

Measuring goal attainment within a community-based multidisciplinary rehabilitation setting for people with spinal cord injury

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ABSTRACT

Aims: To describe and evaluate the multidisciplinary goal attainment measure (MGAM), a method for measuring goal attainment within a community-based multidisciplinary rehabilitation setting and to explore the relationships between the multidisciplinary goal attainment measure and other standardized outcome measures. **Methods:** De-identified data was collected retrospectively from the records of 250 individuals with spinal cord injury who were administered the multidisciplinary goal attainment measure (goal performance and goal satisfaction), functional independence measure, clinical outcomes variables scale and a visual analogue measure of quality of life at commencement and completion of community rehabilitation. **Results:** The multidisciplinary goal attainment measure demonstrated sensitivity to change in goal performance and satisfaction over time. Goal performance and goal satisfaction were highly correlated but appeared to operate as

separate constructs. Goal performance and goal satisfaction correlated with function and mobility at admission to community rehabilitation but not at completion of community rehabilitation. Goal performance and satisfaction did not discriminate across lesion level or completeness of injury. **Conclusion:** Outcome measurement in the community setting requires the use of measures that are appropriate and relevant to the goal-directed nature of rehabilitation in this setting. While goal attainment has been measured in the past, the multidisciplinary goal attainment measure offers an alternative in the multidisciplinary rehabilitation setting but requires further validation and administration to different clinical populations.

Keywords: Community rehabilitation, Goal attainment, Outcome measures, Spinal cord injuries

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INTRODUCTION

Multidisciplinary teams have become a standard part of rehabilitation practice, in both inpatient and

community settings. For these healthcare professionals, the concept of goal setting and attainment is not new, yet measurement of goal attainment within the multidisciplinary team remains limited. Discipline specific measures of objective improvement in functional outcomes continue to predominate. This paper describes a method of measuring goal attainment that was developed specifically for the community-based multidisciplinary rehabilitation team and was based on the measurement model offered by the Canadian occupational performance measure [1]. The multidisciplinary goal attainment measure (MGAM) offers a way of assessing goal attainment for the multidisciplinary rehabilitation team and may be useful across other goal-directed service models, including case management models.

A goal planning approach in the rehabilitation setting has been widely reported, including the area of spinal cord injury rehabilitation [2–4]. Goal setting within a multidisciplinary team provides a more comprehensive rehabilitation approach as it draws upon the specific skills and expertise of different disciplines to address the needs of the client in a holistic manner [5, 6]. Involving the client in the goal formation, planning and decision making process increases their active participation and motivation in the rehabilitation process, leading to enhanced medical, functional and behavioral outcomes in the community [2, 3, 7]. The active participation of the client in goal setting and their rehabilitation program is a vital component of a therapist or team operating under a client-centered approach [8, 9].

There are some examples in literature that actually describe the service structure of goal-directed rehabilitation programs. Kendall, Ungerer and Dorsett [10] described the model offered by the transitional rehabilitation program (TRP), which is part of the unique continuum of healthcare and rehabilitation services referred to as the Queensland Spinal Cord Injuries Service in Brisbane, Australia. Programs such as this provide end stage-primary multidisciplinary rehabilitation in the individual's home or home-like setting to facilitate the transition from hospital rehabilitation to community living and are based on a flexible, goal directed and client centered model of service delivery. While this example was developed specifically for people with spinal cord injuries, there is a range of goal directed rehabilitation models described across varied clinical populations including acquired brain injury, stroke and spinal cord injury [11–13].

In order to evaluate the effectiveness of these models of service delivery as an alternative to traditional hospital-based service delivery systems for people with a spinal cord injury, evaluation strategies are required that incorporate and measure these goal-directed and client-centered aspects of practice. Grenville and Lynne [14] reported that standardized objective outcome instruments often fail to reflect the range of client problems addressed and ignore the individuality of the client. They often tend to

be task orientated rather than client-centered and are assessed on the basis of professional judgment, ignoring client choice and satisfaction [15]. Different clients react differently to similar levels of impairment depending on their expectations, priorities and goals. Standardized outcome measures also often have floor and/or ceiling effects and are relatively insensitive to small changes over time in the condition of an individual [16].

