



Assessment of clients with cognitive impairments: A survey of Norwegian occupational therapists in municipal practice

Linda Stigen, Evastina Bjørk, Anne Lund & Milada Cvancarova Småstuen

To cite this article: Linda Stigen, Evastina Bjørk, Anne Lund & Milada Cvancarova Småstuen (2017): Assessment of clients with cognitive impairments: A survey of Norwegian occupational therapists in municipal practice, Scandinavian Journal of Occupational Therapy, DOI: [10.1080/11038128.2016.1272633](https://doi.org/10.1080/11038128.2016.1272633)

To link to this article: <http://dx.doi.org/10.1080/11038128.2016.1272633>



Published online: 03 Jan 2017.



Submit your article to this journal [↗](#)



View related articles [↗](#)



View Crossmark data [↗](#)

ORIGINAL ARTICLE

Assessment of clients with cognitive impairments: A survey of Norwegian occupational therapists in municipal practice

Linda Stigen^a, Evastina Bjørk^a, Anne Lund^b and Milada Cvancarova Småstuen^c

^aDepartment of Health Science, NTNU, Norwegian University of Science and Technology, Gjøvik, Norway; ^bDepartment of Occupational Therapy, Prosthetics and Orthotics, Oslo and Akershus University College, Oslo, Norway; ^cDepartment of Health Science, Oslo and Akershus University College, Oslo, Norway

ABSTRACT

Background: With the Coordination Reform Act initiated in 2012, Norwegian occupational therapists in municipal practice have been given responsibilities concerning clients with cognitive impairments. With emphasis on supporting best practice, the aim was to investigate the practice of Norwegian municipal occupational therapists (OTs) in their assessment of clients with cognitive impairments.

Method: An online questionnaire was used to collect data from 497 of 1367 OTs in Norwegian municipalities (RR = 36%)

Results: The most frequently used methods were informal interviews (91%), observations (91%) and standardized assessments (73%). The most frequently used standardized assessments were the Clock Drawing test (60%) and the Mini Mental State Examination (MMSE 59%). The most common reasons for using standardized assessments were to get a better foundation for initiating interventions (74%), to get more reliable results (64%) and to measure the effect of interventions (47%). The most common reasons for not using standardized assessments were that they did not have competence (49%) or that they did not have access to the materials (40%).

Conclusion: The results indicate that there are challenges when it comes to the methods and standardized assessments used. These findings invite further research on enabling municipal OTs to move further towards evidence-based practice.

ARTICLE HISTORY

Received 12 May 2015

Revised 15 November 2016

Accepted 11 December 2016

KEYWORDS

Cognition; municipal rehabilitation; occupational therapy; standardized assessment tools

Introduction

Cognitive functions are essential to the performance of everyday occupations [1] and can be defined as *the ability to take in, organize, manipulate and integrate new information with previous experiences in order to plan, structure and perform goal directed behaviour* [2]. Cognitive impairment can lead to difficulties in the way people think, feel and/or act and can result in loss of, or difficulties in acquiring or maintaining, abilities and skills necessary for occupational performance [3].

Norway is currently facing demographic changes that affect the health services; and, within the municipalities, the group of young service recipients with long-term and complex somatic disorders, such as multiple sclerosis (MS), Parkinson's disease, epilepsy, stroke, brain injuries after accidents and brain tumours [4] has doubled in the past 10 years [5]. Demographic projections in the Care Plan 2015 indicate that there are approximately 66,000 people with dementia in Norway and the number is expected to double by 2040 [6]. Under the Coordination Reform

Act, the municipalities have been given new responsibilities, such as the early assessment of needs for health services and follow up services closer to people's homes. Consequently, the occupational therapists' (OT's) responsibilities related to assessment of clients with cognitive impairments is increasing and the development of competence in those matters is, therefore, essential [7].

Through assessments, OTs can measure cognitive function as well as get an understanding of how cognitive abilities contribute to and influence occupational performance [3,8]. The results of assessments are used to indicate the need for service, design interventions based on measurement results and evaluate the results of interventions [9]. OTs examine cognition and performance from many different perspectives and use a variety of methods during the assessment process, such as interviews, cognitive screening, performance-based assessments and specific cognitive measures [10]. Since the assessment of cognitive function can be considered as a starting point

of OT interventions, when working with people with cognitive impairments, appropriate, valid and reliable assessments are crucial [11]. The implementation of evidence-based practice (EBP) has also stressed the importance of utilizing standardized assessments with sufficient psychometric properties [9,10,12,13].

Previous research

A range of assessment tools is available for OTs in clinical practice and they can be described as bottom-up or top-down assessments [14]. Using bottom-up assessments, OTs assess cognitive capacities, such as memory, attention and problem solving that are believed to be prerequisites to successful occupational performance [12]. With top-down assessments, OTs use a broad approach and can assess clients by focusing on their roles and whether the person is able to perform occupations, through observation and informal interviews [12]. Several research studies have investigated OTs' pattern of practice in relation to the assessment of clients with cognitive impairments [7,15–24]. The results of these studies indicate that OTs use both top-down and bottom-up assessments when assessing clients with cognitive impairments. Related to assessment of cognitive function, most standardized assessments used are bottom-up assessments [7,15–19,21–23], although top-down assessments are valued as more important for OTs [8,20,21,23]. The top-down assessments preferred are often non-standardized, such as informal interviews and observation [8,16–19,21–23,25]. The Assessment of Motor and Process Skills (AMPS) [26] is the most commonly mentioned standardized top-down assessment tool used in order to measure the consequences of cognitive impairments on the activities of daily living (ADL) [15,16,18–20,24,27]. The majority of the bottom-up assessments frequently mentioned in international studies are standardized assessments such as the Mini Mental State Examination (MMSE) [16–18,22,23,25,28], Neurobehavioral Cognitive Status Examination (Cognistat) [15,17,18,29], Loewenstein Occupational Therapy Cognitive Assessment (LOTCA) [17,20,24,25,30] and Rivermead Behavioural Memory Test [16,19,22,24,31]. In addition, some assessments seem to be more used in certain geographical areas. In North-America, the Allen Cognitive Level Screening [20,21,32], the Cognitive Competence Test (CCT) [18,23,33] and the Cognitive Assessment Scale for the elderly [18,23,34] are frequently used. In Oceania, the Australia Therapy Outcome Measure (AusTOM) [19,35] and the Assessment of Living Skills and Resources [17,36] are

frequently used tools. In Scandinavia, the Cognitive Test 50 (CT-50) [24,37] and the ADL taxonomy [16,38] are tools that are frequently used by Danish and Swedish OTs.

