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Validation of the Hebrew version of the Burn Specific Health Scale-Brief questionnaire

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ABSTRACT

Background: The Burns Specific Health Scale-Brief (BSHS-B) questionnaire is a suitable measurement tool for the assessment of general, physical, mental, and social health aspects of the burn survivor.
Aim: To translate, culturally adapt and validate the BSHS-B to Hebrew (BSHS-H), and to investigate its psychometric properties.
Methods: Eighty-six Hebrew speaking burn survivors filled out the BSHS-B and SF-36 questionnaires. Ten of them (11.63%) completed a retest. The psychometric properties of the scale were evaluated. Internal consistency, criterion validity, and construct validity were assessed using interclass correlation coefficient, Cronbach's alpha statistic, Spearman rank test, and Mann–Whitney *U* test respectively.
Results: BSHS-H Cronbach's alpha coefficient was 0.97. Test–retest interclass coefficients were between 0.81 and 0.98. BSHS-H was able to discriminate between facial burns, hand burns and burns >10% body surface area ($p < 0.05$). BSHS-H and SF-36 were positively correlated ($r^2 = 0.667$, $p < 0.01$).
Conclusions: BSHS-H is a reliable and valid instrument for use in the Israeli burn survivor population. The translation and cross-cultural adaptation of this disease specific scale allows future comparative international studies.

1. Introduction

1.1. Quality of life assessment in burn survivors

The outcomes of burn care were initially evaluated based on the mortality rates and Length of Stay (LOS) [1]. Nowadays, burn care has evolved and mortality rates have plateaued [2]. An increasing number of major burn survivors are discharged from burn units to the challenging task of integration back to society. As a result, the rehabilitation and overall health status of burn victims is becoming a major concern of healthcare professionals.

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Due to its multifactorial nature, evaluation of burn care outcome is a complex task, which involves estimation of both physical and psychological aspects of the burn survivor's health. In recent decades, Health Related Quality of Life (HRQoL) assessment tools in the form of self-reported questionnaires have emerged. Some of them meet the prerequisites of reliability, validity and responsiveness as outlined by the Scientific Advisory Committee of the Medical Outcomes Trust [3].

The Burn Specific Health Scale-Brief (BSHS-B) is one of the most commonly used assessment tools for HRQoL of burn survivors [4,5]. It has undergone extensive psychometric testing and revision over the last 30 years. BSHS has been used in several countries and has been translated and validated in Norwegian [4], Turkish [6], Persian [5], Chinese [7] and Spanish [8].

1.2. Burn survivors in Israel

Israel population is relatively small, with approximately 8 million people. Yet, it is highly heterogenic, and composed of multitude of different ethnicities, religions, socioeconomic and political groups. This diversity is expressed in overt disparities between population subgroups, which affects the incidence and severity of Israel burn epidemiology. For instance, housing preferences differences varies from Bedouin traditional tents, to sophisticated concrete buildings in major metropolitan areas. In addition, since its independence, Israel is continuously involved in military conflicts, characterized by both high and low intensity warfare. This reality is a fertile ground to the high incidence of burn patients. Therefore, an internationally accepted HRQoL tool with linguistic and cultural adjustment is required for Israeli burn survivors' outcome evaluation.

Haik et al. have recently published accumulative data on burn patients in Israel during the years 1998 and 2005 [9]. In that period, Israel had five operational burn units with 27 burn beds and 14 intensive care beds. During this period, 974 adult burn patients of second degree or higher spanning 20% TBSA and more were admitted. The average hospitalization period was 32.4 days while the mortality rate was 21.1%.

1.3. Study objective

To translate, culturally adapt, validate and assess the reliability of a Hebrew version of The Burn Specific Health Scale-Brief questionnaire.

2. Materials and methods

2.1. Study Design

The study was conducted in two stages: the first stage included the translation and cultural adaptation of BSHS-B questionnaire to BSHS-H. The second stage included a cross-sectional validation pilot study.

2.2. Study setting – burn unit structure

The study was performed at the burn unit of Sheba medical center at Tel-Hashomer, Israel. The burn unit is a tertiary referral center for adult burn patients throughout the Middle East with a capacity of twelve beds including a maximum of three mechanically ventilated patients.

Study participants included burn survivors who were admitted in Sheba medical center burn unit between the years 2006 and 2011.

Inclusion criteria were age over 18, Hebrew speakers, an adequate capacity to sign an informed consent. Burn survivors with psychiatric illness (e.g. schizophrenia, bipolar disorder or major depression), severe chronic disease (e.g. malignancy, hemodialysis) severe neurological disability (e.g. tetraplegia, paraplegia), severe brain damage or dementia, other major trauma injuries at admission to hospital (e.g. major fractures) or history of self-inflicted injuries were excluded from the study.

2.3. Data Measurement

The measurement tools used to collect data for the HRQoL of burn-survivors were the Hebrew version of the SF-36 questionnaire [10] and the BSHS-B questionnaire [11] that was translated to Hebrew (BSHS-H, see Appendix 1).

2.3.1. Short-Form 36 Health Survey (SF-36)

SF-36 is the most widely used of all generic HRQoL questionnaires [12]. Although it is not patient group specific and measures HRQoL outcomes that are affected by disease and treatment [13], it has been validated and used on burn survivors [2,14]. It contains 36 self-report questions that measure eight different health subdomains of HRQoL [15]. The first four subdomains form the physical health domain and the last four form the mental health domain. Each domain is transformed to a score from 0 to 100 with higher scores representing better HRQoL [16].

The Hebrew version of the SF-36 was validated on a sample of 2030 adults from the Jewish population of Israel and has demonstrated adequate reliability and validity [10].

2.3.2. Burn Specific Health Scale (BSHS)

Burn Specific Health Scale-Brief (BSHS-B) is a 40 items valid HRQoL assessment questionnaire [11]. It is composed of two subdomains regarding Physical function, five subdomains regarding social and emotional function, and two subdomains regarding non-physical/burns specific domain (see Table 1) [11]. Answers are scored from 0 to 4, whereas higher values represent better HRQoL.

2.3.3. BSHS-B translation procedure

The translation process of BSHS-B to Hebrew was performed according to the guidelines of the International Society for Pharmaco-economics and Outcome Research task force for translation and cultural adaptation process for patient reported outcomes measures [2]. At first, BSHS-B was translated independently by three burn care expert plastic surgeons (forward translation), and a common version was agreed upon (reconciliation). The second stage included a back translation to English of the common Hebrew version, by uniting independent translation versions written by a professional English lecturer and an English native speaking physician. Later, the translators compared the original and