While standardized outcome measures may still hold valuable roles as components of the total evaluation plans for community rehabilitation, these traditional outcome measures alone may not capture a comprehensive picture of goal-directed and client-centered models of service delivery. An assessment tool that has an evaluative purpose, measuring the magnitude of longitudinal change in individual performance on client goals, would further enhance the evaluation of client-centered outcomes. While literature is limited on these types of evaluative assessments which can be utilized within a multidisciplinary context, two exceptions have emerged. Goal attainment scaling (GAS) [17], which has been used within a multidisciplinary context and the Canadian occupational performance measure (COPM) [1], which is specific to the occupational therapy profession have heralded important advances in this area.

Neither of the goal orientated measures reported may be fully appropriate as a multidisciplinary evaluative assessment of client-centered practice however, suggesting new measures are required. Goal attainment scaling (GAS), while multidisciplinary and client-centered in theory, has traditionally involved the therapist allocating the scoring system and has been criticized for its complex measurement approach [18, 19]. Although the COPM [1] is based on an occupational therapy model and the structured interview which reviews areas of occupational performance may not be suitable for a multidisciplinary setting, the other components of the assessment may be useful. The focus of the COPM on the concept of client-centered practice; and the weighing and scoring system of identified problems could form the basis of a multidisciplinary assessment tool.

Using this evidence, the TRP team in Brisbane developed a method of goal attainment measurement which adopted the basic scoring system introduced by the COPM [1]. This method was titled the multidisciplinary goal attainment measure (MGAM) to reflect its multidisciplinary focus. A modified semi-structured interview approach replaced the structured interview described in the COPM. Using this approach, the multidisciplinary team collaboratively formulates goals with the client that address their diverse needs and utilize the extended skills offered within the multidisciplinary team. These goals are presented on a program plan detailing the goals in the clients' words, activities to achieve these goals and the team member/s nominated to address the goal with the client. The MGAM

results in the development of a list of multidisciplinary goals as identified by the client. Examples of these goals have been reported previously by the current authors [20]. These examples highlight the way in which this method of measurement of individual goal attainment can accommodate and reflect the multiple domains of the International Classification of Functioning, Disability and Health (ICF) including body structure/function, activity, participation and environment. The International Classification of Functioning, Disability and Health (ICF) is an internationally accepted model for describing and organizing information on functioning and disability. It standardizes the use of language and provides a conceptual basis for both the definition and measurement of health and disability.

When completing the MGAM, the client considers the importance of each nominated rehabilitation goal and from this, identifies the five most important goals. Each of these five goals is client rated in terms of their perceived performance and satisfaction on a scale of 1–10 at both the commencement and conclusion of community rehabilitation. Therefore, similar to the system offered by the COPM [1], the MGAM scoring system provides a numerical value for change in performance and satisfaction. An example of a completed MGAM is provided (Figure 1).

The aim of this study was to:

1. describe an evaluative method of measuring goal attainment, the MGAM, that was utilized in a multidisciplinary setting.
2. determine the ability of the MGAM to detect changes in goal performance and satisfaction
3. determine the relationships between the MGAM and other measures such as functional independence measure (FIM), clinical outcomes variables scale (COVS) and self-reported quality of life.
4. determine whether goal attainment, as measured by the MGAM, differs across demographic variables such as age, gender, level of injury and completeness of injury.

MATERIALS AND METHODS

Design

The study design was comparative and correlational with longitudinal data collection occurring on program entry and program completion. The study setting was a multidisciplinary community rehabilitation program for people with spinal cord injuries [10]. The program was developed to provide rehabilitation services to assist individuals in the transition from hospital to community and utilizes an underlying philosophy that is client-centered and goal-directed. A range of therapies inclusive of physiotherapy, occupational therapy, social work and

nursing work together as a team in this setting to deliver client-centered rehabilitation programs. The MGAM has been used clinically in this setting for over 15 years and its use continues in this setting and other local healthcare settings. The current manuscript reports on preliminary work to evaluate the MGAM and this is part of a broader research program on this measure that is current and ongoing.

Participants

De-identified data was collected retrospectively from historical records for 250 individuals with spinal cord injury who were admitted to a large metropolitan teaching hospital in Brisbane, Australia and who undertook transitional rehabilitation upon discharge to the community. Individuals were excluded if their transitional rehabilitation occurred after a readmission to hospital.