Getting valid and reliable assessment results have been reported as the reason for using standardized assessments [8,22], in addition to knowing what interventions to initiate [7,8,22,23]. Assessments that are quick and easy to administer are valued as an important factor when choosing what assessments to use [7,8,19,22–24]. Knowledge of, familiarity with and accessibility of assessments are also important factors when choosing assessments [7,8,22,23,25]. That tools are not specific enough [22] and that the results are difficult to link to the specific occupational performance [8,22] are reasons reported for choosing not to use standardized assessment tools. Time constraints and heavy workloads are also reasons for not using standardized assessments [7,8,19,22–24]. Limited knowledge of how to use assessment tools and of how to interpret assessment results are also reasons for not using standardized assessment tools [7,8,22,23,25]. Although systematic training increases reliability and validity of scoring, it has been reported that a limitation on using standardized assessments is due to the significant training time and costs related to it [23]. Less use of assessment tools by OTs working in municipal practice compared with those working in regional, county and primary care facilities was recently documented in both a Swedish [16] and a Norwegian study [39]. Results from the Norwegian study also report that the OTs from the municipal services valued the usefulness less highly than OTs in the private or governmental sector [39].

Understanding one's own practice has been suggested to be a prerequisite in order to be able to implement EBP [40]. It has also been suggested that critical reflection on one's own practices are supremely important in relation to the development of the OT profession [41,42]. With the emphasis on supporting best practice, it is important to identify the main assessments used in municipal OT practice and the rationale for their use. When practice patterns have been made clear, OT can proceed towards EBP; therefore, this study was commissioned to investigate Norwegian municipal OT practice in relation to the assessment of clients with cognitive impairments. The research questions in this study were (1) What methods and standardized assessment tools do OTs working in municipal services use to assess clients with cognitive impairments? (2) What are the reasons for their choices? (3) Is there any association between the

use of certain methods and standardized assessment tools and OTs' graduating year or work setting?

Method

Questionnaire

An online self-administered questionnaire was developed for this study using Easyfact™ [43]. It contained two subsections about (i) participants' demographic characteristics and (ii) the assessment of clients with cognitive impairments. Cognitive function was in the questionnaire defined as *the ability to take in, organize, manipulate and integrate new information with previous experiences in order to plan, structure and perform goal directed behaviour* [17]. The questionnaire consisted of 14 questions and eight questions were multiple-choice, two questions had two options and four questions were open-ended. The multiple-choice questions all had an option labelled 'other, please specify'. An example of a multiple-choice question is 'What method do you use to assess the patient's cognitive functioning?' Answer options were (i) conversation, (ii) a semi-structured interview, (iii) a structured interview, (iv) standardized assessment tools, (v) observation of daily activities and (vi) other, please specify. The participants had the option of choosing up to six alternatives. The alternatives were not defined in the questionnaire, so consequently the participants answered the question having their own definitions in mind. An example of an open-ended question is 'When were you educated as an occupational therapist?' It was estimated that the questionnaire would take 6–8 min to complete. The questionnaire was piloted prior to commencing data collection to ensure face validity [44]. The first pilot group consisted of four OTs with experience of working in a municipal centre with elderly people and, specifically, people with dementia. Revisions undertaken after the pilot were in relation to estimated time use and the wording of certain questions. After the revisions had been done, the questionnaire was piloted a second time with a group of five OTs working in municipal practice, representing the target group for this study. After the second pilot, revisions relating to making some of the open-ended questions into multiple-choice questions were made, and some alternatives to multiple-choice questions were added.

Participants

The Norwegian occupational therapy organization (Ergoterapeutene) distributed the questionnaire to

ensure anonymity of the participants. The questionnaire was distributed by email to 1367 OTs registered in the organization's database whose workplace was in municipal services. Numbers from the national statistical agency indicate that at the time of the data collection there were 1998 OTs in Norwegian municipalities, so the organization's database covered approximately 68% of the OTs working in Norway [45]. All OTs participated on a voluntary basis; agreeing to participate by entering the link in the invitation email. After the questionnaire was distributed, 71 OTs e-mailed the first author to decline participation for various reasons and this prompted some curiosity about the rest of the dropouts. A follow-up survey was developed based on the reasons stated, and distributed to 880 OTs who did not participate in order to investigate their reasons for declining participation in the study. Seven months after the deadline of the original questionnaire, the follow-up survey was distributed. The Norwegian Center for Research Data (NSD) approved the study in regards to ethics prior to data collection. The authors tried to follow the ethical principles for medical research in the Helsinki Declaration, throughout the process with respect to data collection.

Data analysis

Frequencies and percentages were used to describe the categorical data. The multiple-choice questions were analysed with each possible answer treated as separate variables. Logistic regression [46] was used to estimate the association among (i) the participants' work setting and use of different methods for assessing cognitive impairment, (ii) education year and use of different methods for assessing cognitive impairment and (iii) the participants' work setting and use of specific standardized assessment tools. When performing the regression analysis 1996 was used as a breaking point for 'graduating year'. The reason for this was that in the middle of the 1990s a change in the curriculum of OT schools took place, emphasizing a clearer focus on occupational performance-based assessments and evidence-based practice.

