

The role of resilience in the recovery of the burn-injured patient: an integrative review

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Abstract: Severe burn injuries are catastrophic life events resulting in significant physical and psychological effects. With long periods of hospitalization and rehabilitation, burn survivors encounter many issues, including an altered body image and loss of function and independence that subsequently influence quality of life and the family unit. Consequently, resilience has been identified as a fundamental concept that facilitates the adaptability required to navigate the lengthy and complex recovery process. However, over time, the notion of resilience has shifted from a static, innate trait to a fluid and multidimensional concept. Here, we review the evidence surrounding the role of resilience in the recovery of burn injury. This integrative review was based on a systematic search of five electronic databases. Of the 89 articles identified, ten primary research papers met the inclusion criteria. Three key themes were identified encompassing relational strengths, positive coping, and the resistance to trauma symptoms that are fundamental constructs associated with developing and sustaining resilience that resonate with the broader literature on burn recovery. However, limited evidence is currently available within the burns context. While resilience appears to be a vital component influencing the recovery from burns trauma, it still remains a broad construct within the burns framework. Regular assessment of resilience in burn-injured patients is recommended in clinical practice in addition to longitudinal and intervention studies to best inform patient care.

Keywords: resilience, burn injury, rehabilitation, optimism, tenacity, review

Introduction

Burn injuries are often associated with catastrophic life events that have profound effects both of a physical and psychological nature.¹ Enduring long periods of hospitalization and rehabilitation, burn survivors may encounter an altered body image and loss of function and independence that subsequently influences their quality of life.² Acceptance of an abrupt injury, like a burn, remains challenging for the survivor and their family, with the potential to create a spiral of trauma³ if not mitigated. Subsequently, promoting the benefits of resiliency has the capacity to inform strategies in the development of resilient behaviors among burn survivors.

Resilience pertaining to loss and trauma encompasses the capacity, for those exposed to a trauma event, to maintain relative stability and a level of psychological and physical functioning.⁴ Therefore, resilience is the capacity to construct a “psychosocial comeback in adversity”.⁵ The notion of a resilient individual includes the characteristics of a positive outlook, flexibility, adaptive coping skills, and the ability to maintain supportive social networks enabling one to maintain their physical and psychosocial

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well-being.⁶ Tools such as the Connor-Davidson Resilience Scale (CD-RISC) are a means to distinguish between those with greater and lesser resilience. The CD-RISC comprises the three dimensions of tenacity, optimism, and self-improvement, demonstrating “that resilience is modifiable and can improve with treatment, with greater improvement corresponding to higher levels of global improvement”.⁷

It is well reported that the catastrophic nature of a burn injury can lead to long-term rehabilitative needs, requiring both the characteristics of tenacity and endurance. Seminal authors such as Holaday et al^{8,9} and Williams et al¹⁰ who situate resilience within the burns literature have made significant contributions in both the pediatric and adult population. However, the role of resilience has been under reported within the context of burns literature. Furthermore, to the authors’ knowledge, no review has been conducted to investigate the role of resilience within the arena of burn care and rehabilitation. Therefore, this review aimed to understand the role of resilience in those rehabilitating from a burn injury across the life span.

Methods

Review process

Methodologically, this research study employed an integrative review approach. Integrative reviews have been reported within the literature to be a methodologically sound and rigorous process.¹¹ Integrative reviews aim to review, analyze, and synthesize literature situated within a particular area, incorporating both experimental and nonexperimental research. Integrative reviews have the capacity to generate innovative constructs, viewpoints, ideas, and the potential to build knowledge.^{12,13} This allows for a broader understanding of a phenomenon compared to a systematic review and meta-analysis that remains centered on an exacting synthesis of all research related to one specific question, primarily focused on high-level experimental studies.¹⁴ Furthermore, systematic reviews and meta-analyses apply explicit scientific principles that are aimed at reducing bias.^{15,16} Subsequently, the guiding framework that underpins this review is based on Souza et al’s¹⁴ six stages of the integrative review process (Table 1).

