be argued that some students may experience the use of technology as a disadvantage due to technical challenges[15,21]. Geng et al.[24] concurs with the above about the importance of technology readiness in blended learning. The authors stress that students with higher levels of technology readiness hold a more positive attitude toward technological learning media and platforms for communication. In contrast, students with a sense of discomfort and insecurity in adopting technologies may take a longer time to become efficient users of online learning platforms[25].

CONCLUSION

This review aimed to explore current literature on undergraduate health science students' experiences of blended learning as andragogy. Positive experiences of blended learning among undergraduate health science students was found in the review, as students experienced an improved academic performance and higher levels of engagement when using the blended learning approach. Academic performance and student engagement in curriculum activities were found to be the most significant factors to consider when implementing a blended learning approach. However, the lecturers' perceptions and their level of training when using the blended learning approach could also be explored in future research, as this contributes to the outcomes of blended learning. The review had no qualitative articles included its synthesis, which indicates a gap in literature. As a result, the researchers recommend that future research employ a qualitative approach, allowing for a more meaningful and detailed understanding of the research topic. The findings in this review support the use of blended learning in undergraduate health science education, and therefore suggests that blended learning may be a feasible option to maintain and enhance student satisfaction.

Acknowledgements

Ms Dunyiswa Ngombane for her contribution to the research.

Conflict of interest

The authors have no conflict of interest to declare. All authors agree to the submission of the article to SAJOT.

Author contributions

Iesrafeel Abbas and Zarina Syed provided supervision throughout the research and article writing process, they critically reviewed the data and analysis thereof, and conceptualised the manuscript. Khanya Lujabe, Zintle Mdleleni, Mapule Mokoto, Bridget Pama, and Baby Sinelizwi Somdaka conducted the search, initially analysed the data and took part in the writing of the article seeing it to conclusion. All authors agreed on the final manuscript.

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[INTEGRATIVE REVIEW]

Identifying the gap in assessing activities of daily living in resource-constrained rural settings: An integrative review of existing frameworks and instruments

AUTHORS
*Jennifer Claire McAdam [a]
http://orcid.org/0000-0002-1692-5775
Daleen Casteleijn [b]
https://orcid.org/0000-0002-0611-8662
Denise Franzsen [a]
https://orcid.org/0000-0001-8295-6329

AFFILIATIONS
[a] Department of Occupational Therapy, School of Therapeutic Sciences, University of the Witwatersrand, 3 York Road, Parktown, Johannesburg, South Africa
[b] Department of Occupational Therapy, School of Health Care Sciences, Faculty of Health Sciences, University of Pretoria, Dr Savage Road, Pretoria, South Africa
*PhD occupational therapy candidate at Department of Occupational Therapy, School of Therapeutic Sciences, University of the Witwatersrand, Parktown, Johannesburg, South Africa

CORRESPONDING AUTHOR
Jennifer Claire McAdam
Email: Jenniemcadam.Naude@wits.ac.za

KEYWORDS
ADL assessment instruments, rural rehabilitation, household amenities, epistemic injustice, good health and wellbeing,

HOW TO CITE
McAdam JC, Casteleijn D, Franzsen D Identifying the gap in assessing activities of daily living in resource-constrained rural settings: An integrative review of existing frameworks and instruments. *South African Journal of Occupational Therapy.* Volume 54 Number 3 December 2024.
DOI: https://doi.org/10.17159/2310-3833/2024/vol54no3a8

ARTICLE HISTORY
Submitted: 3 August 2024
Reviewed: 12 August 2024
Revised: 30 September 2024
Accepted: 2 October 2024

EDITOR
Hester M. van Biljon
https://orcid.org/0000-0003-4433-6457

DATA AVILABILITY
The data will be available for 10 years post-publication from the corresponding author

FUNDING
No funding was received for this research

ISSN On-Line 2310-3833
ISSN Print 0038-2337

ABSTRACT

Introduction: The non-availability of indoor piped water and electricity results in alternate forms of personal care and domestic tasks in resource-constrained rural settings. This article examines the applicability of existing measures for the contextual assessment of basic and instrumental Activities of Daily Living (bADLs and iADLs) in these settings.
Method: An integrative review guided by the approach of Lubbe et al. (2020) was conducted. Structured database searches of CINAHL, Scopus and Sabinet identified published articles which were subjected to eligibility criteria. Microsoft Excel was used to synthesize data.
Results: The search strategy yielded 591 articles that met the inclusion criteria, from which 187 ADL instruments were identified. Three instruments suited to resource-constrained rural settings were identified.
Conclusion: Occupational therapists should consider that existing ADL frameworks and instruments appear silent on the impact of limited access to household amenities in resource-constrained settings. This constitutes epistemic injustice as many rural households globally do not have potable water or adequate household energy supply. Global South occupational therapy curricula must include contextually relevant ADL frameworks and development of contextually relevant instruments should be prioritised.

Implications for Practice
The findings suggest that existing ADL instruments have limitations when utilised in the Global South, particularly in resource-constrained rural settings. As such, occupational therapists practicing in such settings need to interpret instrument scores with caution and apply contextual clinical reasoning in the best interests of service users. Furthermore, training institutions in the Global South must ensure that the limitations of existing ADL frameworks, models and instruments are made overt within curricula and that research efforts are directed towards the development of contextually relevant ADL instruments.

INTRODUCTION

Most existing Activity of Daily Living (ADL) frameworks and assessment instruments were developed in the Global North and may be fundamentally flawed in that they have limited applicability to rural resource-constrained contexts. Given that more than two billion people worldwide do not have access to safe potable water and a similar number use fuelwood as their primary household energy source, it is clear that significant daily occupations have historically been overlooked by occupational therapists[1–3].

The household amenities available to people living in resource constrained communities differ significantly from those typically available in urban setting[4]. When basic resources such as sanitation,

electricity and water are not available in the home environment, limited access to indoor bathrooms and domestic appliances affects participation in Basic Activities of Daily Living (bADLs) and instrumental Activities of Daily Living (iADLs) which become more difficult particularly for those with mobility difficulties[2,5,6].

Water and energy sources are arguably the most important amenities when it comes to the performance of bADLs and iADLs in rural contexts[7]. For example, water and fuelwood collection were identified as necessary iADL occupations typical of a rural South African context [8]. Likewise, drinking water is essential for survival, and a sustainable water supply impacts food security as it allows for the cultivation of vegetables and being able to keep domestic animals as a food source for domestic requirements[9,10]. Water is also essential for the performance of personal and household hygiene tasks. Similarly, an adequate supply of electricity also opens up the potential for a household to make use of labour-saving appliances, which have an impact on the way bADL and iADL tasks are done. The presence of an electrical geyser to heat indoor-piped water for personal hygiene and doing laundry would eliminate the necessity for fuelwood to heat water on a fire.

The disjuncture between the environmental resources in less resourced contexts and the traditional ADL ontology presents challenges to occupational therapy service provision[5,11]. Occupational therapists are experts in assessment of individuals' performance in bADLs and iADLs including their occupational forms, performance patterns, habits, routines, methods, environmental context, and challenges regarding execution[12,13].

Activities of daily living are all tasks people carry out on a regular basis, as part of their day-to-day routines[14]. While this definition may be broad enough to include work and socialisation tasks, a number of models and frameworks that form the basis of occupational therapy practice provide more specific classifications for bADLs and iADLs. One such framework, the Occupational Therapy Practice Framework IV (OTPF IV) was developed to describe these constructs for occupational therapy practice[13]. The OTPF IV's development was informed by the International Classification of Functioning, Disability and Health (ICF) with its focus on biopsychosocial and socioecological approaches[15]. As such, the OTPF IV reflects the occupational therapy profession's move in recent years towards a more multifaceted understanding of occupation as the profession's core. This framework has been widely adopted across the global occupational therapy community and most South African occupational therapy curricula to include these concepts[16].

Frameworks such as the OTPF IV[13] however regard the term ADL as only referring to functional mobility and personal care, while others use the term to describe all activities performed in daily life. There are also differing views regarding the tasks included within the term iADL, with some older references to assessment instruments including hobbies, leisure, volunteer work and social tasks as iADLs[15,17–19]. This is contrary to the OTPF IV classification which defines iADLs as activities that support daily life both within the home and the community, including shopping, communication management, financial management, home establishment and management, meal preparation and clean-up, driving and community mobility, care of others, care of pets and animals, child rearing, safety and emergency maintenance, and religious and spiritual expression [13] . To complicate matters further, synonyms for iADLs include independent living skills, extended ADL and advanced ADL, the latter focusing on iADL tasks that are more physically demanding[16]. It is therefore important to define the terminology being used to avoid confusion. In this paper, the terms bADL and iADL are used as described in the OTPF IV[13].

Occupational therapists in South Africa provide an essential service to claimants seeking compensation in the medico-legal and insurance industries. Performance in bADLs and iADLs is assessed during Functional Capacity Evaluations as independence in this regard is viewed as a prerequisite of work ability. An understanding of the household amenities available to clients becomes crucial if the medico-legal occupational therapist is to make appropriate and legally defensible recommendations so individuals with disabilities can be awarded adequate compensation to optimise their independence and quality of life.

The integrative literature review reported in this article formed part of a larger doctoral study which arose from the first author's perspective on the performance of bADLs and iADLs in rural resource-constrained contexts and the impact of their accurate assessment on medico-legal practice. It is acknowledged that South African occupational therapists working in the medico-legal field often make use of non-validated assessment procedures regarding performance of these occupations, such as an interview with the client or their caregiver, or observation of simulated tasks[20]. These methods of ADL assessment currently used by South African medico-legal occupational therapists were explored in a separate stage of the doctoral study and are reported elsewhere.

The aim of this integrative literature review is therefore to interrogate existing standardised bADL and iADL assessment measures used globally and in South Africa, and critique their application against the background of widespread limited access to water, sanitation and electricity in a rural resource-constrained context. The limitations of existing ADL frameworks and assessment instruments are considered and recommendations for contextually relevant curriculum development, further research and ADL assessment instrument development are made.

METHOD

The integrative literature review follows five steps as described by Lubbe et al.[21]. The review question was formulated (Step 1) using the Patient, Intervention, Comparison, Outcome and Time (PICOTS) as follows: 'Do ADL scales and instruments commonly reported in the literature include domains or items for comprehensive assessment relevant to rural resourced constrained contexts in South Africa?'.

The sampling of the literature (Step 2) included searching, screening and selection of research articles in peer reviewed journals. The inclusion and exclusion criteria are presented in Table I (below):

Table I Inclusion and exclusion criteria for studies where bADL and iADL instruments were used

Inclusion Criteria	Exclusion Criteria
English abstracts and reports	Paediatric study participants
ADL instrument used for data collection had at least one item or domain in common with OTPF IV bADLs or iADLs	Systematic reviews
All countries globally	
Adult study participants	

Inclusions were limited to English abstracts and reports where a standardised ADL instrument that included at least one bADL or iADL item or domain as defined in the OTPF IV was used for data collection. An initial search limited to studies conducted in Africa yielded very few articles. Similarly, a broader search limited to resource-constrained settings yielded a relatively low number of articles and showed that standardised bADL and iADL instruments developed in well-resourced settings were also being used for data collection in low resourced settings. The authors therefore broadened the literature search to include all geographical areas globally. Multidisciplinary articles were included as ADL is reported as a broader construct with extensive literature across numerous disciplines. The keywords 'ADL instruments' AND 'ADL scales' OR 'iADL instruments' AND 'iADL scales' were utilised and revealed numerous articles published until January 2024. The database searching process is presented below in a PRISMA flow diagram

(Figure 1) and identified 751 publications, with 378 publications on CINAHL, 359 on SCOPUS and 14 on Sabinet Online. The abstracts and methodology sections were screened by the first author and 29 duplicates were removed. The remaining articles were examined for evidence that an ADL instrument was used for data collection. Excluded literature comprised 7 systematic reviews, 7 publications where research participants were children and 117 articles where an ADL or iADL instrument was not utilised for data collection in the study.

