Management of patients with cognitive impairment after stroke: A survey of Australian occupational therapists

Chia-Lin Koh, University of Queensland
Tammy Hoffmann, University of Queensland
Sally Bennett, University of Queensland
Kryss McKenna, University of Queensland
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Authors:
Chia-Lin Koh
Tammy Hoffmann* 
Sally Bennett
Kryss McKenna

*Division of Occupational Therapy
School of Health and Rehabilitation Sciences
The University of Queensland
Brisbane, Queensland, Australia 4072

* Corresponding author:
Dr Tammy Hoffmann
Division of Occupational Therapy, School of Health Rehabilitation and Sciences, The University of Queensland, Brisbane, Queensland 4072, Australia.
Email address: t.hoffmann@uq.edu.au
Fax: + 61 7 3365 1622
Tel: + 61 7 3365 2306

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Abstract

**Background/Aim:** Cognitive impairment is a common and often debilitating consequence of stroke. The current practice patterns of Australian occupational therapists who work in this area are not clearly known. The aim of this study was to investigate the theoretical approaches, assessments, interventions and research evidence used by Australian occupational therapists who work with patients who have cognitive impairment post-stroke.

**Method:** A self-administered, purpose-designed online survey was used.

**Results:** Survey responses were received from 102 occupational therapists. The client-centred approach was the most commonly used theoretical approach, with 81.3% and 72% using it often or all of the time with inpatients and outpatients, respectively. Assessments that were most frequently used were the Mini-Mental State Examination (63.7% of participants), the Lowenstein Occupational Therapy Cognitive Assessment (45.1%), the Functional Independence Measure (57.8%), and the Assessment of Living Skills and Resources (10.0%). Interventions involving functional activities were used more frequently than compensatory techniques, such as diaries, alarms, or other electronic devices, and paper and pencil remedial exercises. Few (16%) participants used computer programs specifically designed for cognitive rehabilitation. Although 60.8% of the participants reported using research literature when making decisions about interventions, a higher percentage reported relying on their past experience (88.3%) and colleagues’ opinions (77.4%).

**Conclusion:** This study provides an insight into the current practices of Australian occupational therapists who work with people who have cognitive impairment after stroke. Client-centredness is emphasised in current practice, however, the use of research evidence to inform practice appears to be limited.

**Key words:** cerebrovascular accident, cognition, health surveys, occupational therapy, questionnaires
Introduction

Stroke patients make up one of the major diagnostic groups that occupational therapists work with (Langhorne & Pollock, 2002). Approximately one-third of stroke patients have cognitive impairment post-stroke (Patel, Coshall, Rudd, & Wolfe, 2003). Patients with cognitive impairment post-stroke often experience concomitant difficulties in their performance of basic and instrumental activities of daily living (ADL) and in community reintegration (Patel et al., 2003; Zinn et al., 2004). They are also at risk of developing dementia (Linden, Skoog, Fagerberg, Steen, & Blomstrand, 2004). Therefore, knowledge of how occupational therapists evaluate and provide interventions for patients with cognitive impairment post-stroke may be able to inform service provision in this area.

DeJong et al. (2005) suggested that evidence-based practice (EBP), a concept that suggests therapists should integrate research information with clinical experience and patients’ preferences, begins with a better understanding of current practice. However, in the literature, descriptions of occupational therapy practice with patients who have post-stroke cognitive impairment are lacking. A survey of American occupational therapists regarding the provision of cognitive rehabilitation services was conducted with 60 clinicians (Wheatley, 1994). Respondents reported that patients with stroke constituted the primary population they served and traumatic brain injury (TBI) was the second biggest group. In the survey, the respondents emphasised the need for specialised knowledge for therapists about the process of
intervention for cognitive impairment. This included knowledge about standardised
assessments, treatment guidelines, and therapeutic materials. Wheatley's study (1994) was not
specific to stroke and only provided general, instead of specific, information about
occupational therapy practice for this patient group.

