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Multidisciplinary goal attainment measure (MGAM): A review of stroke client goal-based outcomes within a community rehabilitation setting in Brisbane, Queensland, Australia

Anita Blight, Sarah Patterson, Hannah Matson, Alisha Westerman

ABSTRACT

Aims: Community rehabilitation is a key component of health services within stroke care. Ongoing challenges exist as to how to best capture outcomes for these services, especially considering the multi-faceted service delivery and flexible focus on individual need. A goal setting tool, such as the multidisciplinary goal attainment measurement (MGAM), may be useful to objectively measure client outcomes that are meaningful and relevant to individuals within this complex environment. This study aims to review MGAM client outcomes within a stroke population in a community rehabilitation context.

Methods: Pre and post goal outcome data was collected by multidisciplinary team members with stroke survivors, across the domains of impairment, activity/participation, and knowledge/information. These pre and post scores were compared with each other, as well as a measure of everyday functioning.

Results: Clinically significant average change scores and statistically significant changes pre and post intervention were found across all domains on the MGAM. There were no correlations noted between MGAM and length of stay, quality of life and everyday functioning outcomes.

Conclusion: As evidenced in the stroke population of this study, MGAM offers a unique outcome measure different to other clinical measures as it captures client outcomes that are relevant and meaningful to individual need across a range of domains within a multi-disciplinary setting. These formalized goal setting practices and outcomes, such as the MGAM, may assist in providing standardized outcome processes across various community rehabilitation settings.

Keywords: Multidisciplinary goal attainment measure (MGAM), Community rehabilitation, Stroke, Frenchay activity index (FAI)

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INTRODUCTION

Community rehabilitation is an integral part of stroke services within the Australian health care system [1]. Typically, these services are underpinned by the International Classification of Functioning, Disability

and Health (ICF) [2], and as such, focus interventions toward impairments, daily activities, and improving participation in the community [3]. These programs are primarily conducted by multi-disciplinary allied health teams, with an individualized client centered approach to clinical care. Ideally, services are conducted in context specific locations, such as client's home or local community [4].

Measurement of outcomes within community rehabilitation services is often fraught with challenges. The lack of standardization for rehabilitation models of care [3], and reported "ad hoc" selection of outcomes measures creates a difficult environment to capture client outcomes, especially across diverse care settings [5].

Furthermore, traditional outcome tools have been criticized for their lack of sensitivity to individual client needs, expectations and the potential range of issues addressed in a community setting [6]. There is also a tendency for outcome measures to be task orientated and clinician rated compared to a client focused approach [7].

A potential tool to underpin client centered intervention and capture individual client outcomes may be within goal setting measures. Literature suggests that health professionals should set initial goals in collaboration with stroke survivors and their families at the beginning of the rehabilitation processes to guide interventions and measure outcomes [8]. Goals should be client focused, documented, and reviewed regularly [9]. Within rehabilitation, the use of a structured goal setting tool seems to favor psychosocial outcomes (health-related quality of life, emotional status, and self-efficacy) compared to unstructured goal setting [10]. It has been well documented that use of formalized goal setting measures assist clients' motivation within rehabilitation programs [11, 12].

A few such tools have emerged over the years including the Canadian Occupational Performance Measure (COPM) [13], and the Goal Attainment Scale (GAS) [14]. However, Kendall and Wallace [15] suggested that neither of these may be completely appropriate for a truly client centered multidisciplinary service, with the GAS historically involving the therapist with the scoring and the COPM based within occupational therapy paradigms only. As such, a new tool was developed within the Transitional Rehabilitation Program in Brisbane, Queensland, entitled the multidisciplinary goal attainment measure (MGAM) [15]. This scale, based on the COPM scoring within the task performance and satisfaction domains, enables the multidisciplinary team to collaboratively set individualized goals and re-measure them over time. Unlike the COPM, however, there is no associated semi-structured interview associated specifically with the MGAM as this information is typically collected as part of an initial rehabilitation screening review. Furthermore, there is no "importance rating" completed as with the COPM. Clients are encouraged to set goals based on their current concerns within the rehabilitation context.

