[INTEGRATIVE REVIEW]

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

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.

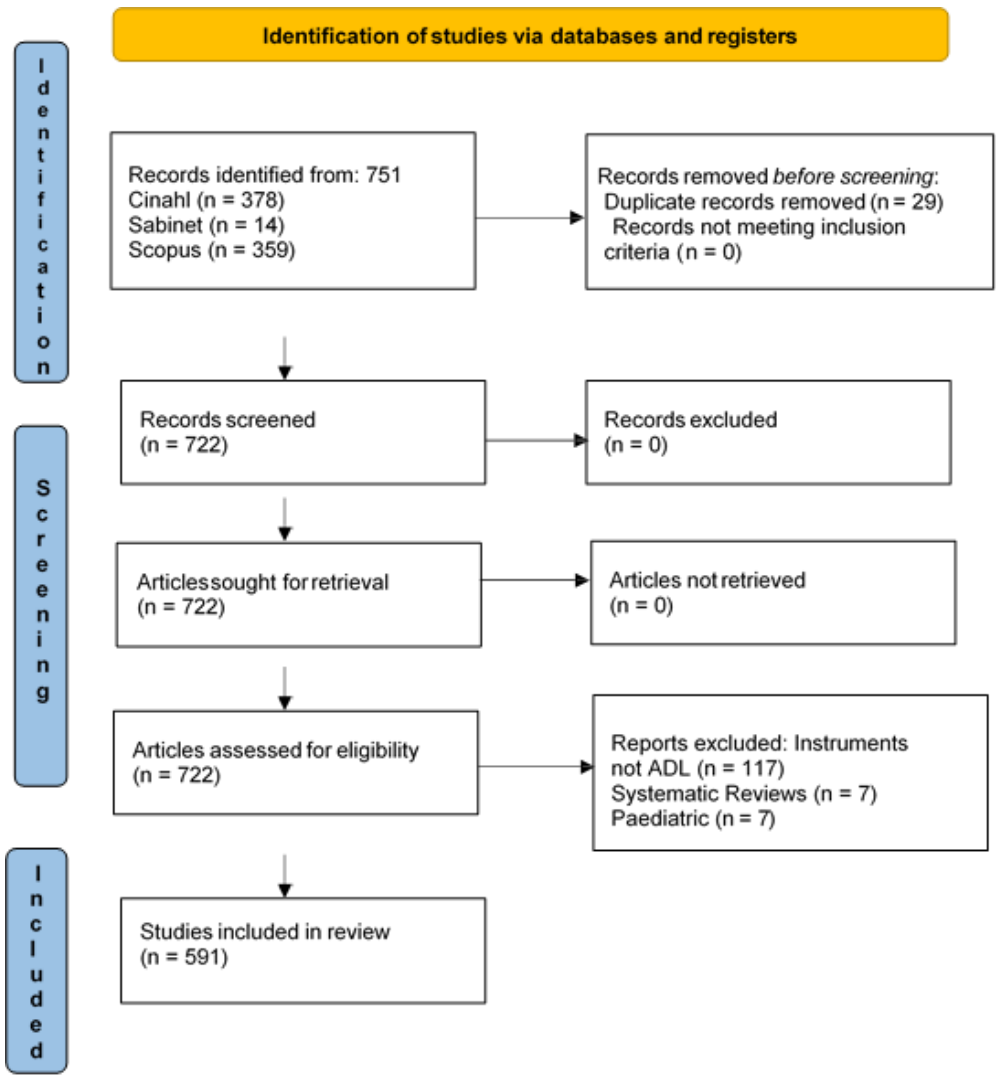

Figure 1: PRISMA 2020 flow diagram. Identifying the gap in assessing activities of daily living in resource-constrained rural settings: An integrative review of existing frameworks and instruments *From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: 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.

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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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