Blundon and Smits (2000) carried out a survey of occupational therapists in 20 clinical
settings in Canada regarding the delivery of cognitive rehabilitations services for people with
TBI. Two major approaches that are often used by occupational therapists when treating adult
physical dysfunction were investigated, namely the remedial approach and the compensatory
approach (Trombly & Radomski, 2002). The remedial approach focuses on attempting to
remediate core areas of cognitive dysfunction, such as impairment of attention or memory, as
these are believed to be prerequisites for the successful performance of daily activities
(Trombly & Radomski, 2002). Drill and practice exercise are often used as part of this
approach. A compensatory approach is usually focused on facilitating the performance of
ADL, with emphasis placed on the successful performance of daily occupations, rather than
on the specific cognitive skills which underpin task performance. Respondents in Blundon
and Smits’s (2000) survey reported using the remedial approach more frequently than the
compensatory approach. They also identified intervention activities that were frequently used
by therapists. For example, paper-pencil tasks were the most frequently used remedial
material irrespective of the domain of cognition that was being targeted, and compensatory
strategies, such as the use of a memory notebook or the rehearsal of a skill, were frequently used to address patients’ memory problems. However, this study focused on cognitive rehabilitation for people with TBI, and the findings can not necessarily be generalised to stroke patients.

A survey, conducted in the USA, regarding occupational therapy practice in stroke rehabilitation, provided detailed description of intervention activities, but not assessments, that were used throughout the patients’ (n=713) hospital stay (Richards et al., 2005). It was found that more treatment time was spent doing impairment-focused activities (37.5%) than basic ADL (31.9%). However, the survey focused on stroke rehabilitation in general, not specifically cognitive rehabilitation. It is clear that there is a lack of literature that details the practice patterns of occupational therapists who work with patients who have cognitive impairment post-stroke.

An additional area that is not explored in the literature is the extent to which therapists’ use research to inform their practice when providing cognitive rehabilitation for patients post-stroke. Knowledge of this can provide insight into therapists’ needs for integrating research in practice. Previous studies of therapists have found that past experience and colleagues’ opinions were the sources that were most frequently used by therapists when they were gathering information for clinical decision making (Bennett, Tooth et al., 2003; Wheatley, 1994).
The aim of this study was to describe current occupational therapy practice for patients with cognitive impairment post-stroke and to investigate related research utilisation.

**Method**

**Participants**

All participants were occupational therapists currently working in Australia. Participants were clinicians, clinical consultants, managers, or in joint academic and clinical positions. The only criterion for inclusion was that the therapists had to be currently working with patients who had had a stroke.

**Instrument**

An online self-administered questionnaire was developed for this study using Zoomerang™ (www.zoomerang.com). It contained five subsections to gather information about: (1) participants’ demographic characteristics, (2) theoretical approaches used, (3) assessments used, (4) interventions used, and (5) research utilisation. For subsections 2, 4 and 5, the responses were ‘never’, ‘sometimes’, ‘often’, and ‘all of the time’. Prior to commencing data collection, the questionnaire was piloted with seven occupational therapists working in adult physical caseloads in a variety of settings in Queensland. Revisions were undertaken according to their feedback. The final questionnaire contained 23 questions and required approximately 15 minutes to complete.
In the section on theoretical approaches, participants rated the frequency with which they used four major approaches to treating both inpatients and outpatients with cognitive impairment after stroke, namely the client-centred approach, the remedial approach, the compensatory approach, and the dynamic interactional approach. The client-centred approach emphasises the patient’s right to autonomy and choice (Law, 1998) and when using this approach, intervention focuses on the needs that are defined by the patient. The dynamic interactional approach uses different graded activities and manipulates the environmental context to increase the patient’s ability to transfer performance to multiple environments (Toglia, 1991). Each of the four approaches was briefly explained in the questionnaire.

In the section on assessment, participants could choose up to three assessments that they frequently used with patients who had cognitive impairment after stroke in the following categories: cognitive screening tests (e.g. Mini-Mental State Examination [MMSE]), cognitive batteries (e.g. Lowenstein Occupational Therapy Cognitive Assessment [LOTCA]), assessments of basic ADL (e.g. Barthel Index), and assessments of instrumental ADL (e.g. Frenchay Activity Index [FAI]). An ‘other’ response option was available for participants to name assessments not listed. In the intervention section, participants rated the frequency with which they used listed interventions with both inpatients and outpatients. The interventions are listed in Table 2. Table 2

The final section contained two questions about participants’ use of research to gather
information for clinical decision making. One question asked about participants’ frequency of
use of various information sources (e.g. text books, research literature, and colleagues’
opinion) to assist with clinical decision making. The other question asked about the frequency
of use of seven relevant databases (see Table 5).