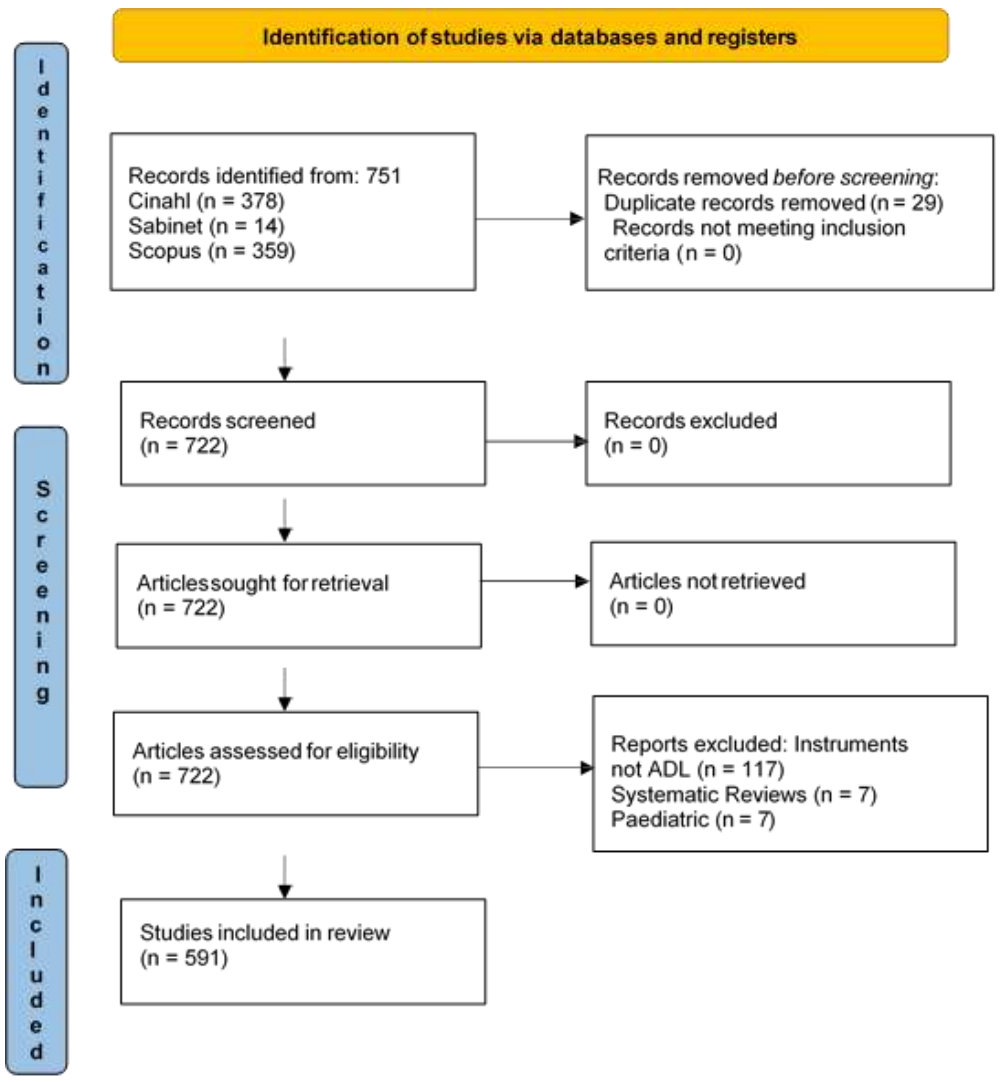

Figure 1: PRISMA 2020 flow diagram. Identifying the gap in assessing activities of daily living in resource-constrained rural settings: An integrative review of existing frameworks and instruments *From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ 2021;372:n71. doi: 10.1136/bmj.n71.*

For the critical appraisal (Step 3) articles were included with methodologies where data was collected using one or more standardised ADL or iADL instrument or scale, or domains and items of an ADL or iADL instrument or scale[13]. The research question for this study pertains to identification of standardised ADL instruments in order to develop a comprehensive list and examine their respective items and domains. The results of the studies in the articles included in this study were not examined or thematically analysed, as the requirements for this current study being defined as an integrative review are met without an evaluation of the quality of the studies.

The data extraction and synthesis (Step 4) was then completed for 591 articles. A Microsoft Excel data extraction sheet was used to extract information of authors, date, publication name, bADL and iADL instrument/s used, country in which the instrument was developed, location of study, methodology, reported validity and reliability studies for the instruments, and domains and items reported in the instruments (available in supplementary file). Where multiple ADL instruments were used for data collection in a study, data from all instruments were extracted.

The frequencies of all the instruments and scales utilised in the studies were calculated to identify instruments commonly used and presented in the supplementary file. Data synthesis was achieved with the analysis of three components of the bADL and iADL instruments. This included identifying the frequency with which the instruments were reported in the literature, the geopolitical location The ten most frequently used instruments in studies conducted worldwide and in the Global South, as well as those conducted of the country in which the study was completed and the relevance of the domains and items to rural, resource-constrained contexts. The standardised bADL and iADL instruments were screened by the first author for the presence of domains or items reflective of occupations typical of rural, resource-constrained contexts. A comprehensive activity analysis which formed part of the broader doctoral study underpinned the screening process[7]. Since many instruments were only utilised in a single study, only the ten most frequently used instruments globally and in the Global South were presented in this integrative review. Those instruments not in the ten most frequently used were checked to ensure that instruments suitable for rural less-resourced contexts were not missed. All instruments identified in the included studies are reported in the supplementary file. The validity and reliability studies for each instrument were included.

In alignment with the research question for this study, the nine ADL instruments used in the six South African studies were extracted to establish if rural contexts were considered in local research. Finally, a textual analysis to identify bADL and IADL assessment instruments' items and domains that overlapped with the bADLs or iADLs as described in the OTPF IV[13] was completed.

The final step (Step 5) included the presentation and discussion of the data for the bADL or iADL instruments as described in Step 4[21].

RESULTS

From the 591 studies included in this integrative review, a total of 187 standardised assessment instruments and scales were extracted and contained at least one domain or item that overlapped with the bADLs or iADLs as described in the OTPF IV[13] The instruments were used 907 times across the 591 studies. Table II (below.) shows that the studies were predominantly carried out in developed countries (78.0%), with 28.0% conducted in the Global South and 4.0% conducted in South Africa respectively.

Table II Geographic location of articles included in this integrative review

Articles included in integrative review (N = 591)					
Global North countries			*Global South countries		
Australia	12	3.0%	Africa	6	4.0%
Europe	154	33.0%	Asia	22	16.0%
Japan	13	2.8%	Caribbean	1	1.0%
New Zealand	1	0.2%	China	31	23.0%
North America	169	37.0%	India	4	3.0%
Scandinavia	82	18.0%	Korea	14	13.0%
United Kingdom	28	6.0%	Middle East	22	16.0%
-	-	-	South Africa	6	4.0%
-	-	-	South America	26	20.0%
	459	**78.0%**		**132**	**22.0%**

*Global South grouping of countries is based on socioeconomics and politics. According to UN Trade and Development (UNCTAD), the Global South broadly comprises Africa, Latin America and the Caribbean and Asia including China. This excludes Israel, Japan, and South Korea, Australia and New Zealand

The ten most frequently used instruments in studies conducted worldwide and in the Global South, as well as those conducted in South Africa are presented in Table III (page 4).

Table III Frequencies of bADL and iADL Instruments cited in literature search (N = 907)

Top Ten: Globally (n = 533)				Top Ten: Global South (n = 120)				South African studies (n = 10)			
Instrument name	Country of origin	Frequency	Percentage	Instrument name	Country of origin	Frequency	Percentage	Instrument name	Country of origin	Frequency	Percentage
Katz Activity of Daily Living Index [22,23]	USA	172	32.0%	Katz Activity of Daily Living Index [22,23]	USA	37	30.5%	Modified Rankin Scale[19]	UK	1	10%
Lawton Instrumental Activities of Daily Living (IADL) Scale[24]	USA	113	21.0%	Barthel Index (and Modified Barthel Index) [25]	USA	32	27.0%	Nottingham Extended ADL [26]	UK	1	10%
Barthel Index (and Modified Barthel Index) [25]	USA	98	18.0%	Lawton Instrumental Activities of Daily Living (IADL) Scale[24]	USA	31	25.5%	Barthel Index (and Modified Barthel Index) [25]	USA	2	20%
Resident Assessment Instrument (RAI)	USA	38	7.0%	Frenchey	UK	4	3.0%	Functional Independence Measure (FIM) [27,28]	USA	1	10%
Functional Independence Measure (FIM) [27,28]	USA	29	5.5%	Functional Independence Measure (FIM) [27,28]	USA	4	3.0%	BETA nursing scale (bADL)[18]	South Africa	1	10%
Short Form – 36 (SF – 36)	USA	26	5.0%	Short Form – 36 (SF – 36)	USA	3	2.5%	Maleka Stroke Community Reintegration Measure (MSCRIM)	South Africa	1	10%
Older Americans Resources and Services (OARS)	USA	16	3.5%	Glittre	Norway	3	2.5%	The Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC)	USA	1	10%
Alzheimer's Disease Cooperative Study (ADCS-ADL)	USA	14	3.0%	Older Americans Resources and Services (OARS)	USA	2	2.0%	Soweto Stroke Questionnaire	South Africa	1	10%
Knee Injury and Osteoarthritis Outcome Score (KOOS)	Sweden & USA	14	3.0%	Bayer	Europe & UK	2	2.0%	Functional Scale for Trauma inpatients	South Africa	1	10%
Nottingham Extended ADL [26]	UK	13	2.0%	Canadian Occupational Performance Measure (COPM)	Canada	2	2.0%				

Many of the identified studies made use of multiple bADL and iADL instruments and scales and included descriptive cross-sectional surveys with examination of functional or disability status, outcomes of clinical interventions, as well as validation of new and existing instruments. The Katz Activity of Daily Living Index was the most commonly used bADL instrument worldwide (32.0%) and in the Global South countries (30.5%) but was not found to have been used in the South African studies. Similarly, the Lawton Instrumental Activities of Daily Living Scale was the most frequently used iADL instrument, comprising 21.0% and 25.5% of the instruments used worldwide and in the Global South respectively. The Barthel Index was used in all three categories analysed, with frequencies of 18%, 27% and 20% respectively in the worldwide, Global South and South African studies. The Katz, the Lawton and the Barthel Index together comprise 72% of those most commonly utilised worldwide and 83% of those most commonly used in the Global South studies.

Of the 187 bADL and iADL assessment instruments and scales identified in the literature search, nine had been utilised in South African studies (Table III, above). All but five instruments identified were found to have been developed in countries from the Global North. It is of note that four of those developed in the Global South were developed and validated in South Africa1[8,29].

A comparison of the domains and items in the eight instruments utilised most commonly in the worldwide and Global South studies and the South African studies as defined in the OTPF IV, is presented in Table III (above). Most (90%, 80% and 100% for the worldwide, Global South and South African studies respectively) included mobility, while many (60%, 70% and 78% for the worldwide, Global South and South African studies respectively) included equivalents of bathing or showering. Items relating to transfers were present in 80%, 60% and 89% of instruments used in worldwide, Global South and South African studies. The inclusion of iADL domains and items was lower, with 60%, 60% and 44% of the instruments used in Overall more bADL domains than iADL domains where included in the instruments with an average of 45.0%, 46.0% and 62.0% bADL items or domains for the worldwide, Global South and South

Table IV: Comparison of Domains in OTPF IV and identified bADL and iADL Instruments

OTPF IV Domains		Domains and/or items present in top ten global instruments		Domains and/or items present in top ten Global South instruments		Domains and /or items present in instruments used in South African studies	
		Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
bADLs							
Bathing, showering		6	60%	7	70%	7	78%
Dressing		7	70%	6	60%	8	89%
Feeding			70%	5	50%	8	89%
Personal hygiene and grooming		5	50%	3	30%	5	56%
Toilet hygiene		5	50%	4	40%	6	67%
Bowel and bladder management		4	40%	3	30%	4	44%
Personal device care		0	0	0	0	0	0
Sexual activity		0	0	0	0	0	0
Functional Mobility	Transfer	8	80%	6	60%	8	89%
	Mobility	9	90%	8	80%	9	100%
	Stairs	5	50%	4	40%	7	78%
Average		**4.5**	**45.0%**	**4.6**	**46.0%**	**6.2**	**62.0%**
iADLs							
Child rearing		0	0	0	0	0	0
Care of pets		0	0	0	0	0	0
Communication management		5	50%	5	50%	3	33%
Community mobility		5	50%	6	60%	4	44%
Financial management		3	30%	4	40%	2	22%
Health management and maintenance		2	20%	3	30%	1	11%
Home establishment and management		6	60%	6	60%	4	44%
Meal preparation and clean-up		5	50%	5	50%	3	33%
Religious observance		0	0	0	0	1	11%
Safety and emergency maintenance		0	0	0	0	0	0
Shopping		6	60%	6	60%	4	44%
Average		**2.5**	**25.0%**	**3.2**	**32.0%**	**2.0**	**20.0%**

African studies respectively. The iADLs had items or domains as defined in the OTPF IV had an average representation in 25.0%, 32.0% and 20% for the worldwide, Global South and South African

Utilising principles of activity analysis, items and domains particularly related to access to water and household energy were identified, as shown in the highlighted sections of Table IV (page above)[7]. Two of the identified South African studies used instruments that included items which accommodated the household amenities typical of resource-constrained contexts: the Soweto Stroke Questionnaire has one question pertaining to household water and electricity access, while the Maleka Stroke Community Reintegration Measure has a number of items relating to household amenities typical of a rural less-resourced context, as shown in Table V (page 6).

