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# Polish adaptation and validation of Burn Specific Health Scale – Brief

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## ABSTRACT

**Background:** The Burn Specific Health Scale – Brief is a well-described, specific tool to assess health condition (quality of life) of burnt patients. This project was aimed at creating a Polish adaptation and validation of the Burn Specific Health Scale – Brief.

**Method:** Adaptation of the tool was performed in two stages. The first stage involved translation, back translation, evaluation by a panel of judges and a pre-test of the tool. The second stage consisted of surveying 202 burned patients. Those data were used to conduct a psychometric analysis. Reliability was checked by determining the Cronbach's  $\alpha$  internal consistency coefficient and conducting the test–retest procedure (ICC). Content validity was evaluated by a panel of judges. Criterion validity was determined using SF-36. Construct validity was determined using known-groups validation.

**Results:** Reliability of the tool, determined using the internal consistency coefficient (Cronbach's  $\alpha = 0.94$ ) and the test–retest procedure (ICC = 0.89), proved to be high. Criterion validity, determined using the relationship of results of comparable BSHS-B and SF-36 subscales, obtained a satisfactory level with a correlation of  $r = 0.55$ – $0.89$  ( $p < 0.01$ ). Analysis of inter-group differences showed that patients who stayed at a hospital for more than 10 days ( $p = 0.002$ ), patients after surgical intervention ( $p = 0.018$ ), patients with a burn larger than 19% of the TBSA ( $p = 0.01$ ) and patients with 3rd degree burns ( $p = 0.001$ ) have much poorer results than the rest of the subjects.

**Discussion:** The Polish version of BSHS-B is a reliable and valid tool for assessing quality of life of burned patients. It may be used to plan the burn treatment process and evaluate its outcomes.

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## 1. Background

Burns are extremely devastating injuries affecting not only physical, but also mental and social aspect of the burnt patient's life [1–4]. Effects of burns include not only pain and

loss of motor functions but also post-traumatic stress disorder, poorer self-esteem, depression, increased anxiety, body image change and reduction of interpersonal relations [1–8]. These complaints may affect patients even a few years after the injury and influenced their perceived health condition [9–12].

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Over the last two decades, the patients' subjective assessment of their health conditions and health-related quality of life (QOL) has become one of the key factors affecting evaluation of the treatment process and its modification [4,10,11,13–18]. Non-specific questionnaires, measuring general health-related QOL, provide valuable information and additionally offer the possibility of comparing the results with the rest of the population [12–16,19]. The Burn Specific Health Scale, however, as a specific tool proved to be more sensitive to issues related with the burn itself, its treatment and consequences [20–24]. Thus BSHS was adapted and it is widely used in burn research in several countries like: Korea, Italy, Norway, Spain, Turkey and Brazil [25–30].

Although the need to use tools for subjective health and QOL evaluation for burned patients has been noticed in Poland [31,32], there are extremely few studies about this. Wójcik et al. [33] used general tools to evaluate health and QOL: WHOQOL-BREF and EQ-5D.

This project was aimed at creating a Polish adaptation and validation of the Burn Specific Health Scale – Brief questionnaire for use as a universal and specific measurement tool to evaluate QOL of burnt patients at various treatment stages.

## 2. Methods

### 2.1. Patients

Study participants consist of 202 patients treated at the Burn Treatment Unit of the General Surgery and Multiple Organ Injury Ward of the J. Struś Multi-Specialist City Hospital in Poznań in the years 2008–2010. Since 12 of them could not be located because of the change of address, our sample consisted of 190 patients.