In this study, this new goal setting tool was implemented within the Metro South Health community-based rehabilitation service in Brisbane, Queensland, to formalize goal setting processes. It was hypothesized that the MGAM would provide clinicians with both a goal setting tool to tailor individualized therapy programs and capture individual client outcome data related to their rehabilitation program.

The aim of this study was to:

- document and analyze goal outcomes as measured by the MGAM for stroke clients within community rehabilitation and
- determine the potential relationship between MGAM and instrumental activities of daily living, as measured by Frenchay Activities Index (FAI)

MATERIALS AND METHODS

Methodology

This study used a pre post design of self-rated performance and satisfaction scores on individual goals as captured on the MGAM. Goals were rated at the commencement of therapy and again at discharge from the service following participation in the rehabilitation program. As the ICF is a key foundational element of this community rehabilitation service, individual goals were set within the domains of impairment, activity and participation within this framework.

Knowledge goals were also set to assist clients with the self-management of their condition. These MGAM scores were collated within a local database.

Goals were required to be as specific as possible and ideally achievable within the 12-week time constraints of the rehabilitation program. An initial in-depth review and discussion regarding the client's functional status, concerns, and specific contextual situation was completed as the initial part of the process. With this client specific knowledge, allied health clinicians were then able to assist the client in both the goal setting process and appropriate action planning. In addition, allied health clinicians within the team had received additional training in socio-behavioral frameworks, including self-management strategies and health behavior change techniques which assisted with the goal setting and attainment process [16].

As part of existing practice prior to the MGAM implementation, clients completed other outcome measures pre and post treatment, including FAI. During the final review, MGAM scores were re-evaluated by the clients, with feedback and support provided by the therapist at this time regarding their goal achievements. These scores were also collated within a local database and utilized for comparisons within this study.

Setting and timescales

The community rehabilitation service is situated in an urban setting on the south side of Brisbane, Australia, covering a large geographical area. There are four sub teams across the service delivery area comprising of a range of multidisciplinary allied health teams, including physiotherapists, occupational therapists, speech pathologists, social workers and dietitians. Clients within the service were typically post hospital discharge and from a range of diagnostic groups, with approximately 30% of the clientele post stroke. As stroke is the largest single diagnostic group within the service this review focuses on this clinical group.

Pre and post MGAM, and FAI data was collected from stroke clients who underwent a full rehabilitation program within the service over the time period from October 2016 until December 2018.

Participants

This community based rehabilitation service completed 209 initial assessments with clients who had a primary diagnosis of stroke during this time period. Pre and post MGAM data was available on 48 stroke survivors for inclusion in the review. The excluded clients may not have been able complete a full rehabilitation program, which may have included clients who received a review visit only, declined services, ceased therapy early or unexpectedly, or returned to hospital. Others may not have been able to participate in the MGAM goal setting process due to their functional ability, or their data was missing from the local data base or not completed. Within these 48 participants, 31 also had completed FAI data for inclusion in the comparison within the review. The difference in completed MGAM scores and FAI scores was due to incomplete data sets by staff.

Ethical approval for the study

An exemption from full Human Research Ethics Review was obtained from the Princess Alexandra Human research Ethics Committee (LNR/2019/QMS/55430). The committee waived the need for client consent as the data was routinely collected as part of usual service delivery.

Interventions

Clients typically received individualized multidisciplinary goal-based therapy either in their home, community or health center depending on their need.

Weekly centered based exercise and education was also offered as appropriate. The service model aligns with the ICF, offering therapy within all domains depending on client need. It is also underpinned by social and behavioral paradigms, including self-management principles and health behavior change techniques [16]. Client goals are set and rated using the MGAM by the client during the initial assessment which is facilitated by the client's allied health care coordinator.

All allied health staff received training in the use of the MGAM prior to the inclusion of the tool within the service. This training included a revision of goal setting principles in the rehabilitation setting, reflections, and discussion of current goal practices as well as specific training of the MGAM tool. Resources developed included a training inservice presentation, written workplace instruction detailing utilization and scoring of the MGAM, in conjunction with an allocated goal-setting key support staff member. Clients typically receive a 12-week therapy program within the service although this can be adjusted to meet client need as required. Goals and subsequent interventions were completed within the various areas of the ICF (impairment, activity and participation) as well as information and knowledge related interventions.