In dichotomizing the data for analysis, where assessment was used the label '1' was attached and '0' was attached where it was not used. The dependent variables used were methods and the specific standardized assessment tools and the covariates were workplace (home only or institution) and graduating year. The results were expressed as odds ratios (OR) with 95% confidence intervals (CI). *p* Values <0.05 were considered statistically significant. As this study is

considered an exploratory analysis, no correction for multiple testing was performed. All analyses were performed using SPSS software [47]. The open-ended questions and the option ‘other, please specify’ were analysed using content analysis, aiming to quantify the responses [48]. The responses to the open-ended question regarding education year were grouped together in 5-year intervals in SPSS, as the responses were numerical. The responses to the open-ended alternative for the question regarding what standardized assessment tools they used were categorized and counted, according to the name of the assessments the participants mentioned. The responses on the open-ended alternative for reasons for using and not using standardized assessments were also analysed through content analysis aiming to find similarities between the respondents. The responses for the follow-up survey were analysed by calculating the relative frequencies.

Results

The questionnaire was distributed to 1367 OTs and after two reminders, 497 completed the questionnaire, leading to the response rate in this study being 36%. As many of the questions were multiple-choice questions and the participants had the opportunity to choose more than one alternative, the percentages reported in the results add up to more than 100%. The follow-up survey consisted of three questions and was completed by 231 OTs. The main reasons for not completing the questionnaire were that assessment of cognitive function was not part of their job (42%) and that they did not have time to complete the questionnaire (34%). Other reasons for not completing the questionnaire were that they do not work with clients (13%) and that they do not work in municipal service (11%).

Participants’ demographic characteristics

As regards gender, 94% of the participants were female and 6% were male. This corresponds well with studies previously reporting the distribution of the male: female ratio within the OT community in Norway (92% female, 8% male [39]). The graduating year of the participants ranged from 1971 to 2013. The spread within the OTs from different health regions, South-East (51%), West (24%), Middle (14%) and North (11%), was representative for the number of OTs working in the different health regions at the time of the data collection (South-East 48%, West 22%, Middle 18% and North 12% [45]). With regard

Table 1. Participants’ demographic characteristics and client groups.

Characteristic	Frequency among participants	
	Number (n)	Percentage
Graduating year (n = 497)		
Median 2002		
2013–2004	208	42
2003–1994	171	34
1993–1984	67	14
1983–1971	51	10
Client groups (n = 497)		
Persons with stroke	346	70
Persons with progressive neurological conditions	345	69
Persons with dementia	296	60
Persons with unspecified cognitive impairments	291	59
Persons with cerebral palsy	252	51
Persons with developmental disorders	247	50
Persons with traumatic brain injuries	233	47
Persons with psychiatric disorders	190	38
Other	184	37
Persons with autism	130	26

to work setting, most of the participants work with clients living at home (93%). Many of the participants work with clients in institutions (55%) and many with clients living at home as well as with clients in institutions (45%). Working with clients living at home and with clients living in institutions was the most common combination of work settings among the participants in this study. In addition, 10% work in administration, 5% only with clients in institutions and 4% work in municipal competence services. It is unknown whether the participants have any further education in OT for clients with cognitive impairments or in assessment of cognitive function. The participants work with a range of client groups, which are specified in Table 1. The most frequent groups are persons with stroke (70%) and persons with progressive neurological conditions such as multiple sclerosis (MS), Parkinson’s disease, *amyotrophic lateral sclerosis* (ALS) (69%). Thereafter, the more frequent groups are persons with dementia (59%) and persons with unspecified cognitive impairments (59%). As the table indicates, the participants work with a wide range of client groups.

Assessment of clients with cognitive impairment

Methods for assessing clients with cognitive impairments

The most frequently used methods for assessing clients with cognitive impairments were informal interviews (91%), observations (91%) and standardized assessments (73%). See Table 2 for detailed results on methods. In relation to the difference between informal interviews and semi-structured

interviews, this is addressed in the discussion section. Logistic regression indicated that the group graduating since 1995 was more likely to use observation as a method than those graduating before 1996 (OR = 1.64).

Standardized assessment tools

The participants reported in total the use of 44 different assessments tools. The most frequently used standardized assessment tools were the Clock Drawing test (60%) and MMSE (59%). Table 3 shows the tools reported by more than 1% of the participants. Logistic regression indicated that the participants working with clients living in municipal

Table 2. Frequency of participants' method of assessing cognition.

Method for assessing cognition	N	% of cases
Observation of daily activities	362	91
Conversation	362	91
Standardized assessment tools	291	73
Semi-structured interview	132	33
Other	37	9
Structured interview	36	9

institutions use the Clock Drawing test and the MMSE more often than the participants working only with clients living in their own homes (OR = 1.72 and OR = 1.55, respectively). Participants working only with clients living in their own homes were used as covariate in the regression analysis and that is why that is shown in Table 4. Logistic regression also indicated that the participants who use either MMSE or the Clock Drawing test are likely to have considered using the other of these two tests. Hence, it was more common to use the two tests in combination, than one of them by itself (OR = 1.64). For details on regression analysis, see Table 4.

Reasons for using and not using standardized assessment tools

The reasons stated by the participants as to why they use or do not use standardized assessments are presented in Table 5. The most common reasons for using standardized assessment tools were to get a better foundation for initiating interventions (74%), to get more reliable results (64%) and to measure the

Table 3. Frequency of participants' use of standardized assessment tools.