### 2.2. Measures

#### 2.2.1. Burn Specific Health Scale – Brief

The BSHS-B is a well-evidenced, public domain tool used to assess the health condition of burn patients [34]. Consent for its use and Polish adaptation was obtained from its original author – M. Kildal. The scale is comprised of 40 items forming 9 subdomains concerning: *Heat Sensitivity (HS)*, *Interpersonal Relationships (IR)*, *Sexuality (S)*, *Body Image (BI)*, *Treatment Regimens (TR)*, *Hand Function (HF)*, *Work (W)*, *Simple Abilities (SA)* and *Affect (A)*. In addition to this, subdomains may be grouped into the following domains: *Affect and Relationships (Affect, Interpersonal Relationships, Sexuality)*, *Function (Simple Abilities, Hand Function)* and *Skin involvement (Heat Sensitivity, Treatment Regimens, Body Image)* [35]. The respondents evaluate each item using a 5-point scale, where 0 is equivalent to “Extreme/Extremely”, 1 – Quite a bit, 2 – Moderate/Moderately, 3 – A little bit, 4 – None/not at all. The respondents can score from 0 to 160; the higher the score, the better the respondent's QOL.

#### 2.2.2. SF-36 (v2) (Short Form Health Survey)

The SF-36 is a non-specific HRQOL scale used to assess health condition and factors affecting it, regardless of the disease, treatment method, age or gender. The scale is comprised of 35 items forming 8 subdomains concerning: *Physical functioning*,

*Physical role functioning*, *Bodily pain*, *General health perceptions*, *Vitality*, *Social role functioning*, *Emotional role functioning* and *Mental health*. In addition to this, the scale comprises one separate item in which respondents assess the change in their health status over the last year. All subdomains, except *Physical functioning*, are assessed using a five-point scale. The *Physical functioning* subdomain is assessed using a three-point scale. Scores from each subdomain are transformed into a 0–100 scale – the higher the score, the better health status.

### 2.3. Translation procedure

The first stage involved measures to develop the Polish language version of BSHS-B. The procedure was conducted according to guidelines of the WHO and Guillemin et al. [36,37]. The original, English language version of BSHS-B was translated into Polish by two independent translators. Thus, two original versions of the questionnaire – BSHS-B-PL1 and BSHS-B-PL2 – were developed. Then, the translators jointly established one common version of the survey: BSHS-B-PL3. This version was then back translated, also by two independent translators. Of the two emerging back translation versions, the translators established one common version. The original language version, the Polish version (BSHS-B-PL3) and the version obtained by back translation were then presented to a panel of judges. This panel consisted of: 2 physicians, 2 nurses, a psychologist working at a burn treatment ward, and a physical therapist familiar with the issue of health-related QOL. All judges except for one of the nurses knew English. The judges were to estimate whether the BSHS-B-PL scale can be used in Poland as a tool to measure QOL of burned patients and whether the scale's items proportionately reflect individual aspects of health-related quality-of-life. The judges also read a description of the test procedure used to create the original scale version. Further during the panel, all versions of the survey were compared, minor stylistic corrections were made, and some questions were rephrased to be more comprehensible to all respondents, regardless of their education.

Stylistic changes concerned item 9 where the word “pracowanie” [Eng. “working” as a noun] was changed to “praca” [Eng. work] and 19 where the phrase “przy mnie” [Eng. “around me”] was changed to “wobec mnie” [Eng. “towards me”]. The changes making the text more comprehensible were as follows: item 11 – the word “oparzenie” [Eng. burn] was replaced by “wygląd blizn” [Eng. scar appearance] which better reflects the subcategory to which this item is ordered – Body Image; item 17 – the word “obrażenie” [Eng. injury] was replaced with “oparzenie” [Eng. burn] – as these two words sound similarly in Polish, it was judged that they might mislead the respondents; item 32 – the phrase “jest problematyczne” [Eng. is a bother] was replaced with “sprawia dużo kłopotów” [Eng. causes much trouble]; item 5 – the phrase “używanie sztućców” [Eng. Eating with utensils] was changed to “posługiwanie się nożem i widelcem” [Eng. using knife and fork].

Implementation of these changes resulted in the third version of the questionnaire – BSHS-B-PL4. This version was then used in a pilot study of a small group of participants. The pilot was comprised of 10 burned participants (age:

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