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Impact of facial burns: relationship between depressive symptoms, self-esteem and scar severity ☆,☆☆

Cornelis Johannes Hoogewerf, MS.c. [a,b,*], Margriet Elisabeth van Baar, Ph.D. [a,c], Esther Middelkoop, Ph.D. [b,d], Nancy Elisa van Loey, Ph.D. [d,e]

[a] Association of Dutch Burn Centres, Maasstad Hospital, Rotterdam, the Netherlands
[b] Department of Plastic, Reconstructive and Hand Surgery, MOVE Research Institute, VU University Medical Centre, Amsterdam, the Netherlands
[c] Department of Public Health, Erasmus Medical Center, Rotterdam, the Netherlands
[d] Association of Dutch Burn Centres, Red Cross Hospital, Beverwijk, the Netherlands
[e] Department of Clinical and Health Psychology, Utrecht University, Utrecht, the Netherlands

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ABSTRACT

Objective: This study assessed the role of self-reported facial scar severity as a possible influencing factor on self-esteem and depressive symptoms in patients with facial burns.
Method: A prospective multicentre cohort study with a 6 months follow-up was conducted including 132 patients with facial burns. Patients completed the Patient and Observer Scar Assessment Scale, the Rosenberg Self-esteem Scale and the Hospital Anxiety and Depression Scale. Structural Equation Modeling was used to assess the relations between depressive symptoms, self-esteem and scar severity.
Results: The model showed that patient-rated facial scar severity was not predictive for self-esteem and depressive symptoms six months post-burn. There was, however, a significant relationship between early depressive symptoms and both patient-rated facial scar severity and subsequent self-esteem. The variables in the model accounted for 37% of the variance in depressive symptoms six months post-burn and the model provided a moderately well-fitting representation of the data.
Conclusion: The study suggests that self-esteem and depressive symptoms were not affected by self-reported facial scar severity but that earlier depressive symptoms were indicative for a more severe self-reported facial scar rating. Therefore, routine psychological screening during hospitalisation is recommended in order to identify patients at risk and to optimise their treatment.

1. Background

Worldwide, burns and fires account for more than 300,000 deaths and almost 11 million people a year require burn related medical attention [1]. Prevalence rates of head and neck involvement vary internationally between 6% and 60% [2–5] and illustrate that facial burns are common. Despite major improvements in burn care in the 20th century, scar formation remains a problematic consequence of burns and may be a factor that influences psychosocial adjustment, especially in the case of facial scarring [6]. Even minor facial lacerations can have a significant psychological impact [7].

Among other psychological problems, depressive symptoms are commonly reported in the aftermath of a burn injury [8]. In-hospital prevalence rates range between 8% and 61% [9–12], whereas rates one year post-injury vary between 13% and 34% [10,12]. The impact of depressive symptoms is considerable, illustrated by several studies reporting a negative influence on quality of life [13] and physical functioning [11,14] in burn survivors. Whether facial burns play a specific role in depressive symptoms following burns is still a subject of debate. Studies that investigated facial burns as a predictor of post-burn depressive symptoms reported conflicting findings. One study reported burn visibility as a predictor of depression, but this study was hampered by a small sample size ($n=23$) [15], whereas a path analysis in a larger study ($n=110$) found no evidence for a direct effect of facial burns on depressive symptoms [16]. One study included an indirect effect, that is an interaction between gender and facial or neck burns, and reported that depressive symptoms were more likely in females with facial burns [17]. In a large cross-sectional study, higher correlations between psychosocial variables and depressive symptoms were found compared to demographic or burn variables [e.g., total body surface area (TBSA) burned, number of surgeries, facial scar and burn scar visibility] and depressive symptoms [18]. Of notice, none of these studies used a subjective patient-reported burn severity measure that may have more power to detect a relation with depressive symptoms compared to objective measurements of burn severity, such as percentage

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* Corresponding author. Maasstad Hospital, P.O. Box 9100, 3007 AC Rotterdam, the Netherlands. Tel.: +31 102913428; fax: +31 102913135.
E-mail address: hoogewerfc@maasstadziekenhuis.nl (C.J. Hoogewerf).

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TBSA burned, number of surgeries or scar visibility. However, in general, little evidence supports a direct impact of facial burns on depressive symptoms.

Up to now, few burn studies have focused on underlying pathways involved in depressive symptoms in patients with facial burns, therefore, the current understanding of eliciting and maintaining factors is limited. One burn study found an indirect relationship in which physical functioning and body image dissatisfaction were shown to be a mediator in the relation between both percentage TBSA burned and the presence of facial burns on depressive symptoms [16]. Another underlying factor that has a strong association with depressive symptoms is low self-esteem [19,20]. Self-esteem refers to an evaluative self-view and is part of the broader self-concept [21] whereas physical appearance is considered a domain-specific part of self-esteem [22]. It is conceivable that a facial burn affects someone's physical appearance that consequently may impacts one's self-esteem and associated depression.

Despite the established link between low self-esteem and depression, the causal relationship between both is still a subject of debate. A meta-analysis found stronger evidence for the vulnerability model stating that low self-esteem contributes to the onset and maintenance of depression compared to the scar model suggesting that depression erodes self-esteem [20].