Measures

Outcomes on the MGAM were compared to more objective measures of outcomes such as functional independence, mobility and quality of life. Functional independence was measured by the functional independence measure [21]. Mobility was measured by the clinical outcomes variables scale [22]. Quality of life was measured by a visual analogue scale [23]. Outcomes were compared across age, length of hospital stay and length of community rehabilitation. Group comparisons were included to examine outcomes across gender, marital status, pre-injury employment status, level of injury, completeness of injury and location (rural/urban).

Length of stay in community rehabilitation was measured in days and age in years. Level of injury was defined as paraplegia versus tetraplegia while completeness of injury was defined in terms of ASIA classifications with ASIA A representing complete injuries and ASIA B C and D representing incomplete injuries. Employment status was defined in terms of employed (FT or PT), unemployed, student and home duties/retired. Marital status was operationalized as single, married/defacto, divorced/separated and widowed. Location was coded into metropolitan (within 100 km radius), regional (large country city), rural/remote (isolated country), interstate and overseas.

Procedure

Ethical approval for the study was obtained from the Metro South Human Research Ethics Committee (HREC/11/QPAH/211). De-identified data was collected retrospectively from hospital records. Initial data collection occurred as part of standard clinical practice. All individuals who were admitted as inpatients to the spinal injuries unit and who were to be discharged

to a community setting were considered eligible for transitional rehabilitation. Those individuals who were eligible for transitional rehabilitation and formalized their entry into the program were approached while still an inpatient by each member of the community multidisciplinary team. During this visit, the client identified a range of rehabilitation goals that they would like to achieve on discharge to the community. There were no limitations to the number of goals identified and these were developed through a collaborative approach between the client and each member of the multidisciplinary team. These goals, while developed on an individual discipline basis usually encompass broad areas that require multidisciplinary input. These goals were then incorporated into a program plan, where the length of their transitional rehabilitation was nominated, goals were listed, appropriate activities required to achieve that goal were outlined and responsible persons were nominated. At the same time, the client was assigned a case coordinator who was responsible for managing the administrative aspects of the client's program.

On entry to community rehabilitation, participants received their goal plan and completed a range of measures including the MGAM (administered by the case coordinator), the FIM (administered by occupational therapist) and the COVS (administered by the physiotherapist). On completion of transitional rehabilitation the above measures were again administered with the addition of the visual analogue quality of life scale (with pre and post ratings).

Data Analysis

Initial examination of the data revealed most variables to have distributions that approximated normality. Data were therefore analyzed in their raw form. The minimal amount of missing data was excluded from the analysis. In order to examine change over time on the MGAM, FIM, COVS and quality of life, paired sample t-tests were used. Correlations between these measures were examined using Pearson's correlation coefficients. Group differences were examined using independent sample t-tests where there were two groups and one way ANOVAS where more than two groups were being compared.

RESULTS

Data collected from a total of 250 individuals with spinal cord injury was included in the study. Demographic details for participants are given in Table 1.

Ability to detect change over time

Scores for participants on the MGAM performance and satisfaction scales, FIM, COVS and quality of life are

given in Table 2 for data collected at commencement and completion of community rehabilitation.

Paired sample t-tests were performed to examine differences over time on each of the measures administered. In order to allow for multiple comparisons, a significance level of 0.01 was used. Significant change over time was noted for each of the measures including MGAM performance ($t = 29.78, p < 0.001$), MGAM satisfaction ($t = 28.86, p < 0.001$), FIM ($t = 10.54, p < 0.001$), COVS ($t = 11.43, p < 0.001$) and quality of life ($t = 17.33, p < 0.001$).

Relationship between goal performance and goal satisfaction

When considering the relationship between scores on the goal performance and goal satisfaction scales, it was found that they were highly correlated prior to rehabilitation ($r = 0.84, p < 0.001$) and following rehabilitation ($r = 0.83, p < 0.001$). Table 3 illustrates these correlations. When considering change scores, it was noted that change in performance was correlated with change in satisfaction ($r = 0.87, p < 0.001$).

