Who is goal-setting? Characteristics of people who set goals using RAID® Ladders in brain injury inpatient rehabilitation.

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Abstract

Background: Goal-setting is an essential part of rehabilitation, and it has been commonly used by acute, post-acute, and community rehabilitation teams. Goal-setting explores people's values, emotions and desires, and intentions (goals), which can be used to direct people's attention and effort to a desired behaviour and/or performance and outcome. One established method of goal-setting with people with brain injuries (PWBI) is using RAID® ladders, as a way to orientate PWBI to link their goal and steps with their rehabilitation journey, as to make the process simple, achievable, relevant, and time limited.

Aims: Studies exploring the personal characteristics of PWBI actively engaging in goal-setting, particularly data exploring cognitive and functional skills, but also risk, psychosocial symptoms related to ABI, and frequency and severity of aggression, are very limited or non-existent. Our aim was to explore such gap in the literature.

Methodology: Data from 24 PWBI collected as part of routine clinical care were used for the study. People were divided into two groups: those who had a RAID ladder, and those without a RAID ladder. Each group comprised of 12 people, selected from one of three inpatient rehabilitation units for brain injuries. Data were collected on age, cognitive functioning, levels of independence and functionality, and risk, as measured by a range of outcome measures including the FIM + FAM, the SASNOS, the HoNOS-ABI and the OAS-MNR.

Results: Data analysis revealed a statistically significant difference between the two groups in regards to FIM+FAM and SASNOS data, but not for the HoNOS-ABI and OAS-MNR. The group of PWBI with a RAID ladder had significantly higher FIM+FAM and SASNOS total scores than those without a RAID ladder at both time points ($p < .05$).

Conclusion: Findings suggest that PWBI with higher cognitive and functional skills are more likely to actively engage in goal-setting, when compare to people who may have lower cognitive and functional abilities may not actively engage in goal-setting without further support. Further clinical input may be required to explore such gap and ensure that goal-setting is adapted for all abilities.

The Importance of Goal setting

Goal setting is an essential part of rehabilitation. It has been successfully applied to monitoring rehabilitation, structuring care meetings, planning and making decisions around service-users' care, and ensuring concise communication to the person and significant others when evaluating their rehabilitation programme (Bergquist & Jackets, 1993). Goal setting has been commonly used by acute, post-acute, and community rehabilitation teams (Evans, 2012) and is recognised as a central feature in rehabilitation process and a core competency of the multi-disciplinary team (Wade, 2009). Goal setting explores people's values, emotions and desires, and intentions (goals), which can be used to direct people's attention and effort to a desired behaviour/performance and outcome (Locke & Latham, 1990, 2002; Lunenburg, 2011). Goal setting has been found to improve patient experience in rehabilitation, and people are more likely to engage in goals they have been involved in setting and that are more meaningful to them (Evans, 2012).

Individual characteristics in goal setting

The goal-setting theory initially suggested that individual characteristics were not of concern for goal setting. However, in the Phase II of the goal-setting theory, it currently states that motivation is a vital personal feature when setting difficult or long-term goals. It is also suggested that self-esteem and self-efficacy play equally an important part to goal setting ability and attainment (Locke & Latham, 1990, 2002). Congruently, the self-regulation theory offers a robust theoretical framework for goal-setting which suggests that motivation and emotion are prominent in goal setting (Siegert, McPherson & Taylor, 2009). Similarly, Phillips and Gully (1997)

found that motivational aspects (i.e. need for achievement, learning and performance, goal orientations, and locus of control) and self-regulatory factors (self-efficacy) are individual characteristics that demonstrated a statistically significant impact on the goal-setting process. These findings suggest that motivational and self-regulatory variables are valuable in the goal setting process and appear to have an influence on a person's ability to goal set.

In order to set realistic goals, it is argued that individuals must have the self-awareness and cognitive abilities to goal set (Fischer, Gauggel & Trexler, 2004). Scobbie, Dixon and Wyke (2011) found that there are four components of a goal-setting practice framework including: goal negotiation, goal identification, planning, and appraisal and feedback. Therefore people need to have the skills to negotiate, identify goals and the ability to plan and maintain appropriate focus on their goals. In addition, Fischer, Gauggel and Trexler (2004) found that peoples' self- awareness is related to goal setting ability in long-term rehabilitation; however they found that the level of intellectual functioning is not related to goal-setting ability in their experimental study.