Table V Instrument items relevant to household amenities in rural less-resourced contexts

	MSCRIM items	Soweto Stroke Questionnaire items
1.	'Can you pour water into a basin?'	'Do they have running water and electricity in the home?'
2.	'Are you able to wash yourself?'	-
3.	'Are you able to walk.....in uneven, hilly areas?'	-
4.	'Are you able to take a walk in your home, yard or community?'	-
5.	'Are you able to collect firewood, chop and prepare fire?'	-
6.	'Are you able to collect water from the river / communal tap?'	-

DISCUSSION

Suitability of instruments for resource-constrained rural contexts

The instruments and scales identified in this study focus on either bADLs or iADLs, with some focusing on both. These findings are similar to the finding of a systematic review of bADL and iADL scales used with neurological conditions[30]. Scrutiny of the assessment instruments and scales identified in the literature search reported on in this paper demonstrated that there was substantial inclusion of domains and items for bADLs or iADLs, as defined the OTPF IV. However, it was notable that all instruments assume access to water and energy are essential pre-requisites with only two instruments used to measure occupational performance in bADLs and iADLs including items for the collection of water and fuelwood.

Both the Soweto Stroke Questionnaire and the Maleka Stroke Community Reintegration Measure spoke to amenities typical of rural, less-resourced contexts. Both instruments have items that acknowledge piped water may not be available in homes, while the latter refers to the use of fuelwood for household energy. Additionally, the wording is contextually appropriate as it does not imply that a bathtub or shower is used and describes terrain that may be challenging to traverse. While both of these instruments have good contextual utility, there are arguably shortcomings. Both instruments were developed with a population of stroke survivors in mind, and there are important item omissions when compared to the OTPF IV, including toileting, bowel and bladder management and community mobility. However, several other studies identified outside of this current integrative review do make mention of the limited access to piped water, electricity and sanitation in the literature, study setting or discussion sections[31–35].

While these three most commonly used instruments are generically applicable and their usage is free, many of the instruments identified in this current study were developed for application to a particular medical condition. Numerous instruments were developed for survivors of stroke and individuals living with various neurological conditions such as Parkinsons, Multiple Sclerosis and Myasthenia Gravis including the Myasthenia Gravis-Specific Activities of Daily Living Scale (MG-ADL-T), the Schwab and England Activities of Daily Living Scale (SEADL) and the Activities of Daily Living Self-Care Scale for Multiple Sclerosis Persons (ADL-MS)[36–38]. Dementia was another strong focus, with the Alzheimer's Disease Cooperative Study Activities of Daily Inventory (ADCS-ADL), Disability Assessment for Dementia (DAD) and the Bayer-ADL instruments, amongst others, having been developed specifically for this population[39–41]. The Knee Injury and Osteoarthritis Outcome Score (KOOS), Foot and Ankle Ability Measure (FAAM) and the Disabilities of the Arm, Shoulder and Hand Questionnaire (DASH) instruments were developed for use with individuals living with orthopaedic conditions[42–44]. Eight South African studies used the Barthel Index (BI), the Modified Rankin and the Stroke Impairment Scale (SIS) to investigate the clinical outcomes for stroke survivors. Only one study made mention of the challenges relating to water collection[45, 36]

Usefulness of modified versions for rural South African settings

Modified versions of bADL and iADL assessment instruments have been produced for use in different countries. The Barthel Index (BI) is the third most widely used and is regarded as the bADL assessment instrument of choice in many settings worldwide, with numerous modified versions being utilised[46–48]. Where modified versions of the BI assessment instrument have been created for different countries, validity studies have utilised methodologies focused only on language translation. In identifying linguistic differences regarding bADL task item descriptors, some authors have also commented on the need for conceptual translation as several differences in the way a bADL task was conducted were uncovered. For example, some studies found that the term bathing was inappropriate in cultural settings where personal hygiene was achieved by using a damp cloth to wash the body, rather than making use of a tub or a shower. However, authors only recommended modifications to certain item descriptors and fell short of eliminating irrelevant items or adding new ones [5,46–48]. In most validity studies associated with the development of the modified versions of the BI minimal attention is paid to differing cultural practices as a limiting factor.

One South African study explored the validity of the Modified Barthel Index (MBI) considering differences in the way South Africans living in resource constrained contexts carry out bADLs5. Two factors leading to bADLs being done differently in these contexts were identified, namely resource and accessibility barriers. Limited access to running water and electricity within households was linked to socio-economic status and led to increased demands in terms of carrying out bADLs. Examples include emptying out a basin of dirty water after completing personal hygiene, as well as walking over rough terrain to reach outdoor toilet facilities. Given the limitations in access to water, sanitation and electricity described earlier, it is not surprising that the functional mobility domain was ranked highest for inclusion in the South African version of the MBI. The study recommends the addition of an item to reflect obtaining supplies necessary to carry out bADLs and while it was concluded that the MBI could be appropriate for the South African stroke population, the importance of the MBI not assuming resources in terms of household amenities was emphasised5.

Thus, despite having been modified, many instrument domains and items remain inappropriate for rural settings in South Africa, and some important items and domains appear to have been completely omitted.

Increased physical burden of daily activities in rural contexts

A Chinese study on the modification of the BI noted that some mobility items were not translatable due to constraints imposed by specific physical environments. The implications of the degree of physical demand of conducting the bADL task in these different environments were noted as similar to those described above for the South African context. Another instrument identified in the current integrative review in a South African study, namely the MSCRIM, also included an item that referenced the increased physical burden of walking in a challenging terrain, Other South African studies identified outside of the current integrative review also evaluated the increased effort required by those with functional disability in rural settings[32,34,35,49,50] using the WHODAS-2.0 as one of the data collection instruments. The study by Schatz et al[37] conducted in the Agincourt area in the Limpopo Province referred to older persons carrying out strenuous household activities such as collecting water and firewood. Both the socioeconomic status (SES) score, which includes access to water,

sanitation and electricity and gender role disparities in terms of care responsibilities, including 'strenuous activities', was included as a variable in the study. The need for further research regarding these factors linked to disability in the aging population are acknowledged[34].

In a further study also carried out in Agincourt, 42% of participants reported experiencing musculoskeletal pain scores which correlated with bad or very bad functional ability according to the WHODAS-2.0 [50]. In a study carried out in the KwaZulu-Natal Province, water collection was reported as the activity for which most assistance was needed, with 93% of those that reported receiving care stating that they needed help with this task[51]. The authors of this study made recommendations for community support systems to assist older people with strenuous activities like drawing water. Realistic assessment of walking distances typically required for water and fuelwood collection in rural contexts is therefore necessary to enable occupational therapists to make impactful recommendations. While WHODAS-2.0 and the MSCRIMtake the physical burden of limited household amenities into account the items consider the environment no instrument adequately measures the ability to complete associated bADL and iADL tasks.

Inadequacy of standard walking tests for rural contexts

Water infrastructure in rural South Africa is built in accordance with the Reconstruction and Development Programme (RDP) Water Policy for domestic water supply, which states that potable water needs to be within 200m from each dwelling[52]. It follows that most rural dwellers need to be capable of walking a distance of at least 400m to allow for the round trip to collect their daily water needs and that standard walking tests should reflect this requirement.

Thus, walking and mobility were the bADLs with the highest level of reported impairment in a number of additional South African studies[33,45,49] Given that walking mobility is a prerequisite for completion of water and fuelwood tasks, presumably a walking impairment could translate into difficulties with collecting from sources outside of the homestead. Although some studies included variables known as Household assets and Socioeconomic circumstances, which included availability of piped water, electricity and sanitation, none of the studies carried out directly examined an association between household amenities and walking or mobility impairment[32,35]. Of the ADL instruments reviewed only the Katz Index of Independence in Activities of Daily Living has a question about 'walking across a room'. The objective measure was a timed walk, with walking speed being measured over only 2.5m distances. However, none of the ADL instruments used in South African settings in the publications in this integrative review considered walking distances, terrains and loads realistic for rural settings. Only other assessments used in South African studies such as the Stroke Impact Scale mention 'walking one block'[17], and the WHODAS-2.0 refers to 'Walking a long distance such as a kilometre (or equivalent)' [53] Self-report and objective measures of mobility were reported in only two health and aging studies South Africa[31,33].

The analysis of the literature regarding bADLs and iADLs in resource-constrained settings in South Africa and globally is important as it highlights a gap in assessment instruments that do not take the bADL and iADL tasks typical of the rural context into account[5,6,11]. The validity and reliability of existing instruments are therefore called into question when applied in rural populations further compounding some occupational therapists' limited understanding of environmental factors such as the rough terrain and limited infrastructure that impact their clients' ability to perform daily activities[7,11]. Furthermore. many bADL and iADL instruments identified in this current integrative review are condition-specific, signifying an emphasis on a medical model view of function across health and rehabilitation professions. South African occupational therapists currently have no alternative but to base their professional opinions regarding recommendations for rural dwellers regarding reasonable accommodations, assistive devices and caregiving requirements on non-standardised assessment techniques or bADL and iADL assessment instruments that were developed in Western, well-resourced countries and are not occupation-based[13,15,16,54,55]. At best, this shortcoming illustrates the need for the development of a contextual bADL and iADL assessment instrument that takes contextual factors into account to ensure the provision of appropriate interventions for rural dwellers. More realistically, it highlights the need for occupational science and therapy disciplines to apply critical reflexivity and unpack taken-for-granted assumptions regarding household amenities on a global scale[56–58]. The hegemony implicit in the assumption that ADL instruments formulated for well-resourced Western contexts have global utility is arguably a form of epistemic injustice.

Limitations of the study

Using only English language articles may have biased the results as articles from the Global South may have been excluded from the literature search. The study would have been strengthened by article identification being carried out by more than one of the authors in Step 2 of the methodology. Additional articles identified outside of the integrative review may have been found had search terms included environmental descriptors such as piped water, sanitation and household amenities.

CONCLUSION

Despite limited access to water, sanitation and energy being global issues affecting billions of people, the daily task of accessing these essential resources does not appear to be included in commonly used bADL and iADL assessment tools. It is therefore critically important to enable occupational therapists to accurately evaluate performance in bADLs and iADLs in a range of contexts, including those in rural resource-constrained areas with limited household amenities.

The historical exclusion of the impact of limited access to household amenities on bADL and iADL performance from assessment instruments and occupational therapy frameworks is arguably an example of epistemic injustice and a manifestation of the pervasive bias towards Western and well-resourced contexts. The findings of the current study can inform and support the drive towards more inclusive South African undergraduate occupational therapy curricula. The review of ADL frameworks and assessment instruments that are taught will ensure that South African graduates are equipped to provide contextually relevant intervention.

Further research into the factors affecting the type and form of bADLs and iADLs in resource-constrained rural contexts to inform the revision of ADL instruments is recommended. The development of a valid, cost-effective, contextually relevant occupation-based bADL and iADL assessment resource-constrained settings instrument appears justified. The identification of the gaps in occupational therapy frameworks and bADL and iADL assessment tools is important for the practice of occupational therapy in South Africa and internationally.

Acknowledgment

Research assistance by Ms Ntomfuthi Tshongaye is acknowledged.

Contributions

Jennie McAdam - post-graduate student who conceptualised and completed the research and contributed to the article. All four criteria for authorship met. Daleen Casteleijn and Denise Franzsen - supervisors and conceptualisation of the research project and contributed to the article. All four criteria for authorship were met.