Relationships between MGAM (performance and satisfaction), quality of life, function and mobility

When looking at the relationship between goal performance and satisfaction measures, the similarly subjective measure of quality of life and the more objective measures of function and mobility, some interesting findings were noted. These correlations are given in Table 4. The subjective measure of quality of life was expected to more closely correlate with goal performance and satisfaction measures yet no relationship was found.

When considering the relationship between goal attainment measures and more objective measures of function and mobility, a different pattern emerged with measures of goal performance at admission to community rehabilitation correlating positively with admission ($r = 0.21, p = 0.001$) and discharge FIM scores ($r = 0.20, p = 0.002$). Similarly measures of goal satisfaction at admission to community rehabilitation were correlated with admission ($r = 0.24, p < 0.001$) and discharge FIM scores ($r = 0.23, p < 0.001$). There were correlations between goal satisfaction at admission to community rehabilitation with COVS scores at admission ($r = 0.21, p = 0.001$) and discharge ($r = 0.21, p = 0.001$). This did not hold true for goal performance, however, goal performance and satisfaction at discharge from community rehabilitation did not correlate with the more objective measures of function and mobility and there were no correlations between change in goal performance or satisfaction and changes in FIM or COVS scores.

Table 1: Demographic details for study sample

		N (%)	Mean (SD)
Gender	Male	192 (76.8%)	
	Female	58 (23.2%)	
Marital status	Never married	125 (50%)	
	Married	103 (41.2%)	
	Divorced/separated/widowed	20 (8.8%)	
Employment status at time of injury	Employed (Full or part time)	154 (61.6%)	
	Studying	24 (9.6%)	
	Unemployed	31 (12.4%)	
	Home duties/retired	41 (16.4%)	
Discharge location	Metropolitan	145 (58.0%)	
	Regional	64 (25.6%)	
	Rural/remote	23 (9.2%)	
	Interstate/overseas	18 (7.2%)	
Level of injury	Paraplegia	136 (54.4%)	
	Tetraplegia	114 (45.6%)	
Completeness of injury	Complete (ASIA A)	98 (39.2%)	
	Incomplete (ASIA B, C, D)	152 (60.8%)	
Age			38.10 (16.67)
Length of community rehabilitation			39.06 (16.35)

Table 2: Mean scores for the MGAM, FIM, COVS and QOL scales pre- and post-transitional rehabilitation

	Pre-transitional Rehabilitation Mean (SD)	Post-transitional Rehabilitation Mean (SD)	t	p
MGAM Performance	4.03 (1.60)	7.47 (1.37)	29.78	< 0.001
MGAM Satisfaction	4.25 (1.79)	7.67 (1.33)	28.86	< 0.001
FIM	99.54 (23.49)	102.31 (23.52)	10.54	< 0.001
COVS	57.82 (19.63)	60.44 (20.56)	11.43	< 0.001
QOL	4.75 (1.73)	6.70 (1.35)	17.33	< 0.001

Abbreviations: MGAM: Multidisciplinary Goal Attainment Measure
 FIM: Functional Independence Measure
 COVS: Clinical Outcomes Variables Scale
 QOL: Quality of Life visual analog scale

Table 3: Correlations between MGAM Performance, Satisfaction and Change scores pre and post transitional rehabilitation

	MGAM Performance Pre	MGAM Performance Post	MGAM Performance Change	MGAM Satisfaction Pre	MGAM Satisfaction Post	MGAM Satisfaction Change
MGAM Performance Pre	1.00	0.25 p < 0.001	-0.73 p < 0.001	0.84 p < 0.001	0.27 p < 0.001	-0.65 p < 0.001
MGAM Performance Post		1.00	0.42 p < 0.001	0.18 p = 0.005	0.83 p < 0.001	0.34 p < 0.001
MGAM Performance Change			1.00	-0.59 p < 0.001	0.38 p < 0.001	0.87 p < 0.001
MGAM Satisfaction Pre				1.00	0.31 p < 0.001	-0.71 p < 0.001
MGAM Satisfaction Post					1.00	0.39 p < 0.001
MGAM Satisfaction Change						1.00

Abbreviations: MGAM: Multidisciplinary Goal Attainment Measure

Table 4: Correlations of MGAM performance and satisfaction with FIM, COVS and QOL pre- and post-transitional rehabilitation

