Archives of Gerontology and Geriatrics 52 (2011) 5–11

Contents lists available at ScienceDirect

Archives of Gerontology and Geriatrics

journal homepage: www.elsevier.com/locate/archger

Cognitive appraisal and perceived benefits of dysvascular lower limb amputation: A longitudinal study

Mélanie Couture [a,b,*], Johanne Desrosiers [a,b], Chantal D. Caron [a,b]

[a] Research Center on Aging, University Institute of Geriatrics of Sherbrooke (CSSS-IUGS), 1036 Belvédère Sud, Sherbrooke, Québec J1H 4C4, Canada
[b] Faculty of Medicine and Health Sciences, Université de Sherbrooke, 3001 12th Avenue North, Sherbrooke, Québec J1H 5N4, Canada

ARTICLE INFO

Article history:
Received 22 May 2009
Received in revised form 30 October 2009
Accepted 2 November 2009
Available online 29 November 2009

Keywords:
Lower limb amputation
Cognitive appraisal
Rehabilitation

ABSTRACT

This study aimed to: (i) compare the adjustment of individuals who have a positive appraisal of their amputation with those who have a negative appraisal; and (ii) identify the perceived benefits of amputation. Sixteen individuals who had a lower limb amputation (nine men and seven women) completed questionnaires during hospitalization (T1), rehabilitation (T2) and after discharge (T3). A subsample ($n = 10$) also participated in semi-structured interviews. Participants who had a positive appraisal of their amputation showed greater functional independence (T1) and greater body image satisfaction (T3) than those with negative appraisal. From interviews, the perceived benefits identified were less pain, more social contacts, fewer health concerns and fewer demands from family and friends. Positive appraisal of the amputation is experienced by many people, thus requiring more attention in future research.

1. Introduction

Losing a lower limb is a life-changing experience; the amputation has an impact not only on mobility but also on other aspects of life (Bodenheimer et al., 2000). Functional abilities (Weiss et al., 1990; Ham and De Trafford, 1994) as well as social and leisure activities (Jones et al., 1993; Pell et al., 1993; Gibson, 2001) are often altered by the amputation. Psychologically, the amputation can change the person's self-concept and body image (Mcgarry, 1993; Gibson, 2001), underline the question of mortality, and generate a sense of loss (Mcgarry, 1993) and feelings of guilt (Mcgarry, 1993). The grieving process following the loss of a limb has been even compared to the one experienced following the loss of a loved one (Gallagher and MacLachlan, 2001).

Adequate adjustment is characterized by the absence of psychopathologies in social behaviors and activities and the ability of the person to fulfill his/her responsibilities (Katz, 1963). However, major health issues such as an amputation do not automatically convert into adjustment problems. Studies with individuals having lived through a heart attack (Affleck et al., 1987), multiple sclerosis (Mohr et al., 1999), lupus and cancer (Katz et al., 2001) and other diseases (Sears et al., 2003) have demonstrated that benefits can emerge from health situations that are habitually perceived as stressful. Yet, after conducting a review of the literature on the psychological aspects of amputation, Horgan and MacLachlan (2004) concluded that studies focused primarily on the negative aspects of this event. Because little is known about the positive aspects of amputation, this study was designed to explore the cognitive appraisal and perceived benefits of a lower limb amputation.

According to the transactional theory of stress and coping developed by Lazarus and Folkman (1984), cognitive appraisal is "the process of categorizing an encounter and its various facets with respect to its significance for well-being" (p. 31). The perception of a situation varies according to personal features and the characteristics of the situation and that partly explains why people have different reactions to similar events. Situations are not intrinsically stressful and can be appraised as: (1) irrelevant if the situation has no impact on the person's well-being; (2) benign-positive if the situation maintains or increases the person's well-being with the possibility of providing additional benefits; or (3) stressful if the situation implies a loss, threat or challenge (Lazarus and Folkman, 1984).

In recent years, studies have shown that an amputation can be appraised as a positive experience despite the various obstacles encountered (Furst and Humphrey, 1983; Jones et al., 1993; Dunn, 1996; Gallagher and MacLachlan, 2000). For instance, according to Jones et al. (1993), many individuals who had an amputation reported experiencing greater well-being, being able to do everything they desire, and having fewer visits to the doctor or

* Corresponding author at: Research Center on Aging, University Institute of Geriatrics of Sherbrooke (CSSS-IUGS), 1036 Belvédère Sud, Sherbrooke, Québec J1H 4C4, Canada. Tel.: +1 819 821 7131; fax: +1 819 829 7141.
E-mail address: Melanie.Couture@USherbrooke.ca (M. Couture).

0167-4943/$ – see front matter © 2010 Elsevier Ireland Ltd. All rights reserved.
doi:10.1016/j.archger.2009.11.002

hospitalizations. Furst and Humphrey (1983) also noted that despite the loss of their limb, most people with an amputation do not consider themselves to be unlucky in life.

Oaksford et al. (2005) developed a grounded theory concerning the role of positive coping following a lower limb amputation by interviewing 12 individuals who had an amputation. Results showed that participants used positive reframing, a strategy where individuals identify benefits from their amputation experience. The benefits found by the participants were as follows: still being alive, meeting new people, having home modifications, being able to drive and having no more pain. According to the model, positive reframing modulated psychological adjustment to the amputation.