Procedure

Ethical clearance for this study was obtained from the University of Queensland.

Approval was obtained from the administrator of an Australian national occupational therapy
neurology listserve with 228 members to send out an invitation to participate in the study via
the member email list. In April 2006, a participant information sheet was emailed to members
of the listserve, inviting them to complete the online questionnaire. The information sheet
explained that consent to participate was implied by completion of the online questionnaire.
Participants who reported that they were unable to access the Internet to complete the online
questionnaire were emailed a copy of the questionnaire in Microsoft Word. After two weeks, a
follow-up email was sent to encourage completion the questionnaire. A final reminder email
was sent in the end of May 2006.

Because a low number of responses (n=52) was obtained from the national neurology
listserve, state and territory groups of OT Australia (the Australian Association of
Occupational Therapists) were contacted to obtain approval to send information about the
online questionnaire to their members. The Victorian group (with 288 members listed on their
Neurology Special Interest Group register) and the Australia Capital Territory group (with 90 members in their association) gave approval for their members to be emailed and invited to participate in the study. In addition, 136 valid email details were obtained from the Who’s Working Where Member Directory of OT Australia Queensland. In order to avoid duplication, participants from the state/territory groups were reminded not to complete the questionnaire if they had already completed it via the national neurology listserv.

Data analysis

Data for each question were extracted from ZoomerangTM and imported to the Statistical Program for Social Sciences (SPSS) version 11.0 for descriptive analysis. Optional categories were collapsed in some subsections in order to more accurately reflect the real practice in clinical settings.

Results

Emails were sent to 742 occupational therapists and 102 responses were obtained. Because the proportion of therapists from each of these sources who were currently working with stroke patients and therefore eligible to participate is unknown, the response rate for this study cannot be accurately calculated.

Participants’ demographic characteristics

Participants were aged from 20-59 years with the majority (n = 62, 60.8%) being 20-29
years and female (n = 96, 94.1%). Most (n = 92, 90.2%) held a Bachelors degree in occupational therapy and 5.9% held a higher educational degree. Participants were from every state/territory of Australia, except the Northern Territory: Queensland (32.4%), Victoria (27.5%), New South Wales (19.6%), Western Australia (7.8%), Australian Capital Territory (5.9%), South Australia (2.9%), and Tasmania (2.9%). In terms of current primary work role, 93.1% participants were clinicians and/or consultants, 3.9% were managers, and 3.0% were therapists in joint academic and clinical positions. Fifty-four (53.0%) worked in inpatient rehabilitation units, with the remainder in acute stroke units (21.6%), outpatient rehabilitation units (12.7%), community centres or home care (13.7%), and private practice (3.9%).

Theoretical Approaches

Table 1 shows the number of participants who used the four theoretical approaches. The majority (81.3%) used the client-centred approach often or all of the time with inpatients and 72.0% used it often or all of the time with outpatients. The compensatory approach was the second most frequently used approach with 78.9% of participants using it with inpatients often or all of them time and 67.9% using it with outpatients often or all of the time. The remedial approach was used more by participants with inpatients than with outpatients (56.6% and 38.3% respectively used it often or all of the time). On the contrary, the dynamic interactional approach was more frequently used with outpatients (38.3%) than with inpatients (30.7%).
Assessments

Of the seven examples of cognitive screening tests provided, the top three used by participants were the MMSE (Folstein, Robins, & Helzer, 1983) (63.7%), Neurobehavioral Cognitive Status Screening Examination (also known as Cognistat) (Kiernan, Mueller, Langston, & Van Dyke, 1987) (23.5%), and brief screening tests developed by participants’ own centres (14.7%).

In terms of cognitive assessment batteries, the most frequently used assessment (by 45.1% of participants) was the LOTCA (Katz, Itzkovich, Averbach, & Elazar, 1989), either the original or its geriatric version. The Barry Rehabilitation Inpatient Screening of Cognition (BRISC) (Barry, Clark, Yaguda, Higgins, & Mangel, 1989) and the Cognitive Assessment of Minnesota (CAM) (Rustad et al., 1993) were both frequently used by 34.3% of participants, respectively. Other participants (22.5%) indicated that they did not use any cognitive batteries to evaluate clients’ cognitive function.