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[RAPID REVIEW]

Occupational therapy in adult palliative care. A rapid review

AUTHORS

Hester M van Biljon [a, b]
http://orcid.org/0000-0003-4433-6457
Madri Engelbrecht t[c]
https://orcid.org/0000-0002-4606-7572
Janke van der Walt [d]
https://orcid.org/0000-0001-5012-0121
Shaheed M Soeker [e]
https://orcid.org/0000-0001-5382-1855

AFFILIATIONS

[a] Work-Link, Vocational Rehabilitation Practice, Netcare Rehabilitation Hospital, 2 Bunting Road, Aucklandpark, South Africa.
[b] SAJOT, Occupational Therapy Association of South Africa, Hatfield Bridge Office Park, 213 Richard St, Hatfield, Pretoria, South Africa
[c] Division of Disability and Rehabilitation Studies, Department of Global Health, Faculty of Medicine and Health Sciences, Stellenbosch University, Education Building, 4th Floor, Francie van Zijl Drive, Tygerberg, Cape Town, South Africa.
[d] Division Occupational Therapy, Department of Health and Rehabilitation Sciences, Faculty of Medicine and Health Sciences, Stellenbosch University, Francie van Zijl Drive, Tygerberg, Cape Town, South Africa.
[e] Occupational Therapy Department, Community and Health Sciences, Robert Sobukwe Road, University of the Western Cape, Bellville, South Africa.

CORRESPONDING AUTHOR

Hester M van Biljon
Email: HesterMvanBiljon@gmail.com

KEYWORDS

life-limiting illness, terminal illness, end-of-life care, palliative intervention, ADL and iADL, cancer, quality of life, interprofessional team, symptom management, assistive devices

HOW TO CITE

van Biljon HM, Engelbrecht M, van der Walt J, Soeker, SM. Occupational therapy in adult palliative care. A rapid review. *South African Journal of Occupational Therapy*. Vol 54 No 3. December 2024. DOI: https://doi.org/17159/2310-3833/2024/vol54no3a9

ARTICLE HISTORY

Submitted: October 2023
Reviewed 1st round: May 2024
Reviewed 2nd round: June 2024
Final revision: July 2024
Accepted: July 2024

EDITOR

Blanche Pretorius
https://orcid.org/0000-0002-3543-0743

DATA AVAILABILITY

Upon reasonable request, from corresponding author

FUNDING

Authors were remunerated by The Occupational Therapy Association of South Africa (OTASA) who requested the review

ISSN On-Line 2310-3833
ISSN Print 0038-2337

ABSTRACT

Introduction: The Occupational Therapy Association of South Africa commissioned a task team to gather evidence that would inform the upcoming National Health Insurance policies on the role and practice of occupational therapists. This rapid review aimed to identify level 1 and 2 peer-reviewed published evidence that describes occupational therapists' practice and intervention in adult palliative care.
Method: Systematic reviews and randomised control trials were searched for through the Stellenbosch University library. CINAHL (EBSCO), MEDLINE (EBSCO), the Cochrane Library (Wiley) and OTSeeker databases were used and hand searching of references in selected articles was done. Rayyan.ai was used for the screening and selection of articles. The CASP appraisal tool was used for quality assessment of the selected articles. Data was captured in Excel and Word and analysed and synthesised in Excel and Taguette.
Results: 15 articles were identified for data extraction in this rapid review. The CASP quality appraisal showed a good rating. Occupational therapists working in palliative care were reported to address: Functionality, activity participation and quality of life, symptom management related to disease and the treatment thereof, environmental modification and adaption, assistive devices and equipment, education and caregiver support and education, lifestyle adaptation, return to work or higher education/training.
Conclusion: South Africa has a unique palliative burden of care due to diseases that shorten life expectancy. Due to the unique and varied beliefs held by South Africans about illness and end of life, evidence from high income countries needs to be supplemented with local knowledge to frame the role and intervention of occupational therapists in palliative care. Evidence to support and define the role of occupational therapists claims this needs to be a matter of priority.

Implications for practice

- Contextually relevant palliative care intervention needs to be included in the undergraduate curriculum for occupational therapists and once they go to community service, they need to be supported in this.
- Development and upskilling of occupational therapy clinicians in contextually relevant palliative practice at all levels of care need to be an available and accessible continuous professional development (CPD) activity.
- Occupational therapy clinicians working on the frontlines of palliative care need to be encouraged and supported to collect and present evidence for their practices in formats and at forums where it can be used to shape policies that affect palliative adult care locally and globally.

INTRODUCTION

Palliative care, as defined by the World Health Organisation (WHO), is an approach aimed at enhancing the quality of life for individuals with life-limiting diseases and their families. This definition encompasses early identification, assessment, and intervention to address the physical, psychosocial, and spiritual needs of those in palliative care[1]. Palliative care is the broad term for services offered

to persons who have a life-limiting illness or disease by interprofessional service providers. It spans the time from point of diagnosis or identification of a life-limiting condition, to end-of-life (the last weeks or months of life) and terminal or dying (the last days to hours of life) care. There are several models and frameworks used to guide research and practice in palliative care[2]. One such model that is widely used in occupational therapy, is the International Classification of Functioning, Disability and Health (ICF) framework which extends to palliative care, where it allows the identification of intervention affecting activity and participation[3].

The World Federation of Occupational Therapy (WFOT) notes that occupational therapists are globally recognised as valuable members of interprofessional care teams who focus on palliative intervention. The WFOT position statement[4] in this regard, states that occupational therapists recognise that participation in occupation is transformational and that persons who are terminally ill have the right to well-being and quality of life through engaging in meaningful occupations. They address the decline in functioning and can make a valuable impact in the lives of persons (and their families) from the point of diagnosis with a life-limiting condition right through to facing end-of-life realities. This position is supported by an Occupational Therapy Australia position paper[5] on occupational therapy in palliative care, and two publications on the role of occupational therapy in end-of-life care published in the American Journal of Occupational Therapy[6, 7]. Hammell et al.[8]; expand on this by stating that occupational therapists working in palliative care aim to enable a person with a life-limiting illness to participate in meaningful activities for as long as possible. The two interrelated foci of this occupational engagement are a balance between *focusing on life* and *preparing for death*.

The Constitution of the Republic of South Africa, No. 108 of 1996, upholds the fundamental rights to life and human dignity for all who live in South Africa[9]. Actioning this right within palliative care, a National Steering Committee on Palliative Care 2017 – 2022, was formed. Dr Dhlomo, the chair of the committee, presented the National Policy Framework and Strategy for Palliative Care with the hope that its implementation will allow *"patients to live as actively as possible with good quality of life as long as possible, despite the diagnosis of life-limiting or life-threatening illness"*[10:4]. In the introduction of this framework, Motsoaledi[10] underscores the crucial role of integrating palliative care as an integral part of the broader healthcare service continuum, particularly when addressing the significant health challenges faced by South Africans, such as the quadruple burden of diseases (HIV/AIDS, TB, maternal and child mortality, high levels of violence and injuries and non-communicable diseases). The National Palliative Steering Committee has estimated that approximately 50% of all individuals who died in South Africa could benefit from palliative care services[10].

Palliative care is not confined to healthcare facilities but is delivered across all levels of the healthcare system and beyond. It encompasses an interprofessional approach aimed at providing care and support to individuals with life-threatening illnesses and their families. Its goal is to enhance the quality of life and uphold the dignity, starting from the moment of diagnosis and continuing throughout the entire journey until the end of life[10]. Interprofessional palliative teams include doctors, nurses, dieticians, pharmacists, occupational therapists, physiotherapists, chaplains, psychologists, social workers and family members. Occupational therapy is a person-centred health profession concerned with promoting health and well-being through occupation, enabling people to participate in the activities they value[11]. Occupational therapists achieve this outcome by working with people and communities to enhance their ability to engage in such occupations, or by modifying the occupation, or the environment, to better support their occupational engagement[12]. Intending to inform National Health policies the Occupational Therapy Association of SouthAfrica (OTASA) commissioned a task team to provide evidence of occupational therapist's role in palliative care. This was to be done in the form of a rapid review.

The rapid review methodology was selected to produce timely evidence for decision-making purposes and to address urgent and emergent health issues and questions deemed to be of high priority. Garritty et al.[13] define a rapid review as a form of knowledge synthesis that accelerates the process of conducting a review by streamlining specific methods to produce evidence for stakeholders in a resource-efficient manner. This review considered Randomised Control trials (RCTs) and systematic reviews (Level 1 and 2 evidence[14]) published in peer-reviewed journals related to occupational therapy intervention in adult palliative care. Burns et al.[15] described these levels of evidence to be in the form of systematic reviews and randomised control trials (RCT). An adult in this current review is considered to be 18 years and older. The authors' postulation is that in general, under 18-year-old persons' occupational needs and activities, and by implication occupational therapy intervention, differ from those of adults and the same applies to persons who are retired or not vocationally active anymore. In South Africa adults 60 years and older qualify for the governmental older persons grant[16]. This was taken into consideration in this review.

The aim for this rapid review was to conduct a review of interventions that occupational therapists provided in adult palliative care reported as evidence in level 1 and 2 peer reviewed journal articles.

METHOD

The OTASA rapid review task team consisted of four occupational therapists (the authors) who met online regularly. They used the South African Department of Health method guide and template for rapid reviews[17] and the Cochran Rapid Reviews method guide[13]. The first author, assisted by the other authors during all phases of the review, was the principal researcher for the adult palliative rapid review. This rapid review was conducted from May to August 2023.

Search strategy

Step1: Topic and review refinement

The review question was: *What is occupational therapy's role and intervention in palliative care with adults?* Eligibility criteria for inclusion of articles were defined according to the population, intervention, context and outcome (PICO) elements.

Population: Adult human beings, 18+ years, no upper cut-off age was specified, all gender-, and cultural groups, with life-limiting illnesses.

Intervention: Any form of occupational therapy as per the World Federation of Occupational Therapy definition.

Context: All settings where palliative care is offered.

Outcomes: Occupational therapy intervention in palliative care of terminal adults, from the point of diagnosis to end of life.

Only evidence of ***population groups*** 18 years and older with no upper cut-off age and/or with no prescribed proportion of age groups were considered. Articles that focused specifically on paediatric palliative care or specifically on older adults or geriatric end-of-life care were excluded. The reasoning behind this is that in occupational therapy, paediatric and geriatric interventions are recognised and well-published fields of practice[18, 19] and have age-specific interventions that differ from the occupational realities of the population group identified for this review. However, if an article reported - younger than 18-year-olds and older adults - as part of a larger and general research population, such articles were included.

All forms of occupational therapy ***intervention*** were considered. Considering palliative care from the point of diagnosis to end-of-life suggests various ***contexts*** for intervention. From acute specialised hospital settings to hospice long-term care and even private homes. ***The outcome*** of interest was occupational therapy intervention that involved the acknowledgement of the inevitability of death, loss of

function, and the aim to be as active as possible for as long as possible.

Step2: Strategy and search

Evidence considered for this review was systematic reviews and randomised control trials that were written in English, published in peer-reviewed journals between January 2013 and June 2023 for which full texts were available to the OTASA rapid review task team. The date range was decided on by the OTASA rapid review team through an iterative decision-making process The review team had access to Stellenbosch University Library where the following data bases were searched: CINAHL (EBSCO), MEDLINE (EBSCO), the Cochrane Library (Wiley) and OTSeeker. In addition, the first author did a hand search of the references of articles that

RESULTS

were selected after screening, including articles that were not found in the original search.

Step 3: Study Screening and Selection

Rayyan[20] software was used to screen articles and generate a PRISMA flow diagram (Figure 1, adjacent). Two of the authors did the screening using the software's blinded setting. Conflicts were resolved by discussion and consensus. Figure 1 (adjacent) shows the results of this screening and selection.

Step 4: Quality appraisal and data extraction

The first author created quantitative and qualitative data extraction templates in Excel and Word. The Critical Appraisal Skills Programme (CASP)[21, 22], which offers the healthcare professional with various checklists to check the quality of articles, was used. The CASP Systematic Review[21] and the CASP RCT[22] checklists were used for this study. The quality rating indicated in Table II (adjacent) was devised by allocating scores to the three answer options: Yes = 2, Can't tell = 1, and No = 0. The higher the rating percentage the greater the quality of the research. Comments noted during the appraisal were considered in the discussion section of this article.