	MGAM Performance Pre	MGAM Performance Post	MGAM Performance Change	MGAM Satisfaction Pre	MGAM Satisfaction Post	MGAM Satisfaction Change
FIM Pre	0.21 p = 0.001	0.06 ns	-0.14 ns	0.24 p < 0.001	0.12 ns	-0.14 ns
FIM Post	0.20 p = 0.002	0.06 ns	-0.13 ns	0.23 p < 0.001	0.12 ns	-0.12 ns
FIM Change	-0.09 ns	-0.01 ns	0.07 ns	-0.07 ns	0.03 ns	0.09 ns
COVS Pre	0.16 ns	0.04 ns	-0.12 ns	0.21 p = 0.001	0.07 ns	-0.14 ns
COVS Post	0.15 ns	0.05 ns	-0.11 ns	0.21 p = 0.001	0.09 ns	-0.13 ns
COVS Change	-0.02 ns	0.04 ns	0.05 ns	0.03 ns	0.11 ns	0.04 ns
QOL Pre	0.14 ns	0.15 ns	-0.05 ns	0.07 ns	0.10 ns	-0.04 ns
QOL Post	-0.03 ns	0.15 ns	0.13 ns	-0.03 ns	0.12 ns	0.09 ns
QOL Change	-0.19 ns	-0.03 ns	0.17 ns	-0.12 ns	-0.02 ns	0.13 ns

Abbreviations: MGAM: Multidisciplinary Goal Attainment Measure
FIM: Functional Independence Measure
COVS: Clinical Outcomes Variables Scale
QOL: Quality of Life visual analog scale

Relationship to age and length of community rehabilitation

Correlations with age and length of stay in community rehabilitation were conducted to examine relationships with each of the outcome measures. There were no correlations between age and any of the measures used in this study.

Length of community rehabilitation was negatively correlated with FIM scores at admission ($r = -0.59, p < 0.001$) and discharge ($r = -0.57, p < 0.001$). Similarly, there were negative correlations between length of stay in community rehabilitation and COVS scores at admission ($r = -0.61, p < 0.001$) and discharge ($r = -0.50, p < 0.001$). Yet there were no correlations between change in FIM or COVS and length of community rehabilitation. Length of stay in community rehabilitation did not correlate with quality of life at any stage but correlated negatively with initial ratings of MGAM goal performance ($r = -0.24, p < 0.001$) and goal satisfaction ($r = -0.28, p < 0.001$). These correlations were not maintained at discharge however. While there was no significant correlation between change on MGAM goal performance and length of community rehabilitation, there was a small but significant positive

correlation between length of community rehabilitation and change in MGAM goal satisfaction ($r = 0.17, p = 0.008$).

Group differences across lesion level, completeness of injury, marital status, employment status, locality and gender

Significant group differences were noted for the FIM at admission to ($t = 9.03, p < 0.001$) and discharge from community rehabilitation ($t = 8.87, p < 0.001$) where individuals with paraplegia scored significantly higher than those with tetraplegia. Following a similar pattern, group differences were noted for COVS at admission ($t = 5.95, p < 0.001$) and discharge ($t = 5.65, p < 0.001$). Lesion level did not correlate with change in FIM or COVS scores over the course of community rehabilitation. Similarly, lesion level did not correlate with admission or discharge quality of life nor did it correlate with MGAM goal performance or satisfaction at admission or discharge.

A similar pattern was seen when comparing those with complete versus incomplete injuries where quality of life, MGAM performance and satisfaction scores did not distinguish these groups. However, function and mobility

scores at admission and discharge from community rehabilitation were different across groups. Those with incomplete injuries scored significantly higher on FIM at admission ($t = 7.00, p < 0.001$) and discharge ($t = 7.01, p < 0.001$) as well as COVS at admission ($t = 10.62, p < 0.001$) and discharge ($t = 11.00, p < 0.001$) than those with complete injuries. Completeness of injury did not correlate with change scores on either FIM or COVS.

There was no outcome measure that discriminated across marital status or employment status and no outcome measures discriminated between individuals across discharge locality. Similarly, there were no gender differences in MGAM goal performance or satisfaction at admission to or discharge from community rehabilitation. However, females did report changes in MGAM goal satisfaction that significantly exceeded that of males ($t = 2.96, p = 0.003$). However, the same did not hold true for goal performance ratings.