The Functional Independence Measure (FIM) (Keith, Granger, Hamilton, & Sherwin, 1987) was used by the majority (57.8%) of participants as an assessment of basic ADL. The Barthel Index (in one of its forms) was used by 34.3% participants. Some (14.7%) participants did not use any basic ADL assessment and some (13.7%) used functional assessments that they, or their workplace, had developed to assess basic ADL.
Of the five examples of instrumental ADL measures provided in the questionnaire, the Assessment of Living Skills and Resources (ALSAR) (Williams et al., 1991) was the most frequently used (10%), followed by Kohlman Evaluation of Living Skills (KELS) (3.9%) (McGourty, 1988) and Nottingham Extended Activities of Daily Living Scale (EADL) (2.0%) (Nouri & Lincoln, 1987). A large proportion of participants (47.1%) did not report using any instrumental ADL assessments. Twenty-eight (27.5%) participants reported that they evaluated clients’ instrumental ADL function with informal functional assessments, such as kitchen and laundry tasks.

Interventions

Table 2 shows the interventions used by the participants who worked with inpatients. The top two interventions that the participants used often/all of the time were basic ADL training (88.5%) and instrumental ADL training (83.9%). More than half (67.8%) of the participants used compensatory techniques, such as diaries, alarms, or other electronic devices, often or all of the time with inpatients. Paper and pencil exercises were used often or all of the time by approximately half of the participants (44.7%). A large proportion of the participants never used computer programs as interventions, regardless of whether these programs were designed for leisure or specific cognitive training.

[Insert Table 2 about here]

The interventions used by participants who worked with outpatients are presented in
Table 3. The majority of the participants (71.5%) indicated that they used instrumental ADL training often or all of the time. Compensatory techniques and work-related activities were used often or all of the time by 63.7% and 46.8% of the participants respectively. About one-third of participants (33.4%) used paper and pencil exercises often or all of the time. Interventions that participants most frequently reported never using were card games (50.7%), computer programs designed for recreational use (76.7%), and computer programs specifically designed for cognitive rehabilitation (84.0%).

[Insert Table 3 about here]

Research utilisation

Table 4 presents the frequency with which participants used various information sources when making clinical decisions. Most participants (88.3%) depended on their past experience often or all of the time, followed by colleagues’ opinions (77.4%) and research literature (60.8%).

[Insert Table 4 about here]

Table 5 shows participants’ frequency of use of seven major relevant databases. For those who used databases, use was similar among five databases (CINAHL, Cochrane, MEDLINE, OTseeker, and PubMed). PsycINFO and Embase were the least used databases.

[Insert Table 5 about here]
Discussion

This survey investigated the current practices of Australian occupational therapists who work with patients who have cognitive impairment after stroke, including the theoretical approaches, assessments, interventions and research evidence used. A large proportion of participants indicated that they used the client-centred approach often or all of the time when treating patients with cognitive impairment after stroke, suggesting that participants recognise the importance of obtaining and using patients’ or their caregivers’ priorities as a guide to their practice. While Morgan, Kelkar and Vvas (2002) found that using a client-centred approach can improve patients’ satisfaction with and the achievement of functional outcomes, more research is needed to determine the effectiveness of using this approach with patients who have cognitive impairment after stroke.

In general, participants in this survey used the compensatory approach more frequently than the remedial approach. This was also reflected in participants’ choice of interventions, with functionally-based interventions and compensatory techniques used more frequently than remedial interventions such as paper-pencil, card, and board exercises. The most common criticism of remedial interventions is that the skills acquired through paper-pencil or tabletop activities may not be readily transferred to ADL (Cobble, Bontke, Brandstater, & Horn, 1991). This may explain why participants in this survey tended to use functional activities and compensatory techniques more. However, Abreu and Toglia (1987) argue that compensatory
approaches that directly train a patient’s skills in a particular task do not guarantee that the patient will be able to perform the same task in a different environment. More research is needed regarding the effectiveness of both the remedial and compensatory approaches.

This survey identified some commonly used assessments in the categories of cognitive screening tests, cognitive assessment batteries, and basic ADL assessments. However, for many of these assessments, their psychometric properties, such as reliability and validity, for use with patients with cognitive impairment after stroke are either weak or have not been examined. For example, the MMSE has been reported to have only moderate test-retest reliability and low to moderate sensitivity for the stroke population (Grace et al., 1995). The LOTCA has been found to be slightly superior to the MMSE in its ability to predict patients’ functional outcome and detect change in patients’ cognitive status (Zwecker et al., 2002), but it is time consuming to use. Assessments that were commonly used were not specifically designed for stroke, thus, it is important to confirm how sound their psychometric properties are for use with the stroke population. Using an assessment without consideration of its psychometric properties may yield misleading information about patients’ condition and impact on the appropriateness of therapists’ clinical decisions.