Step 5: Evidence Synthesis

Quantitative data were analysed in Excel predominantly with frequencies/percentages. The qualitative data were analysed using Taguette[23], a free open-source data analysis tool for qualitative research. The authors met online on a regular basis, at least once every two months, and discussed the results of the analysis. The final synthesis of the results was done by the first author.

Step 6: Reporting and dissemination of results

The results of the rapid review were presented in the form of a report to the OTASA Council and submitted to the South African Journal of Occupational Therapy for peer review and publication. The PRISMA 2020 diagram[24], Figure 1 (adjacent), shows the results d

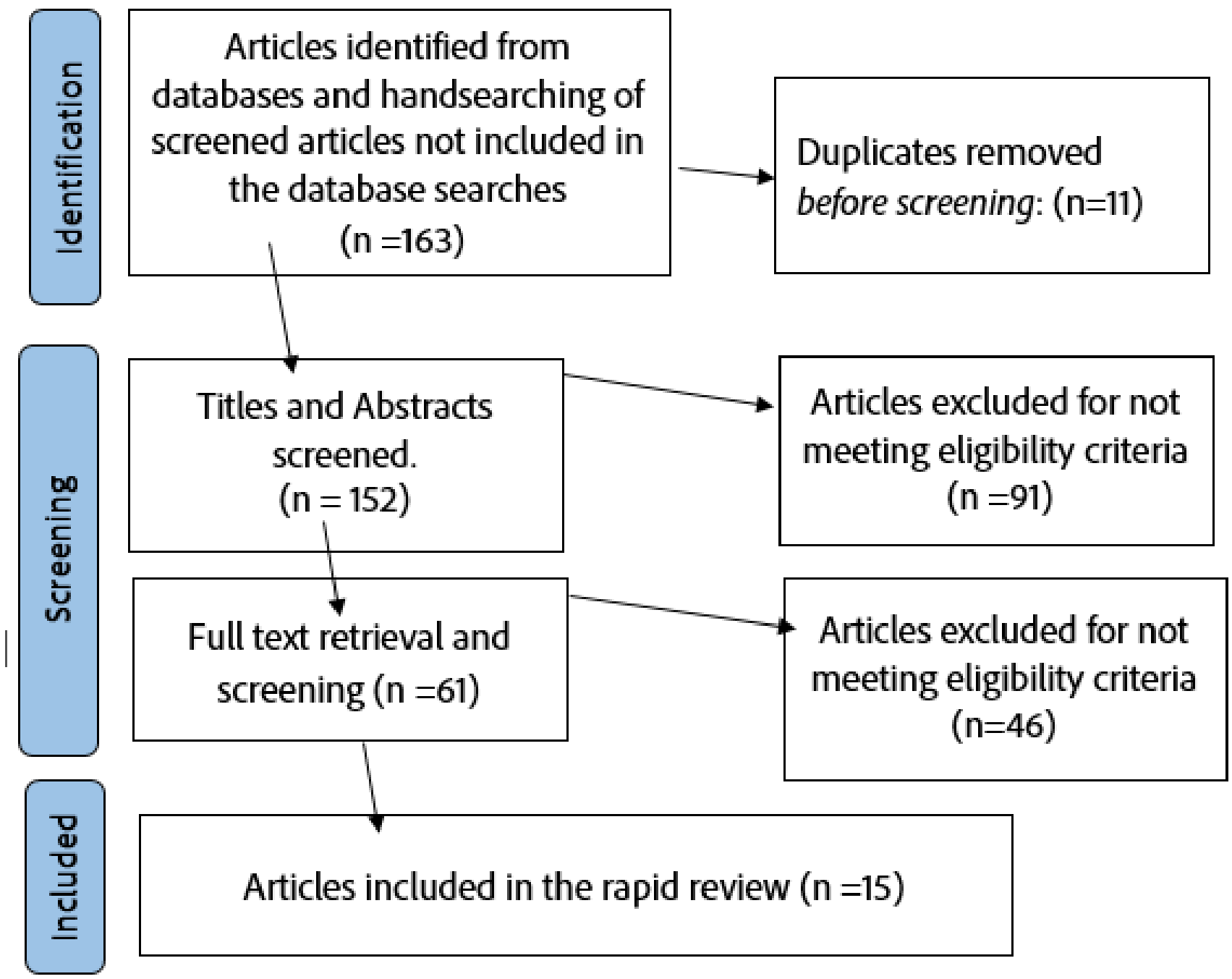

Figure 1. PRISMA2020 shows the results of the searching, screening and selection of articles.

Table I (below) lists the 15 included articles, in alphabetical order of first author's surname. There were six randomised control trials (RCTs) and nine systematic reviews. All RCTs were done in the European Union: four were conducted in Denmark, one in Turkey and one from a Netherlands–Spain collaboration. The six systematic reviews were predominantly executed by USA authors, with one from Australia, one from Denmark and one from Korea. There were no articles from Africa.

Table I. Articles used for this rapid review and the country of origin.

#	Citation	Country
1	Arbesman M, Sheard K. **Systematic review of the effectiveness of occupational therapy-related interventions for people with amyotrophic lateral sclerosis.** AJOT Am J Occup Ther [Internet]. 2014 May 3;68(1):20+. Available from: https://link.gale.com/apps/doc/A357472207/AONE?u=27uos&sid=bookmark-AONE&xid=cbb38d8d [25]	USA
2	Hansen A, Pedersen CB, Jarden JO, Beier D, Minet LR, Søgaard K. **Effectiveness of physical therapy–and occupational therapy–based rehabilitation in people who have glioma and are undergoing active anticancer treatment: single-blind, randomized controlled trial.** Phys Ther. 2020;100(3):564–74. https://doi.org/10.1093/ptj/pzz180 [26]	Denmark
3	Hunter, E. G., Gibson, R. W., Arbesman, M., & D'Amico, M. (2017). Centennial Topics—**Systematic review of occupational therapy and adult cancer rehabilitation: Part 1. Impact of physical activity and symptom management interventions.** American Journal of Occupational Therapy, 71, 7102100030. https://doi.org/10.5014/ajot.2017.023564 [27]	USA
4	Hunter E. G., Gibson R. W., Arbesman M., & D'Amico M. (2017) **Systematic review of occupational therapy** and adult **cancer rehabilitation: Part 2 Impact of multidisciplinary rehabilitation and psychosocial, sexuality,** and **return-to-work interventions.** American Journal of Occupational Therapy, 71, 7102100040. https://doi.org/10.5014/ajot.2017.023572 [28]	USA
5	Huri M, Huri E, Kayihan H, Altuntas O. **Effects of occupational therapy on quality of life of patients with metastatic prostate cancer: a randomized controlled study.** Saudi Med J. 2015;36(8):954. https://doi.org/10.15537%2Fsmj.2015.8.11461 [29]	Turkey
6	Hwang N-K, Jung Y-J, Park J-S. **Information and communications technology-based telehealth approach for occupational therapy interventions for cancer survivors: a systematic review.** In: Healthcare. MDPI; 2020.Vol8 No4. https://doi.org/10.3390/healthcare8040355 [30]	Korea
7	Lozano-Lozano M, Galiano-Castillo N, Gonzalez-Santos A, Ortiz-Comino L, Sampedro-Pilegaard M, Martín-Martín L, et al. **Effect of mHealth plus occupational therapy on cognitive function, mood and physical function in people after cancer: Secondary analysis of a randomized controlled trial.** Ann Phys Rehabil Med. 2023 Mar;66(2). https://doi.org/10.1016/j.rehab.2022.101681 [31]	Netherlands and Spain
8	Nottelmann L, Groenvold M, Vejlgaard TB, Petersen MA, Jensen LH. **Early, integrated palliative rehabilitation improves quality of life of patients with newly diagnosed advanced cancer: The Pal-Rehab randomized controlled trial.** Palliat Med. 2021;35(7):1344–55. https://doi.org/10.1177/02692163211015574 [32]	Denmark
9	Piil K, Juhler M, Jakobsen J, Jarden M. **Controlled rehabilitative and supportive care intervention trials in patients with high-grade gliomas and their caregivers: a systematic review.** BMJ Support Palliat Care. 2016;6(1):27–34. https://doi.org/10.1136/bmjspcare-2013-000593 [33]	Denmark
10	Pilegaard MS, la Cour K, Gregersen Oestergaard L, Johnsen AT, Lindahl-Jacobsen L, Højris I, et al. **The "Cancer Home-Life Intervention": a randomised controlled trial evaluating the efficacy of an occupational therapy-based intervention in people with advanced cancer.** Palliat Med [Internet]. 2018;32(4):744-756. Available from: https://www.cochranelibrary.com/central/doi/10.1002/central/CN-01571787/full [34]	Denmark
11	Pilegaard MS, la Cour K, Baldursdóttir F, Morgan D, Oestergaard LG, Brandt Å. **Assistive devices among people living at home with advanced cancer: Use, non-use and who have unmet needs for assistive devices?** Eur J Cancer Care (Engl). 2022 Jul;31(4):e13572. [35]	Denmark
12	Sleight A, Gerber LH, Marshall TF, Livinski A, Alfano CM, Harrington S, et al. **Systematic review of functional outcomes in cancer rehabilitation.** Arch Phys Med Rehabil. 2022;103(9):1807–26. https://doi.org/10.1016/j.apmr.2022.01.142 [36]	USA
13	Sposato L. **Occupational Therapy Interventions for Adults at the End of Life: A Systematic Review of Dignity Therapy.** Occup Ther Ment Heal [Internet]. 2016 Oct;32(4):370–91. Available from: https://search.ebscohost.com/login.aspx?direct=true&db=cin20&AN=120213555&site=ehost-live&scope=site [37]	USA
14	Stout NL, Santa Mina D, Lyons KD, Robb K, Silver JK. **A systematic review of rehabilitation and exercise recommendations in oncology guidelines.** CA Cancer J Clin. 2021;71(2):149–75. https://doi.org/10.3322/caac.21639 [38]	USA
15	Taylor S, Keesing S, Wallis A, Russell B, Smith A, Grant R. **Occupational therapy intervention for cancer patients following hospital discharge: How and when should we intervene? A systematic review.** Aust Occup Ther J. 2021;68(6):546–62. https://doi.org/10.1111/1440-1630.12750 [39]	Australia

Quality appraisal

Two of the CASP (Critical Appraisal Skills Programme) checklists were used to assess the quality of articles identified for this rapid review: Randomised Controlled Trial Standard checklist[22] and Systematic Review checklist[21]. Article rating: A score of > 4 indicates high quality, a score of 3-4 shows moderate quality, and a score of < 3 represents low quality (Berger and Alperson, 2009) was expressed in percentage and shown in Table II (page 5). The 'sample size' of each article depicts the number of participants in an RCT and the number of articles included in a systematic review.

Table II. Type of evidence, sample size and CASP rating of included articles.

Article	Type of evidence	Sample size	CASP rating
Arbesman et al. [25]	Systematic review	14	65%
Hansen et al. [26]	RCT	64	80%
Hunter et al. [27]	Systematic review	86	90%
Hunter et al. [28]	Systematic review	52	90%
Huri et al. [29]	RCT	55	78%
Hwang et al. [30]	Systematic review	15	80%
Lozano-Lozano et al. [31]	RCT	78	88%
Nottelmann et al. [32]	RCT	288	76%
Piil et al. [33]	Systematic review	9	76%
Pilegaard et al. [34]	RCT	242	70%
Pilegaard et al. [35]	RCT	237	78%
Sleight et al. [36]	Systematic review	362	76%
Sposato et al. [37]	Systematic review	10	73%
Stout et al. [38]	Systematic review	21	66%
Taylor et al. [39]	Systematic review	9	70%

The palliative condition addressed in 14 out of the 15 articles was cancer and one was a motor neuron disease (amyotrophic lateral sclerosis or ALS). The settings which the occupational therapy intervention took place were not reported by all the articles. Settings that were reported ranged from inpatient and outpatient hospital care[26,36,39], hospice and palliative care[36,37,39,25], private homes/domiciliary and community settings[25,29,31,32,34,35,36,39], education and work settings[27], and sheltered living[34]. Seven of the articles referred to the value in palliative care of working in interprofessional teams[25,27,28,31,32,33,39]. Arbesman and Sheardl[25] reported evidence that people with ALS who were involved in interprofessional programmes had 30% longer survival, more appropriate assistive devices and higher quality of life in social functioning and mental health than those in general care. Interprofessional teams were noted to include physicians, nurses, occupational therapists, physiotherapists, speech and hearing therapists, dieticians/nutritionists, psychologists, social workers and chaplains[25,32]. Referring specifically to ALS, Arbesman et al.[25] report that occupational therapy is part of the palliative care team through all phases of the disease, including immediately before death.

