

Appendix 15 Goal Attainment Scaling Article

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Original Article

GOAL ATTAINMENT SCALING: AN EFFECTIVE OUTCOME MEASURE FOR RURAL AND REMOTE HEALTH SERVICES

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ABSTRACT: *The aim of this paper is to demonstrate the utility of Goal Attainment Scaling (GAS) as an effective, multidisciplinary measure of client outcomes for rural and remote health services. Goal Attainment Scaling was adopted by the Spinal Outreach Team (SPOT) as a client-focused evaluation tool, as it is sensitive to the individual nature of clients' presenting issues and the multidisciplinary focus of the team. It enables individualised goals to be set on a five-point scale. Goal Attainment Scaling was introduced to the SPOT service after a pilot trial established guidelines for its effective implementation. An ongoing review process ensures that goal scaling remains realistic and relevant. Service outcomes can be effectively summarised using a frequency distribution of GAS scores. One of the important benefits of GAS is its facilitation of collaborative goal setting between clinician and client. Goal Attainment Scaling is recommended to rural and remote multidisciplinary health services because of its ability to summarise outcomes from heterogeneous service activities.*

KEY WORDS: *goal attainment, outcome measures, rural health services, spinal cord injury.*

INTRODUCTION

Recent papers have emphasised the importance of evaluation and outcome measurement in rural health care.^{1,2} Barriers to outcome measurement and research in rural and remote practice include insufficient organisational infrastructure, inadequate University sector understanding of rural and remote issues and limited funding for research and evaluation activities.^{1–3} In addition, the increased scope of practice of health professionals in rural and remote areas may preclude the use of standardised outcome measures which are disease or disability specific.^{4,5} The aim of this paper is to demonstrate the utility of Goal Attainment Scaling (GAS) as an effective, multidisciplinary measure of client outcomes for rural and remote health services.

GAS evaluates program effectiveness by measuring the extent to which individualised client goals are

achieved in a specified timeframe.⁶ As shown in Table 1, the goal attainment scale is characterised by five levels of achievement. The expected outcome is the middle or 'zero' score. This expected outcome is determined first and then two better and two worse outcomes are documented.

In many programs, including multidisciplinary health services, a single, standardised outcome measure is not relevant to all clients due to the heterogeneity of their needs.^{7,8} Thus, it is difficult to evaluate overall service outcomes. Goal Attainment Scalings enables individualised goals to be set and allows measurement of clinically important change which may not be detected by standardised assessments.^{6,9,10} Thus, due to the individualised

TABLE 1: *GAS scaling guide*

–2	Outcome much less than expected
–1	Outcome somewhat less than expected
0	Programme goal/expected outcome
+1	Outcome somewhat better than expected
+2	Outcome much better than expected

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nature of goals, GAS has appealing face validity.¹¹ However, authors^{6,11} warn against comparison of GAS scores with standardised measurements for testing of construct validity, since GAS is designed to evaluate change in the client's unique situation, whereas standardised assessments are designed to make between subject comparisons. Reliability results routinely are not reported in the literature although it has been suggested that both test-retest and interrater reliability can be maximised through staff training and through the choice of appropriately measurable goals.^{6,9}

Goal Attainment Scaling was originally developed in the 1960s as an outcome measure in community mental health services.¹² Since that time it has been used with many diagnostic groups including acquired brain injury,^{3,13} the elderly,^{11,14} paediatric learning disability,¹⁵ stroke,^{10,16} and chronic pain.¹⁷ In addition, GAS has been used to evaluate client outcomes in generic programs such as occupational therapy services in the community¹⁸ and social work services in a hospital.¹⁹ Dunn described the use of GAS in the evaluation of a community based health services program in rural and remote Australia.²⁰ Rather than goals being set for individual clients, performance indicators for the whole program were scaled and evaluated. The vast majority of the literature, though, describes the use of GAS with individual clients and the aggregation of these scores for program evaluation purposes. Importantly for rural health settings, GAS has been advocated as an evaluation tool for small services since it is highly responsive to change and therefore requires a smaller sample size to demonstrate outcomes of intervention.^{9,15}