Table 1 Six stages of integrative review process

Souza et al’s stages of the integrative review process
Stage 1: Preparing the guiding question
Stage 2: Searching or sampling the literature
Stage 3: Data collection
Stage 4: Critical analysis of the studies included
Stage 5: Discussion of results
Stage 6: Presentation of the integrative review
Notes: Data from Souza et al. ¹⁴

Literature search strategy

A systematic and rigorous search was conducted across five electronic health care databases: PubMed, EMBASE, CINAHL, PsychINFO, and Scopus in December 2015. The databases utilized affirmed a comprehensive and multidisciplinary breadth of research, encompassing literature across the spectrum of health care. Boolean connectors AND, OR, and NOT were used to combine search terms burn*, resilien*, and hardiness. The references of potential papers retrieved were examined to identify any additional papers not captured through the initial search strategy.

Inclusion and exclusion criteria

The search criteria for this integrative review incorporated peer-reviewed primary research published in English that explored the role of resilience in those rehabilitating from a burn injury across the life span continuum. No parameters concerning year of publication were imposed so as to capture the depth and breadth of data. Papers that focused on health care personnel were excluded as they did not focus on the burn survivor. Reviews, conference proceedings, theses, editorials, and secondary sources were also excluded.

Data evaluation

After duplicates were removed, the search strategy identified 89 prospective papers (Figure 1). RK and HB identified 31 potential papers through assessment of title and abstracts. Based on the inclusion/exclusion criteria, all four authors independently reviewed the 31 papers, and any differences were resolved by discussion. Eighteen papers were subsequently eliminated. In addition, upon further in-depth review and analysis, a further three papers were excluded as they did not meet the inclusion criteria, leaving ten papers for inclusion.

Data extraction and synthesis

A total of ten papers were systematically summarized and synthesized to identify key themes and relationships. Findings from each study were analyzed and then categorized to form significant themes. Implementing thematic analysis allows for the identification of recurrent relationships across the data to achieve higher order groups.¹¹ Data extracted included author(s), year of publication, country of origin, design, purpose of study, sample and study population, data collection and analysis, and significant findings and outcomes (Table 2). The data from each of the studies were extracted and tabulated by RK and HB. LM checked and assessed the pooled results. In keeping with the integrative review methodology, findings were integrated and synthesized

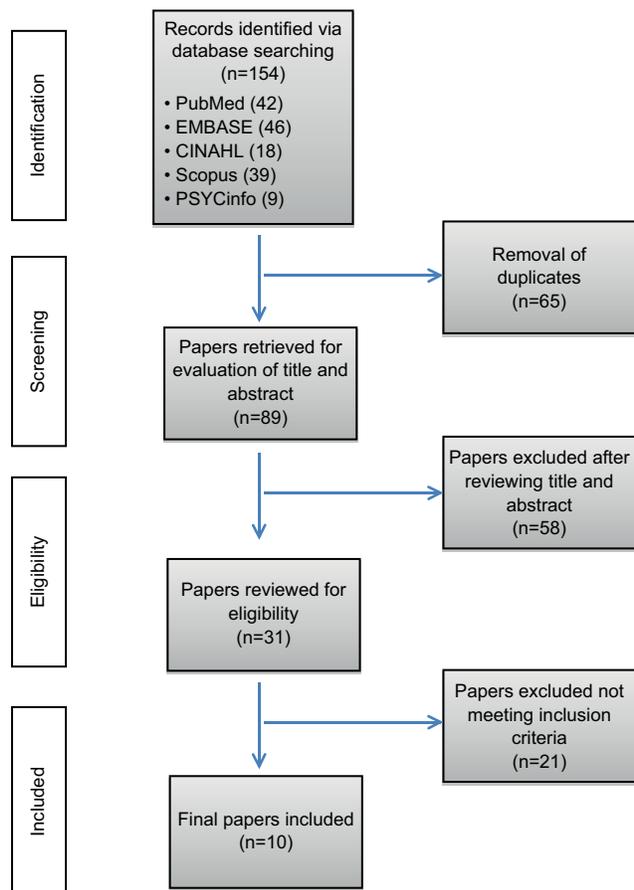


Figure 1 Decision trail of included studies.

without assessing methodological rigor. This allows the researchers to capture the scope of the presented data.