Standardized assessment tools	N	% of cases
Clock Drawing test	279	60
Mini Mental State Examination, MMSE	276	59
Sunnaas kitchen observation	95	20
Trail Making Test, TMT	51	11
Rivermead Behavioural Memory Test	46	10
Loewenstein Occupational Therapy Cognitive Assessment, LOTCA	32	7
Trandex	23	5
Assessment of Motor and Processing Skills, AMPS	23	5
The Perceive, Recall, Plan and Perform system of task analysis, PRPP	15	3
Montreal Cognitive Assessment, Moca	13	2
Arnadottir Occupational Neurobehavioral Evaluation, A-ONE	13	3
Canadian Occupational Performance Measure	12	3
Dementia Assessment Tool for Primary Health Care	9	2
Practical Mental State, PMS	8	2
Test of playfulness	7	1
Cognitive Test 50, CT 50	7	1
Dementia Assessment Tool for Primary Health Care	7	1
Movement Assessment Battery for Children, MABC	7	1
Neuromotor examination for children and adolescents, NUBU	5	1

Table 4. Regression analysis on association between method and standardized assessment use and practice location and graduating year.

Dependent variable (reference)	Variable (covariate)	OR	95% CI	p Value
Use of standardized assessment tools (non-use = ref)	Educated including and after 1996	0.829	0.544 – 1.264	0.383
	Working with clients living at home only	1.715	1.167 – 2.521	0.006*
Use of observation as method (non-use = ref)	Educated including and after 1996	1.643	1.039 – 2.597	0.034*
	Working with clients living at home only	1.603	1.036 – 2.480	0.034*
Use of conversation as method (non-use = ref)	Educated including and after 1996	1.749	1.128 – 2.713	0.013*
	Working with clients living at home only	1.233	0.521 – 2.919	0.634
Use of the Clock Drawing test (non-use = ref)	Educated including and after 1996	0.829	0.544 – 1.264	0.383
	Working with clients living at home only	1.715	1.167 – 2.521	0.006*
Use of MMSE (non-use = ref)	Educated including and after 1996	0.986	0.650 – 1.497	0.949
	Working with clients living at home only	1.551	1.057 – 2.275	0.025*

*p Value <0.05.

Table 5. Frequency of participants use and non-use of standardized assessment tools.

	N	% of cases
Reasons for using standardized tools		
To get a better foundation for initiating intervention	250	74
To get more reliable results	216	64
To be able to evaluate effect of the intervention	161	47
Other	68	20
Reasons for not using standardized tools		
Lacks competence	124	49
Do not have access to materials	103	40
Lack of time	77	30
Other	71	28
There is no tradition for it at the workplace	65	26
The tests does not provide answers to what I am wondering about	55	22
Do not want to expose my clients to testing	39	15

effect of their interventions (47%). The most common reasons for not using standardized assessment tools were that the participants did not have the competence to do so (49%), they did not have access to materials (40%) and that there was a lack of time (30%) to do so. The participants had the opportunity to give reasons why standardized assessment tools might be used even though they did not use any themselves. Twenty per cent of the participants used the option 'other' in reply to the question on why they use standardized assessment tools. Answers indicate that the participants use them as they are well-known tools for the multidisciplinary team and that they are expected to use them as part of the process of diagnosing dementia. Twenty-seven per cent of the participants used the option 'other' in answering the question on why they do not use standardized assessment tools. Reasons stated were that it was the responsibility of other members of the team to do standardized assessments; that the clients have already been tested in the hospitals; or that the participant did not reckon the standardized tests they were able to use would be relevant, because assessment of the patient's occupational performance would be more appropriate.

Discussion

The aim of this study was to investigate Norwegian municipal OT practice in relation to assessment of clients with cognitive impairment. Specifically (1) What methods and standardized assessment tools do OTs working in municipal services use to assess clients with cognitive impairments? (2) What are the reasons for their choices? (3) Are there any associations between the use of certain methods and standardized assessment tools and OTs' graduating year or work setting?

Methods for assessing clients with cognitive impairments

The results indicate that the group of OTs educated after 1995 were more likely to use observation as a method than those educated before 1996. One possible explanation for this could be the shifting paradigms within OT, where OTs in the 1960–1980s had a more reductionist view on both assessments and interventions [49], where the occupational performance aspect was not emphasized in many practice settings to the degree it has come to be since the 1990s. However, one might also assume that the tradition in the various practice locations would have an influence on this aspect, leading to newly hired OTs adopting the traditions already existing in the practice locations.

Historically, OTs have favoured non-standardized assessments such as informal interviews and unstructured observations [12]. A major limitation when using informal assessments is the challenge of ensuring the reliability and validity of the assessment results, leading to difficulties with, among other aspects, measuring treatment outcomes [11,12]. As observations and informal interviews are valued as important methods for OTs [16–19,22–25], it is important to have standardized tools to use in combination with these methods, in order to ensure valid and reliable assessment results.

Standardized assessment tools

In addition to observations and informal interviews, 73% of the participants in this study report that they use standardized assessments. Many standardized assessments used within OT are bottom-up assessments, measuring body function and structures [7,15–23]. However, it can be argued that those are not always suitable in municipal practice, where the focus in many cases is more on the level of activity, occupation and participation. In this study, the MMSE and the Clock Drawing test were the most frequently used standardized assessment tools. An association was found between them demonstrating that if MMSE is used it is likely that the same OT would also use the Clock Drawing Test. Regression analysis also indicated that the participants working with clients living in institutions use the MMSE and the Clock Drawing test more frequently than the participants working only with clients living at home. It was outside the scope of this study to investigate why that is, however, although one explanation could be that OTs in municipal institutions in many cases have a specific responsibility to perform these standardized

tests as routine on admission. The other international studies that found MMSE used frequently did not find that the Clock Drawing Test was as common as it had been among the Norwegian OTs [15,16,18,19,21]. Although the Clock Drawing test is not that frequently used in the international studies, it has been recommended for use in connection with screenings such as the MMSE [15,50]. One reason for the frequent use of the Clock Drawing test in Norway can be the effects Ageing and Health [51] has had on developing and implementing the Dementia Assessment Tool for Primary Health Care [51]. The assessment contains eight different tools, whereas the MMSE and the Clock Drawing test are the two that are usually completed by OTs. It is also documented that standardized assessment tools that are quick and easy to administer are important for OTs in clinical practice when they are choosing what tools to use [7,8,19,22–24]. Although the participants did not state that as a reason for using the MMSE and the Clock Drawing test in this study, it could be assumed that this aspect is an important reason for the reported frequent use of these two tools, as they can both be administered within a short timeframe and do not require extensive training.