One of the most disabling effects of acquired brain injury (ABI) is cognitive, emotional and interpersonal functioning. Therefore it is often difficult for a person with a brain injury to form realistic goals and understand the need for rehabilitation (Bergquist & Jackets, 1993). Thus, there is a need to establish what skills people need in order to set and achieve goals, as to ensure that clinicians select the most appropriate goal setting tools for each clinical population.

Within St Andrews Healthcare, goal setting a range is approached using a range of formats, some take on idiosyncratic formats while at times a structured goal setting

tool may be more appropriate. One established method of goal-setting with people with brain injuries (PWBI) is using RAID® ladders. A RAID ladder is a simple tool used within the RAID methodology, by supporting PWBI setting up a desired goal and steps to achieve this (Davies, 2016). This superordinate goal, at the top of the RAID ladder, is decided by the person and it can be anything that they want to achieve. Once people have decided on a goal, they will be supported by their clinical team to populate the remainder of the RAID ladder with the necessary steps required to achieve their overall goal. Such steps can be, or ideally are, linked to care plan needs as negotiated by PWBI and their clinical team. This approach aims at orientating PWBI to link their goal and steps with their rehabilitation journey, as to make the process simple, achievable, relevant, and time limited (SMART) (Bovend'Eerdt, Botell, & Wade, 2009).

Despite the existence of studies highlighting some of the necessary individual characteristics in people who goal set, there is limited information within the brain injury population to explain why some PWBI may be more likely to set goals and work on them, while other may be less engaged with the process. As such, the aim of this study is to investigate the individual characteristics of PWBI who are actively engaged in goal-setting and attempt to baseline and differentiate from those that are not actively engaged in goal setting, more specifically in terms of cognition, functionality, and risk.

Methodology

<u>Participants</u>

Data from 24 PWBI collected as part of routine clinical care were used for the study. People were divided into two groups: those who had a RAID ladder, and those without a RAID ladder. Each group comprised of 12 people, selected from one of three inpatient rehabilitation units for PWBI, more specifically an Acute Admissions Unit N=6, an Active Rehabilitation Unit N=12, and a Slow Stream Rehabilitation Unit N=6. Of the entire population of PWBI residing in those three units only 12 were actively engaged in goal setting using a RAID ladder. A further sample of 12 PWBI without RAID ladders were selected from the same units to match for demographic characteristics to those with a RAID ladder. All people with ABI were males, with an average age of 41.7 years, and have been residing within the service on average for 47 months. The study was categorised as service evaluation and thus did not require ethical approval from the local National Health Service research Ethics.

<u>Measures</u>

A range of outcome data, as below, were collected as part of service model and delivery. People's basic demographic information was also collected. All data remained anonymous in regards to personal identity.

FIM + FAM

The Functional Independence Measure (FIM) is a global measure of disability and can be scored alone or with the additional 12 items that formulate the Functional

Assessment Measure (FAM). In the UK, FIM+FAM is designed for measuring disability in PWBI. It has an ordinal scoring system for all 30 items from 1-7 (1=complete dependence and 7 fully independent) (Law, Fielding, Jackson, & Turner-Stokes, 2009; Turner-Stokes, Nyein, Turner-Stokes, Gatehouse, 1999). Higher scores represent more independence and functionality across six major domains (self-care, bladder/bowels, locomotion, communication, cognitive/psychosocial, and activities of daily living. For the purpose of this study, the total FIM+FAM score for each person was used, at both admission and most recent rating. A percentage score was then calculated to highlight an improvement percentage between scores.