Results

Characteristics of included papers

Of the ten included studies, nine comprised 904 burn survivors and one included 63 parents of pediatric burn survivors.¹⁷ The studies encompassed populations ranging from pediatric to adolescent and adults. Studies were conducted across six countries, including Australia,¹⁷ the People's Republic China,^{18–20} Sweden,²¹ Mexico,²² South Africa,²³ and the USA.^{8–10} Three studies employed qualitative methods using narrative/thematic analysis; one used a mixed methods approach; and six studies used quantitative methods, of which five were cross-sectional and one was a longitudinal in design. The CD-RISC⁷ was used in four studies^{17,18–20} to distinguish between those with greater and lesser resilience. Subsequently, the ten included studies were synthesized, and their findings were categorized into three themes: relational strengths, positive coping, and resistance to trauma symptoms. Table 3 depicts a matrix that maps the themes to the source articles.

Relational strengths

The relational strength theme refers to the transformational capacity to restore a positive relationship with the self, post-burns injury and to foster positive social connections with others. Both of these aspects contribute to increased resilience in burn survivors and their caregivers. This theme emerged from seven of the ten included studies.

Lau and Van Niekerk,²³ Williams et al,¹⁰ and Holaday and McPhearson⁸ identified themes related to the process of restoring a positive relationship with the self. Lau and Van Niekerk²³ described burn survivors struggling to gain recognition of the contrast between the inner self and outer disfigurement in both a personal and social context. For very young survivors, this tension did not arise until confronted with responses from peers (ie, at school),²³ whereas for adult survivors, this tension arose immediately.

Survivors experienced a range of emotions in response to their injury.¹⁰ For some survivors, their emotional response became self-defining and part of their identity:

Whatever took you through this – it's yours. If you saw angels [...] that's beautiful. That's your thing. But anger was mine.¹⁰

Acceptance played a large role in personal transformation. Lau and Van Niekerk²³ described the process of self-acceptance as occurring with the recognition that despite significant changes in the outer self, the inner self remained more permanent and stable:

When I was little, I wanted the scars to go away, but now I don't care about them anymore. They're part of me.⁸

As well as acknowledging the losses, Williams et al¹⁰ described survivors as having the capacity to reframe their adverse experience as important for constructing new personal meaning. Participants described “unexpected gains” such as insight, self-esteem, gratitude, and identity:

I was pretty much dependent you know, (on my looks) [...] Maybe (my injury) was the way of telling me, there was more to me.¹⁰

Healthy positive self-confidence was significantly associated with higher resilience in pediatric survivors.⁹ Acceptance of self appeared to impact positively on external social connections and encouraged positive social responses that affirmed the sense of self and promoted further engagement:

I used to ignore them [...]. But now when I look down, they [say], “Eh Buhle, don't look down man, what's up?” [...],

