The health service impact of an occupational therapy practice placement model: Student-resourced service delivery of groups

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Abstract

Introduction: Student-resourced service delivery of groups is a practice education placement model in which students deliver therapy to groups, with graded supervision. This study examined an application of this model in occupational therapy to determine its costs to the health service and impact on hospital rehabilitation throughput and patient outcomes.

Methods: Retrospectively collected data were compared between periods when groups were student-resourced and staff-resourced. Patient data were analysed separately to group data.

Results: Seventeen patients received staff-resourced group therapy, and 52 patients received student-resourced group therapy, with no statistically significant differences identified in the characteristics of patients between group types. There was no evidence student-resourced therapy was associated with change in patient rehabilitation outcomes or length of rehabilitation stay.

Student-resourced therapy groups had an average duration of 10.8 minutes per session shorter (95% CI: 3.7, 18.0; $p = 0.002$) than staff-resourced groups. Under the student-resourced groups placement model, mean clinician time per group—both direct patient time and time spent on group facilitation—was not adversely affected and was reduced for occupational therapy assistants' direct time (mean difference -7.6 minutes, 95% CI: 0.8, -16.0; $p = 0.04$) and for occupational therapists' indirect time (mean difference -30.28 minutes 95% CI: -1.0, -59.6; $p = 0.02$). Despite an implied mean cost savings per group of $49.61 under the student-resourced model, there was no evidence of any statistically significant impact on overall costs.

Conclusions: Student-resourced service delivery of rehabilitation groups provide an opportunity for student practice education placements and do not appear to negatively impact occupational therapists' time, costs or patient outcomes.

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Introduction

Professional practice education placements, a core component of allied health university programs, provide opportunities for students to integrate knowledge and skills into practice in a "real world" clinical setting (Lewis, 2005; WFOT, 2016). The demand for practice education placements is increasing as the number of university programs and subsequent student numbers increase (McBride et al., 2015; Thomas et al., 2005). While practice education placements provide essential training for students, meeting the demand creates challenges and burdens for clinicians, clinical educators and the health system (Gustafsson et al., 2016; Larkin & Watchorn, 2012). Challenges include increased workload pressures for clinical educators, lack of time to support students, a trend towards a part-time workforce supporting the placements and pressure to maintain caseload productivity whilst hosting students (McBride et al., 2015; Thomas et al., 2007). In one study, each occasion of service was reported to require a longer duration with a student present, impacting clinicians' time (Rodger et al., 2012). Ozelie and colleagues (2015) reported that, on average, an additional 25 minutes is required per workday to supervise a student, which places additional demands on clinical educators. Conversely, a systematic review and meta-analysis of allied health placements found the presence of students was associated with an increase in the number of occasions of therapy service provided (Bourne, Short, et al., 2019).

The combination of workload challenges and an increase in the number of students needing professional practice education placements has created a need for placement models that potentially reduce the impact on clinical educators while still providing students with quality learning opportunities (A. Hamilton et al., 2015; McBride et al., 2015; Thomas et al., 2005). The most commonly employed fieldwork model has been reported as the 1:1 apprenticeship model (Bourne, Short, et al., 2019; Gustafsson et al., 2016), where one clinical educator is assigned for each student. This model is resource intensive for clinical educators. Current placement models are not meeting the needs for increasing practice education placements (McBride et al., 2020). Several innovative models are being trialled in different health disciplines, including the expansion of placements beyond the traditional hospital setting (Taylor et al., 2017) and collaborative co-design of novel placement models (Nisbet et al., 2021). Demand for the development of alternative placement models to meet increasing placement demands is increasing (McBride et al., 2020).