The Spinal Outreach Team (SPOT) is a community based nursing, physiotherapy, occupational therapy and social work service which supports people with spinal cord injury (SCI), their carers and service providers throughout Queensland. The Spinal Outreach Team provides consultancy and early intervention services. Outreach to rural and remote areas is undertaken through regional visiting, videoconferencing, telephone advice, email and internet services. The service has a comprehensive evaluation plan which is discussed elsewhere.²¹ Goal Attainment Scaling is one aspect of this plan which aims to measure SPOT's effectiveness in achieving client outcomes. Due to the individual nature of clients' presenting issues and the multidisciplinary focus of the team, no single, standardised outcome measure was appropriate. Thus, GAS was adopted as a client-focussed evaluation tool.

In order to demonstrate the effectiveness of GAS as a tool for quantifying outcomes for rural health services, the procedure for introducing GAS to SPOT and a review of its implementation is outlined. The results of the GAS process for an 18-month period are examined in order to

illustrate the way in which SPOT has summarised the data for presentation to stakeholders.

METHOD

Pilot trial

Following a review of the literature and theoretical appraisal of the relevance of GAS to the SPOT service model, a pilot trial was instituted. Three staff members undertook the pilot trial over a period of five months.

The first aspect of the pilot trial was establishing guidelines for client inclusion and structuring of the GAS process. Due to the high referral rate to the service, it was decided that GAS would only be used with clients with complex needs. Those clients receiving the SPOT post-discharge follow-up service were also excluded in order to keep the GAS workload realistic. A minimal level of SPOT intervention was set as an inclusion criterion, being four occasions of service with any one discipline. All SPOT clients who met the inclusion criteria were included in the GAS process. Goals were established as soon as practicable after client assessment. Expected goals were determined through negotiation with the client. Attainment of the goals was assessed and scored by SPOT staff either at the end of the intervention (at referral closure) or at a time determined by the goal itself. The goal(s) were multidisciplinary or related to a single discipline only.

While clients were active participants in determining their goals, they were not included in the development of the five-point scales by which the goals were measured. This was identified as less time consuming and potentially less confusing for clients. For similar reasons, other authors have also not included formal client involvement in the scaling.^{9,11,22} The other major aspect of the pilot trial was practising the technique of goal scaling. Some goals were obviously measurable through physical achievements or meeting timeframes, while other goals relied on client self report to determine if the goal had been achieved, for example, levels of pain or satisfaction. Table 2 shows the GAS form used by SPOT with an example goal included.

A system of weighting which reflects prioritisation or ranking of goals has been used by some authors.^{6,11} A T score (which is derived by a complex formula), enables weighted goals to be standardised for comparison across clients.^{6,7} The option of goal weighting was considered during the pilot trial but was not instituted. Consequently the T score was not used. This is similar to other teams.^{8,9} Weighting adds to the complexity and time taken to develop goals and a lower weighting may imply decreased

TABLE 2: *Goal Attainment Scaling (GAS) form and example goal*

Client: Xxx Xxx	Referral number: xxxxx
Goal number: 2	Date goal set: 28/06/2000
Worker(s): xx and xx	Date for review: 16/03/2000
<p>-2 Either a replacement shower commode chair seat is not prescribed or it does not meet X's bowel therapy and/or pressure relief needs as listed at level zero.</p> <p>-1 A replacement shower commode chair seat will be prescribed and submitted to the funding body in more than 6 weeks. X's bowel therapy and pressure relief needs are met as listed at level zero.</p> <p>0 A replacement shower commode chair seat will be prescribed and submitted to the funding body within 4 to 6 weeks. X will report that the seat enables independent bowel therapy and provides improved pressure relief as indicated by absence of red areas 30 minutes after transfer off seat.</p> <p>+1 A replacement shower commode chair seat will be prescribed and submitted to the funding body within 2 to 4 weeks. X's bowel therapy and pressure relief needs are met as listed at level zero.</p> <p>+2 A replacement shower commode chair seat will be prescribed and submitted to the funding body in less than 2 weeks. X's bowel therapy and pressure relief needs are met as listed at level zero.</p>	
Date of goal closure: 03/03/2000	Goal attainment score: 0
Goal closure status: <input checked="" type="checkbox"/> Goal Completed <input type="checkbox"/> Goal No Longer Applicable <input type="checkbox"/> Client Lost to F/Up	

importance which may be counterproductive to a holistic approach.