Table 2 Summary of included studies

Source and country	Design	Purpose	Sample and study population	Data collection method	Method of analysis	Significant findings and outcomes
He et al ¹⁸ (People's Republic of China)	Cross-sectional	To explore the impact of dispositional optimism and psychological resilience on posttraumatic subjective well-being of burn patients and the mediator role of psychological resilience	410 burn patients (309 M; 101 F); mean age 24 years (range: 17–35 years); all burns because of scalds, head and face burns excluded	Revised Life Orientation Test; CD-RISC; Subjective Well-being Scale	Correlation; structural equation modeling	Psychological resilience partially mediates the relationship between dispositional optimism and subjective well-being
Holiday and McPhearson ⁸ (USA)	Qualitative	To investigate the concept of resilience of burn survivors' burns	39 severe burn survivors with visible scarring; 21 children and adolescents <18 years; mean age 14.1 years; average years since burn 6.7; 18 adults; mean age 36.8 years; average years since burn 12	Face-to-face interviews	Thematic analysis	Social support, cognitive skills, and psychological resources influence resiliency. Further counseling is recommended to strengthen these strategies to facilitate recovery
Holiday et al ⁹ (USA)	Cross-sectional; mixed methods; Rorschach study	To determine whether it is possible to identify children and adolescents more likely to be resilient and those more likely to need early intervention	Convenience sample of 40 severely burned children and adolescents aged 8–19 years; (21 M; 19 F); majority with facial burns	Selected statements from the Rorschach Clinician Rating Scale; clinician Likert scale rating of "survivor trait"	Two groups compared utilizing chi-square test and t-test	70% classified as resilient; 30% nonresilient; resilient group > cooperative responses and normal capacity to tolerate stress; nonresilient group < egocentricity index scores and a positive coping deficit index
Lau and Van Niekerk ²³ (South Africa)	Qualitative informed by social constructionism	To explore how burn survivors construct notions of self and social reality	Purposive sampling; 6 burn survivors (4 M; 2 F) average age 19 years (range: 14–24 years); burns sustained >2 years earlier; sustained injuries during: early lives (n=3) (pre)adolescent years (n=3)	Semistructured interviews	Narrative analysis	Three themes identified: Struggle for recognition – the self as both highly viable and invisible Reconciling or rediscovering the self Turning points: the search for meaning Person-centered meanings have the capacity to inform interventions beyond acuity toward survivors lifelong psychosocial adjustment
McGarry et al ¹⁷ (Australia)	Cross-sectional	To investigate the impact of exposure to pediatric trauma on parents with children with a burn injury and to identify risk factors and relationships between psychological distress and resilience	63 parents of pediatric burn survivors (46 mothers; 17 fathers, of whom 5 were mother/father dyads). Age of children not reported	CD-RISC; Impact of Events Scale Revised; Depression, Anxiety, and Stress Scale, Screening Tool for Early Predictors of PTSD	t-tests; ANOVA; correlations	Parents reported lower resilience and higher depression and anxiety as compared to the general population; low resilience associated with higher PTSD and stress

