

## The Relationship between Depression Level and Patient-set Goal Achievement

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Patient participation in rehabilitation goal setting is known to have a positive impact on recovery. The participation process can provide patients with goals that are personally relevant, and therefore should theoretically increase patient satisfaction and ensure better recovery. However, many patients set independent gait as their primary goal, which may not be realistic in some cases. We conducted a retrospective chart review to assess patient depression level of meeting self-selected goals during in-patient rehabilitation following stroke. A total of 57 post-stroke patients who went through in-patient rehabilitation at our medical center from January through December of 2017 were selected for chart review. Patient goals regarding mobility were asked at the beginning of rehabilitation, and the patient or care giver selected personalized goals. Rehabilitation programs were approximately 3 weeks, and Berg Balance Score (BBS) was evaluated both at the beginning and end of the rehabilitation program. Beck Depression Index (BDI) was checked at discharge. Out of 57 patients, 33 patients set independent gait as their primary goal. The patients with such rehabilitation goal had a wide range of initial BBS score, ranging from 0 to 52. Many validation studies such as those conducted by Hayes et al and Robbins et al support a cut-off BBS score of 45 out of 56 for independent self-ambulation. The 33 patients thus had to receive a BBS score of 45 or higher in order to achieve their goals at discharge. The difference between primary goal (BBS=45) and BBS score at discharge was calculated for each patient to evaluate goal achievement. We compared the depression levels and the discrepancy between goal and actual achievement. Patients with a follow up BBS of 36 or higher, which is 80% achievement of their initial goal, showed significantly lower level of depression at the end of the rehabilitation program and also exhibited greater change in BBS during rehabilitation (Table 1). A Spearman analysis revealed that goal achievement extent was negatively correlated to BDI with significance (Figure 1,  $r = -0.495$ ,  $p = 0.003$ ). BBS improvement extent, defined as the difference in initial BBS and BBS at discharge, also showed negative correlation to BDI (Figure 2,  $r = -0.245$ ,  $p = 0.048$ ). Patient satisfaction upon achieving the goals was thought to better motivate the patients and therefore improve the recovery process. However, our study suggests that unrealistic goal setting which can lead to greater discrepancy between goal and actual achievement may ultimately be associated with higher depression level. Among those who set independent gait as their primary goal, patients who achieved less than 80% of that goal showed higher levels of depression. We therefore emphasize the importance of setting realistic goals that patients have a better chance of achieving. It may be the role of clinicians to guide patients in the process of individualizing rehabilitation goals.

Table 1. Patients who achieve less than 80% of their initial primary goal showed higher degree of depression and less change in BBS during rehabilitation (p-value<0.05).

	BBS <sub>discharge</sub> ≥36	BBS <sub>discharge</sub> <36	p-value
BDI score	11.12±9.78	17.5±10.17	0.039
ΔBBS (BBS <sub>discharge</sub> -BBS <sub>initial</sub> )	19.18±11.28	8.88±12.6	0.024

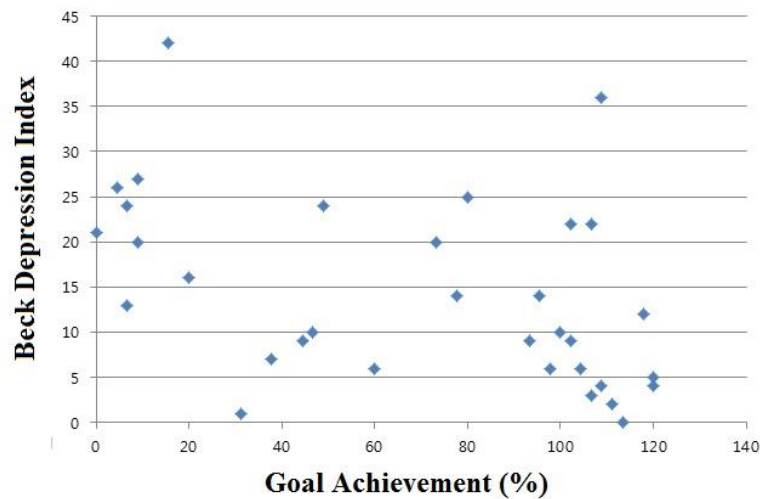


Fig 1. Higher percentage of goal achievement was negatively associated with BDI ( $r = -0.495$ ,  $p = 0.003$ ).

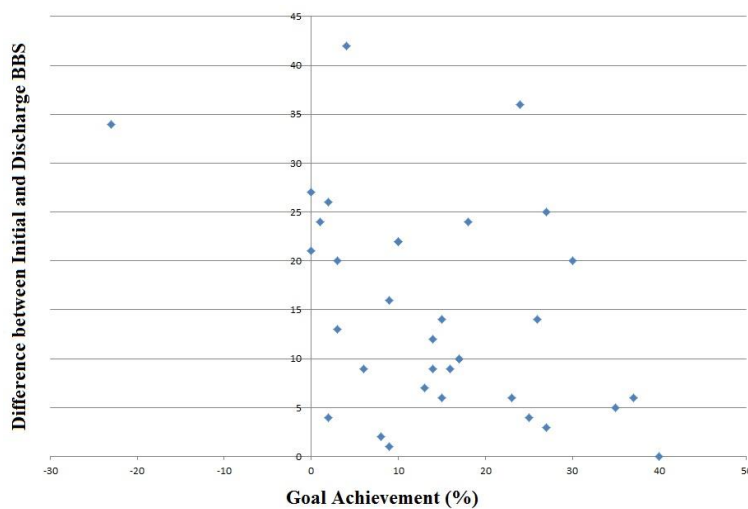


Fig 2. Greater difference between initial and discharge BBS score was negatively associated with BDI ( $r = -0.245$ ,  $p = 0.048$ ).