Outcome measures

The MGAM was used to set and measure individual client goals within the therapy program [15]. The MGAM was designed for use in a multidisciplinary rehabilitation setting to enable clinicians to assist clients to set and select up to five important goals. Client's perceived performance and satisfaction for each goal was rated on a ten-point scale, with ten being the highest rating. The measure of change in performance and satisfaction was a numerical value between the pre- and post-scores of each goal.

The FAI is a self-rated questionnaire to measure disability and functional ability, which was originally developed within the stroke population [17]. It utilizes a four-point scale across 15 activities of daily subsets including main meal preparation, washing up, washing clothes, light and heavy housework, shopping, social outings, walking outside, hobbies, driving, outings, gardening, maintenance, reading, and work. The higher the total score, the greater the perceived functional ability of the client with the highest possible score of 45.

Data analysis

Dependent paired samples t-tests were conducted to examine the change between the pre and post mean scores for the various goals set by the 48 stroke survivors, on both the performance and satisfaction measures. The pre and post mean goal scores were examined as a whole and also within the ICF groups of "impairment" and "activity/participation" as well as "knowledge and information." Independent group correlations were conducted between length of stay and average change between pre and post mean goal scores for both performance and satisfaction as a whole. Independent group correlations were further conducted between average change scores on performance and satisfaction.

Also, independent group correlations were conducted between MGAM average change scores and FAI average change scores for both performance and satisfaction.

The study aimed to include sufficient participants to detect a medium effect size with a power of 80%. Power calculation were calculated post hoc [18] to determine that the study had sufficient power to detect a medium effect size (f = 0.36).

Before beginning statistical analyses, data was cleaned and normality checked, incomplete data sets were removed and all values fell within expected range, no univariate outliers identified. Using SPSS statistical program (version 24.0) the Shapiro-Wilk values calculated indicated that the data set was normally distributed [19].

RESULTS

Within the 48 stroke survivors, there was a mean age of 65 years (range 37–81 years). Of the participants, 29 were male and 19 were female. The average length of stay (LOS) for clients in the service was 90 days (range 8–234 days). Participants experienced a range of stroke related disability, including physical, cognitive and communication difficulties. Table 1 contains the stroke specific information of the participants in the study.

The 48 stroke survivors set a total of 171 goals across the various ICF domains; 67 impairment goals, 94 activity or participation goals, and 7 knowledge goals (with 3 goals not fitting into these categories as they relate to client's specific living situation).

Some examples of goals include:

To improve left upper limb function to be able to return to playing pool.

To be able to independently dress self.

To increase fluency and rhythm of speech to be able to talk on the telephone.

To learn more about processes around parking permit applications.

To be able to walk my daughter's dog.

To improve my fitness to be able to walk 500 meters so I can complete the shopping.

To return to playing darts.

To return to my usual cooking tasks, hanging washing and other domestic duties.

The average change in performance scores was 3.37. The average change in satisfaction score was 3.76. There was a significant correlation between these average change scores of performance and satisfaction ($r = 0.76$, $n = 48$, $p = 0.000$).

There was no correlation with LOS and change scores of both performance (ns, $r = -0.01$) and satisfaction (ns, $r = -0.07$). No correlation was found with FAI and change of scores of both performance (ns, $r = 0.23$) and satisfaction (ns, $r = 0.33$). The results of these correlations are shown in Table 2.

Paired sample t-tests revealed significant differences between pre and post scores in all goal categories for both performance and satisfaction. These results are summarized in Table 3.

Table 1: Demographic details for study sample

		N (%)	Mean (SD)
Gender	Male	29 (60.42%)	
	Female	19 (39.58%)	
Infarct	Left	21 (43.75%)	
	Right	15 (31.25%)	
	Bilateral	4 (8.33%)	
Hemorrhage	Left	3 (6.25%)	
	Right	4 (8.33%)	
	Bilateral	1 (2.08%)	
Age			65 (12.00)
Length of Stay (LOS)			89 (39.60)

Table 2: Correlations between MGAM Performance and Satisfaction change scores, and LOS and FAI

	Performance change score	Satisfaction change score	LOS	FAI
Performance change score	1.00	0.76, p < 0.001	0.01, ns	0.23, ns
Satisfaction change score		1.00	−0.07, ns	0.33, ns