There were no differences between the groups educated before and after 1996 in regard to the use of standardized assessment tools and this was noteworthy, as with the implementation of EBP from the mid-2000s, the OT schools have emphasized standardized assessments in the curriculum. The client groups the participants are working with are those with stroke and progressive neurological disorders and the most common tools are the Clock Drawing test and the MMSE. This is interesting, as both these tools are emphasized as tools suitable for use in connection with diagnosing dementia rather than with the assessment of stroke and neurological impairment. Whether it is a mistake to use these tools for assessment of stroke or neurological impairment would be an important subject to reflect upon and investigate further.

When reporting the most frequently used method for assessing cognitive function the OTs in this study report that they use observation of daily activities and informal interviews. Looking at the valid and reliable top-down assessments, they are used to a very limited extent and that indicates that most of the observations done are non-standardized. Five per cent indicate they use the Assessment of Motor and Processing Skills (AMPS), 3% the Perceive, Recall, Plan and Perform system of task analysis (PRPP), and 3% indicate they are using the Arnadottir Occupational

Neurobehavioural Evaluation (A-ONE). The Sunnaas kitchen observation, however, [52], is reported as the third most frequently used standardized assessment, with 20% of the participants indicating that they use it. The Sunnaas kitchen observation was developed in Norway, at Sunnaas Rehabilitation Hospital in the 1980s. The language is Norwegian, and there is little requirement in relation to costs or time used in order to learn how to use it. Studies have emphasized that costs and time requirements are important factors that could hinder the implementation of new assessment tools for OTs in clinical practice [7,8,19,22–24]. Subsequently, important reasons why so many of the participants in this study choose to use the Sunnaas kitchen observation in their practices could be that it is available for OTs without cost or need for training and that the language is well known. It is documented in international studies that OTs tend to prefer assessments developed in their own geographical locations [16–20,23,24]. However, the reason why that is so could be a topic for future research. The Sunnaas kitchen observation is standardized in regard to the activities being assessed and scoring procedures; however, there are no studies on psychometric properties in relation to its use [52]. This indicates that the trustworthiness of the results could be questioned, and whether it should be used to the extent reported in this study ought to be studied.

Studies on psychometric properties have been undertaken in regard to the AMPS, PRPP and A-ONE. These studies indicate that the assessment results can be considered valid and reliable for various client groups [53–61]. These tools, however, require OTs to take part in extensive training, which is time consuming and costly. Although it is time consuming to go for further training and implementing the new tools in practice, spending the necessary time for a thorough assessment will provide a starting point for instigating the appropriate intervention and lead to assessment results that are both valid and reliable.

Reasons for using and not using standardized assessment tools

Seventy-two per cent of the participants in this study reported that they use standardized assessment tools in order to get a better foundation for initiating interventions, and this has been documented both in the literature [9,11] and in previous research [7,8,22,23] as reasons why standardized assessment tools are used. It is important to have a thorough understanding of clients' resources and limitations in order to

tailor interventions to the individuals [3,11,12]. It was indicated by 64% of the participants that they use standardized assessments in order to get more reliable results, and this is in line with the implementation of evidence-based practice where OTs are encouraged to use more standardized assessments in their practices in order to be able to trust the results of the assessments [3,11,13]. Reliable and valid assessment results are also important reasons for using standardized assessment tools in previous research [8,22]. Almost 50% of the participants say that a reason for using standardized assessment was to measure the effect of their interventions. When looking at the most frequently used assessments, MMSE and the Clock Drawing test, they have been developed in order to identify impairments rather than describe occupational performance or make predictions on a performance level [15,18]. It was outside the scope of this study to investigate interventions and what tools are used to measure the effect of the interventions; however, it is worth mentioning that tools such as the MMSE and the Clock Drawing test are not developed to measure interventions related to an occupational performance level.

The three most common reasons for the participants not using standardized assessments were lack of competence (49%), no access to materials (40%) and lack of time (30%). Lack of competence has been emphasized in other studies [7,8,22–24]. To cope with that it has been suggested that OTs should take additional courses, both in regard to assessment procedures and as intervention [11]. Lack of time was the third most common cause reported by the participants for not using standardized assessments, and this was also found to be a reason for not using standardized tools in previous studies [7,8,19,22–24]. Implementation of new assessments takes time, and challenges when doing assessments in the early stages when they are not that familiar to the therapists, can reduce the quantity of time given to other clients [7], because using standardized assessments can take more time [7,24]. In addition, OTs may experience difficulty in prioritizing participation in further training, due to a heavy workload from day to day [22]. However, choosing not to prioritize time for training or doing standardized assessments conflicts with evidence-based practice and invites further reflection.

Limitations of the study

The aim of this study was to investigate Norwegian municipal OT practice in relation to the assessment of clients with cognitive impairment.