Group-based therapy is a core component of occupational therapy service delivery used for a wide range of purposes (Higgins et al., 2014). There are well-established patient benefits achieved through participation in groups, including the opportunity to maximise frequency and intensity of practice and facilitate peer learning and support (Drum et

al., 2011; Patterson, Fleming, & Doig, 2017, 2019). Benefits to the health service include cost-efficient resource allocation, whereby multiple patients can be seen simultaneously (Drum et al., 2011; McCarthy & Hart, 2011). Clinicians report finding group facilitation rewarding and believe groups make a positive contribution to rehabilitation outcomes of patients involved (Patterson, Fleming, & Doig, 2017). It is not clear whether these benefits are retained when groups are delivered wholly or partially by students.

The provision of group therapy by student occupational therapists presents an opportunity to address issues of practice placement numbers and therapist capacity. Student-resourced service delivery (SRSD) practice placements is an umbrella term used to describe a range of specific placement models whereby services are delivered directly to consumers by students and "supervision from clinical educators can be long-armed or a planned reduction in direct supervision from clinical educators based on an assessment of student capability" (Queensland Health, 2018, p. 1). One example of this model of practice placement is SRSD rehabilitation groups. The model involves multiple students working together to deliver rehabilitation groups in continuous and overlapping placements (Beck, 2005; Kent et al., 2016; Patterson, Caine, et al., 2019). This placement model differs from others where students may be involved in delivering isolated or one-off groups as part of a traditional placement model. Little research on the effectiveness of the SRSD rehabilitation groups model has been undertaken. However, early investigations in brain injury rehabilitation indicate the SRSD model has benefits for student learning, is well-received by clinicians and provides both year-round continuous placement opportunities and improved services for patients (Patterson, Caine, et al., 2019; Patterson, Fleming, Marshall, & Ninness, 2017). The health service impacts of SRSD rehabilitation group placements require investigation.

This study aimed to compare the health service impact of student-resourced (SRSD rehabilitation group model) and staff-resourced occupational therapy rehabilitation group programs. Specific research questions included: What is the association with patient rehabilitation outcomes? What is the impact on hospital throughput? and What is the staffing cost to the health service provider of hosting the student placements using this model?

Methods

Design

This retrospective observational study examined health service data routinely collected through existing hospital data sources to compare periods when student placements occurred and comparative periods when no student placements occurred in two different quaternary hospital locations with existing SRSD group programs. Approval for data access to health records was provided under the Public Health Act. Ethical approval was received from the Metro South Hospital and Health Service (HREC/2019/QMS/49847)

and University of Queensland ethics committees (2019001197/HREC/2019/QMS/49847). Governance approval was also provided by each study site (SSA/2019/QRBW/49847, SSA/2019/QMS/49847).

Study setting

This multisite study was set in two tertiary hospital locations in Brisbane, Australia. Both facilities had inpatient rehabilitation units with existing SRSD group therapy programs. Hospital 1 comprised specialist rehabilitation for the spinal cord injury unit (SIU), brain injury rehabilitation service (BIRS) and geriatric assessment and rehabilitation unit (GARU) and had operated an SRSD program for many years. Hospital 2 provided generalist rehabilitation through the geriatric and rehabilitation unit (GARU) and had commenced SRSD groups the year prior to the study. The units within each facility host a minimum of two third- or fourth-year undergraduate occupational therapy students concurrently in a SRSD rehabilitation groups placement. Student placements overlap with the preceding and following student placements to facilitate a smooth transition and to enable continuous delivery of the SRSD groups to patients. Students receive orientation and training in group operation through provision of locally developed manuals, observation of preceding students delivering groups and instruction from their clinical supervisor. The undergraduate occupational therapy students plan and facilitate the groups and provide peer support and feedback to one another as part of their supervised practice education placement. The primary clinical foci of the occupational therapy groups examined in this study were upper limb retraining, life skills, meal preparation and cognitive skills development. For inclusion in the SRSD group programs, patients at each hospital site were formally referred by their treating therapist, who provided students with information about the patients' goals, barriers, risks and potential patient-specific issues that may impact on group participation. Group tasks were designed and developed by the students to cater for the needs of the referred patients. Clinical supervision of students was graded, with most support provided initially, reducing to long-armed supervision when appropriate based on student capabilities as assessed using the university prescribed placement evaluation tool for occupational therapy student placements, the Student Practice Evaluation Form—Revised (The University of Queensland, 2008).