Occupational therapy interventions reported in the selected articles

Interventions that occupational therapists were involved in were grouped into five themes: 1) Functionality, activity participation and quality of life, 2) Symptom management related to disease and the treatment thereof, 3) Environmental modification and adaptation, assistive devices and equipment, 4) Education and caregiver support, and 5) Lifestyle adaptation, return to work or higher education/training. These are reported below in order of frequency as they were mentioned in the articles.

Functionality, activity participation and quality of life

All the articles referred to occupational therapists' involvement with functionality, activity participation and quality of life and this was the most frequently reported role and intervention. In many cases, specific actions within these concepts were not expanded on. The general impression was that occupational therapists aimed at keeping persons with life-threatening illnesses as functional as possible doing activities of importance to them for as long as possible. Sposato et al.[37] cite Hammill et al.[8] whose systematic review concurs that individuals at the end of life should remain engaged in occupations of value to them, to maintain a sense of competence and mastery over self and their environment. This approach also prevents disuse syndrome[38] and helps with the management of pain, fatigue and depression30. Huri et al.[29] reported that occupational therapy with breast cancer patients focus specifically on the quality of life through management of pain, fatigue, nausea, metastatic patients intervention, stress-reducing and management programmes, the value of engagement in meaningful activities, lymphedema, vocational rehabilitation, creative and therapeutic use of activity, cognitive therapy, and changing lifestyle with cognitive behavioural therapy.

Several articles noted that the occupational therapists addressed the activity participation needs[25,26,27,28,30,32,39] of adults faced with life-limiting illness, listing the following: activities of daily living (ADL) and instrumental activities of daily living (iADL), work, leisure, hobbies, community mobility, social participation, and rest and sleep. Sleight et al.[36] identified functional areas as fundamental to cancer rehabilitation and the occupational therapists were involved in the following: quality of life, activities of daily living, functional mobility, fatigue, cognition, and return to work. Hunter et al.'s [27,28] reviews concluded that occupational therapy practitioners are well suited to investigate occupational performance, occupation-based strategies, quality of life, and participation status to support client-centred interventions before, during, and after treatment of cancer.

Symptom management related to disease and the treatment thereof

Fatigue, loss of energy, disrupted sleeping and rest are common problems reported by persons with cancer[40] and ALS. An RCT[26] found that occupational therapists address fatigue in people with ALS. A systematic review of telehealth interventions[30] and an RCT of the BENECA mHealth app[31], which monitors energy balance, reported that these occupational therapy interventions positively addressed fatigue, reduced sleep disturbances and insomnia39. Stout et al.38 and Nottlemann et al.[32] reported occupational therapists address fatigue, energy conservation, sleep and rest through assessment, education and instruction. Other articles similarly report occupational therapists involved in fatigue and energy conservation at home, work, and community environments with practical intervention by recommending rest breaks[25], lifestyle behaviour changes[30], assistive devices and adaptations[41,27,37].

Huri et al.[29] report the use of cognitive behavioural therapy-based occupational therapy (OT-CBSM) with male cancer patients. Occupational therapy telehealth psychosocial interventions that included cognitive behavioural therapy and problem-solving were reported[30]: the BENECA mHealth application, the Occupational Therapy Practice Framework and the Cognitive Orientation to Daily Occupational Performance (CO-OP). Cognitive functional training31 were also reported as interventions with cancer patients. Cognitive training, cognitive behavioural therapy, home-based problem-solving sessions and a generic referral to cognitive therapies were other reported occupational therapy interventions[27,28,33,36,38].

Pain symptom management is an important aspect of end-of-life care[37]. Hunter et al.[27,28] reported pain management to be the most common occupational therapy focused on symptom intervention reported in their two systematic reviews. Two of the RCTs noted the occupational therapy intervention they studied effectively reduced pain[31,29]. The management of pain in cancer palliative care was often linked to fatigue interventions [30,31,39].

Hunter et al.[28] reported strategies that occupational therapists used to address mental health and stress with cancer patients and listed a variety of psychosocial interventions, interventions focused on reducing anxiety and depression, spiritual well-being interventions and stress management groups. An RCT showed occupational therapy using a telehealth approach improved patients' confidence, and self-efficacy and reduced their depression, anxiety, and distress levels[30]. A systematic review on dignity therapy[37] concluded that therapeutic approaches to help regulate troubling emotions commonly seen at the end of life (i.e., anxiety, depression, helplessness, etc.) should be part of palliative occupational therapy.

Three of the articles reported occupational therapy intervention focused on lymphedema management [27,38,39]. Hunter et al.[27] found that occupational therapy practitioners can feel confident in suggesting physical activity to clients with lymphedema. Stout et al.[38] reported the use of compression garments, progressive

resistance training under supervision, manual lymphatic drainage and range of motion exercises and activity participation.

Environmental modification and adaption, assistive devices and equipment

Assistive devices facilitate the performance of everyday activities and the conservation of energy. An occupational therapist often recommends assistive devices to enable activity participation and improve the quality of life for their clients[37,38,39]. An RCT of the Cancer Home-Life Intervention[34] investigated the efficacy of this occupational therapy-based intervention and the assistive devices used by persons with advanced cancer who still live at home[35]. This study highlighted the prevalence of assistive devices used and the importance of skilled occupational therapy assessment of assistive devices and continued provision for people with advanced cancer.

Arbesman et al.[25] found occupational therapy practitioners can play a vital role in helping the client find positions of comfort in bed or a wheelchair. Practitioners provided splinting to address hand contractures, grab rails, raised toilet seats, and shower seats. They also assisted other team members to enable participation in meaningful activities (e.g., visiting friends, carrying out ADLs and IADLs, and using equipment to control the environment). This study[25] showed that persons with ALS most valued assistive devices and equipment, increased safety and independence for bathing and toileting, and increased dignity and independence. Occupational therapy practitioners were uniquely qualified to help people with cancer choose the correct equipment and make environmental modifications with consideration of the disease progression[25, 38].

Education and caregiver support

Arbesman et al.[25] indicated triggers for initiating individual or family discussions about end-of-life issues. These triggers were: a request by the family when a person enters hospice care. Occupational therapists educated family and hospice workers on positioning and client needs. Telehealth was used by occupational therapists for aftercare intervention, education and guidance, supervision and support of patients, family and caregivers30. Pill et al.[33] also found that telephonic follow-up was a useful strategy and that patients, their families and caregivers' need for psychosocial support was met by applying different psychosocial approaches. As part of a interprofessional team occupational therapists took part in early intervention education sessions[32], education for goalsetting and activity scheduling[39], and provided caregiver training[37]. There are activities of end-of-life that can be incorporated as part of the intervention that occupational therapy may consider.

Lifestyle adaptation, return to work or higher education/training

Five studies reported occupational therapists involved in assisting persons with cancer to return to work and vocational rehabilitation[27,28,29,30,36],. Occupational therapists assisted clients in applying ergonomics and energy-saving techniques at home and work, allowing them longer and pain-free participation in activities at home, workplace and community[25,37]. These included task adaptations such as sitting versus standing, taking regular rest breaks, and using adaptive tools and assistive devices [25,37].

Ethical considerations

Ethical clearance was not required for this review as no primary data collection was done. The quality and bias of selected articles were tested to ensure quality results to inform the question of this review.

DISCUSSION

The World Health Organization (WHO) advocates for the enhancement of palliative care as an integral part of comprehensive healthcare[42]. This global commitment acknowledges that palliative care is an ethical responsibility of health systems and insists on the urgent need to include palliation across the continuum of care, especially at the primary healthcare level. The South African Policy, Framework and Strategy on Palliative Care 2017 – 2022[10], acknowledged this and called for appropriate and accessible care that will be responsive to the needs of patients with a life-threatening illness and their families or caregivers. The policy also mentions occupational therapy as part of the package of care for a patient in palliative care. Globally, there are position papers[5,4], books[43] and seminal articles that position occupational therapy within palliative care providing holistic, client-centred approaches with constant reassessment of the needs of the individual, their families and carers. Occupational therapy interventions aim to enhance independence, as individual as well as within collectives or communities, in various aspects of daily life. This encompasses a range of strategies, such as providing assistive devices and facilitating retraining, evaluation and adjusting seating and bed requirements, as well as prescribing wheelchairs and pressure-relieving methods. Further, occupational therapists address cognitive and perceptual dysfunctions, employ splinting techniques to prevent deformities and alleviate pain, conduct home visits and assessments, and assist individuals in managing their lifestyles, including hobbies and leisure activities. They offer valuable advice and education, teach relaxation techniques, and help manage issues like fatigue and breathlessness through energy conservation methods. Additionally, occupational therapists provide support and education to caregivers, assist individuals in their psychological adjustment to their loss of function, and collaborate on setting realistic goals for their retraining endeavours. Effective occupational therapy in palliative care reduces anxiety, promotes self-efficacy and dignity, and once loss of independence does occur the correct way to adjust to and handle this.

In their review, Hunter et al.[27] found that occupational therapy practitioners working with survivors of cancer of all types, stages, and points on the survivorship continuum have a body of evidence to support current and future practice. Taylor et al.'s[39] systematic review identified that occupational therapy provides intervention for three major ICF domains; Rehabilitation (Activity and Participation), Symptom management (Body Structures and Function) and Environmental modifications. Representation in all major ICF domains is positive. Adult palliative intervention from the occupational therapist, within a interprofessional programme or team was reported in nine articles[25,26,27,28,32,33,35,36,38]. Arbesman et al.[25] indicate that occupational therapists within an interprofessional team brought a unique client-centred and occupation-based perspective to the interprofessional team. The interprofessional approach showed the potential to meet the variety of needs in palliative care[33].

The South African National Policy Framework and Strategy on Palliative Care (NPFSPC)[10] foresees that most South Africans will receive palliative care within their communities, placing palliative care within the primary healthcare domain. At the primary care level, community-based resources and a palliative care approach are essential to support the needs of people with chronic diseases. To achieve this, it is necessary to have empowered people and communities, a PHC workforce trained in the basic approach of palliative care and the availability of medicines and health policies that integrate this, focusing on the patient and the family as well as the referral of the patient when required[42]. All of this leads to the consideration of the limitations of this rapid review.

Limitations of the study

None of the articles' address or consider persons living with HIV and Aids. HIV being one of the leading causes of death in South Africa[44] it is disconcerting that there is no occupational therapy evidence supporting the role of the occupational therapists in HIV/AIDS in this context.

Except for Turkey, which has an upper-middle-income economy, all the evidence in this rapid review was from high-income countries. There were no systematic reviews or RCT articles on adult

palliative care from Africa, or Low- and Middle-Income Countries (LMIC) such as South Africa. In the book Occupational Therapy: An African Perspective, Matovu[45.255] concludes her chapter on occupational therapy in palliative care in an African setting stating that in Africa, with its unique and varied cultural and religious beliefs around illness, death and dying occupational therapists cannot 'extrapolate western biomedical approach' to palliative care.

Future research and other recommendations

Motsoaledi10 notes that in Africa, the burden of palliative care is focused on dealing with death arising from HIV. The absence of level 1 and 2 evidence on the occupational therapist's role within this context needs to be addressed as a priority. Occupational therapy training and education in contextually relevant palliative care is essential. This should be at the undergraduate and post-graduate levels as well as continuous professional development activities for clinical occupational therapists. Responsibility for the support, mentoring and equipping of community service occupational therapists and therapists responsible for taking palliative occupational therapy services to populations with the greatest health needs[46] should be seen as a collective South African occupational therapy responsibility.