Source and country	Design	Purpose	Sample and study population	Data collection method	Method of analysis	Significant findings and outcomes
Quezada et al ²² (Mexico)	Cross-sectional	To explore the roles of both the patients and caregivers' resilience and posttraumatic stress in pediatric burn survivor adjustment	51 pediatric burn survivor and caregiver dyads. Survivor age range 7–18 years; 29 M mean age 12 years; 22 F mean age 13 years	The Resilience Questionnaire for Children and Adolescents; The Mexican Resilience Scale for Adults; The Davidson Trauma Scale; Burn Injury Data from Medical Records	Correlations and descriptive analysis; structural equation modeling	High levels of survivor and caregiver resilience; low PTSD in caregivers; higher resilience in survivors associated with younger age at time of burn; higher resilience in caregivers associated with lower avoidance and PTSD intrusion symptoms; higher levels of caregiver resilience associated with higher resilience in survivors
Sveen et al ²¹ (Sweden)	Prospective longitudinal study	To investigate whether there are different PTSD symptom trajectories after burns	95 burn-injured adults (72 M; 23 F); mean age 44.7 years (range: 19–89); mean TBSA 23.4% (range of 1%–80%)	Collected at 3, 6 and 12 months postburn. All measures in Swedish: Impact of Event Scale Revised; Hospital Anxiety and Depression Scale; Social Support Questionnaire Short Form; Swedish University Scales of Personality; Coping with Trauma Interview (1 subscale); Structured Clinical Interview for DSM Disorders I and II; The List of Threatening Experiences Questionnaire; Burn Injury Data from Medical Records; Structured Interview	t-tests and chi-square test; cluster analysis	Four clusters identified: Resilient (low PTSD decreasing over time); Recovery (high PTSD decreasing over time); Delayed (moderate PTSD increasing over time); Chronic (high PTSD levels over time)
Williams et al ¹⁰ (USA)	Qualitative	To understand how burn survivors adapt and to gain insight through personal descriptions of their recovery process	Purposive sampling; 7 burn survivors (3 M; 4 F); age range at interview 31–51 years; age range injury 2–42 years	Semistructured face-to-face interviews	Drawing from phenomenology and grounded theory to explore common themes	Participant experiences involving determination, independence, courage, compassion, and spiritual transformations are indicators of resiliency. Innate resiliency resides within the human spirit
Xia et al ¹⁹ (People's Republic of China)	Cross-sectional	To investigate the impact of acceptance of disability and psychological resilience on PTSD with burn injuries	Convenience sample of 127 hospitalized burns patients (85 M; 42 F); all >18 years; mean age and age range not reported	Chinese versions of: PTSD Checklist – Civilian Version; Acceptance of Disability scale; CD-RISC	Student's t-tests; ANOVA	Lower resilience compared to other trauma subgroups; PTSD negatively correlated with resilience
Yang et al ²⁰ (People's Republic of China)	Cross-sectional	To investigate the factors that influence burn survivors' resilience during rehabilitation	Convenience sample of 129 hospitalized burns patients (105 M; 24 F); mean age 34 years (range: 18–60); n=21 had severe burns	Chinese versions of: CD-RISC; Social Support Rating Scale; Simplified Coping Style Questionnaire	Descriptive analysis; student's t-tests; ANOVA; correlations; and linear regression	Higher resilience scores associated with higher burns severity, female sex, active coping, divorced patients, and nongovernment employees; social support not associated with higher resilience

Abbreviations: ANOVA, analysis of variance; CD-RISC, Connor-Davidson Resilience Scale; F, female; M, male; PTSD, posttraumatic stress disorder; TBSA, total burn surface area; DSM, Diagnostic and Statistical Manual of Mental Disorders.

Table 3 Concept matrix mapping themes to source articles

Themes	He et al ¹⁸	Holaday and McPhearson ⁸	Holaday et al ⁹	Lau and Van Niekerk ²³	McGarry et al ¹⁷	Quezada et al ²²	Sveen et al ²¹	Williams et al ¹⁰	Xia et al ¹⁹	Yang et al ²⁰
Relational strengths (transforming self and others)		√	√	√		√		√		√
Positive coping (optimism)	√	√	√	√			√	√		√
Resistance to trauma symptoms			√		√	√	√		√	

I wish I could communicate with this person, and then we talk, we talk, we talk.²³

Acceptance of self also fostered compassion and understanding of others' negative reactions:

I learned that I can't be responsible for another person's lack of understanding, so I don't let it bother me.⁸

The value of social support was identified across the majority of studies. Sveen et al²¹ found that survivors in the "resilient" trajectory of recovery (low trauma symptoms and high resilience) and in the "delayed" trajectory (mild trauma symptoms increasing to moderate trauma symptoms) had higher levels of social support as compared with those in the "chronic" trajectory (sustained high trauma symptoms and low resilience). Beyond merely the presence of social support, Holaday et al⁹ found when comparing resilient versus nonresilient pediatric burn survivors, resilient survivors displayed a higher level of "cooperative movement response", ie, being socially gregarious and having a higher expectation of relationships to be mutually supportive and harmonious. The resilience of caregivers of pediatric burn survivors was highlighted as important to pediatric burn recovery by Quezada et al,²² who found an indirect relationship with resilience in female caregivers, predicting symptoms of intrusion via avoidance and subsequently influencing the quality of connection with their child.

