Short Report

The 12 scales in the Australian Therapy Outcome Measures for Occupational Therapy (AusTOMs - OT) have been previously reported as offering therapists a simple and quick outcome measure for use in all practice areas. This short report describes and compares outcomes for a sample of 82 clients with neurological problems from two acute care hospitals who were rated on the AusTOMs - OT Self-care scale. It was found that client outcomes were comparable at the two facilities, although one site had a higher number of occupational therapy contacts and a greater number of clients showed a reduction in their level of impairment. The findings of this study suggest that AusTOMs - OT can be used by services to compare client outcomes. Ultimately, AusTOMs - OT could be used to establish clinical benchmarks against which services could make comparisons.

A Comparison of Client Outcomes from Two Acute Care Neurological Services using Self-care Data from the Australian Therapy Outcome Measures for Occupational Therapy (AusTOMs - OT)

Carolyn A Unsworth and Dianne Duncombe

Introduction

The Australian Therapy Outcome Measures for Occupational Therapy (AusTOMs - OT) scales have been previously described as providing valid, sensitive (Perry et al 2004, Unsworth et al 2004) and reliable (Morris et al 2005) outcome data for clients of all ages and with any aetiology. Outcome measures are vital for clinicians wishing to explore the types of therapy and modes of delivery that are most efficient or effective. Managers and clinicians can therefore use tools such as AusTOMs - OT in quality control exercises, randomised controlled trials (RCTs) and clinical benchmarking exercises. Comparisons of clients’ global outcome performances can contribute to the justification of current services provided, client length of stay or staffing levels, or assist in arguing for changes in service delivery.

Overview of AusTOMs - OT


To use the AusTOMs - OT, the therapist assesses the client’s status using usual assessment methods and goals are established. Next, AusTOMs - OT scales that relate to the goals are selected by the therapist and/or the client and the client is rated in relation to the four scale domains of Impairment, Activity limitation, Participation restriction and Distress/wellbeing. For each scale a score between 0 and 5 is awarded, from 0 (most severe) through to 5 (least severe), and half-points may be awarded creating an 11-point scale. Upon completion of the occupational therapy programme, the same AusTOMs - OT scale(s) are readministered. With practice, therapists can administer the scales in approximately 5 minutes. More detailed descriptions for using and scoring the AusTOMs - OT may be found in Unsworth and Duncombe (2004) and Unsworth (2005).
During the foundation study using AusTOMs - OT with 466 clients, anecdotal feedback suggested that clinicians in acute care settings were unsure if AusTOMs - OT could provide useful client outcome data (for outcome studies or benchmarking exercises) given that clients may be seen on only two occasions. Therefore, it was decided to compare data from occupational therapy services at two large acute care facilities (sites A and B). To ensure an adequate sample size for the comparison, the AusTOMs - OT scale with the most data (Self-care) for the largest client aetiology group (acquired neurological problems) was selected for the comparison. Hence, the aim of this study was to demonstrate how AusTOMs - OT Self-care data can be combined with client demographic information to compare client outcomes at two acute care facilities.

**Method**

**Participants**
A total of 82 clients with acquired neurological problems and nine occupational therapists from two large metropolitan acute care hospitals were included in the study. A brief description of the size of these hospitals is presented in Table 1.

**Instrument**
A data collection form was devised to collect demographic data for each client, including details of the service type and the client’s age, gender, length of stay, discharge destination, number of therapy sessions, and diagnosis(es) and aetiology(ies) (based on the United Kingdom classification systems used by Enderby and John [1997] with TOM) and AusTOMs - OT scale scores.

Therapists do not usually require training in the use of the AusTOMs - OT since the manual provides adequate information for use. However, the therapists in this study were trained to use the tool since reliability studies were also undertaken. The first author and Wiseman (2004) conducted a detailed reliability study of the Self-care scale with seven occupational therapists using 15 paper case studies. Interrater intraclass correlation coefficients (ICCs) of over 0.79 were obtained for the three domains of Activity limitation, Participation restriction and Distress/wellbeing, and of over 0.70 for Impairment. Test retest reliability was also reported to be quite high, with ICCs of 0.88 for Activity limitation, 0.81 for Participation restriction, 0.94 for Distress/wellbeing and 0.74 for Impairment. The AusTOMs - OT Self-care scale is included as Appendix 1.

