

A systematic review to investigate outcome tools currently used for patients who have sustained hand burn injuries and to map the psychometric properties of the outcome measures

identified from the literature across the International Classification of Functioning, Disability and Health (ICF).

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Background:

Severe burn injuries can have devastating effects on patients with life-long complications of pain, scarring and disfigurement. The psychological impact and after-effects of sustaining a severe burn injury have been well documented in the literature [1-4]. Although hand burns represent a small Total Body Surface Area (TBSA) percentage, hand burns are classified as severe burn injuries that require the advanced skills and interventions that are provided by specialised clinicians [5-6]. Interruption to the function of the hand resulting from a severe burn injury impacts widely on the patient's participation in daily life and the ability to engage and interact with the surrounding social environment [2].

The aim of this systematic review is to review outcome measures reported in studies used to measure hand function post severe hand burn injuries. To determine what domains of hand function are identified and measured by each assessment tool based on the evidence and to critically evaluate the reliability and clinical utility of each hand assessment tool identified from the literature to determine suitability for use with the burns population. To determine the alignment of each outcome measure with the constructs of the International Classification of Functioning, Disability and Health (ICF).

Methodology:

A search of the published literature using electronic data bases MEDLINE, CINAHL, PEDro, OT seeker and PubMed. The Cochrane Collaboration and the Joanna Briggs Institute (JBI) were included to ensure that any potential relevant studies were screened for inclusion. The timeframe searched January 1st 1997 to -July 1st 2018.



Data extraction and synthesis

Results:

38 articles yielded 32 assessments for measurement of hand burn outcomes, as follows: Active Range of Motion. Activities of Daily Living, Assessment of patient satisfaction Burns Specific Health Scale, Burns Specific Health Scale Brief, Composite Finger Flexion, Cutometer, Degree of contracture, Dermaspectrometer, Disability of the Arm, Shoulder and Hand = DASH, Disability of the Arm, Shoulder and Hand short version= Quick DASH, EQ- D5, Grip Strength Hand Span, Health Related Quality of Life, Jebsen Taylor Hand Function Test, Kapandji Thumb opposition scale Linear finger measurements, Matching Assessment with Photography of Scars, Medical Outcomes Study 36 Item Short Form, Michigan Hand Function Questionnaire Pinch Strength, Range of Motion, Rate of amputation, Sequential Occupational Dexterity Assessment, Sollerman's Hand Function Test, Stanford- ReSurg Burn Scar Contracture Scale – Upper Extremity, Test d' Evaluation des Membres Supérieurs des Personnes Agées, The Patient and Observer Scar Assessment Scale, Total Active Movement, Vancouver Scar Scale, Visual Analogue Scale and Web space distance.

The psychometric properties of each outcome measure identified was mapped across the Comprehensive ICF Core Set for Hand Conditions [7]. The most common core sets identified were: b7101 Mobility of several joints, b810 Protective functions of the skin, d4400 Picking up, d4401 Grasping ,d4408 Fine hand use and other specified d4458 Hand and arm use. The assessments were arranged in to six groups to facilitate ease of discussion: Strength, sensation including itch, quality of life, range of motion, scar outcome and hand function.

Discussion:

Clinometric properties of outcome measures vary by population and setting therefore the appropriateness of

an instrument may not be applicable across all cultures and/ or age groups [8].The WHO – ICF published a robust list of core sets for hand conditions [7] and it is recommended that instruments used to measure hand function post burn injury should included these core domains in conjunction with patient reported outcome measures. To date a few of the commonly used outcome measures have undergone this rigor thus leading to a deficit in quality of data collection of hand burn injuries. **Conclusion:**

A large number of outcome tools exist to measure outcomes post hand burn injuries however to date no assessment tool captures all recommended components of the core set of hand conditions as per the WHO-ICF. Further research is required to determine if patients and clinicians agree if the components of the core set of hand conditions would be advantageous to hand burn outcomes.

Declarations: PROSPERO: CRD42018085059

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