Data collection

One-month evaluation periods were selected for data collection at each site to enable comparison between staff-resourced and student-resourced groups. As almost year-round student-resourced groups were in operation at both study sites, choice of evaluation periods was restricted to the single 1-month time period annually when staff operated groups in the absence of students. For student-resourced data collection, the Hospital 2 time was chosen to mirror the staff-resourced group time of year. Hospital 1 did not have a corresponding time period, and an alternative month was chosen to accommodate university placement times and to avoid time periods with known disruptions to hospital

resourcing. Data from Hospital 1 were evaluated January–February 2018 (staff-resourced groups) and August 2018 (student-resourced groups). Data from Hospital 2 were evaluated for February 2018 (staff-resourced groups) and February 2019 (student-resourced groups).

Data analysis

Patient and group characteristics data were collected and analysed as independent datasets.

Patient-level data and analysis

Patient level data were extracted from the patient medical records of all patients who attended their first SRSD group during the defined data collection periods. Data sampled included age, sex, primary diagnosis, date of admission to rehabilitation, length of stay in hospital, number and duration of occupational therapy rehabilitation groups attended, type of group and length of rehabilitation unit admission. Patient characteristics data were contributed from both study sites. For analysis and presentation, primary diagnosis was aggregated into the following groupings: *acquired brain injury*, *spinal cord injury*, *orthopaedic, cardiac*, and *"other" diagnoses.* Rehabilitation outcomes were examined using the change in Functional Independence Measure (FIM) assessment scores (Hamilton et al., 1987) recorded in the patient medical record. As a part of standard practice at both study sites, FIM assessments were conducted within 72 hours of admission and discharge. The FIM assesses 13 motor items and five social and cognitive items on a 7-point scale, ranging from (1) *total dependence* to (7) *complete independence*. A higher score indicates a greater level of independence.

Statistical significance of differences in age, diagnosis type, discharge destination, number of groups attended and total group attendance time were assessed using Fisher's exact test to account for the small sample sizes. Differences in FIM score change on discharge and rehabilitation length of stay were tested using two-sample *t*-test comparisons. The level of statistical significance was set to .05.

Group-level data and analysis

Group data were extracted from local databases used to routinely record service provision at the study sites. Data sampled included type of group, number of participants, staffing of the groups (i.e., number of students, occupational therapists and/or occupational therapy assistants). Quantity of therapy received was collected as *direct clinical time for groups* (activities in the presence of the patient, time for group facilitation/participation) and *indirect clinical time* (activities related to facilitation of a group such as time for documentation and liaison interaction with other professionals related to group activities). Group characteristic data from the BIRU ward at Hospital 1 and the GARU ward at Hospital 2 were not included in this analysis due to differences in the recording of clinician time for patient contact and non-patient time compared to other wards.

Descriptive statistics were used to summarise the characteristics of the student- and staff-resourced samples. Two-sided *t*-tests were conducted to analyse the difference between therapy group types (i.e., student-resourced vs. staff-resourced) for group duration, size and provider time required. When examining the staffing resources for the groups, it was identifed that occupational therapy clinical educators who lead and supervise group therapy sessions range between entry level and advanced clinician (HP3–HP5 on the Queensland Health, Health Professional pay scale) (Queensland Health, 2019). The fortnightly salary for HP3.8, reflecting both permanent and casual staff rates, was used to capture occupational therapist costs. The hourly rate for occupational therapy assistants was based on the Queensland Health Operational Officer level 3. Overhead costs of 30% were applied to provider costs and used to calculate the cost difference per group therapy session between student-resourced and staff-resourced programs.