**Procedure**
Ethical permission for the study was sought and obtained from the La Trobe University Ethics Committee and the ethics committees of the two participating sites. Clinicians who gave consent were entered into the study. On admission, clients were informed of the study and their permission for participation was sought.

**Data analysis**
The data relating to client demographics, such as age and number of occasions of service, were treated parametrically, whereas the data from the AusTOMs - OT Self-care scale were treated non-parametrically since the scale generates ordinal data. Initially, client demographics, such as age, length of stay and number of occasions of service, were summarised using descriptive analysis techniques (means, median and standard deviation) and compared using independent t-tests. Next, client Self-care profiles at admission were compared using a Mann Whitney U test (for independent samples). To present a summary of client change over time in relation to Self-care during their admission, graphs for each site are presented. A Wilcoxon Signed Ranks Test (for repeated measures) was used to determine if this change over time was statistically significant. To investigate whether more clients improved or stayed the same/deteriorated at site A or site B, a chi-square analysis was used. Finally, client profiles at discharge were again compared using a Mann Whitney U test. A p value of 0.05 or less was considered statistically significant.

**Results**
Initially, the client demographic data were compared, since it needed to be established if one hospital consistently admitted
adult clients for much longer or who were much younger. Table 2 presents a demographic comparison of the clients scored on the Self-care scale at the two selected facilities. It shows that site B admitted slightly younger patients, but this difference was not statistically significant (t = 1.705, p = 0.092). The occupational therapists at site B had many more contacts with clients and this difference was statistically significant (t = -4.028, p < 0.001); however, there was not a significant difference in client length of stay (t = -1.899, p = 0.061). Finally, although the frequencies of client aetiologies were quite similar, the frequencies of resulting disorders were classified somewhat differently by the therapists.

In comparing these two sites, the next step was to consider whether the client admission profiles for Self-care were similar at sites A and B. In other words, if the clients at one site were more impaired or were experiencing more activity limitations, this would again need to be taken into account when drawing any conclusions. Using a Mann Whitney U test, it was found that there were statistically different profiles between clients at sites A and B in terms of Impairment (U = 621, p = 0.034) and Activity limitation (U = 533, p = 0.003). Clients had more severe Impairment and Activity limitation at site B. No significant differences were found between admission profiles in relation to Participation restriction (U = 721, p = 0.257) or Distress/wellbeing (U = 796, p = 0.676).

Next, it was established whether the clients changed over their admission in relation to Self-care status. Viewing Fig. 1 for site A it can be seen that, generally, more clients improved than stayed the same or deteriorated in relation to all four domains. Similar data are presented for site B in Fig. 2. At site A, slightly more clients stayed the same for the Impairment domain. Wilcoxon Signed Ranks Tests were conducted to explore changes between admission and discharge in relation to the four scale domains. The data were combined for the clients who stayed the same or deteriorated. All tests resulted in statistically significant Z scores. At site A: Impairment (Z = -3.908, p < 0.001), Activity limitation (Z = -5.174, p < 0.001), Participation restriction (Z = -4.044, p < 0.001) and Distress/wellbeing (Z = -3.699, p < 0.001). At site B: Impairment (Z = -4.981, p < 0.001), Activity limitation (Z = -5.123, p < 0.001), Participation restriction (Z = -4.548, p < 0.001) and Distress/wellbeing (Z = -4.300, p < 0.001). The data portrayed in Figs 1 and 2, and the accompanying Wilcoxon Signed Ranks Tests, indicate that the clients made improvements at both sites.

Table 2. Demographic comparison of clients rated on the Self-care scale

<table>
<thead>
<tr>
<th>Site</th>
<th>Sample (n)</th>
<th>Mean age</th>
<th>Mean occupational therapy contacts</th>
<th>Mean length of stay in days</th>
<th>Aetiologies (most frequent)</th>
<th>Disorders (most frequent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>42 (20 M, 21 F, 1 missing data)</td>
<td>64 years (SD 17.91)</td>
<td>2.93 (range 1-8, SD 1.66)</td>
<td>6.19 (SD 8.03)</td>
<td>Neurological (n = 8)</td>
<td>Decreased general mobility (n = 13)</td>
</tr>
<tr>
<td>B</td>
<td>40 (15 M, 25 F)</td>
<td>56 years (SD 22.56)</td>
<td>5.74 (range 2-20, SD 4.19)</td>
<td>9.82 (SD 9.27)</td>
<td>Neurological (n = 13)</td>
<td>Decreased general mobility (n = 6)</td>
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</tr>
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Fig. 1. Change in client status for the Self-care scale at site A.