When using a questionnaire for data collection, the use of closed questions enables the possibility of drawing conclusions from a large group of participants [48]. However, there is a possibility that the answer options may not reflect the exact meanings of the OTs [48]. In order to minimize these disadvantages, the participants in this study had the opportunity to choose multiple-choice alternatives for answering the different questions, in addition to being able to give their own replies in the final alternative labelled ‘other, please specify’. In spite of this, the participants might not have used that option and thus their exact meanings might have been lost.

The Norwegian occupational therapy organization distributed the invitation to participate in this study to the members registered in their database and this led to many OTs receiving the invitation. Four hundred and ninety-seven OTs participated in the study but since there were 1998 OTs in Norwegian municipalities at the time of data collection, this study does not reflect the whole picture. There is a possibility that the database was not updated with the OTs’ correct email addresses and, based on the feedback received from some OTs, they had changed jobs and were, therefore, no longer in the target group for the study. There is also a possibility that there are OTs who would have been in the target group but at the time of distribution were not registered in the organization’s database. This could be due to not having updated their membership information, or they were not members of the organization. The OTs received the invitation by e-mail including an introductory text with a link to the online questionnaire. As the wording in the introductory text focused on assessment of clients with cognitive impairments, some OTs could have felt that was not their field of expertise (although they might assess cognition in their practices), leading them to decide not to participate. In addition, the first author received feedback from some OTs that firewall settings on their work computers would not allow them to access the link with the questionnaire.

The most frequent methods for assessing cognitive function were observation of daily activities and informal interviews. These are also frequently used methods in international studies [16,19,23,25]. As the answer options on what methods the participants use when assessing clients with cognitive impairments were not defined in the questionnaire, there could be a source of error related to the results from this question. The difference between an informal interview and a semi-structured interview was up to the participants themselves to define and might have been

interpreted differently. However, looking at the other studies reporting that informal interview is a method frequently used [16,19,23,25], it is likely that the results in this study would not have differed largely had the options been defined. In addition, the participating OTs piloting the questionnaire did not comment on uncertainty regarding the definitions on the various alternatives in the questionnaire, so consequently they were not added to the questionnaire prior to distribution.

The methodological limitations in this study raise key questions regarding the trustworthiness of the study. Whether the limitations are severe enough to affect the transferability of the results is difficult to say. The sample was representative in regard to sex, graduating year and health regions, so at least it should be grounds to generalize and state that this is the practice of Norwegian OTs in municipal service. However, only 36% filled out the questionnaire and another 17% completed the follow-up study. That means that the practice of 47% of the OTs in municipalities, at the time of data gathering, is still unknown.

Implications for practice and future research

The methods preferred by the participants in this study were informal interviews and observations. The standardized top-down occupation-based assessment tools were not generally used, indicating that most of the observations done are unstructured observations. In the current climate focusing on evidence-based practice, it would be recommendable to implement and use standardized assessment top-down tools in the municipalities in a higher degree than the results of this study indicated.

The client groups most participants are working with are clients with progressive neurological diseases and stroke, and the most frequently used standardized assessment tools used are the Clock Drawing test and the MMSE, which are recommended for use in dementia care rather than neurology. Whether they are in fact used on clients with neurological conditions, such as stroke and progressive disorders such as MS or Parkinson's disease, is unknown and should be a topic for future research. It is recommended that the OTs in municipalities reflect upon the tools they choose to use and the limitations they entail, in regard to who they are developed for and what the results can be used for.

The results of this study invite OTs to reflect and create awareness of the choices, in addition to what values and attitudes are implicitly influencing their

assessment practices. The results also prompt some topics for future research such as

- How do municipal OTs use the results from MMSE and the Clock Drawing test in their practices?
- Is there a tendency that OTs prefer using standardized assessment tools that have been developed in their geographical areas and if so, why is that?
- In what way could a standardized observational tool such as the PRPP [2] or the AMPS [26] be suitable assessment tools used for observation of the occupational performance aspect in the context of municipal service?

Conclusion

The overall conclusions of this study indicate that there are challenges regarding the assessment of clients with cognitive impairments, when it comes to both the reported methods and the assessment tools used by the participants. The participants' preferred methods for assessing cognition are informal interviews and observations, but the standardized assessment tools in this regard are not frequently used. These findings invite further reflection and research on whether using non-standardized assessments conflicts with evidence-based work. This aspect could be investigated through qualitative methods such as individual or focus group interviews with the aim of enabling municipal OTs to move further towards evidence-based practice.

Acknowledgements

The authors would like to acknowledge the contribution of all the OTs who participated and made this study possible. The authors would also like to acknowledge the contribution of the Norwegian Association of Occupational Therapists, Ergoterapeutene with Karl-Erik Tande Bjerkaas, and Easyfact with Anders Kjønnøy, for their support during the data collection process.

Disclosure statement

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the paper.

References

- [1] Togliola J. A dynamic approach to cognitive rehabilitation. In: Katz N, editor. Cognition and occupation across the lifespan models for intervention in occupational therapy, 2nd ed. USA: AOTA Press; 2005.