Most participants reported either never using a formal assessment of instrumental ADL or using informal assessments/tasks developed in their own settings. Of those that did use a formal assessment, the ALSAR was used more frequently than other instrumental ADL
assessments, such as the EADL, that have been more commonly used in stroke research. The frequent use of the ALSAR by participants in this study of Australian occupational therapists may be because the ALSAR has been researched by Australian academic occupational therapists and subsequently taught in Australian university programs (Hilton, Fricke, & Unsworth, 2001). It may also be because the ALSAR is the only instrumental ADL assessment that considers the resources available to patients when undertaking instrumental ADL tasks (Hilton et al., 2001). Therapists may find that assessing both the skills and resources available to patients provides them with valuable information. However, the original scoring criteria for the ALSAR have been criticised as lacking clarity, resulting in it being difficult to provide a valid interpretation of item scores (Conner-Spady, Slaughter, & MacLean, 1999). Therefore, therapists who want to use ALSAR with their patients with stroke need to be cautious when interpreting the scores.

Most participants reported never using computer programs as an intervention. According to previous research, a lack of computer equipment and/or software and older adults’ lack of interest in computer technology may be the two main reasons for this (Ackerman et al., 2001). Although research supporting the effectiveness of computerised interventions for cognitive rehabilitation is growing (Bond, Wolf-Wilets, Fiedler, & Burr, 2000), more evidence is still needed for therapists to have confidence to offer it as an intervention for patients with cognitive impairments post-stroke.
Like participants in previous studies (Bennett, Tooth et al., 2003; Wheatley, 1994), participants in the current survey reported relying more on past experience and colleagues’ opinions as sources of information to assist in clinical decision making than on research literature. Forty percent of participants reported using research evidence never or only sometimes. The possible reasons that have been reported as barriers for therapists’ use of research evidence include: a perceived lack of time or skills/knowledge to identify appropriate evidence, insufficient research evidence, and a lack of support and resources in the workplace for accessing research evidence (Bennett, Tooth et al., 2003). However participants in this study used research literature more frequently than participants in other studies who reported relying more on short courses/continuing professional development or text books (Bennett, Tooth et al., 2003; Wheatley, 1994). This result may be indicative of therapists’ increasing awareness of and knowledge about EBP over recent years.

Five electronic databases were used often or all the time by a quarter to a third of participants. These databases can be categorised into two groups: (1) general databases, such as MEDLINE/PubMed or CINAHL; and (2) specialist databases, such as OTseeker and The Cochrane Library. For those who would like to search for evidence regarding the effectiveness of interventions, searching in these specialist databases may be more efficient as they contain high quality pre-appraised research information (Bennett, Hoffmann et al., 2003). However, therapists are also encouraged to search in general databases when possible as these
databases contain a broad range of research methodologies that may provide therapists with important information to assist them with clinical decision making.

**Limitations**

A number of limitations of this study should be acknowledged. In addition to the small sample size, the majority of participants were from Queensland, Victoria, and New South Wales. Therefore the sample may not be representative of all Australian occupational therapists who work with patients who have cognitive impairment after stroke.

Despite piloting of the questionnaire, the wording of some of the questions may have limited accurate interpretation of participants’ responses. For example, the ‘never’ option that was available in most questions may have been used by participants to indicate either a) that they never used the approach or assessment or intervention that was referred to in the question or b) that the question was not applicable to them. Also, the intervention categories of compensatory techniques and ADL training were not mutually exclusive as some interventions could be classified as belonging to both categories.