Results

Patient-level data

Examination of medical records of patients who attended SRSD groups during the retrospective data collection period across all four rehabilitation units found that 52 patients attended student-resourced groups only compared to 17 patients attending staff-resourced groups only. Another 16 patients attended a mix of staff and student-resourced groups and, so, were excluded from the analysis, leaving a final sample size of 69 patients. The distribution of student- or staff-resourced groups was not significantly different between the different wards, diagnoses or discharge destination.

The most common type of primary diagnosis among patients was acquired brain injury. The most common destination for patients following discharge from rehabilitation at the study site was to their home. Table 1 outlines patient sample characteristics.

Patients in staff-resourced groups were more likely to be discharged home, with shorter mean length of stay in rehabilitation. These patients were found to receive more time in group sessions compared to patients in the student-resourced groups (Table 2). However, these differences were not statistically significant.

FIM composite scores showed a mean increase between discharge and admission of 27.27 for patients in the staff-resourced groups and 29.52 for student-resourced groups. Mean increases in both cognitive and motor FIM component scores were also higher for patients in the student-resourced programs (mean increase in scores of 2.8 and 0.31, respectively). However, none of these between-group differences in improvements in composite or component scores were statistically significant.

Table 1

Patient Sample Characteristics

	Staff-resourced groups program (patients = 17) **n (%)**	**Student-resourced groups program** (patients = 52) **n (%)**	***p*-value**
Age [years] mean (SD)	56.6 (22.4)	60.6 (19.5)	0.238[i]
Male	13(76.5)	32(61.5)	0.381[ii]
Ward site (%)[#]	**17 (100.0)**	**52 (100.0)**	0.902[ii]
Hospital 1 GARU	6 (35.3)	16 (30.8)	
Hospital 1 SIU	3 (17.7)	6 (11.5)	
Hospital 1 BIRU	3 (17.7)	13 (25.0)	
Hospital 2 GARU	5 (29.4)	17 (32.7)	
Diagnosis category (%)	**17 (100.0)**	**52 (100.0)**	0.580[ii]
Acquired brain injury	10 (58.8)	27 (51.9)	
Spinal cord injury	3 (17.7)	7 (13.5)	
Orthopaedic	1 (5.9)	3 (5.8)	
Cardiac	1 (5.9)	1 (1.9)	
Other	2 (11.8)	14 (26.9)	

[i] two-sided *t*-test

[ii] Fischer's exact test

[#] GARU (Geriatric Assessment and Rehabilitation Unit); SIU (Spinal Injury Unit); BIRU (Brain Injury Unit)

Table 2

Patient Outcomes

	Staff-led program n (%)	**Student-led program n (%)**	***p*-value**
Discharge destination (%)	17 (100.0)	52 (100.0)	0.819[ii]
Home	16 (94.1)	42 (80.8)	
Nursing home/supported accommodation	0 (0.0)	3 (5.8)	
Acute medical ward (no return to rehab)	0 (0.0)	3 (5.8)	
Another inpatient rehabilitation ward	1 (5.9)	3 (5.8)	
Residential transitional care	0 (0.0)	1 (1.9)	
Group time [minutes] per patient## mean (SD)	188 (230.8)	273 (263.9)	0.1374[i]
Rehab mean LOS [days] mean (SD)	42.6 (36.2)	57.5 (63.8)	0.176[i]

[##] total time spent in groups per patient across all group therapy sessions

[i] two-sided *t*-test

[ii] Fischer's exact test

SRSD groups data

During the sampling periods, a total of 59 group therapy sessions were captured, comprising 21 staff-resourced and 38 student-resourced sessions. For the group-based results, data from the GARU and SIU wards at Hospital 1 were included, whilst remaining units were excluded due to data recording issues previously discussed.

Group duration ranged from 30 minutes to 90 minutes during the student-resourced program and between 60 to 90 minutes during the staff-resourced program period. Mean duration of therapy group sessions was over 10 minutes longer during staff-resourced programs compared to student-resourced programs. This difference was statistically significant (p = 0.0018). Table 3 outlines group session metrics for student-resourced and staff-resourced time periods. There was no statistically significant difference in the mean number of patients per group between staff-resourced and student-resourced therapy groups.