Team implementation

Upon completion of the pilot trial, GAS was introduced to the whole team (eight clinical staff in total). Team members were provided with reading material and this was followed with a presentation and group training session. During the initial implementation period a buddy system was used in relation to goal scaling.

Team implementation revealed the need to limit the number of goals per client to improve the efficiency of the process. No more than four goals were active at any one time with any one client. If the client had more than four goals, then the four most important goals from the client's perspective, were scaled.

A disproportionate number of -1 scores were noted during the initial implementation phase, which indicated that goal achievement was less than expected. The team reviewed these goals, and in the majority of cases, circumstances beyond the control of SPOT had influenced the outcome (e.g. equipment funder waiting lists or supply issues). This finding provided the impetus for a regular and ongoing review process to ensure that goals and goal scales were realistic and under the control of SPOT and/or the client.

Review process

For GAS to be successful it is important that goals remain realistic and relevant.^{14,15,23} The progress of all SPOT

clients is discussed at regular intervals at a weekly team meeting. Once each month this forum focuses specifically upon reviewing goal scales and setting subsequent dates for review.

In addition to this regular informal review of goal scales, there is a formalised six-monthly internal peer review. Goals for this review are randomly selected from those developed in the preceding six months. The client and worker identifiers are removed. Table 3 includes the questions against which the goals are assessed.

RESULTS

A sample of GAS results is presented, covering the period between June 1999 and November 2000. During this time the GAS process was fully implemented with all staff members involved.

TABLE 3: *Questions used for the six-monthly peer review of Goal Attainment Scaling (GAS) goals*

- | |
|---|
| <ul style="list-style-type: none"> • How mutually exclusive are the levels? • How measurable are the levels? • Are the factors included within the control of the Spinal Outreach Team (SPOT) and/or the client? • Is the goal measuring one issue only? • Are there any issues with the review period and/or time frame? • Other comments: |
|---|

A total of 246 goals were scored over the 18 month period. Goals were associated with diverse issues including care support, bladder management and equipment prescription. Figure 1 shows the outcome of the 222 completed goals across the five scaling levels. A further 23 goals (9.3%) were 'no longer applicable' and one goal (0.4%) was not scored as the client was lost to follow-up. Reasons for a goal being no longer applicable included admission to hospital (6 goals), the client deciding that they no longer wished to pursue the goal (11 goals), development of medical complications (2 goals) and death of the client (4 goals).

The median goal score is zero but there is a greater proportion of scores which are better than expected than those which are worse than expected ($\chi^2 = 6.66$, $P < 0.01$). This indicates that SPOT was successful in identifying and achieving client focussed outcomes. It also demonstrated that goals which were not scored as zero were more likely to be better than expected.

DISCUSSION

Goal Attainment Scaling has been demonstrated to be an individualised and client focussed method of evaluating the outcomes of SPOT interventions. In addition, the scores are able to be collated to give an overall picture of the achievements of the service. This can be an effective way to quantify outcomes to service funders.¹⁸ The simplicity of the median score and the frequency graph are particularly effective in summarising service outcomes. The Spinal Outreach Team has realised many other benefits through the use of GAS which would be applicable to rural health services.

As demonstrated in other studies, GAS was found to actively encourage collaborative goal setting between clinician and client which facilitates realistic expectations and helps motivation.^{6,8,24} This collaboration also assists in prioritising intervention which may result in improved

efficiencies.^{10,23} The highly client-focussed nature of GAS also reflects the fact that the same outcome, for example, independent wheelchair mobility, can be a success or a failure for different clients.⁸ This ability for GAS to summarise heterogeneous outcomes is advantageous for services with a large scope of practice such as those in rural areas.