Fig. 2. Change in client status for the Self-care scale at site B.
Next, it was important to determine whether there was a difference in the number of clients who improved at sites A and B. In other words, was site A or site B doing better in terms of AusTOMs - OT outcomes as measured on the Self-care scale? When answering this question, it is important both to note that very few clients deteriorated at sites A and B and also to remember that clients at site B had more severe Impairments and Activity limitations on admission. Using a chi-square analysis, it was found that more clients improved (rather than stayed the same or deteriorated) at site B than at site A in relation to Impairment, *χ² (1) = 9.259, p = 0.002*. In other words, at site B, clients made more gains in terms of lessening their impairments. There were no significant differences between the sites for the other domains: Activity limitation, *χ² (1) = 0.237, p = 0.626*; Participation restriction, *χ² (1) = 1.300, p = 0.254*; and Distress/wellbeing, *χ² (1) = 0.396, p = 0.529*.

Finally, a comparison was made of client status at discharge to determine whether the client discharge profiles for Self-care were similar at sites A and B. In contrast to the admission profiles where the clients at site B had more severe Impairments and Activity limitations, by the time of discharge a Mann Whitney U statistic revealed that there were no significant differences between client Self-care scores in relation to the four domains: Impairment (U = 831, *p = 0.9304*); Activity limitation (U = 655, *p = 0.076*); Participation restriction (U = 812, *p = 0.784*); and Distress/wellbeing (U = 741, *p = 0.341*).

**Discussion**

This study revealed that, at admission, the clients at site B had more severe Impairments and Activity limitations than those at site A. The clients at site B received more occupational therapy contacts. The clients at both sites improved significantly between admission and discharge in relation to all AusTOMs - OT domains; however, a greater number of clients improved in relation to Impairment at site B. At discharge, there were similar profiles of Self-care scores in relation to the four domains for clients at sites A and B. Hence, it appears that the increased number of occupational therapy contacts at site B may be associated with improved client Impairment outcomes. Given this finding, it is unclear why a greater number of clients at site B did not also reduce their activity limitations, particularly since occupational performance rather than a reduction in impairment is the focus of occupational therapy. Future research could consider the types of therapy administered and the skill level of clinicians as possible explanations for such differences. However, it is perhaps of more interest that there was no significant difference in client status on the four domains at sites A and B by the time of discharge. Hence, this comparison showed that therapists at both sites appear to be achieving similar self-care outcomes with clients who have acquired neurological problems.

In the future, it may be useful for the two site managers to compare staffing levels and explore in more detail what the ‘occupational therapy contacts’ involved at each site. One of the limitations of this study was that the data collected for ‘Number of occupational therapy contacts’ did not include the nature or length of the contact; these data were not collected in order to minimise the reporting burden placed on therapists. Therefore, an ‘occupational therapy contact’ could have ranged from a 10 minute chat to a 2 hour home visit. Future studies should relate AusTOM - OT data to the ‘department/therapist statistics’ for the client, such as the nature of and time taken for each therapy session. Managers could use this information to begin the process of determining ‘how much’ therapy clients need in order to make similar gains in relation to their self-care.

Ultimately, a tool such as AusTOMs - OT could be used to provide data for benchmarking purposes. Benchmarking activities (comparing the performance of one service against an agreed criterion or aggregate data) can be used to examine variation in clients referred for therapy; the types and variation in amount and length of therapy; the amounts and variation in changes associated with therapy; and the variation in client profiles at discharge. Therefore, benchmarking is one way to assure quality and deliver best practice (Bullivant 1996). For example, in the United Kingdom, Enderby et al (2003) compared TOM outcomes for clients with acquired neurological diseases at one National Health Service trust against the mean performance of clients from six other trusts. The results indicated several possible areas for improvement in service delivery in relation to the benchmarks.