According to the vulnerability model, people with low self-esteem are likely to have negative evaluations of the self and might seek negative feedback from others to verify their negative self-concept [19,20]. This self-fulfilling prophecy might be further reinforced by the tendency of people with low self-esteem to be more sensitive to rejection [19]. In this line of reasoning, facial burns may elicit negative reactions from others that reinforces negative self-believes and affects self-esteem. These reactions may be perceived more negatively when people evaluate their scars more severely. Therefore, it could be hypothesised that negative interpretations of the facial scars affect self-esteem and subsequently affect post-burn depressive symptoms.

The scar model on the other hand suggests that low self-esteem is a consequence of depression rather than an eliciting factor. In this model, an episode of depression is thought to damage social networks and change how others perceive the individual. Both are important for one's self-esteem [19,20], and consequently might leave permanent scars on one's self-esteem. According to this theory, pre-burn depressive episodes are salient to consider when predicting low self-esteem and post-burn depressive symptoms. Indeed, pre-burn affective problems have been found to influence post-burn depressive symptoms [10,23] and patients with a psychiatric history have a higher risk of post-burn psychiatric problems, including major depression [24]. Although most evidence supports the vulnerability model [20], one does not exclude the other and might actually cause a negative spiral, that is depression contributing to low self-esteem which in turn causes aggravation of depressive symptoms. This raises the question to what extent burn injury factors, such as facial burns, might play a role beyond pre-burn vulnerability factors, a topic that remains an open question [10]. Understanding associations between self-esteem and depressive symptoms in patients with facial burns may be crucial to the identification of patients at risk for depression and may assist clinical practice to improve treatments.

In summary, depressive symptoms are a significant problem in the aftermath of a burn injury, but there is little evidence concerning the role of facial burns in relation to depressive symptoms. There is consistent evidence for pre-existing vulnerability to develop post-burn depressive symptoms in contrast to the current lack of evidence for burn specific factors, such as facial scarring, that might contribute to these symptoms [10]. To our knowledge, previous research has not used a patient-reported facial scar severity measure, which might be more relevant compared to a physical severity measure in relation to self-esteem and depressive symptoms. Therefore, the aim of this study was to investigate the role of self-esteem and self-evaluation of facial scarring in relation to depressive symptoms. We tested the following hypothesis: self-reported facial scar severity at three months is a predictor for self-esteem at three months and depressive symptoms six months post-burn, with lower self-esteem and higher levels of depressive symptoms in patients with higher self-reported facial scar severity scores, controlled for pre-burn and early post-burn depressive symptoms.

2. Methods

2.1. Participants

This study was conducted as part of a multicentre study. The clinical outcomes were previously published [25] and follow-up treatment was performed according to standard clinical practice. Patients admitted to one of the three Dutch burn centres were enrolled in the study between March 2006 and January 2009. Patients were eligible if they had facial burns (including head, neck, scalp or ears) and were ≥18 years. Patients were excluded if they were unable to provide informed consent, for instance due to cognitive impairment or because they had poor Dutch proficiency.

2.2. Procedure

Patient and burn injury characteristics were collected from medical files and participants completed follow-up measures at three weeks (T0), three months (T1) and six months (T2) post-burn. Measurements at T0 included pre-burn depression and depressive symptoms post-burn, whereas measurements at T1 included self-reported facial scar quality and self-esteem. Final measurements at T2 included depressive symptoms only. All patients provided informed consent, and the medical ethical board of the Maasstad Hospital (Rotterdam, the Netherlands) approved the study (TWOR 2005/25).

2.3. Measures

2.3.1. Depressive symptoms

The Hospital Anxiety and Depression Scale (HADS) [26] was used to assess depressive symptoms. This questionnaire consists of two 7-item subscales, one for anxiety (HADS-A) and one for depression (HADS-D). Each item is scored on a 4-point Likert scale with a range from 0 to 3, consequently the sum of scores for depressive symptoms ranged from 0 to 21. A higher score indicates more depressive symptoms. Original cut-off points were 7/8 for 'possible caseness' and 10/11 for 'probable caseness'. Other cut-off points used in burn literature are ≥8 to indicate moderate symptomatology of depression and ≥11 to indicate high symptomatology of depression [10]. A literature review of the validity of the HADS reported a sensitivity and specificity of approximately 0.80 at a cut-off score of 8+, [27]. The HADS was administered three weeks (T0) and six months (T2) post-burn.

2.3.2. Pre-burn depression

Pre-burn depression was measured three weeks post-burn (T0) by asking if the patient had been suffering from depression before the burn event. The following question was scored yes or no and used in the analyses:"Have you ever suffered from depression?".

2.3.3. Scar quality

The Patient and Observer Scar Assessment Scale (POSAS) was used to assess scar quality of facial burn scars. The scale has been found reliable and valid [28] and enables both patient and observer to assess the same scar on six different scar-characteristics. The observer assesses the scar on vascularity, pigmentation, thickness, relief, pliability and surface area. The patient assesses the scar on pain, pruritus, colour, thickness, surface roughness and pliability. Both use a numerically