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ORIGINAL ARTICLE

Goal Pursuit and Goal Adjustment as Predictors of Disability and Quality of Life Among Individuals With a Lower Limb Amputation: A Prospective Study

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Abstract

Objective: (1) To identify significant changes in disability and quality of life (QOL) across 3 time points (t1: admission to rehabilitation; t2: 6wk postdischarge; t3: 6mo postdischarge) in individuals with lower limb amputation, and (2) to examine whether goal pursuit and goal adjustment at t1 were predictive of these outcomes at t3.

Design: Prospective cohort study.

Setting: Inpatient rehabilitation.

Participants: Consecutive sample of persons (N=64) aged ≥18 years with major lower limb amputation.

Interventions: Not applicable.

Main Outcome Measures: World Health Organization Disability Assessment Schedule 2.0 (WHODAS 2.0) and World Health Organization Quality of Life Scale Brief Version (WHOQOL-BREF).

Results: Mean WHODAS 2.0 scores were in the 95th percentile at each time point. Scores on the WHODAS 2.0 and the physical, psychological, and social relations domains of the WHOQOL-BREF remained stable across the study period. Environmental QOL scores decreased from t1 to t2 but returned to near-baseline levels between t2 and t3. Having a greater tendency toward goal pursuit at t1 was predictive of higher physical and psychological QOL at t3, whereas having a stronger disposition toward goal adjustment at t1 predicted lower disability and higher environmental QOL at t3.

Conclusions: High levels of disability were experienced from admission to rehabilitation up to 6 months postdischarge. QOL in the physical, psychological, and social relations domains remained stable over the study period. Stronger goal pursuit and goal adjustment tendencies on admission predicted lower disability and higher QOL 6 months postdischarge.

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The loss of a limb presents individuals with extensive and evolving threats and challenges to their physical, psychological, and social functioning.[1] Outcome measurement is essential to effective rehabilitation practice and sound clinical decision-making.[2] There are no definitive guidelines regarding best practice in measuring outcomes after lower limb amputation (LLA), as reflected in the heterogeneity of functional classification systems and assessment tools used in this patient group.[3] The World Health Organization's *International Classification of Functioning, Disability and Health* (ICF)[4] is a universal disability and health classification system that offers a generic framework for describing the consequences of illness and disability and the dynamic interplay of personal and environmental factors[5] and has been applied to a number of conditions, including LLA.[5,6] The ICF classifies functioning and disability into 2 components: (1) body functions and structures (at the level of the body or body part), which are interpreted through changes in physiological systems or anatomic structures; and (2) activities (at the level of the whole person) and participation (at the level of the whole person in a social context), which are interpreted through capacity and performance. The primary goal of rehabilitation is to achieve optimal functioning (as appropriate to the individual) at each of these levels.[7] Recent reviews indicate that most rehabilitation outcomes research among persons with

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LLA has been at the level of body functions and structures[2] or specific activities, such as mobility.[6] Few studies have explicitly examined the impact of limb loss on participation, despite its status as a key rehabilitation outcome.[8] The limited evidence available indicates that amputation results in significant restrictions in participation, particularly in the areas of physical recreation, leisure activities, and employment.[9,10] Little is currently known about the experience of disability in the activity and participation component of the ICF among people with LLA, its trajectory over time, or its associations with personal and environmental factors in this population.[1,9]

The ICF distinguishes further between disability (the limitations and restrictions experienced because of a health problem) and quality of life (QOL) (how the person feels about these limitations and restrictions).[11] Measures of QOL provide insight into the subjective experience of illness and disability, taking into account a broad range of areas, including perceived health and physical functioning, social relations, psychological well-being, and environmental support, and their inclusion in routine clinical assessment after amputation has been recommended.[12] QOL is a complex issue, however, and research in this patient group has been hampered by methodologic issues, including heterogeneity of samples and measurement tools, and a surplus of cross-sectional designs.[13,14] Further longitudinal studies of QOL to examine changes in this outcome over time and assess its determinants among individuals with amputations are required. The first objective of the present study was to examine disability in the activity and participation component of the ICF and QOL among individuals with LLA across 3 time points (t1: admission to rehabilitation; t2: 6wk postdischarge; t3: 6mo postdischarge) to identify significant changes in these outcomes over the study period.