SASNOS

The St Andrew's Swansea Neurobehavioural Outcome Scale (SASNOS) is a measure developed by Alderman, Wood, and Williams (2011) to identify any residual neurobehavioural disability (NBD) arising from ABI and the resulting range and impact of social disabilities. Research has highlighted that NBD has a major impact on long-term psychosocial outcome (Woods, 2013). The tool expresses five major domains of NBD (interpersonal behaviour, cognition, inhibition, aggression and communication), which are rated by clinicians and/or patients within a total of 49 individual items. Ratings are converted to standardised scores and indices of ability compared with those of neurologically healthy people. Lower scores represent a higher degree of NBD and are used by the clinical team to assess needs and plan rehabilitation goal with the person. Repeat ratings are used as a means of tracking progress. For the purpose of this study, the total SASNOS standardised score was

used, for both admission and most recent rating. A percentage score was then calculated to identify the improvement percentage between scores.

HoNOS-ABI

The Health of the Nation Outcome Scales for Acquired Brain Injury (HoNOS-ABI) (Coetzer & Du Toit, 2001) is an instrument adopted from the Health of the Nation Outcome Scales (Wing et al., 1998) consisting of 12 separate rating items about the psychosocial consequences of ABI, highlighting symptoms requiring clinical attention. Lower scores represent less ABI related symptoms. The HoNOS-ABI has been found to be moderately to highly sensitive to change following cognitive-behavioural rehabilitation (Bajo et al., 2011). Only the most recent HoNOS-ABI total score was used for this study.

OAS-MNR

The 'Overt Aggression Scale – Modified for Neurorehabilitation' (OAS-MNR) is an observational measure specifically developed for use in ABI as a standardised method of recording and reporting aggressive behaviour (Alderman, Knight, & Morgan, 1997). This tool captures information regarding four types of aggression (verbal, objects, self and people) across four levels of severity, along with associated settings events, antecedents and interventions. This information can be analysed in detail to help identify rehabilitation goals, contribute to formulation and programme design, and to track progress. It has good inter-rater reliability and been extensively and successfully employed in clinical work, research, outcome measurement and service evaluation. Frequency of aggression collected using the OAS-MNR can also

be presented as an Aggregate Aggression Score (AAS) by calculating the weighted severity of the behaviour presented. The AAS can then be used to compute single improvement scores for each patient or group of patients to monitor reduction in frequency and severity of aggression (Alderman, Knight, Stewart, & Gayton, 2012). For this study, 3-month data were analysed for frequency of aggression and AAS.

Procedure

Data were collected from clinical records and included in a database for further analysis. PWBI's files were searched for the presence or absence of a RAID ladder or any other goal setting tool. No other goal setting tool was found for patients other than a RAID ladder. People were then divided into two groups: WITH RAID ladder and WITHOUT RAID ladder. Data were subjected to analysis using the Statistical Package for Social Sciences v 18 (SPSS v18). Since data were not normally distributed non-parametric statistical analysis were preferred.

Results

Demographics

A Mann-Whitney U analysis revealed a statistically significant difference between groups in regards to the median age of the two groups, $U = 19$, $Z = -3.07$, $p = .002$. with a medium effect size ($r = .63$). The group of PWBI with a RAID ladder were younger (Mdn = 32) that the other group (Mdn = 51). As for "months since admission" the between groups results were non-significant, however there was a

trend for those without a RAID ladder to have been residing in the unit for a longer period (Mdn = 39.5 months) than those with a RAID ladder (Mdn = 22.5 months).

Outcome measures

Data analysis revealed a statistically significant difference between the two groups in regards to FIM+FAM and SASNOS results, but not for the HoNOS-ABI and OAS-MNR.

Table 1 suggests that the group with a RAID ladder had significantly higher FIM+FAM total scores than those without a RAID ladder at both time points ($p < .05$) with a medium effect size ($r \leq .57$). Further analysis into FIM+FAM subscales revealed a statistically significant different between groups ($p \leq .05$). Despite an overall improvement rate ($\leq 4\%$) between the FIM+FAM scores for both groups, the between-group results were non-significant.

