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Quality of life and posttraumatic growth after adult burn: A prospective, longitudinal study

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ABSTRACT

Posttraumatic growth is positive psychological change that occurs beyond pre-trauma levels. Understanding the relationship between growth, stress and quality of life after burn improves understanding about the nature of postburn psychological growth and associated quality of life factors. This study aimed to determine the nature of these relationships, and whether posttraumatic growth changed over time in individuals. Two hundred and seventeen surveys were collected from 73 adult burn patients. The Posttraumatic Growth Inventory, Depression, Anxiety and Stress Score, SF-36 quality of life and Burns Specific Health Score – Brief surveys, together with demographic and clinical information was collected over a six month period. Acute and non-acute burns were equally represented. Growth and stress were positively correlated ($p=0.004$), but depression and growth had a curved relationship ($p=0.050$). Growth scores reduced as affect ($p=0.008$) and mental health improved ($p<0.0001$), and were highest at mid-levels of physical recovery ($p=0.001$). This supports the concept that PTG is linked to coping as higher growth is reported with more stress, and that depression is a barrier to growth. As patients recover both physically and mentally from burn, less growth is reported. Early identification and management of depression is important to optimise growth outcomes.

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1. Introduction

Posttraumatic growth (PTG) is the patient's report of positive psychological change that occurs beyond pre-trauma functioning, beliefs and values. The changes relate to benefit finding in the domains of interpersonal relationships, philosophy of life and perception of self and this phenomenon has been extensively researched in areas of trauma other than burn [1–4]. It has been previously demonstrated that self-reported growth after burn presents in two discrete ways. Firstly by gaining a changed understanding of the self, others and the world and secondly, by the use of specific coping mechanisms and ways of thinking. These ways of thinking include the use of humour, positive reframing, downward comparison, gratefulness and meaning making [1] and other studies regarding burn recovery have supported these findings [5,6]. The relationship between PTG and burn has been moderately explored in the literature [7–9], however the relationship of PTG with stress and quality of life has not, despite having been identified as an important area of research in this field [10]. It has been proposed that PTG is thought to arise from a 'shattering' of worldview [11] and may be triggered by deliberate rumination about the trauma [12]. It is not the opposite of posttraumatic stress, and respondents have concurrently reported positive and negative effects in corresponding survey items simultaneously [13] suggesting a 'double track' of posttraumatic recovery [14]. Stress may trigger growth through the process of reflection and rumination resulting in changes in thinking in order to make meaning from the injury event [11,15].

The relationship between posttraumatic growth and stress has been widely explored in the non-burn literature with inconsistent findings [15]. Some studies have demonstrated a curvilinear relationship between posttraumatic growth and posttraumatic stress with the majority of growth occurring at moderate levels of trauma exposure [16] and distress [17,18], although that curvilinear pattern has not yet been identified and demonstrated after burn [19,20]. Recovery from burn can be long, and physically and psychologically arduous on both the patient and their families [5]. Qualitative research into posttraumatic growth after burn has demonstrated that the consequences of this burden is a barrier to interpersonal communication within families, which is a possible barrier to PTG [9] in addition to within wider social circles [21].

Depression after general trauma has been reported in up to 42% of survivors, and can persist for many years [22]. The prevalence of depression after burn is variable, and has been reported up to 53% within the first month of burn, and between 13% and 35% at 12 months post burn [23] although these rates might be accounted for by pre-burn prevalence [24]. Depression has been previously reported as a barrier to PTG in people affected by an earthquake [25]. Anxiety has been found to be equally common after injury and can persist in the longer term [26] and when depression, anxiety and stress were assessed via the DASS-21 outcome measure within general trauma increased scores at 3 months post injury were predictive of longer term psychopathology [22]. In contrast, worse mental health outcomes do not appear to be related to burn severity [26].

There are general (global) and burn-specific health-related quality of life (HRQoL) measures that are used to assess recovery after burn. Routine use of these measures occur in burns units locally and internationally, and relationships between these measures and the presence or absence of posttraumatic growth could enable clinicians to identify response patterns which are early indicators of good or poor positive psychological recovery, thus enabling early investigation, intervention and referral. As patient reported HRQoL outcome measures are a burden on patients' time, and depression, anxiety and stress are not independent of these, it is beneficial to get a more comprehensive understanding from a small number of routinely collected measures. A meta-analysis reported no association between global health-related quality of life (HRQoL) and PTG after various non-burn trauma [27]. Other studies found that cancer patients reported better quality of life and less anxiety and depression with higher reports of growth [28], and that more growth was associated with better mental component scores from the SF-36 [29]. However, after burn, no significant association was found between PTGI scores and quality of life using the SF-12 measure [20]. Burn specific quality of life can be assessed with the Burn Specific Health Scale Brief (BSHS-B) [30–33] and is routinely used within our clinical environment. As this HRQoL measure is specific to burn, and because the investigation of PTG after burn is a relatively new area of research with a minimal number of published studies, the evidence that assesses the two measures together is reduced to one published study [19]. This study reported significantly higher posttraumatic growth scores for the BSHS-B subdomains of hand function ($r=0.34$, $p<0.001$), body image ($r=0.26$, $p=0.03$), heat sensitivity ($r=0.39$, $p<0.001$), work ($r=0.33$, $p<0.001$) and overall function ($r=0.40$, $p<0.001$) [19]. However, this study did not report a relationship between posttraumatic growth scores and the BSHS-B subdomain of Interpersonal relationships, despite this being a key part of PTG theory [4]. This might be because the two measures assess different aspects of this theme, with no other study having assessed the relationship of these two specific outcome measures together.

Temporal changes in PTG are difficult to assess due to the lack of published longitudinal studies. A 12 month longitudinal study of Taiwanese cancer survivors found four different trajectories of PTG, each having different relationships with HRQoL measures, namely, stable high, high decreasing, low increasing and low decreasing [34]. There are no longitudinal studies exploring PTG after burn, however a cross-sectional study suggested that a positive relationship exists between PTG and time since burn, but did not specify a time when PTG is optimal, and does not assess repeated measurements in individuals [19]. It is important to identify the interrelationships between PTG and HRQoL so that we can better understand the nature of growth, what might drive and impede it and ultimately reveal potential interventions for better growth.

Thus, it is important to understand the relationships between HRQoL after burn and PTG. Understanding these relationships will help to clarify the nature of PTG after burn and may identify specific quality of life factors associated with the presence or lack of growth after burn. This means that it will be easier to identify those at risk of poor psychological