Table 3: Paired samples t-test between pre and post scores in performance and satisfaction across all goal types

	Goal type	N (%)	Pre-Mean (SD)	Post-Mean (SD)	t	p
Performance	Total	171*	3.56 (2.06)	6.95 (2.35)	−17.58	<0.001
	Impairment	67 (39.18%)	4.18 (1.88)	7.03 (1.84)	−12.35	<0.001
	Activity/Participation	94 (54.38%)	3.13 (2.14)	6.83 (2.74)	−12.54	<0.001
	Knowledge	7 (4.09%)	2.57 (1.27)	7.71 (1.89)	−5.21	<0.05
Satisfaction	Total	171*	3.20 (2.57)	6.95 (2.35)	−16.41	<0.001
	Impairment	67 (39.18%)	3.63 (2.87)	7.28 (2.07)	−10.38	<0.001
	Activity/Participation	94 (54.38%)	2.89 (2.41)	6.80 (2.93)	−11.99	<0.001
	Knowledge	7 (4.09%)	2.29 (1.25)	7.00 (2.94)	−3.90	<0.05

*3 (1.75%) goals could not be classified within ICF categories.

DISCUSSION

This study documented and analyzed outcomes associated with the MGAM goal setting tool as a potential community rehabilitation outcome tool. The significant changes from pre to post treatment across all various goal groupings of impairment, activity/participation and knowledge/information suggest that the MGAM is a flexible, relevant tool to capture individual outcomes across the varied goals within the multi-disciplinary community rehabilitation setting. The favorable changes in goal attainment documented also offers insight into the potential benefits of community rehabilitation service across the spectrum from a client perspective.

Overall, there appeared to be a positive improvement in the average change scores for both performance (3.37) and satisfaction (3.76) within the stroke survivors. These results are comparable to previous studies within the community dwelling spinal cord population who had average change of 3.44 and 3.42 for performance and satisfaction respectively [15]. Although there are no known clinical significance values for the MGAM, comparable values on the COPM, on which the MGAM scoring is based, suggest that change scores over 2.5 are clinically significant [20]. Therefore, it can be suggested that the change scores noted in this study are also likely to be clinically significant.

The reported changes across the ICF domains may also provide support for the MGAM being able to capture and drive outcomes depending on client need, rather than measurement against a set task criterion which may have little or no relevance to the individual client. Set criteria and task based outcomes have been criticized within community rehabilitation for potentially not being relevant to represent the individual client need and are somewhat arbitrary measures [7].

This notion is supported by the lack of correlation found with the MGAM change scores and the FAI in this study, suggesting there is no real relation between these set criterion measures and client individually set goals. Similar results were found within previous MGAM research [15].

Length of stay on within this community based rehabilitation program also did not correlate with changes in goal performance and satisfaction. This outcome suggests that ideally client focused service delivery should be dependent on goal attainment, rather than set service time frames. Service delivery which provides a holistic client focus (including social, personal and comorbidity factors) has been found to be associated with positive quality of life outcomes [21], and has also been supported within previous MGAM research [15, 22].

Despite these favorable results, it is important to note that the MGAM, like the GAS and COPM [23], was designed primarily as a goal setting outcome measure. As such, the MGAM does not give insight into the complexities around goal attainment such as client's motivation to participate, personal contextual factors, co-morbidities, neurological recovery as well service delivery limitations. Literature highlights the struggles of stroke survivors reporting that minimal goals are achieved by stroke survivors in the first-year post stroke [24]. Considering this, consideration needs to be given to the practical implication of MGAM implementation including allied health clinician skill and knowledge level with goal setting as well as the community rehabilitation service delivery framework model. Given that literature suggests self-efficacy, tenacity and flexibility with goals are associated with positive outcomes [24], service

delivery frameworks, such as in this study, which are underpinned by social-behavioral frameworks may assist with the goal setting and attainment process overall [16]. Ideally, service delivery frameworks need to be to flexible around client need, with both interventions and timeframes [7]. Goal specific frameworks such as the Goal setting and Action Planning (G-AP) framework [25] may also provide a foundation to promote goal setting and attainment in this clinical group.