Table 1. *Between-group comparison of mean and median admission and latest SASNOS and FIM+FAM scores and respective Mann-Whitney U results*

	With RAID ladder		Without RAID ladder		Mann-Whitney *U* test	
	Mean	**Median**	**Mean**	**Median**	***U*, Z**	***p***
SASNOS admission	42.05	46.20	30.26	27.85	32, -2.31	.021
SASNOS latest	43.47	43.40	32.26	29.50	23, -2.65	.008
FIM+FAM admission	302.09	310	241.29	262.50	24.5, -2.74	.006
FIM+FAM latest	311.25	323	247.82	269	18, -2.79	.005

Similarly, the group with a RAID ladder scored statistically higher in both admission and latest SASNOS scores, that the group without a RAID ladder ($p < .05$) with a medium effect size ($r \leq .54$). There was no statistical significance between groups when comparing their SASNOS improvement rate from admission to most recent SASNOS (≤8.1%).
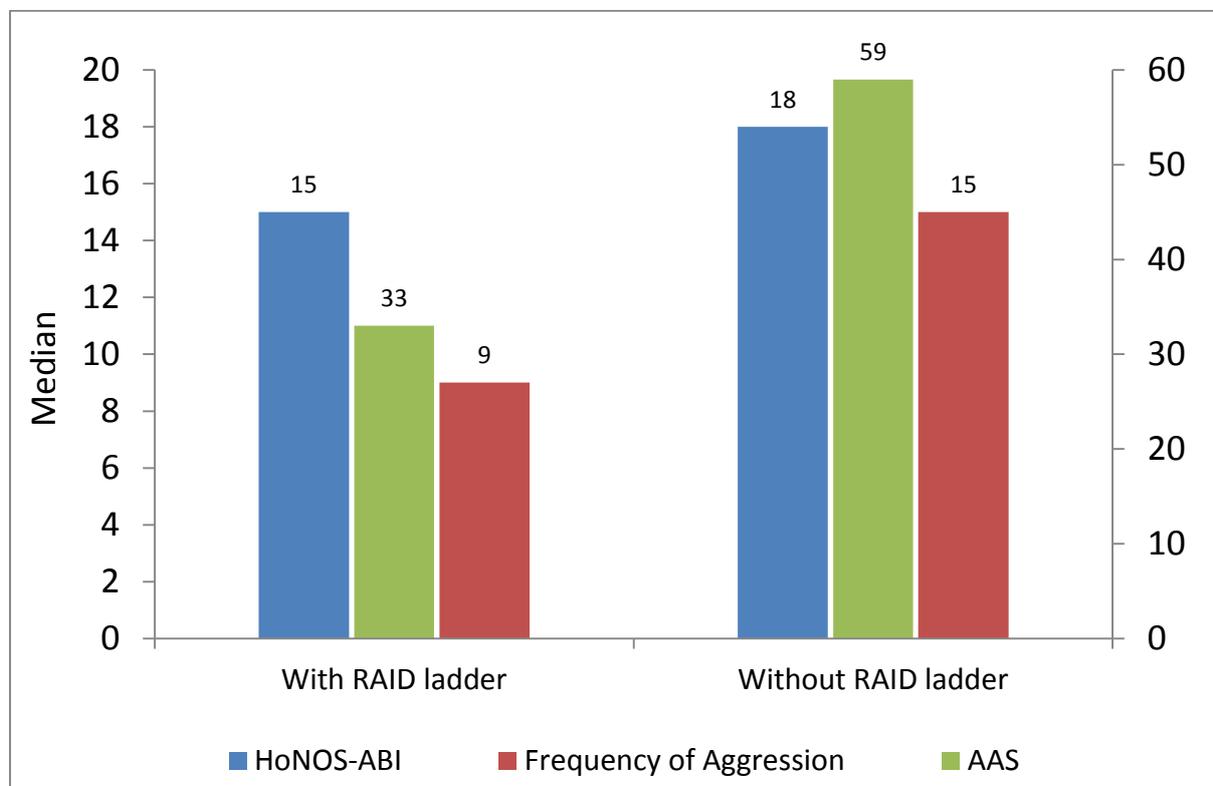

Figure 1. *Between group comparison of HoNOS-ABI, frequency of aggression and aggregate aggression score (AAS) as measured by the OAS-MNR.*

Figure 1 suggests that results from the HoNOS-ABI and OAS-MNR frequency and aggregate aggression score (AAS), despite being non-significant, revealed a trend where the group with a RAID ladder scored lower than the group without a RAID

ladder in psychosocial symptoms related to ABI, and frequency and severity of aggression. Despite this, combined data from both groups suggested prevailing risk related to psychosocial symptoms and frequency and severity of aggression related to ABI.