**Conclusion**

This report has provided an example of how client demographic data, clinical inputs (that is, number of therapy sessions) and Self-care performance data as measured on the AusTOMs - OT could be used to compare client outcomes at two acute care facilities. While all the clients showed statistically significant improvement on the Self-care scale in relation to the domains of Impairment, Activity limitation, Participation restriction and Distress/wellbeing, the clients at site B showed greater improvement in relation to the Impairment domain. However, the clients at site B did have a greater level of severity of impairment on admission and did receive a greater number of therapy contacts. Although it is possible that the increased number of occupational therapy contacts with clients at site B was associated with this outcome, further investigation of the nature and types of contact with clients at both sites is required, particularly given the lack of difference in client outcomes at the two sites by the time of discharge. In conclusion, the AusTOMs - OT shows promise as a quick and simple outcome measure for occupational therapists who wish to study the effectiveness and efficiency of their service.
Acknowledgements

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References


Appendix 1. AusTOMs - OT, Scale 7. Self-care (reprinted from Unsworth and Duncombe 2004 by kind permission of La Trobe University)

Self-care consists of: washing and drying body, caring for one’s body (for example, cutting nails), toileting, grooming (for example, shaving, brushing hair, applying make-up and cleaning teeth), dressing and undressing, eating and drinking, and looking after one’s health (for example, taking medication).

Impairment of either structure or function (as appropriate to age):

Impairments are problems in body structure (anatomical) or function (physiological or psychological) as a significant deviation or loss. Impairments may be mental (cognitive/perceptual), sensory, voice/speech, cardiovascular/respiratory, digestive/metabolic/endocrine systems, genitourinary/reproductive, neurological movement or musculoskeletal.

A variety of impairments may have an impact on the ability to engage in self-care. Considering all the impairments an individual may have, assess the level of severity of these. Base your assessment on typical presentation of the individual’s impairment/s in an appropriate environment.

0. The most severe presentation of impairment/s. For example, very dense hemiplegia or severe fixed contractures, or constant and intrusive hallucinations or unbearable pain or most severe presentation of cognitive impairment.

1. Severe presentation of impairment/s. For example, dense hemiplegia, or severely restricted range of movement or very frequent and intrusive hallucinations or severe pain or severe cognitive impairment.

2. Moderate/severe presentation of impairment/s. For example, moderate to severe hemiplegia, or moderate to severely restricted range of movement or frequent and intrusive hallucinations or moderate to severe pain or moderate to severe cognitive impairment.

3. Moderate presentation of impairment/s. For example, moderate hemiplegia, or moderately restricted range of movement or somewhat frequent but rarely intrusive hallucinations or moderate pain or moderate cognitive impairment.

4. Mild presentation of impairment/s. For example, mild hemiplegia, or mildly restricted range of movement (such as morning stiffness) or infrequent and non-intrusive hallucinations or mild pain or mild cognitive impairment.

5. No impairment/s of structure or function. All structures and functions intact. No pain.

Activity limitation (as appropriate to age):

Activity limitation results from difficulty in the performance of an activity. Activity is the execution of a task by the individual. Assess the individual’s ability to perform the multiple activities involved in self-care. Assess what the client actually does.

1. Severe difficulty in performing self-care activities. Requires maximum assistance to perform self-care tasks. May demonstrate an awareness of the processing required for the activity. Individual may offer minimal movement to assist the carer or maintain a posture.

2. Moderate/severe difficulty in performing self-care activities. Able to perform self-care tasks with hands-on assistance from a carer or constant verbal prompting. Client can perform some parts of the activity, for example, thread arms into jumper before carer puts it over client’s head.

3. Moderate difficulty in performing self-care activities. Able to perform self-care tasks with verbal prompting or supervision or set-up.

4. Mild difficulty in performing self-care activities. Able to do but lacking in quality, or extra time required.

5. No difficulty in performing self-care activities. Able to perform all aspects of self-care activities independently with or without use of aids or adaptive equipment, for example, raised toilet seat. Completes activities in reasonable time.

**Participation restriction (as appropriate to age)**

**Distress/wellbeing (as appropriate to age)**