As the MGAM is a relatively newly developed tool, further research into the clinical implications for varying diagnostic groups and clinical teams would be beneficial. An exploration of longer-term outcomes could also be explored. In addition, further investigations into the client perspective of the tool in other clinical settings would also provide another critical viewpoint.

This study was limited by the small data set analyzed. MGAM was generally not used with clients with significant communication or cognitive impairment and not all stroke clients had completed data sets for the time period of this study. Furthermore, MGAM ratings are dependent on client's perception of their ability, which may be influenced by many factors, including those potentially outside the scope of service delivery. Finally, the current study did not utilize a control group and therefore cannot attribute changes in scores to participation in the community rehabilitation program, which is another limitation of this study.

CONCLUSION

This study found similar results to previous research on the MGAM with a different clinical population. Goal setting via the MGAM seems to be useful in capturing client outcomes across the ICF, that are both relevant and important for clients. The use of such measurement tools may assist in progressing service delivery towards a true client centered approach and providing a standardized outcome measure approach across community rehabilitation settings. Implementation of such tools needs to be considered given the complexity of goal attainment.

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Author Contributions

Anita Blight – Conception of the work, Design of the work, Acquisition of data, Analysis of data, Interpretation of data, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Sarah Patterson – Conception of the work, Design of the work, Acquisition of data, Analysis of data, Interpretation of data, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Hannah Matson – Conception of the work, Design of the work, Acquisition of data, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Alisha Westerman – Conception of the work, Design of the work, Acquisition of data, Analysis of data, Interpretation of data, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Guarantor of Submission

The corresponding author is the guarantor of submission.

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Consent Statement

Written informed consent was obtained from the patient for publication of this article.

Conflict of Interest

Authors declare no conflict of interest.

Data Availability

All relevant data are within the paper and its Supporting Information files.

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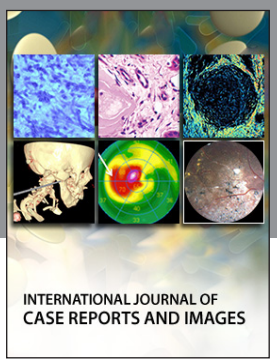

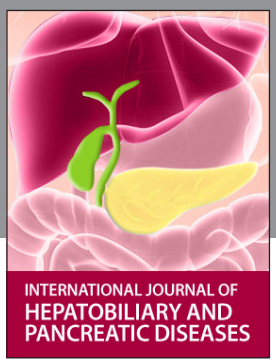

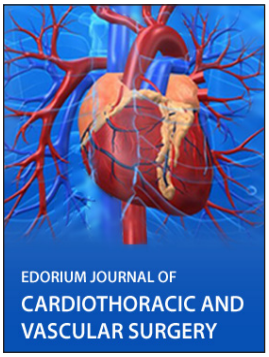

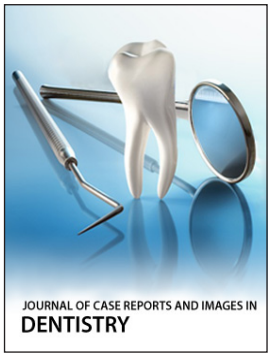

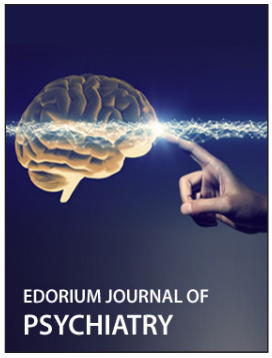

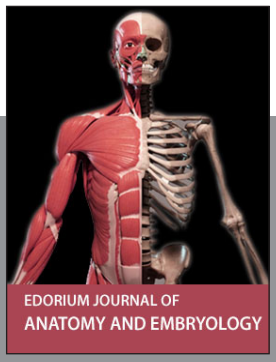

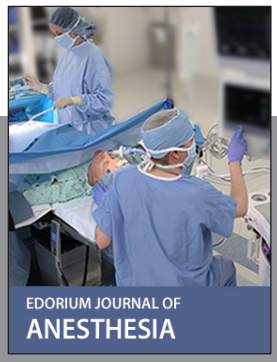

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