Discussion and conclusion

This study aimed at highlighting the main characteristics between PWBI actively engaged in goal setting as opposed to those not actively engaging in such process. Age, cognitive functioning, levels of independence and functionality, as measured by a range of outcome measures, remained the main variables featuring statistical significance between the two groups.

The group of PWBI who were actively engaged in goal setting using a RAID ladder were younger, and scored higher in either admission and most recent SASNOS and FIM+FAM scores than the group of people who did not have a RAID ladder and were not seen to be actively engaged in any other type of goal setting. It was also observed via the tools' subscales that the group with a RAID ladder demonstrated less neurobehavioural disability as measured by the SASNOS subscales (e.g. interpersonal behaviour, cognition, inhibition, aggression and communication) and improved independence and functioning as measured by the FIM+FAM (e.g. self-care, bladder/bowels, locomotion, communication, cognitive /psychosocial, and activities of daily living). Scores from both tools for the two groups also demonstrated stability when comparing admission and the most recent ratings. Neither group stood out in regards to their improvement score across time. It seems that goal setting has been relying on certain levels of cognition, independence and functionality that may

stimulate PWBI to goal setting. It could be that PWBI who are perceived as having better cognition, independence and functional skills may be more encouraged and supported by their clinical teams to actively engage in goal-setting; while those with limited cognitive abilities may be perceived as having plateaux and have their goals set by proxy by their team. It has been evidenced before that people who are involved in goal-setting are more likely to perform better however small those goals may be, but also when their goals are linked to regular reviews and feedback (Latham, 2003; Lunenburg, 2011). People are more likely to reject imposed goals (Bandura, 1997), thus potentially disengaging from rehabilitation.

This gives rise to further questions:

a) why people who have lower cognitive and functional abilities are less engaged in goal setting?

b) how have the teams attempted to support those with lower cognition in active goal setting?

c) how does goal setting or lack of it affects people's self-concept, motivation to engage in rehabilitation, and their relationship with their teams?

d) how are clinical teams exploring PWBI with lower cognitions values, desires and intentions (goals)?

e) What motivators have been tried to engage such group?

f) what changes need to happen to make goal setting accessible to everyone, independent of their cognitive/functional abilities?

Between-groups results for the HoNOS-ABI and the OAS-MNR were of no significance, as it was also length of stay in the service, thus suggesting that goal setting for either group was potentially not linked to psychosocial symptoms related to ABI, and frequency and severity of aggression, and how long they have been admitted to the service. These findings may be interpreted that time factors or service pressures to discharge people are not necessary to motivate people to actively engage in goal setting. Similarly, levels of risk do not seem to be directly connected to the ability to set goal, neither should it be used to inhibit people to goal set. On the contrary, people who actively engaged in high levels of risk, and perhaps demonstrate a range of psychosocial symptoms should indeed be actively encouraged by their clinical teams to set goal in order to reduce their risk levels, reduce any residual aggression and improve their psychosocial skills.

Limitations

One of the main limitations of the study is that all the data collected from PWBI have been by proxy, or according to the treating team's perspective on PWBI cognitive, independence and functional skills, and levels of risk. Therefore in future research, self-ratings could also be included as a further outcome measure.

The methodology used in this study was over simplistic, thus only collecting 2 SASNOS and FIM+FAM time points and only the most recent HoNOS-ABI and OAS-MNR data. Also, the study did not take into account if PWBI currently without a RAID ladder, may have had one completed or a similar goal-setting tool in the past. The study's scope did not allow to search for note entries for qualitative information on clinical teams' attempts to engage the person in goal setting.

Another limitation is that a small sample size was used for this study; therefore these results cannot be generalizable to the whole PWBI population. Further studies with larger populations need to be conducted to determine if these results are applicable to the whole population. Also, further research is needed to attempt to find relationships between goal-setting and a range of factors, which was outside the scope of this study.

Finally, there were no self-report measures, potentially addressing self-esteem, mood or quality of life in goal-setting, which may have been valuable information within this study.

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