CONCLUSION

In South Africa, the palliative care burden is predominantly carried by family and communities and occupational therapists are actively engaged in primary healthcare and community environments, making them well-suited to meet the requirements of individuals who need palliative care and their families or communities. The aim of this review was to gather global level 1 and 2 evidence published in peer reviewed journals of interventions that occupational therapists provided in adult palliative care. The results showed that occupational therapy practices transcend the healthcare sector and extend the role of the profession to schools and education facilities, the labour market, the life insurance industry, religious institutions, hospices, family homes and community settings. Occupational therapy practitioners worked with various types of life-limiting illnesses and at different stages of palliative care and that they provided intervention for Rehabilitation (Activity and Participation), Symptom management (Body Structures and Function) and Environmental modifications ICF domains. They were active in within interprofessional programs and teams bringing a client-centred and occupation-based perspective to the team.

None of the articles reported evidence from Africa. Due to South Africans' varied and unique beliefs concerning end-of-life, first-world evidence cannot be used to frame the role and intervention of occupational therapists within adult palliative care. South African policymakers, and future research need to prioritise the generation of contextually relevant and high-level research evidence to support and define the role of occupational therapists in Africa. In addition to evidence, the skilling, training and support for occupational therapists offering palliative intervention need to be recognised by South African occupational therapists representing professional bodies, healthcare policymakers and training institutions.

Acknowledgements

Stellenbosch University (SU), the SU library and SU occupational therapy departments who assisted, encouraged and enabled the access to evidence.

Conflicts of Interest and other declarations.

The authors declare they received remuneration from the Occupational Therapy Association of South Africa (OTASA) for this review. They declare that this did not affect their decision making in the review and results were not skewed to provide the outcome OTASA wanted to have. They have no bias to declare.

The Large Language Model (LLM), ChatGPT, was used to assist with the language editing and paraphrasing of the final article.

Author contribution

All authors planned and participated in review. They all took part in the writing and revising after two reviews of the article. Shaheed M. Soeker initiated and supervised the review. Hester van Biljon spearheaded the review, drafted, saw to completion and submitted the article.

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POSITION STATEMENT

OCCUPATIONAL THERAPY ASSOCIATION OF OCCUPATIONAL THERAPY (OTASA)

Occupational therapy pain management to enable occupational engagement

Ratified by Council: March 2024

CONTRIBUTORS:

OTASA acknowledges the following professionals for the compilation of this paper:

Linda Hiemstra
https://orcid.org/0009-0005-9480-5532
Dershnee Devan
https://orcid.org/0000-0002-1738-6718
Helen Roome
https://orcid.org/0009-0001-0977-2483
Gill Coetzee
https://orcid.org/0009-0009-7390-9315

KEYWORDS

tissue damage, acute pain, chronic pain, occupational therapy scope of practice, The Canadian Model of Occupational Performance and Engagement, The Person-Environment-Occupation Model, The Model of Human Occupation, Ecology of Human Performance mode, good health and well being

HOW TO CITE

Occupational Therapy Association of South Africa (OTASA) Position Statement: Occupational therapy pain management to enable occupational engagement. *South African Journal of Occupational Therapy.* Volume 54 Number 3 December 2024. DOI: https://doi.org/10.17159/2310-3883/2024/vol54no3a10

FUNDING

No funding was received.

ISSN On-Line 2310-3833
ISSN Print 0038-2337

PREAMBLE

Pain was defined by the International Association for the Study of Pain (IASP) in 2020 as:

> "…. *An unpleasant sensory and emotional experience associated with, or resembling that associated with, actual or potential tissue damage*" [1:1]

The experience of pain is always subjective, personal, and influenced by multiple factors, namely social (including deprivation, isolation, lack of access to services), emotional factors, (including distress and previous trauma), expectations and beliefs, mental health (including anxiety, depression and post-traumatic stress disorder) and biological factors. Furthermore, the International Association for the Study Pain (IASP)[1] noted in their expanded definition in 2020 that pain cannot be inferred solely from activity in sensory neurons, individuals learn the concept of pain through experience. A person's report of an experience as pain should be respected and while pain usually serves an adaptive role, it may adversely affect occupational performance as well as mental, social and psychological well-being and quality of life. Verbal description is only one of several behaviours to express pain and an inability to communicate does not negate the possibility that a human experiences pain[1].

Pain affects a person's ability to exercise, enjoy normal sleep, perform household chores, work efficiently, attend social activities, drive a car, walk, have sexual relations, maintain relationships, and find enjoyment in life[2,3].

In a recent report (2019) of the Unit States Pain Management Best Practices Inter-Agency Task Force[4], it was emphasized that best practice in pain management consists of the development of an client-centred individualized effective pain treatment plan after proper evaluation to establish a diagnosis with measurable outcomes that focus on improvements including quality of life (QOL), improved functionality, and Activities of Daily Living (ADLs)[4]. This places pain management interventions to enable/facilitate engagement in all occupational and pre-occupational categories within the scope of practice of an occupational therapist as described in the regulations defining the scope of the profession of occupational therapy. in South Africa, as set out in the amendment to Health Professions Act 56 of 1974, Regulations defining the Scope of the Profession of Occupational Therapy[5].

Acute and chronic pain are associated with many health conditions. In South Africa, the evidence suggests that 1 in 5 adults experience chronic pain with the limbs and back being the most common sites of pain[6]. Chronic low back pain, reported to be one of the most common conditions globally, has a high prevalence across the life course and has been reported to be responsible for 60·1 million disability-adjusted life-years and the highest increase seen in low- and middle-income countries[5]. In South Africa the annual cost of treating chronic low back pain alone, in only Kwa Zulu Natal is as high as R65 million rand[7] The burden of disease, as well as the mandate for occupational therapists to practice in the field of pain management is clear.

PURPOSE OF DOCUMENT

This document serves to identify the role and intervention responsibilities of Occupational Therapists in the management of adult patients with primary and secondary pain conditions, or conditions in which pain is a symptom that causes loss of age-appropriate occupational performance and independence; supported by the clear compatibility of occupational therapy's foundational principles, philosophies, models, frameworks, interventions, and training.

1. **Occupational therapy models applicable to pain management**
   Various occupational therapy models used with pain management interventions are reported in literature.
   These include:
   - The Canadian Model of Occupational Performance and Engagement[8–11]
   - The Person-Environment-Occupation Model[12–14]
   - The Model of Human Occupation[15–17]
   - Ecology of Human Performance mode[18]

These models emphasize the placing the person at the centre of any intervention, and encourages the therapist to consider how the person's impairment interacts with the particular barriers or enablers of occupational performance, the client's environment, and the occupations that the person has to or wants to engage in. For more information on the aspects that should be considered in the assessment and management of chronic pain, clinicians can consider the aspects highlighted in the ICF core set for chronic widespread pain[19] when planning their assessment and treatment of patients with chronic pain. However, other diagnostic core sets may apply for patients with other pain conditions. The focus of occupational therapists working in pain management is, therefore, to enable individuals with chronic pain to participate in the activities that have value and meaning to them, despite their pain[11].

Occupational therapy intervention may include the use of strategies such as (amongst others)

"activity management, activity adaptation, the development of coping strategies and vocational rehabilitation and may involve working with patients at home, school or workplace in addition to clinical settings"[20:451]

1. **Occupational therapy role in pain management**
   Occupational therapists working in pain management may have various goals for treatment. These include:
   - Improving participation in all categories of occupations affected[21]
   - Enabling occupational engagement and performance
   - Promoting functional independence, mobility, and autonomy
   - Addressing occupational balance
   - Improving body mechanics and activity tolerance
   - Modifying tasks and the occupational environment to allow optimum participation.
   - Enhancing social interaction and facilitating community reintegration
   - Vocational rehabilitation
   - Prevention of further disability
   - Health promotion and quality of life[22] through the promotion of activities health[23]

2. **Practice guidelines for occupational therapists in pain management**

Pain is a prevalent symptom that forms part of multiple physical and psychiatric diagnoses in the adult population. In this position paper interventions are not categorized in according to diagnostic groups. However, the occupational therapist should be aware that pain can impact occupational performance regardless of the underlying pathology and should assess this intentionally and address any impairments or functional limitations due to pain pro-actively.

The assessments and interventions occupational therapists working in pain management use should be guided by a self-management approach[24] to empower patients to take responsibility for their own health, reduce symptoms and improve quality of life despite symptoms.

Table I (below) lists assessments and interventions associated with pain management, but it is not exhaustive. There may be interventions required by the specific presenting pathology, which are different to those required for pain management, which need to be performed in addition to those listed.

Table 1: Assessments and interventions associated with pain management

Assessments	Intervention	Outcomes
Occupational Profile including Pain History namely: • Daily activity profile including routines, habits, roles, extent, variety, and quality of participation. • Medical history including medical conditions, trauma, previous injury, or surgery, prescribed and self-medications. • Personal and social history • Vocational history • Sensory-discriminative aspects of pain • Cognitive-evaluative aspects of pain • Motivational-affective aspects of pain • Pain behavior and other communicative components • Ideas, concerns, fears and beliefs regarding pain • Evaluation of body systems, **including physical assessment of relevant components of function** • Psycho-emotional status • Contextual factors • Cognition • Lifestyle factors including stress, sleep, diet, substance use. **Administration of relevant self-report measures.** These should include measures of pain severity, disease impact, psychosocial risk factors, prognostic factors and health-related quality of life. Further assessment of specific areas of occupation affected by the pain as indicated following general assessment. **Administration of home or work environmental assessment if applicable** **Administration of assessment of sensory factors if applicable**	• Education regarding the biopsychosocial nature of [25] • Goal setting in all functional[26] • Pacing and grading of activity participation[27,28] • Activity scheduling • Activity modification/task adjustment • Adjustments to physical and sensory environments • Prescription of assistive devices/adaptive equipment • Stress management interventions[29] • Mindfulness-based interventions[30] • CBT-based interventions[31] • Sleep hygiene[29] • Fatigue management • Anxiety management[32] • Graded motor imagery[33] • Vocational rehabilitation interventions with additional training: • Progressive Goal Attainment Program (PGAP)[34] • Sensory coaching[35]	• Improved participation and independence in activities across all functional domains • A healthy, structured daily routine that incorporates periods of rest and activity, including physical activity, cognitive activity, social and spiritual activity. • Healthy, active coping strategies • Complete daily occupations across a variety of domains • Return to remunerative or non-remunerative work if pain has resulted in disengagement from work activities.

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POSITION STATEMENT

OCCUPATIONAL THERAPY ASSOCIATION OF OCCUPATIONAL THERAPY (OTASA)

Occupational therapy in Neonatal Care

Ratified by Council: March 2024

CONTRIBUTORS:

OTASA acknowledges the following professionals for the compilation of this paper:

Gina Rencken [a]
https://orcid.org/0000-0002-3658-4453
Pragashnie Govender [a]
https://orcid.org/0000-0003-3155-3743
Lizelle Jacobs [b]
https://orcid.org/0000-0002-5373-2155
Beverly Hewson [c]
https://orcid.org/0009-0004--7675-1289
Ayesha Dawood [d]
https://orcid.org/0000-0002-3316-5907
Kate Bailey [e]
https://orcid.org/0009-0006-3242-343X

KEYWORDS:

neonate, occupational therapy, NICU, developmental care, specialised knowledge

HOW TO CITE:

Occupational Therapy Association of South Africa. Position Paper: Occupational Therapy in Neonatal Care. South African Journal of Occupational Therapy. December 2024. DOI: https://doi.org/10.17159/2310-3833/2024/vol54no3a11

ACKNOWLEDGEMENT:

Bianca Pereira, Nelson Mandela Children's Hospital, Gauteng , South Africa

POSTHUMOUS ACKNOWLEDGEMENT:

Samantha J. York

FUNDING

No funding was received.

ISSN On-Line 2310-3833
ISSN Print 0038-2337

RATIONALE

Occupational Therapists have a role to play in the assessment and treatment of a high risk# neonate in the specialized practice setting of the neonatal intensive care unit (NICU)[1], the neonatal high care unit (NHCU) and beyond[2]. The role in these environments is not only for the immediate and ongoing developmental care of the neonate as part of the multidisciplinary team, but also in the family environment with the neonate and parent/s or caregiver/s[2]. Occupational therapists can uniquely contribute to the active management of the neonate through an understanding of child development, the complex environment and demands of the NICU and the developmental tasks required of infants and families within this space. Adaptation of the environment and task requirements may be necessary to help infants and families achieve typical developmental, social-emotional and attachment outcomes[2].