Table 3

Group-Based Therapy Session Metrics by Type of Group Leadership

	Staff-resourced groups program mean (SD)	Student-resourced groups program mean (SD)	Mean difference	95% CI	*p*-value
Group duration (minutes) (n = 65)	73.75 (15.3)	62.93 (13.1)	-10.82	-3.67, -17.97	0.0018[i]
Patients per group (n = 59)	3.62 (0.9)	3.76 (1.1)	0.144	0.72, 0.43	0.309[i]
Number of occupational therapists (n = 61)	0.87 (0.5)	0.47 (0.5)	-0.4	-0.14, -0.65	0.0016[i]
Number of occupational therapy assistants (n = 61)	0.87 (0.3)	0.55 (0.5)	-0.32	-0.08, -0.56	0.005[i]

[1] two-sided *t*-test

Based on the data from Hospital 1-based GARU and SIU wards only, the number of occupational therapists and occupational therapy assistants per group therapy session was significantly less under the student-resourced program compared to the staff-resourced programs.

The direct time use by occupational therapists was reduced by 6 minutes for SRSD groups compared to staff-resourced groups, however this difference was not significant (Table 4). There was a statistically significant reduction of 7.6 minutes in occupational therapy assistant direct time for student-resourced groups compared to staff-resourced groups.

Table 4

Changes in Provider Time (Direct and Indirect)[a] per Group Session

	Staff-led program mean (SD)	Student-led program mean (SD)	Mean difference	95% CI	*p*-value
Occupational therapist direct time (minutes)					
All group types (n = 37)	71.05 (14.9)	65.0 (18.6)	-6.05	5.14, -17.24	0.1398[ii]
Occupational therapy assistant direct time (minutes)					
All group types (n = 41)	67.6 (19.0)	60.0 (0.0)	-7.6	0.76, -15.96	0.037[i]
Occupational therapist indirect time (minutes)					
All group types (n = 36)	50.28 (52.3)	20.0 (31.7)	-30.28	-1.00, -59.55	0.0215[i]
OTA indirect time (minutes)					
All group types (n = 40)	15.95 (20.7)	7.24 (13.3)	-8.71	2.32, -19.74	0.059[i]

[i] two-sided *t*-test

[a] Direct provider time refers to clinician activities in the presence of the patient (e.g., time for group facilitation, participation). Indirect provider time refers to activities related to facilitation of a group (e.g., time for documentation and liaison interaction with other professionals related to group activities).

The mean indirect time reported by occupational therapists under student-resourced groups showed a statistically significant reduction on average of 30.3 minutes compared to the staff-resourced groups (Table 4). There was no statistically significant difference observed in occupational therapy assistant indirect time between student and staff-resourced groups. There were insufficient observations to allow for comparisons by separate therapy group types.

Staffing costs per group were lower for student-resourced therapy groups. This resulted from lower costs of patient contact time and non-patient contact time for both occupational therapists and occupational therapy assistants. Together these staffing cost differences indicate that under student-resourced groups, both occupational therapists and occupational therapy assistants were released for other activities, with the implied mean cost savings per group of $49.61. The largest element of this cost difference was a reduction in the cost of occupational therapy time of $39.65, of which $33.05 was indirect occupational therapy time. These findings were robust, using different points on the pay scales. However, none of these differences were statistically significant.

Discussion

Importantly, this study addressed the impact of SRSD rehabilitation group placements on the healthcare system and indicative patient function. The study findings indicate that SRSD rehabilitation groups had no negative association with either outcome.

The study found that the duration of rehabilitation groups was shorter when students were present, and while this was unexpected, the observed decrease in duration for the student-resourced program did not dip below the prescribed group time (60 minutes). This is an interesting finding when considered in the context of previous research that has found occupational therapy intervention duration increased in the presence of students (Rodger et al., 2012). The decreased duration of group interventions in this study may be related to the metrics upon which students' performance on practice placement is evaluated, such as time management and service delivery, including the organisation of patient group structures. Students may have adhered more closely to the prescribed group times (mean duration of 63 minutes) compared with staff, whose groups ran over the allocated time (mean duration of 74 minutes).

