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Sexuality, body image and relationships following burns: Analysis of BSHS-B outcome measures

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ABSTRACT

Background: The Burns Specific Health Scale – Brief (BSHS-B) was analyzed to investigate the longitudinal impact of burns on sexuality and body image. Four sub-domains of the BSHS-B domains were of particular interest: sexuality, body image, affect and relationships, and as such were investigated for correlation between all of the sub-scales of the BSHS-B.
Methods: A total of 1846 observations from 865 Western Australian burn patient BSHS-B questionnaires were analyzed. Descriptive statistical methods included dichotomous and ordinal scale variables and medians, as well at the range for continuous variables. Inferential statistical methods used longitudinal linear mixed-effects models and random effects models with the BSHS-B total and its sub-scales as dependent variables.
Results: The four BSHS-B domains of interest all showed no significant change over time, indicating that the psychological and psychosocial impact of burns does not significantly improve for burn survivors, regardless of good physical and functional recovery.
Conclusions: Burn survivors experience sexuality, body image and relationship changes following a burn, which may affect their quality of life (QoL) over time. Rehabilitation services need to be aware of these issues and create rehabilitation programs that specifically and meaningfully address these issues for burn survivors.

1. Background

The impact of burns on sexuality and intimate relationships for burn survivors is under researched, thus many rehabilitation health professionals remain under confident and undertrained in working with these issues within the clinical setting [1].

Studies focussing on sexuality changes following burns have indicated that burn survivors may experience decreases in sexual self-esteem, decreases in sexual and relationship satisfaction and higher rates of sexual dysfunction [2–4].

A preliminary study of sexuality and body image following burns conducted by Connell, Coates [3] found that there were high percentages of sexual and body image dissatisfaction up

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to 12 months post injury, as measured by the Burns Specific Health Scale-Brief (BSHS_B). Dissatisfaction in the BSHS_B sexuality and body image domains were particularly prevalent in female burn survivors. This current study builds on Connell, Coates [3] preliminary study by conducting further statistical analysis of findings from longitudinal BSHS-B outcome measures of Western Australian burn survivors, to determine the impact of burns on changes in sexuality, body image and relationships over time.

2. Methods

2.1. Subjects

The subjects for this study were 865 burns patients treated by the Adults Burn Service of Western Australia based at Royal Perth Hospital. Patients were eligible for the study if they had an inpatient admission to the Royal Perth Hospital Burns Unit and had at least one record of the brief version of the Burn Specific Health Scale (BSHS-B) on at least one occasion after the burn. Patients who did not meet these criteria were not included in this study. The instrument was first used in 2001 and became routinely used from 2006 at hospital discharge, one month, three months, six months, 12 months post-burn. A total of 1846 observations were available for analysis.

Ethical approvals to conduct this research with Royal Perth Hospital patients were gained from the Curtin University Human Research Ethics Committee (HR 196/2008) and the Royal Perth Ethics Committee (EC 2009/108).

2.2. Measure

The BSHS-B was used to analyze changes in sexuality, body image, affect and relationships over time. The BSHS-B is a 40 item questionnaire validated in the burns population to measure functional and psychosocial quality of life (QoL) outcomes for burns survivors [5,6].

There are nine internally consistent sub-domains measured by the BSHS-B; heat sensitivity, hand function, affect, treatment regimes, simple abilities, work, interpersonal relationships, body image and sexuality [5,6].

Whilst other QoL outcome measures are also gathered from patients during their care at the above time points, the BSHS-B was chosen for this analysis as it specifically incorporates the target variables of potential changes to sexuality and body image within the assessment domains.

2.3. Statistical methods

Descriptive methods included percentages for dichotomous and ordinal scale variables and medians plus the range for continuous variables. Inferential statistical methods used longitudinal linear mixed-effects models and random-effects models with the BSHS-B total and its sub-scales as dependent variables. Robust estimation of the standard error was applied because the BSHS-B scales were not normally distributed as indicated by the Shapiro–Wilk test. The assumption of linearity was assessed using restricted cubic spline transformations. Interactions between covariates and gender were assessed using multiplicative interaction terms. In addition to time the following covariates were assessed: age (standardized), total burn surface area (TBSA%), burn depth (superficial, superficial partial, deep partial, full thickness), gender, burn site (upper limb(s) only, lower limb(s) only, upper and lower limb(s), trunk/torso, upper limb and trunk, face (with or without other body parts), lower limb and trunk, three or more body parts), marital status (single (never married), married, de facto relationship, separated, divorced or widowed), burn agent (thermal, chemical, scald, contact, other) and residential location (metropolitan, rural). The correlation between BSHS-B subscales was assessed using Spearman's rank-order correlation coefficient. A p value less than 0.05 was regarded as statistically significant.

All analysis was conducted using the Stata statistical package, Version 12 (StataCorp. 2011, Stata Statistical Software: Release 12. College Station, TX: StataCorp LP).

3. Results

Eligible patients had dates of injury from 26th February 2001 to 31st May 2012, with almost all injured from January 1st 2006 (96%). The median age was 35 years with a wide range from 13 to 87 years. Most patients were male (73%). Most patients had minor burns (<15% TBSA) with 63% having at least one surgical intervention and a median hospital length of stay of 8 days (range: 0–777 days), Table 1.

3.1. Control of confounding covariates

Table 2 identifies the significant associations between the BSHS-B sub-domains. Gender, age at burn and %TBSA are significantly associated with affect and relationships, sexuality and body image and thus provide an opportunity to confound any examination of the change over time.

Multivariable mixed model analysis for each scale of interest with significant covariates and any significant interactions with gender are provided in Table 3. Time since burn was included as a linear and non-linear term and retained in the model if either term was significant.

For the BSHS-B total scores, age showed a significant interaction with gender so that age had a significantly negative association for men (coefficient = −3.7, $p = 0.007$) and a significant positive association for women (coefficient = 7.3, $p = 0.001$). TBSA% was not different for men and women and showed a significant linear negative association (coefficient = −0.62, $p < 0.001$). For time since injury there was a significant interaction with gender. For women there was a linear positive association (coefficient = 5.4, $p = 0.006$) and for men a non-linear positive association (coefficient = 2.9, $p = 0.024$). The overall result of these associations and interactions is that women have a lower mean BSHS-B total score than men with less improvement over time for minor burns and a lower mean BSHS-B total score than men for major burns (Fig. 1).

The sexuality sub-domain age also showed a significant interaction with gender with men having a lower score with increasing age (coefficient = −0.7, $p < 0.001$) and women having a higher score with increasing age (coefficient = 0.5, $p = 0.028$). TBSA% showed no interaction with gender and was