Professional Knowledge and Skills Required

Due to the vulnerability of premature and ill infants and their families, advanced knowledge and skills are required to safely and effectively provide occupational therapy services in the NICU/NHCU. This is needed to assess and treat the infant, meet the needs of the family, and work in the specific constraints of the NICU/ NNHCU environment with specific knowledge of intensive care equipment, medication conditions and effects, support in nutrition, respiration and thermoregulation, diagnostic procedures and infection control in promoting optimal infant development[3]. A minimum of three years' experience practicing as an occupational therapist in a paediatric setting is highly recommended as a pre-requisite to providing services in the NICU/ NHCU[1,2].

Knowledge and skills in the following are recommended[1-3]:

- Knowledge and skills in evaluation and intervention of the infant, including medical conditions and risks these pose to growth and development.
- Knowledge and skills in the use of appropriate standardised assessment tools, parent/ caregiver interviews and careful observations of infant behaviour and adaption in the social and physical environment.
- Knowledge of factors (prenatal, perinatal and postnatal) which may influence development, as well as the developmental course of the premature, high risk or vulnerable infant is needed to guide clinical reasoning in choice of assessment and treatment planning.
- Knowledge and skills in assessing and treating the developmental course of infants including neuro-behavioural organisation, sensory development and sensory processing, motor function, emerging competencies in infant occupation in daily life activities including feeding**, engaging in nurturing occupations and tolerating bathing, dressing, diaper changes and routine medical intervention.

#"high risk" has been used to describe the target population in this position paper. This includes, but is not limited to all infants born preterm, high-risk infants born at term (including those with hypoxic ischaemic encephalopathy, intracranial haemorrhage, neonatal abstinence syndrome, congenital conditions, and complex surgical need), infants at risk of developmental delay, infants receiving palliative care and their parent/s or caregiver/s.

***"feeding" includes influencing the environment, infant regulation, motor organisation and co-occupations which affect feeding. It does NOT include assessment and treatment of swallowing.*

- Knowledge and skill in recognizing and facilitating co-occupations or shared occupations between the infant and parent/s or caregiver/s including feeding*, interaction, bonding and attachment[3-5].
- Sensory Integration Training and qualification

The following is strongly recommended for safe and effective practice[1,2]

- Specialized mentoring in neonatal therapy , in-person or online through established communities of practice
- Mentored practice hours and established competence in the NICU/NHCU
- Initial and ongoing participation in neonatal specific peer-reviewed education

Areas of assessment

The therapist should have sufficient specialised knowledge and skill[1,3,6,7] in conducting appropriate assessments, including standardised assessments and specific, skilled observations as needed. The appropriate timing of assessments, based on medical and physiological stability, gestational age, corrected age, NICU/NHCU routines and family routines is essential to protect the infant and provide appropriate timing of treatment. Assessment should be occupation based, covering the occupations and co-occupations of the neonate. Areas of assessment should cover neuro-behavioural organization, sensory development and processing, motor function, pain, feeding, sleep, social-interaction and social-emotional development, as well as the impact of the environment on these domains of functioning as well as feeding#. An in-depth understanding of development is necessary to implement safe, effective and individualised treatment in hospital and post-discharge. Appropriate assessment tools may include, but are not limited to: Prechtl's General Movement Assessment (GMA), Test of Infant Motor Performance (TIMP), Neonatal Intensive Care Unit Network Neurobehavioral Scale (NNNS), Hammersmith Neonatal Neurological Examination (HNNE), Newborn Behavioral Observations (NBO) and Neonatal Behavioral Assessment Scale (NBAS).

Areas of intervention and methods of treatment

Intervention should form part of the collaborative management plan from the team. The therapist should have skills and ability to consult and communicate effectively with parents, instructing and guiding them in the developmental care of their infant. An individualised therapeutic plan should be developed after assessment for each infant, supporting their current level of function, facilitating optimal social-emotional, physical, cognitive and sensory development of the infant within the environment of the NICU/NHCU and their family environment. Family based care includes supporting the roles of parents/caregivers and providing sensitive, appropriate parent. Caregiver engagement in the neonate's care. In areas of intervention around the mouth in preparation for oral feeding prior to 32 weeks of age, an in-depth understanding of sensory development and integration in the neonate is essential in promoting regulation, organisation, and responding appropriately to stress cues In addition to individual assessment results, the seven core measures of neuroprotective care should inform intervention with the infant. These are 1) healing environment, 2) partnering with families, 3) positioning & handling, 4) safeguarding sleep, 5) minimising stress and pain, 6) protecting skin, and 7) optimising nutrition[8]. Early referral for positioning interventions and caregiver education are appropriate, however continuous therapy may only be considered at a later gestational age, depending on the stability of the infant, in this light, occupational therapists promote an appropriate developmental environment, based on the infant's age and status and individual needs[2]. Best Practice Guidelines for Clinicians (including occupational therapists) in supporting neurodevelopmental supportive care have been established, and include direst assessment of and intervention in the environment (guideline 1 – environment), preterm infant care (guidelines 2 – 7: positioning, handling, individualised care, self- regulation, feeding and pain management), the family unit (guidelines 8 – 9: family centred care, family education) and staff (guidelines 10 - 11: staff education and multidisciplinary team approach)[9]. The occupational therapist should be actively involved in implementation of all these guidelines within the scope of the profession[7].

Occupational therapy Intervention, as part of the collaborative multidisciplinary team approach is a dynamic process which aims to minimize stress and exposure to harmful stimuli, support comprehensive neurodevelopmental care, improve the short and long-term outcomes of fragile and vulnerable neonates and improve the child's future health, well-being and quality of life 1 and should constantly be modified based on the infant's responses. Thorough, concise, objective and interpretive documentation should be kept as per HPCSA standards[7]. Discharge and follow-up plans, with intervention beyond NICU/ NNHCU should be completed in consultation with the multidisciplinary team and take into account the resources available to the family, as well as the infant and family's needs.

Professional-therapeutic intervention and desired outcomes

The family forms an integral part of the infant's life and care team. Their occupational roles as nurturers and caregivers need to be recognised, reaffirmed, and at times assisted to reach fulfilment in the NICU/NHCU and in the transition home. Infant- and maternal mental health have a large role in the long-term outcomes of this cohort of infants10 Promotion of attachment is an important consideration for occupational therapy intervention. Occupational therapy in this population of neonates incorporates occupations of the neonate, occupations of the parent/ caregiver, co-occupations of the neonate- parent/caregiver dyad, assessment and modification of the environment as well as al domains of new-born functioning (autonomic stability, regulation of state, motor control and social interaction).

CONCLUSION

The occupational therapist has an important role in the holistic assessment and treatment of the neonate as part of the multidisciplinary team, and within the family structure. Therapists have a duty to ensure they are adequately trained and possess sufficient knowledge and skill to safely and accurately assess and treat neonates who are often fragile or vulnerable. Occupational therapy intervention should continue after discharge from the NICU/NHCU within the resources and context of the family in meeting the infants' developmental needs.

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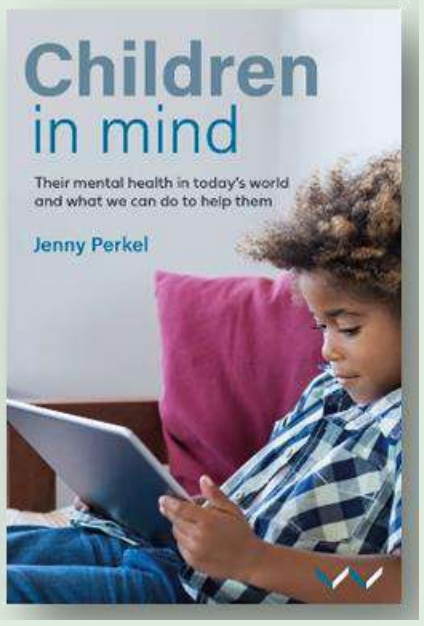
[BOOK REVIEW]



TITLE OF THE BOOK
Children in mind. Their mental health in today's world and what we can do to help

AUTHOR
Jenny Perkel

INFORMATION ON THE BOOK:
Published: 2022
Publisher: Wits University Press
No of pages: 189
Cost of Paperback: ZAR: 362.48; USD: 20
ISBN: 978-1-77614-747-2

INFORMATION ON THE AUTHOR
Jenny Perkel is a clinical psychologist with over 25 years of experience. She works in private practice in Cape Town offering psychotherapy to babies, children and adults, and she specializes in Parent Therapy. Jenny helps parents to understand and to handle children's psychological, emotional, developmental and behavioural problems. In addition, she has trained and supervised childcare workers for various child and adolescent mental health projects and children's homes and is involved in postgraduate teaching for child psychotherapy. She has published book chapters and academic journal articles.

HOW TO CITE THIS REVIEW
Chimara, M. A review of the book "Children in Mind. Their mental health in today's world and what we can do to help" by J. Perkel. *South African Journal of Occupational Therapy*. Vol 54 No3. December 2024.
DOI: https://doi.org/10.17159/2310-3833/2024/vol54no3a12

ARTICLE HISTORY
Submitted: 21 June 2024
Reviewed: Not subject to peer review
Accepted: 29 June 2024

INFORMATION ON THE REVIEWER:
Mr Munyaradzi Chimara
https://orcid.org/0000-0002-5720-3867
Affiliation: Department of Occupational Therapy and Physiotherapy. School of Allied Health Sciences. University of Namibia.. 13 Jackson Kaujeua Street, Windhoek, Namibia
Contact: mchimara@unam.na
Declaration of bias: The reviewer has no bias to declare.

ISSN On-Line 2310-3833
ISSN Print 0038-2337

A review of the book: "Children in mind. Their mental health in today's world and what we can do to help" by Jenny Perkel

THE REVIEW

Children in mind – *Their mental health in today's world and what we can do to help*, is an eloquently written book that presents the mental health challenges children face in the modern world. Written from the perspectives of a clinical psychologist, Jenny brings her vast experience working with troubled children and their parents. She raises a critical question; Are children of today happier than the children of yesteryear? To answer this question the author describes the context in which the modern child exists. The book is presented in two sections: (i) the clinical picture of childhood mental distress, and (ii) the impact of modern life on child mental health. Each chapter ends with a set of valuable recommendations for the clinician to consider.

A number of theoretical frameworks applied in child mental health, such as the cognitive behavioural framework, are presented, but the author has a clear sway towards the psychoanalytic approach despite it being criticised for *'being static, unevolved and overly located in unscientifically proven intrapsychic theory which is concerned with what happens inside of the mind, as opposed to interpersonally and in the outside world'* (p4). Today's digital world is posing parental challenges and testing parenting styles as children gain power and authority resulting in the emergence of the egalitarian approach to parenting.

The book highlights several potential environmental reasons a child could find herself/himself in the rooms of a child therapist and these could be *'medical, social, scholastic, interpersonal or intrapsychic'* reasons (p71). Jenny further asserts that at times, all the child needs is play, a view that resonates with occupational therapists who argue that for children, 'play is work' and that play is a means of learning and developing. Due to the current exposure to technology in the modern world, some children of today have become 'couch potatoes' with electronic gadgets in their hands and they are *'so immobile that their gross motor development has been affected'* (p121). Although the COVID19 pandemic enforced the meaningful use of electronic gadgets through online learning, children were restricted from play and outdoor activities such as contact sports, and this required adjustment from both the child and the parent. Indeed, *'nature, playing outdoor, adventure, space, and physical exercise are good for the emotional well-being of children'* (p125).

Jenny further touches on the important topic of parenting and how it contributes to a child's mental health. She reiterates that *'some psychological disturbances and psychiatric disorders have been linked to problems with early parenting'* (p126). Unrealistic expectations from parents, attachment between children and their parents and too much discipline may contribute to a child's mental health. Single parenting, same-sex families, mixed race adoptions are some of the different forms of modern families as presented in chapter 12 of the book. Providing psychotherapy for children from modern families may require extra caution and, in some instances, *'the therapist may need to step away to avoid being used as part of the ammunition in the battle between the exes'* the case in point being toxic divorce situations, (p151).

This book is written in a language accessible to other healthcare professionals, teachers and parents. Occupational therapists in particular may find this book beneficial to their clinical practice in child and adolescent mental health. In occupational therapy, play is utilized for assessment and intervention for various psychosocial dysfunctions in children. Jenny provides information with a balanced contextual background that may assist occupational therapists who work with children and their parents. This book is an interesting read, it is well backed by recent literature, and I certainly encourage occupational therapists working with children to read it.

VOLUME 54, NUMBER 3, DECEMBER 2024, ISSN ONLINE 2310-3833