Some research efforts have been made to explore the positive appraisal of the amputation and to understand its impact on adjustment. In a study by Dunn (1996), 77% of the 138 individuals with amputations surveyed reported that something positive resulted from their amputation. According to the participants, this positive appraisal is the consequence of redefining the event or reappraising life in general (35%) and finding side benefits (60%) such as success in a new occupation or becoming a more outgoing person. Finding positive meaning in the amputation was related to better psychological adjustment in terms of depression ($r = -0.17$; $p < 0.05$), but not to self-esteem (Dunn, 1996).

In their exploration of positive meaning in amputation, Gallagher and MacLachlan (2000) found that 46% of 104 individuals stated that something good had happened as a result of their amputation. Participants identified some side benefits: increased independence (33%), strengthening of character (19%), change in attitude toward life (17%), improved coping abilities (13%), direct financial benefits (10%), elimination of pain (10%), implementation of a better way of life (8%), and meeting people (6%). Participants who considered that something good had happened as a result of the amputation reported better health ($p < 0.01$), greater physical capabilities ($p < 0.01$), better adjustment to limitations ($p < 0.01$), and less athletic activity restrictions ($p < 0.01$) than those who did not consider that something good had happened. There were no significant statistical differences between the two groups on age, gender, cause of or type of amputation.

More recently, Phelps et al. (2008) verified if positive cognitive processing (including indicators such as growth and acceptance, the discovery of benefits associated with the experience, and satisfaction with coping) was associated with post-traumatic growth, which implies that there are positive changes in self-perception, priorities and relationships with others after a traumatic experience (Tesdeschi and Calhoun, 1996, 2004). Results showed that positive cognitive processing was significantly related to post-traumatic growth at 12 months ($r = 0.33$; $p < 0.01$) and was negatively associated with depression at 6 months ($r = -0.27$; $p < 0.05$) and 12 months ($r = -0.33$; $p < 0.01$).

In light of these results, the idea that an amputation is inevitably appraised as a negative event is questionable. However, studies that have explored the cognitive appraisal and perceived benefits of lower limb amputation had samples that comprised individuals with different causes of amputation. Unlike amputations following trauma, cancer or congenital malformations, lower limb amputation due to vascular disease usually happen after failed attempts at revascularization and the deterioration of ulcers or the presence of gangrene. This type of amputation generally occurs in individuals aged 60 and older (Ziegler-Graham et al., 2008) and is associated with the presence of other health problems such as diabetes, hypertension, cardiovascular disease and kidney failure (Buzato et al., 2002). Another the characteristic of lower limb amputation due to vascular reasons is that the disease persists following surgery (Thompson and Haran, 1983; Fisher and Hanspal, 1998).

This difference in context justifies the need to explore in more detail how individuals perceive their amputation due to vascular disease. In addition, the potential relationship between cognitive appraisal of the amputation and psychosocial adjustment might be a promising path for developing or improving psychological interventions for individuals who had an amputation.

The present study explores how individuals appraise their lower limb amputation due to vascular disease during hospitalization, rehabilitation and post-discharge from rehabilitation. More specifically, the objectives of this study were to: (1) compare the adjustment of individuals who have a positive appraisal of their amputation with those who have a negative appraisal over time in terms of functional independence, locomotor capabilities with prosthesis, depressive symptoms and body image satisfaction; and (2) identify the perceived benefits of amputation.

2. Subjects and methods

This study used a longitudinal design where individuals with a unilateral lower limb amputation due to vascular disease were evaluated during the first 2 weeks of their hospitalization (T1), 2 weeks before discharge from rehabilitation (T2), and 2–3 months post-discharge from rehabilitation (T3). A mixed-method approach was used. Questionnaires (quantitative data) provided a general description of the sociodemographic and clinical characteristics of the participants, their cognitive appraisal of the amputation, and their level of adjustment following the amputation. Individual interviews (qualitative data) were used to obtain the perspective of the participants as well as to identify and describe the perceived benefits of the amputation.

The study was approved by the Research Ethics Committees of the Centre Hospitalier Universitaire de Sherbrooke and of the University Institute of Geriatrics of Sherbrooke in the province of Québec, Canada. Written informed consent was provided by all the participants.

2.1. Participants

Of all the 58 individuals who had above- and below-knee amputations for vascular problems between July 2004 and October 2006 at a university hospital in Sherbrooke, Québec, Canada, 14 individuals refused to participate in the study and 23 were excluded due to the following reasons: bilateral amputation ($n = 10$), metatarsal amputation ($n = 6$), moderate to severe cognitive deficits ($n = 6$), or hospital transfer ($n = 1$). In total, 21 participants were evaluated during hospitalization (T1). Two patients refused to participate in the rehabilitation phase (T2) for a total of 19 participants. Finally, at 2–3 months post-discharge from rehabilitation (T3), one person refused to participate, one died and another had an amputation of the other lower limb, for a final total of 16 participants. For the qualitative subsample, 10 individuals were interviewed at T1 and T2, and eight at T3 (one died and another had a second leg amputated). Individuals who refused to participate in the study were comparable to the participants on age and level of amputation. However, a greater number of men refused to participate ($p = 0.06$).

Participants were hospitalized for an average of 25 ± 13 days (±S.D.), range = 12–63). Intensive functional rehabilitation as an inpatient or outpatient lasted 92 ± 90 days on average (range = 11–367). Individuals participated in an intensive functional rehabilitation program that included occupational therapy and/or physiotherapy at least 2 days per week. In addition, they had access to psychological, social and prosthetic services. Most participants returned home following their amputation and only two lived in residential care. Twelve participants received a prosthetic limb and 10 of them could take more than 30 steps with the prosthesis.