Finally, the questionnaire did not explore participants’ rationale for their current practice, such as their reasons for using or not using particular assessments or interventions. Although this was not the focus of the study, interpretation of the results would be enhanced if this information was available and it is suggested that further research explore this issue.
Conclusion

This study surveyed Australian occupational therapists regarding their current practice when treating patients with cognitive impairment following stroke. More than three-quarters of the participants in the study reported using the client-centred approach often or all of the time to guide their practice and the compensatory approach was used more frequently than the remedial approach, with both inpatients and outpatients. Participants used standardised assessments to evaluate their patients’ cognitive impairment and basic ADL performance, but relied more on clinical observations or assessments developed by their own workplace when assessing instrumental ADL. In terms of interventions, functional activities were used more frequently than remedial exercises. Just over half of the participants reported using research evidence often or all of the time to guide clinical practice. This study provides insight into the current practices of Australian occupational therapists who work with patients who have cognitive impairment post-stroke and this may inform service provision in this area.

References


independence measure: A new tool for rehabilitation. In M. G. Eisenberg & R. C. Grzesiak (Eds.), *Advances in clinical rehabilitation* (pp. 6-18). New York: Springer-Verlag.


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<th>Often</th>
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<td>Often n (%)</td>
<td>All of the time n (%)</td>
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<td>Basic ADL training (e.g. dressing, toileting)</td>
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<td>9 (10.3)</td>
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Computer programs

specifically designed to rehabilitate cognitive skills

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Table 3 Participants’ (N=102) frequency of use of interventions with outpatients

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and leisure use

Computer programs

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<th>63 (84.0)</th>
<th>11 (14.7)</th>
<th>1 (1.3)</th>
<th>0 (0.0)</th>
</tr>
</thead>
</table>

rehabilitate cognitive skills
<table>
<thead>
<tr>
<th>Source</th>
<th>Never n (%)</th>
<th>Sometimes n (%)</th>
<th>Often n (%)</th>
<th>All of the time n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experience with similar clients in the past</td>
<td>1 (1.0)</td>
<td>11 (10.8)</td>
<td>52 (51.0)</td>
<td>38 (37.3)</td>
</tr>
<tr>
<td>Colleagues’ opinion</td>
<td>2 (2.0)</td>
<td>21 (20.6)</td>
<td>60 (58.8)</td>
<td>19 (18.6)</td>
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<tr>
<td>Research literature</td>
<td>2 (2.0)</td>
<td>38 (37.8)</td>
<td>53 (52.0)</td>
<td>9 (8.8)</td>
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<tr>
<td>Short courses/continuing professional</td>
<td>1 (1.0)</td>
<td>49 (48.0)</td>
<td>43 (42.2)</td>
<td>9 (8.8)</td>
</tr>
<tr>
<td>Text books</td>
<td>5 (4.9)</td>
<td>56 (54.9)</td>
<td>38 (37.3)</td>
<td>3 (2.9)</td>
</tr>
<tr>
<td>Undergraduate course materials†</td>
<td>45 (45.9)</td>
<td>41 (41.8)</td>
<td>11 (11.2)</td>
<td>1 (1.0)</td>
</tr>
</tbody>
</table>

† Four respondents did not give a response to this item
Table 5 Participants’ (N=102) frequency of use of electronic databases

<table>
<thead>
<tr>
<th>Interventions</th>
<th>Responses</th>
<th>Never</th>
<th>Sometimes</th>
<th>Often</th>
<th>All of the time</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
<td>n (%)</td>
</tr>
<tr>
<td>CINAHL</td>
<td>98</td>
<td>16 (16.3)</td>
<td>46 (46.9)</td>
<td>29 (29.6)</td>
<td>7 (7.1)</td>
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<tr>
<td>MEDLINE</td>
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<td>20 (20.4)</td>
<td>45 (45.9)</td>
<td>28 (28.6)</td>
<td>5 (5.1)</td>
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<tr>
<td>Cochrane</td>
<td>98</td>
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<td>52 (53.1)</td>
<td>22 (22.4)</td>
<td>6 (6.1)</td>
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<tr>
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<td>29 (29.9)</td>
<td>43 (44.3)</td>
<td>22 (22.7)</td>
<td>3 (3.1)</td>
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<tr>
<td>OTseeker</td>
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<td>18 (18.2)</td>
<td>57 (57.6)</td>
<td>20 (20.2)</td>
<td>4 (4.0)</td>
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<tr>
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<td>49 (52.7)</td>
<td>29 (31.2)</td>
<td>14 (15.1)</td>
<td>1 (1.1)</td>
</tr>
<tr>
<td>EMBASE</td>
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<td>77 (83.7)</td>
<td>12 (13.0)</td>
<td>3 (3.3)</td>
<td>0 (0.0)</td>
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</tbody>
</table>