DISCUSSION

Measurement of goal attainment remains fairly limited in the multidisciplinary setting, possibly due to a lack of appropriate and easily administered scales. For community-based multidisciplinary rehabilitation teams, measures are required that reflect the nature of multidisciplinary goal setting and also uphold the

principles of client-centered practice. These measures should be easily administered and evaluated for their utility as an outcome measure. The multidisciplinary goal attainment measure (MGAM) offers an easy to use, clinically relevant and appropriate method for the community-based multidisciplinary rehabilitation team to assess goal attainment.

In the community, rehabilitation is frequently focused on broader rehabilitation goals than those typically addressed in the inpatient setting. Using the framework offered by the International classification of functioning, disability and health (ICF) [24], inpatient rehabilitation tends to focus on improving activity while community-based rehabilitation tends to focus on improving participation and removing environmental barriers. For individuals with spinal cord injury, issues associated with participation and the environment are likely to predominate their rehabilitation goals. Subsequently, measures are required that capture these expected outcomes otherwise they will not be sensitive enough and will lack evaluative value for the program. The findings in this paper clearly suggest that the MGAM measures constructs distinctly different to those captured by standardized functional and mobility measures. In the example provided (Figure 1), three of the five nominated goals were focused on environmental manipulation and the other two were related to participation. This scale captures the goal-directed and client-centered nature

Multidisciplinary Goal Attainment Measure (MGAM)

NAME: _____

Date Completed: _____

CLIENT IDENTIFIED GOALS	PERFORMANCE			SATISFACTION		
	Initial	Final	Change in Performance (Final-Initial)	Initial	Final	Change in Satisfaction (Final-Initial)
1. Finalize prescription of my pressure relieving cushion	1	10	9	1	10	9
2. To develop my own exercise program to improve my upper body strength	3	10	7	4	10	6
3. Access and participate in leisure activities I like during the day	1	7	6	2	7	5
4. To learn how to order my catheter equipment in the community	1	10	9	1	10	9
5. To have my accommodation modifications finalized	2	10	8	1	10	9
TOTAL SCORE = TOTAL PERFORMANCE OR SATISFACTION /# OF GOALS	1.6	9.4		1.8	9.4	
TOTAL CHANGE IN PERFORMANCE OR SATISFACTION (TOTAL FINAL – TOTAL INITIAL)	7.8			7.6		

Figure 1: An example of a completed Multidisciplinary Goal Attainment Measure scoring sheet.

of community based rehabilitation by using a measure that facilitates assessment of these individualized goals. Furthermore, the utility of the MGAM as an outcome measure in community-based rehabilitation was supported by the finding that it was extremely sensitive to change over time.

The MGAM clearly measures two highly related but separate constructs, namely goal performance and goal satisfaction. This theoretical distinction allows for individuals to reflect their different expectations of outcome. While highly correlated at both commencement and completion of community rehabilitation, differences emerged when these constructs were correlated with other outcome measures. Goal performance and goal satisfaction were clearly related to function and mobility at commencement of community rehabilitation but MGAM goal performance was not related to mobility at discharge. It remains an important conceptual distinction to separate out the level at which someone believes they are performing and their satisfaction with that. For some individuals, these may be quite distinct while for others, they may be closely related. Expectations about performance will play an important role in influencing ratings on these concepts.

The fact that correlations were evident between goal performance and goal satisfaction and more objective measures of function and mobility at commencement of community rehabilitation but not at completion of community rehabilitation, suggests that the priorities of individuals may change throughout the course of community rehabilitation. When individuals enter community rehabilitation, they have typically undergone several months of inpatient rehabilitation in which the majority of their rehabilitation has been focused on the development of functional skills that will facilitate independent living. Once in the community, it may become apparent to individuals that other aspects of participation and context become much more relevant, regardless of their level of functional independence.

Issues such as social role normalization, community access and activities of daily living within their home environment are more likely to reflect community-based rehabilitation goals and impact on quality of life. Indeed, change in goal performance and change in goal satisfaction did not approximate change in function or mobility. Therefore individuals may have improved in their functional independence and mobility, but may still not have made substantial improvement towards their rehabilitation goals or alternatively, individuals may have made substantial improvements towards goal performance and satisfaction, despite the fact that they made no functional gains. Importantly, the current study found no relationship between quality of life and goal performance or satisfaction. Further research is needed to explore the links between goal attainment and the subjective measures of quality of life.