Goal Attainment Scaling has also been shown to assist in multidisciplinary team communication, decision making and prioritisation, especially for clients with complex problems.^{8,10,11,15} The use of GAS with clients requiring more than four occasions of service from any one discipline enabled SPOT to maximise these benefits and it is recommended that rural services also incorporate its use for more complex clients only. Communication with family members and other services has been shown to improve with the use of GAS²⁴ although SPOT has not used it for this purpose.

Goal Attainment Scaling has some acknowledged limitations. Goal setting is influenced by the clinician's experience, especially their knowledge regarding client potential for goal attainment.¹⁴ Due to this subjectivity, the final score reflects change in the client performance and also the accuracy of the prediction scale developed.⁶ The sample of results presented here demonstrated that when goals were not scored as zero they were more likely to be better than the expected outcome than worse. This could also be interpreted as SPOT staff being inclined to be pessimistic when scaling goals.

The consultancy nature of SPOT means that all staff are employed at a clinical specialist level. This high level of clinical expertise may have facilitated the overall very accurate prediction of client outcomes. Other services may not have the luxury of such skilled staff, however, GAS reflects the clinical reasoning process and thus may be an effective professional development tool for inexperienced staff. If realistic goals are being set, then a normal distribution of scores should be achieved.^{8,11} Monitoring of this distribution by using a frequency graph and peer review assisted in enhancing the accuracy of GAS. Issues identified in peer review have also facilitated service improvement. For example, staff were underestimating the length of equipment supply waiting lists. Goal Attainment Scaling peer review identified this as an issue impeding goal attainment and enabled staff to communicate more realistic time frames to clients.

The time required to establish the GAS process must be recognised.^{6,10} While the training and peer review process have been resource intensive for SPOT, the benefits discussed previously have been worth the investment. The Spinal Outreach Team has also found that the time taken

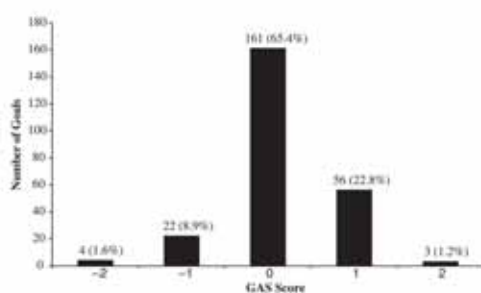


FIGURE 1: Goal Attainment Scaling (GAS) results.

to scale goals has dramatically decreased with practice. A documented policy and procedure has also facilitated efficiency and is recommended for other services.

The floor and ceiling effects of GAS have been highlighted by some authors.^{6,8} This refers to situations where goal attainment falls above or below the five-point scale. The Spinal Outreach Team has successfully avoided this issue through careful scaling of the highest and lowest scale levels (+2 and -2 respectively). The fact that GAS locks the clinician into developing exactly five levels of outcome is sometimes challenging, necessitating the inclusion of very improbable outcomes in the +2 or -2 positions. However, the ability for SPOT to measure degrees of goal attainment through GAS has far outweighed this occasional difficulty. It is also important to note that GAS does not provide information on absolute levels of functioning and is therefore not a replacement for reliable and valid standardised tools where this is required.^{10,11}

Collation and categorisation of goals has assisted programs to map current service provision and to plan future directions.^{15,16} The Spinal Outreach Team has not used GAS for this purpose as such data was already collected in conjunction with occasions of service statistics. However, other services may find it useful to use GAS for this purpose.

CONCLUSION

Despite the substantial initial resources required for setup and training, GAS is a highly useful outcome measure both for the SPOT service as a whole and for individual clients. Its use remains ongoing. Goal Attainment Scaling is recommended to rural and remote multidisciplinary health services as an individualised outcome measure which enables heterogeneous client goals and service activities to be quantified for service evaluation purposes.

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