Identifying predictors of rehabilitation outcomes after LLA could aid in the early identification of at-risk individuals and inform the development of interventions to promote adjustment. Previous research on rehabilitation outcomes in this patient group has tended to focus on sociodemographic and amputation-specific predictors that are unchangeable and of limited use in terms of intervention. The ICF emphasizes the important role that personal and environmental factors play in determining the functioning and disability of an individual with a health condition, and the characteristics of the person's specific condition are seen as an inadequate means of understanding or accounting for any aspect of disability experienced.[4] However, the ICF does not provide explicit and testable hypotheses to improve our understanding of how these personal and environmental factors influence adjustment to illness and disability.[15] Psychological models emphasize the primacy of individuals' subjective, phenomenologic appraisals of their own resources, stressors, and contextual issues in this process,[16] and allow for the development of testable hypotheses and identification of predictors that are potentially amenable to change with appropriate intervention.[15]

Theories of self-regulation may help to increase understanding of adjustment to LLA.[17,18] According to this perspective, human behavior is organized around the pursuit of goals, which energize activities and give structure and meaning to people's lives and are thus closely linked with their subjective well-being.[19-21] Indeed, negative associations have consistently been observed between perceived disruptions in goal attainment and psychological outcomes after illness and disability.[22] To avoid the adverse consequences of goal failure and ensure that purpose in life and well-being are maintained, individuals must either overcome their difficulties through continued striving toward goal attainment (goal pursuit), or abandon or scale down threatened goals and manage adverse emotional consequences (goal adjustment).[23,24] Having a greater tendency toward goal pursuit and/or goal adjustment is associated with greater well-being among patients with acquired physical impairment, including stroke[25] and spinal cord injury.[26]

The physical, psychological, and social consequences of amputation are likely to constrain people's ability to attain their valued goals and, concomitantly, their subjective well-being, unless they regulate their goals appropriately in response to these challenges. Indeed, a recent cross-sectional study of 98 individuals with LLA found that stronger goal pursuit tendencies were associated with higher positive affect on admission to rehabilitation, whereas stronger goal adjustment tendencies were associated with lower negative affect.[27] Goal pursuit and goal adjustment tendencies have not yet been examined longitudinally in this population, however, and their efficacy as predictors of disability and QOL is unknown.

The second objective of this study was to examine whether goal pursuit and goal adjustment tendencies at t1 were predictive of disability in the activity and participation component of the ICF and QOL at t3, controlling for baseline scores and sociodemographic and clinical variables.

List of abbreviations:

ANOVA	**analysis of variance**
FGA	**flexible goal adjustment**
ICF	***International Classification of Functioning, Disability and Health***
LLA	**lower limb amputation**
QOL	**quality of life**
TGP	**tenacious goal pursuit**
WHODAS 2.0	**World Health Organization Disability Assessment Schedule 2.0**
WHOQOL-BREF	**World Health Organization Quality of Life Scale Brief Version**

Methods

Participants

Recruitment took place in 2 urban hospitals in Ireland offering specialized multidisciplinary inpatient rehabilitation programs for individuals with LLA. Patients consecutively admitted between February 2010, and July 2011, were eligible to participate if they (1) were aged $\geq$18 years, (2) had a confirmed case of major LLA (ie, above the level of the ankle) for which inpatient rehabilitation services had not previously been received, and (3) had sufficient English for the demands of the study. Patients who had a Mini-Mental State Examination[28] score of $<$18 or were deemed unsuitable by the rehabilitation team's clinical psychologist because of a previous or current history of psychiatric morbidity were excluded.

Procedure

The research protocol was approved by the ethics committees of both hospitals. Potential participants were identified by the consultant in charge of the rehabilitation program in each hospital,