In the findings, there was no evidence of a correlation

between goal performance or satisfaction and age. This is perhaps not surprising given that goal setting and measurement of goal attainment is a particularly age neutral approach. People of all ages can nominate rehabilitation goals that are achievable and age appropriate and therefore all individuals have the ability to show improvement in performance and satisfaction. Of course this process relies on the ability of the client and the multidisciplinary team to work together in identifying appropriate goals.

Length of community rehabilitation correlated negatively with goal performance and satisfaction at admission. Therefore, lower goal performance at admission was associated with an increased length of community rehabilitation. It is proposed that program length was made longer for people who had more difficult goals to achieve and this would not be surprising given that the timeframes placed on service provision are explicitly formulated on the basis on the goals identified. Interestingly though, individuals rated goal performance once goal plans and program length had been determined and therefore goal performance per se was not predictive of program length in itself.

It is difficult to determine whether longer programs are more beneficial for individuals in community rehabilitation because the current study identified no relationship between length of program and goal performance change scores. Studies are required which control program length in the context of varied rehabilitation goals. There was a small positive correlation between length of community rehabilitation and change in goal satisfaction, however, suggesting that people may like longer programs even if they do not result in higher goal performance. This finding has significant implications for service delivery whereby cost/benefit decisions need to be made. Is longer program length worth the improvement in goal satisfaction when there is no associated improvement in goal performance? Obviously this is a question that services would need to consider at an individual level.

As expected, there was no discrimination across lesion level, completeness of injury, marital status, employment status or discharge location on MGAM goal performance or satisfaction. This highlights the appropriateness of goal attainment as an outcome measure across all client groups. Females did, however, report greater goal satisfaction change over time, suggesting that they may derive more benefit from the socially focused objectives targeted in community rehabilitation. Alternatively, perhaps females identified goals that were more likely to result in satisfaction than males.

Limitations

There are certain limitations to the evidence presented here that provide direction for future research. This paper does not report on traditional psychometric

properties, especially those associated with reliability. While it is imperative that studies attempt to define the psychometric properties of these scales, it is typically difficult to determine. For example, inter-rater and internal consistency would be inappropriate because of the individualized nature of the goal setting process. In this instance, we were unable to assess test-retest reliability because of the intervention provided by community rehabilitation. Future studies should aim to establish this.

There is a need for the scale to be applied in populations other than spinal cord injury to establish its utility across a range of clinical and non-clinical groups. Furthermore, there is the possibility that this type of scaling could be used with inpatient rehabilitation populations. Future research should be directed to exploring the use of such measures in inpatient settings where interventions are goal-directed and client-centered.

It is important to recognize that only the top five goals were rated. Within community rehabilitation, restrictions are not usually placed on the total number of goals that individuals can identify and therefore most clients had more rehabilitation goals than those that they rated. It is unknown whether these goals rated as less important would differ in the degree of goal performance and satisfaction and this should be investigated in future research. It must be remembered however that the importance of these nominated goals was rated during the goal setting process which took place while the client was still an inpatient. As such, goals that were initially identified but ranked as less important, may actually have become more important throughout the course of community rehabilitation and vice versa. While the intervention provided within community rehabilitation has the flexibility to adapt to these changing goals, the administration of the MGAM did not. Practical strategies need to be developed to address this issue. There is perhaps a need for more work on the goal setting process and attention paid to establishing how to future orient people in the absence of experience.

CONCLUSION

The multidisciplinary goal attainment measure (MGAM) offers a new way of measuring goal attainment in the multidisciplinary community rehabilitation setting that was easily implemented by clinicians, readily understood by clients and extremely sensitive to change. The applicability of this method of assessing goal attainment to other settings and other clinical populations remains to be explored.

Author Contributions

Melissa Bianca Kendall – Substantial contributions to conception and design, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

Melissa Anne Wallace – Substantial contributions to conception and design, Acquisition of data, Revising it critically for important intellectual content, Final approval of the version to be published

Guarantor

The corresponding author is the guarantor of submission.

Conflict of Interest

Authors declare no conflict of interest.

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