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Predictors of health status and health-related quality of life 12 months after severe burn



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ABSTRACT

Introduction: Sustaining a moderate to severe burn injury is associated with the potential for substantial impairments to long-term physical and psychosocial health, including health related quality of life (HRQoL). The objective of this study was to identify clinical and patient characteristics which predict HRQoL 12-months after injury.

Methods: A total of 125 patients were recruited over the study period, although only 99 were included in the final analysis representing all those who completed both the pre-burn and 12-months after burn injury Short Form 36 Medical Outcomes Survey (SF-36v2). These patients also completed the Burn Specific Health Scale-Brief (BSHS-B). Patient demographics and burn injury characteristics and treatment factors were collected to identify which factors predict 12-month health status outcomes. Multiple linear regression analyses were conducted to identify important predictors of outcomes. The SF36v2 models were adjusted for pre-injury measurements.

Results: Older age (regression coefficient -0.26 , 95% confidence interval (95% CI) -0.38 , -0.13), female gender (-8.08 , 95% CI -12.8 , -3.34) and increased percentage of full-thickness burns per body surface area (-0.51 ; 95% CI -0.88 , -0.13) were important predictors of poorer physical health status at 12 months. Older age (-0.15 , 95% CI -0.26 , -0.04) and increased percentage of full-thickness burns per body surface area (-0.36 , 95% CI -0.69 , -0.03) were important predictors of poorer mental health status at 12 months. Older age (-0.38 ; 95%CI -0.66 , -0.11) and female gender (-12.17 ; 95% CI -22.76 , -1.57) were important predictors of poorer BSHS-B total score at 12 months after injury.

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Conclusions: Given the complexity of burn care rehabilitation, physical and psychosocial screening and assessment within the first weeks after a burn injury along with adequate monitoring after discharge should be undertaken in burn injured patients. In this context, patients of specific demographics, such as female patients and older patients, and patients with a higher percentage of full thickness surface area burns are of greater risk for poorer physical and psychological outcomes and may benefit from additional monitoring and rehabilitation.

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1. Introduction

Sustaining a moderate to severe burn injury and undergoing consequent burn care therapies may result in long-term hospitalisation, repeated acute and reconstructive surgeries and multifaceted rehabilitation regimes. The potential physical stress from an extensive burn injury, as well as the subsequent complex and invasive treatment, often extends beyond the immediate acute phase of injury. This can result in months to years of complex rehabilitation, with significant impacts on the long-term physical and psychosocial health and well-being of patients [1,2].

Highlighting the extent of ongoing difficulties experienced by discharged burn patients, a number of cross-sectional or retrospective studies have been conducted with a mean follow-up of up to eight years after burn. A study by Liang et al. [2] with 93 adult patients with a mean total burn surface area (TBSA) of 45% found that the level of physiological care needs had reduced over time whereas psychosocial needs (reported as being more extensive than physiological care needs) had not changed. More extensive burned areas and visible scarred areas were in particular predictive of greater physiological and psychosocial needs at follow-up. A second study that conducted a follow-up on average five years after burn injury for 50 patients (>10% TBSA) found that 70% of patients reported “good” to “very good” ratings of general quality of life, although on average patients reported “moderate” difficulties in heat sensitivity and body image and approximately one-quarter of patients reported elevated levels of trauma or depression symptoms [3]. A further study that conducted a matched-comparison of 49 burn patients (mean TBSA = 35%) on average five years after burn and a control group found that the groups did not significantly differ on any health status domains of the Short-Form 36 (SF36), whereas twice as many burn patients reported clinically-significant psychological distress [4]. A consistent pattern of findings across these cross-sectional studies was therefore better recovery in physical functioning and global quality of life whereas ongoing psychosocial difficulties were seen for many burn patients.

Further longitudinal and cross-sectional studies have, however, highlighted sub-samples of burn patients that failed to show similar levels of physical health improvement. A retrospective study interviewing 69 patients on average eight years after burn with more significant burn injury found that 49% of the interviewed sample had current healthcare contact

due to their burn injury [5]. Significantly greater difficulties with simple abilities, work and hand function were reported by patients receiving current healthcare contact. A prospective study in which 162 burn patients were assessed at hospital discharge and at 6 and 12 months after burn, also found that patients with more extensive burns (>30% TBSA) and greater in-hospital psychological distress had more impaired physical recovery [6]. The strength of this study was that pre-burn health status was estimated using the SF36 to enable changes from pre-burn functioning to be assessed over time.

A number of other prospective studies have similarly looked to assess broader clinical factors that can be used to identify burn patients at greater risk for poorer recovery. Less emotional distress and pain, and improved community re-entry were found to contribute significantly to better burn specific QoL scores at two and six months in one study [7]. Furthermore, a multi-centre study found that having received psychological treatment in the year prior to the burn-injury, not being married, more days spent in intensive care and treatment involving amputation were multivariate predictors of poorer life satisfaction at 6 months after burn [8]. More extensive full thickness burns and poorer hand function has also been found to be related to poorer physical health status following massive burn injury (TBSA > 50%) with poorer mental health status found to be related to older age at time of burn and less social support following burn injury [9].

Highlighted within the previous literature is that long-term physical and psychosocial recovery and health-related quality of life (HRQoL) is influenced by an array of pre-injury (e.g. pre-morbid psychological health and age), peri-traumatic (e.g. depth and site of burn and nature of intervention during admission) and after burn (e.g. presence of scars, impaired physical performance) factors. Complicating the assessment of the consistency of the findings, however, is that few have used a prospective design (with the result that patients at different points after burn are included) and few apart from Fauerbach et al. [6] have adjusted for pre-burn functioning or health status. Few studies have also focused on the demographic, injury and treatment-related variables that are available to the hospital treating team to illustrate acute care factors that may impact on longer-term HRQoL.

To address the identified research gaps, the current study had the aim of prospectively assessing which demographic, injury and acute care treatment variables were multivariate predictors of 12-month after burn outcomes to help identify patients with potentially poor HRQoL outcomes who could benefit from early intervention.

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