The staffing cost to the health service provider of hosting the student placements was a core element of this study. Previous research has shown that impact on clinician time is a key reason health professionals are reluctant to host student practice education placements (Ozelie et al., 2015). Findings from this study indicate that SRSD rehabilitation groups may result in time-saving for healthcare placement providers in terms of both direct patient contact required per group and indirect, non-patient time related to group service delivery. Fewer occupational therapists and occupational therapy assistants were present during student-resourced groups, improving capacity for staff to engage in other tasks within the rehabilitation unit. Whilst not examined in this study, there is potential for these additional tasks to contribute positively to the rehabilitation care experience through provision of rehabilitation to other patient groups or completion of necessary administrative tasks. This finding is consistent with a systematic review and meta-analysis examining allied health student placement types, which found students have a neutral or positive effect on allied health patient activity levels and clinical time (Bourne, Short, et al., 2019). Smaller studies investigating student placements have also found either neutral (Bourne, McAllister, et al., 2019) or increased (Rodger et al., 2012; Shalik, 1987) clinician productivity when hosting allied health students.

Hospital throughput was not significantly affected by the presence of SRSD rehabilitation groups in this study. The length of stay comparison between student and staff group periods showed a non-significant trend towards increased length of stay under the SRSD rehabilitation groups model program. However, the large variance under both staff and student periods, the disproportionate allocation of indicator variables and size of groups (Table 1) limit any interpretation of these differences as being caused by the use of staff versus student facilitators. Further, there are too many other factors that vary between the two groups to enable such an interpretation to be made, and the low number of observations limit our ability to control for these differences statistically. Previous studies investigating the impact of rehabilitation groups on overall patient outcomes also supports the concept that variation in outcomes is not well explained by time spent in groups due to the large numbers of influencing factors (Hammond et al., 2015).

FIM scores were examined to determine any negative impact associated with the provision of rehabilitation via the SRSD groups. The study results indicate that FIM scores were similar between student-resourced and staff-resourced periods. Whilst not implying causality, these results indicate no negative impact on patients being treated under the SRSD rehabilitation groups model. A limitation of the retrospective data collection was that FIM scores were collected as a part of standard care at admission and discharge to rehabilitation units, and assessments may not have aligned to SRSD commencement and completion.

The small sample size and retrospective design of this study limit the capacity of the analysis to identify statistically significant differences in outcomes by hospital ward, group and diagnosis. A limitation imposed by the retrospective nature of this study was the absence of information on the overall time impact on occupational therapists hosting students. While this study saw a decrease in health professional staff time required for direct group service provision, it did not account for any additional tasks that were able to be completed by staff during this time nor was it able to account for the impact of non-clinical student-related time (e.g., time to teach, support and assess students). These data would add to understanding of the overall impact of SRSD rehabilitation groups on health service resources and would benefit from examination in future studies. Additional impacts of SRSD groups, including the patient rehabilitation experiences, supervisor demands and student learning, have also been examined and reported elsewhere (Patterson et al., 2021). Examination of the impact of SRSD rehabilitation groups in other health professional groups is also warranted in future studies.

Conclusion

Notwithstanding the limitations of the number of observations and the retrospective study design, study findings support the conclusion that there is no evidence that SRSD rehabilitation groups negatively impact on occupational therapists' time, costs to the service provider or patient outcomes. Further research might consider adopting prospective study designs and larger numbers of matched observations to both confirm the findings of this study and provide opportunities for more informative controlled analyses.

Key points

- SRSD rehabilitation groups are an emerging practice placement education model.
- The use of SRSD rehabilitation groups did not negatively impact therapist time, costs or patient outcomes in this study.

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Data

Data available on request from the corresponding author amanda.pigott@health.qld.gov.au

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