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Satisfaction with life after burn: A Burn Model System National Database Study

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ABSTRACT

Objectives: While mortality rates after burn are low, physical and psychosocial impairments are common. Clinical research is focusing on reducing morbidity and optimizing quality of life. This study examines self-reported Satisfaction With Life Scale scores in a longitudinal, multicenter cohort of survivors of major burns. Risk factors associated with Satisfaction With Life Scale scores are identified.

Methods: Data from the National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR) Burn Model System (BMS) database for burn survivors greater than 9 years of age, from 1994 to 2014, were analyzed. Demographic and medical data were collected on each subject. The primary outcome measures were the individual items and total Satisfaction With Life Scale (SWLS) scores at time of hospital discharge (pre-burn recall period) and 6, 12, and 24 months after burn. The SWLS is a validated 5-item instrument with items rated on a 1–7 Likert scale. The differences in scores over time were determined and scores for burn survivors were also compared to a non-burn, healthy population. Step-wise regression analysis was performed to determine predictors of SWLS scores at different time intervals.

Results: The SWLS was completed at time of discharge (1129 patients), 6 months after burn (1231 patients), 12 months after burn (1123 patients), and 24 months after burn (959 patients). There were no statistically significant differences between these groups in terms

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of medical or injury demographics. The majority of the population was Caucasian (62.9%) and male (72.6%), with a mean TBSA burned of 22.3%. Mean total SWLS scores for burn survivors were unchanged and significantly below that of a non-burn population at all examined time points after burn. Although the mean SWLS score was unchanged over time, a large number of subjects demonstrated improvement or decrement of at least one SWLS category. Gender, TBSA burned, LOS, and school status were associated with SWLS scores at 6 months; scores at 12 months were associated with LOS, school status, and amputation; scores at 24 months were associated with LOS, school status, and drug abuse.

Conclusions: In this large, longitudinal, multicenter cohort of burn survivors, satisfaction with life after burn was consistently lower than that of non-burn norms. Furthermore mean SWLS scores did not improve over the two-year follow-up period. This study demonstrates the need for continued efforts to improve patient-centered long term satisfaction with life after burn.

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1. Introduction

Over the past four decades, mortality rates due to burn have decreased significantly [1-3]. Major advancements in burn care have included improvements in resuscitation and ventilation strategies; control of infection, including early excision and burn wound closure; as well as increased support of the hypermetabolic response to trauma. Given these improved survival rates, even more emphasis is now placed on measuring and optimizing the quality of life for burn survivors.

The Satisfaction with Life Scale (SWLS) is a metric created to better quantify a person's general quality of life and global satisfaction [4]. The scale was originally validated using a healthy undergraduate student and elderly population, but later expanded to various patient populations, including those with spinal cord injury (SCI) and traumatic brain injury (TBI) [5,6]. It has since been translated into over five different languages and has demonstrated validity and reliability in a variety of populations [7,8]. Furthermore, SWLS is negatively correlated with other clinical measurements of distress [9,10]. The simple five question survey allows a respondent to rate a series of statements implicating their contentment with their current life.

Patterson et al. were the first to utilize the SWLS to investigate global satisfaction in burn survivors. They examined 295 burn survivors treated at 3 major U.S. burn centers and demonstrated that burn survivors had lower SWLS scores at 6 months after injury when compared to a non-burned population [11]. Using stepwise regression analysis they also showed that satisfaction with life at follow-up was best predicted by a combination of psychosocial and medical variables. By utilizing the Burn Injury Model System National Database, which has collected SWLS scores for the past 20 years, this study aims to confirm and expand upon Patterson's findings. Here we evaluate SWLS scores in a large, multi-centered population of burn survivors over a 2 year follow-up period. Furthermore we identify predictors of SWLS scores in order to facilitate early recognition of these individuals for potential early interventions and increased support.

2. Materials and methods

Prospectively collected data from the National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR) Burn Model System (BMS) database, for burn survivors from 1994 to 2014, were analyzed. A total of six centers have contributed to the database over this time period (Boston-Harvard Burn Injury Model System, Boston, MA; Northwest Regional Burn Model System, Seattle, WA; North Texas Burn Rehabilitation Model System, Dallas, TX; Pediatric Burn Injury Rehabilitation Model System, Galveston, TX; University of Colorado, Denver, CO; Johns Hopkins University, Baltimore, MD). All patients greater than 9 years of age were included in the analysis. The NIDILRR BMS database comprises patients that meet at least one of the following current inclusion criteria:

- (1) Burn greater than or equal to 10% TBSA which underwent surgery for at least some portion of wound closure (defined as autografting); ages 65 years and older.
- (2) Burn greater than or equal to 20% TBSA which underwent surgery for at least some portion of wound closure; ages 0 years to 64 years old.
- (3) Electrical high voltage/lightning injury which underwent surgery for at least some portion of wound closure.
- (4) Burn of any size to critical area(s): face and/or hands and/or feet and/or genitals which underwent surgery for at least some portion of wound closure.

Since 1993, when the NIDILRR BMS database came into existence, minor modifications have been made to the inclusion/exclusion criteria. These modifications can be found at <http://burndata.washington.edu/standard-operating-procedures> and the complete detailed inclusion and exclusion criteria have been previously described [12]. Primary outcome measures include individual item and total SWLS scores. Demographic (age, gender, ethnicity, school/work status, and history of drug or alcohol abuse) and medical data were collected. Medical data included TBSA burned and grafted, length of stay (LOS), length of stay in ICU (ICU days),

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