- [2] Chapparo C, Ranka J. The Perceive, Recall, Plan and Perform System assessment course manual. Available from authors, chris.chapparo@sydney.edu.au and jranka@occupationalperformance.com; 2015.
- [3] Grieve J, Gnanasakaran L. Neuropsychology for occupational therapists. cognition in occupational performance. 3 ed. Oxford: Blackwell Publishing Inc; 2008.
- [4] Lov om kommunale helse- og omsorgstjenester m.m. (helse- og omsorgstjenesteloven); 2011.
- [5] Romøren TI. Yngre personer som mottar hjemmetjenester: hvem er de, hva slags hjelp får de og hvorfor øker antallet så sterkt? Rapportserie 2006:8. Gjøvik: Høgskolen i Gjøvik; 2006.
- [6] Helse- og omsorgsdepartementet. Omsorgsplan 2015. Oslo: Helse- og omsorgsdepartementet; 2005.
- [7] Holmqvist K, Kamwendo K, Ivarsson A. Occupational therapists' descriptions of their work with persons suffering from cognitive impairment following acquired brain injury. *Scand J Occup Ther.* 2009;16:13–24.
- [8] Sansonetti D, Hoffmann T. Cognitive assessment across the continuum of care: the importance of occupational performance-based assessment for individuals post-stroke and traumatic brain injury. *Aust Occup Ther J.* 2013;60:334–342.
- [9] Law M, Baum C. Measurement in occupational therapy. In: Law M, Baum C, Dunn W, editors. *Measuring occupational performance supporting best practice in occupational therapy.* Thorofare: SLACK Incorporated; 2005.
- [10] Fawcett AL, Payne S, Howell C. Methods of assessment and sources of assessment data. In: Laver Fawcett A, editor. *Principles of assessment and outcome measurement for occupational therapists and physiotherapists.* London: Wiley & Sons; 2008.
- [11] Laver FA. *Principles of assessment and outcome measurement for occupational therapists and physiotherapists.* London: Wiley & Sons; 2008.
- [12] Turner A, Foster M, Johnson SE. *Occupational therapy and physical dysfunction: Principles, skills and practice,* 5th ed. London, UK: Churchill Livingstone; 2002.
- [13] Taylor MC. *Evidence-based practice for occupational therapists.* 2nd ed. London: Blackwell Publishing Ltd; 2007.
- [14] Rogers J, Holm M. The therapist's thinking behind functional assessment I. In: Royeen C, editor. *AOTA self study series assessing function.* Rockville, MD: AOTA; 1989.
- [15] Douglas A, Letts L, Liu L. Review of cognitive assessments for older adults [corrected] [published erratum appears in *Phys Occup Ther Geriatr* 2009;27:273–4]. *Phys Occup Therapy Geriatrics.* 2008;26:13–43.
- [16] Holmqvist K, Ivarsson A-B, Holmefur M. Occupational therapist practice patterns in relation to clients with cognitive impairment following acquired brain injury. *Brain Injury* 2014;28:1365–1373.
- [17] Koh C, Hoffmann T, Bennett S, McKenna K. Management of patients with cognitive impairment after stroke: a survey of Australian occupational therapists. *Aust Occup Ther J.* 2009;56:324–331.
- [18] Korner-Bitensky N, Barrett-Bernstein S, Bibas G, et al. National survey of Canadian occupational therapists' assessment and treatment of cognitive impairment post-stroke. *Aust Occup Ther J.* 2011;58:241–250.
- [19] Robertson L, Blaga L. Occupational therapy assessments used in acute physical care settings. *Scand J Occup Ther.* 2013;20:127–135.
- [20] Alotaibi NM, Reed K, Nadar MS. Assessments used in occupational therapy practice: an exploratory study. *Occup Ther Health Care.* 2009;23:302–318.
- [21] Piernik-Yoder B, Beck A. The use of standardized assessments in occupational therapy in the United States. *Occup Ther Health Care* 2012;26:97–108.
- [22] Stapleton T, McBrearty C. Use of standardised assessments and outcome measures among a sample of Irish occupational therapists working with adults with physical disabilities. *Br J Occup Ther.* 2009;72:55–64.
- [23] Douglas A, Liu L, Warren S, et al. Cognitive assessments for older adults: which ones are used by Canadian therapists and why. *Can J Occup Ther.* 2007;74:370–381.
- [24] Pilegaard M, Pilegaard B, Birn I, et al. Assessment of occupational performance problems due to cognitive deficits in stroke rehabilitation: a survey. *Int J Therapy Rehab.* 2014;21:280–288.
- [25] Burns SC, Neville M. Cognitive assessment trends in home health care for adults with mild stroke. *Am J Occup Ther* 2016;70:1–8.
- [26] Fisher AG. *Assessment of motor and process skills.* Fort Collins, CO: Three Stars Press; 2003.
- [27] Swinson T, Wenborn J, Hynes S, et al. Community occupational therapy for people with dementia and their family carers: a national survey of United Kingdom occupational therapy practice. *Br J Occup Ther.* 2016;7:85–91.
- [28] Folstein MF, Folstein SE, McHugh PR. "Mini-mental state". A practical method for grading the cognitive state of patients for the clinician. *J Psychiatr Res.* 1975;12:189–198.
- [29] Kiernan R, Mueller J, Langston J, et al. The Neurobehavioral Cognitive Status Examination: a brief but quantitative approach to cognitive assessment. *Ann Intern Med.* 1987;107:481–485.
- [30] Itzkovich M, Averbuch S, Elazar B, et al. *Loewenstein Occupational Therapy Cognitive Assessment (LOTCA) battery,* 2nd ed. Pequannock, NJ: Maddak Inc; 2000.
- [31] Wilson B, Clare L, Baddeley A, et al. *The Rivermead Behavioural Memory Test – extended version.* Bury St Edmonds: Thames Valley Test Company; 1999.
- [32] Allen CK, Austin SL, David SK, et al. *Allen Cognitive Level Screen-5 (ACLS-5)/Large Allen Cognitive Level Screen-5 (LACLS-5).* Camarillo, CA: ACLS and LACLS Committee; 2007.
- [33] Burns T, Mortimer JA, Merchak P. Cognitive Performance Test: a new approach to functional assessment in Alzheimer's disease. *J Geriatr Psychiatry Neurol.* 1994;7:46–54.

- [34] Geneau Taillefer D. Le Protocole d'Examen Cognitif de la Personne Âgée (PECPA-2). 1er Colloque de Psychogériatrie du CCFP, St-Hyacinthe, Québec; St-Hyacinthe, Québec; 1995.
- [35] Perry A, Morris M, Unsworth C, et al. Therapy outcome measures for allied health practitioners in Australia: the AusTOMs. *Int J Qual Health Care*. 2004; 16:285–291.
- [36] Williams JH, Drinka TJK, Greenberg JR, et al. Development and Testing of the Assessment of Living Skills and Resources (ALSAR) in elderly community-dwelling veterans. *Gerontologist* 1991;31:84–91.
- [37] Sørensen L. *Cognitive Sensibilitet Og ADL Undersøgelser* København, Danmark: Ergoterapeutforeningen; 1989.
- [38] Sonn U, Törnquist K, Svensson E. The ADL taxonomy – from individual categorical data to ordinal categorical data. *Scand J Occup Ther* 1999;6:11–20.
- [39] Hagby C, Bonsaksen T, Dolva A, et al. Bruker norske ergoterapeuter undersøkelses- og vurderingsredskaper? Resultater fra medlemsundersøkelsen i 2013. Del 1. *Ergoterapeuten* 2014;4:22–27.
- [40] DeJong G, Horn SD, Conroy B, et al. Opening the black box of post-stroke rehabilitation: stroke rehabilitation patients, processes, and outcomes. *Arch Phys Med Rehabil*. 2005;86:1–7.
- [41] Hammell KRW, Iwama MK. Well-being and occupational rights: an imperative for critical occupational therapy. *Scand J Occup Ther*. 2012;19:385–394.
- [42] Whalley Hammell KR. Client-centred occupational therapy: the importance of critical perspectives. *Scand J Occup Ther*. 2015;22:237–243.
- [43] Easyfact. *Easyfact*. Asker: Easyfact AS; 2014.
- [44] Furr R, Bacharach V. *Psychometrics: an introduction*. California: Sage Publications, Inc; 2008.
- [45] SSB. *Norwegian Occupational Therapists 2014*. Available from: <https://www.ssb.no/statistikbanken/SelectVarVal/define.asp?SubjectCode=01&ProductId=01&MainTable=HelsosSektor&contents=Syssestette&PLanguage=0&Qid=0&nvl=True&mt=1&pm=&SessID=3287035&FokusertBoks=1&gruppe1=Hele&gruppe2=Hele&gruppe3=Hele&gruppe4=Hele&gruppe5=Hele&VS1=FylkerArbMark2&VS2=Fagutdanning11&VS3=AlleAldre14ac&VS4=Sektor260&VS5=&CMSSubjectArea=&KortNavnWeb=hesospers&StatVariant=&Tabstrip=SELECT&aggreseotr =1&checked=true>.
- [46] Field A. *Discovering Statistics Using SPSS*, 3 ed. London: SAGE Publications Inc; 2009.
- [47] Corp I. *IBM SPSS Statistics for Windows, Version 22.0*. Armonk, NY: IBM Corp; 2013.
- [48] Bowling A. *Research methods in health*. Buckingham: Open University Press; 2009.
- [49] Law M, Baum C, Dunn W. Challenges and strategies in applying an occupational performance measurement approach. In: Law M, Baum C, Dunn W, editors. *Measuring occupational performance supporting best practice in occupational therapy*. Thorofare: SLACK Incorporated; 2005:375–381.
- [50] Smedslund G, Siqveland J, Leiknes KA. *psychometric assessment of the clock drawing test*. Oslo: Nasjonalt kunnskapssenter for helsetjenesten; June 2015. Report No. 16. ISBN 978-82-8121-968-7 ISSN 1890-1298.
- [51] Health A. *Dementia Assessment Tool for Primary Health Care* Tønsberg; Aging and Health Online Resources; 2015. Available from: www.aldringoghelse.no/?PageID=634&ItemID=1859
- [52] Bathen T. *Sunnaas Sykehus Kjøkkenobservasjoner*. Nesodden: Sunnaas Rehabilitation Hospital; 2003.
- [53] Chapparo C, Ranka J. *OPM, Monolog 1 OPM(A) website1997 (updated 30.11.15)*. Available from: www.occupationalperformance.com.
- [54] Doble S, Fisk J, MacPherson K, et al. Measuring functional competence in older persons with Alzheimer's disease. *Int Psychogeriatr*. 1997;9:25–38.
- [55] Nygård L, Bernspång B, Fisher A, et al. Comparing motor and process ability of persons with suspected dementia in home and clinic settings. *Am J Occup Ther*. 1994;48:689–696.
- [56] Arnadottir G, Fisher A, Löfgren B. Dimensionality of nonmotor neurobehavioral impairments when observed in the natural contexts of ADL task performance. *Neurorehabil Neural Repair* 2009;23: 579–586.
- [57] Arnadottir G, Fisher A. Rasch analysis of the ADL scale of the A-ONE. *Am J Occup Ther*. 2008;62: 51–60.
- [58] Nott M, Chapparo C, Heard R. Reliability of the Perceive, Recall, Plan and Perform System of Task Analysis: A criterion-referenced assessment. *Aust Occup Ther J*. 2009;56:307–314.
- [59] Nott MT, Chapparo C. Measuring information processing in a client with extreme agitation following traumatic brain injury using the Perceive, Recall, Plan and Perform System of Task Analysis. *Aust Occup Ther J*. 2008;55:188–198.
- [60] Nott MT, Chapparo C. Exploring the validity of the Perceive, Recall, Plan and Perform System of Task Analysis: cognitive strategy use in adults with brain injury. *Br J Occup Ther* 2012;7:256–263.
- [61] Steultjens EMJ, Voigt-Radloff S, Leonhart R, et al. Reliability of the Perceive, Recall, Plan, and Perform (PRPP) assessment in community-dwelling dementia patients: test consistency and inter-rater agreement. *Int Psychogeriatr*. 2012;24:659–665.