Williams et al¹⁰ reported that the quality of social relationships was associated with losses and gains, and was a way of adapting and coping with change. Importantly, Holaday and McPhearson⁸ highlighted that preexisting, long-term community relationships were valuable and positive to adult burn survivors' well-being. For pediatric survivors, school social support that ameliorated stigma was vital, as well as a long-term relationship with at least one person outside their immediate family that treated them with unconditional positive regard.⁸ Social interactions were shown as a way of assisting survivors to reframe the meaning or purpose interpreted from their injury experiences.²³ Associating with other burn survivors was also helpful for increasing acceptance and normalizing the burn experience.²³

The quality of relationships identified by study participants was found to vary from "hurtful and difficult"

through to "helpful and uplifting"²¹⁰ and either empowering or disempowering.¹⁸ In contrast to the majority of included papers however, Yang et al²⁰ found no significant correlation with social support and resilience; social support was instead correlated with optimism.

Positive coping

The theme of positive coping encompasses the components of active, nonavoidant coping approaches, optimism, personal choice, and perceived control. Of ten studies, seven identified positive coping strategies as promoting resilience. Avoidant coping was negatively correlated with resilience and associated with personality traits of embitterment and somatic trait anxiety, and substance use.²¹

Yang et al²⁰ found a positive correlation between high coping scores on the Simplified Coping Style Questionnaire and high resilience scores as measured by the CD-RISC. Positive coping was significantly related to overall resilience and with each of the resilience dimensions of tenacity, strength, and optimism. He et al¹⁸ also found that dispositional optimism, defined as the capacity to recover from frustration, directly and significantly increased subjective well-being in adult burn survivors. Furthermore, optimism was mediated by resilience to impact on subjective well-being.¹⁸ Similarly, Holaday et al⁹ found a significant association between healthy positive self-confidence and increased resilience in pediatric burn survivors. Holaday et al⁹ proposed that a global measure of negative coping was associated with nonresilient children; however, this was not significant potentially because of small sample sizes. Sveen et al²¹ also reported that a negative coping style was negatively correlated with resilience. In contrast to the optimistic outlook generally associated with resilience, one participant from the Williams et al¹⁰ study actively owned his negative affect – "I lived because I had hate" – suggesting that the negative affect style may not be detrimental to burn recovery if used as an active coping style, as opposed to avoidance.

Lau and Van Niekerk²³ suggested that the coping styles influence all stages of the process of recovery from burn injury. They proposed that the key to recovery was to create a narrative of meaning that arises from reflexivity with self and

others. This could be seen as an active meta-strategy for coping that centers on meaning making for self-transformation. In contrast, one of the participants from Lau and Van Niekerk's²³ study was described as having limited reflexive evaluation, leading to a narrowing view of others – "I have learned that when you are burned people treat you different" – and subsequently a narrowing sense of self. Williams et al¹⁰ reported that noticeably the women in their sample perceived the adversity associated with their injury as something that held positive implications:

I know that I am more outspoken and I will stand up for myself if the need arises. I know that it was fortunate and that I survived this tragic event.¹⁰

Personal choice and perceived control were uniquely highlighted in Holaday and McPhearson's⁸ study as an important component of the development of resilience. They gave examples of survivors feeling empowered to make their own recovery decisions and to take personal control:

We have the right to choose what kind of [anesthetics] we take, and we should be able to say "no" to more surgeries.⁸

Choice also related to attitudes toward life and acceptance of emotions. One of the participants from Holaday and McPhearson's⁸ study expressed:

Sometimes I still choose to feel sorry for myself and have a bad day, and that's OK.⁸

Resistance to trauma symptoms

Five of the ten papers highlighted the relationship between trauma symptoms and resilience. Symptoms of trauma in adults were measured by The Davidson Trauma Scale, Impact of Events Scale, and the posttraumatic stress disorder (PTSD) Checklist – Civilian Version (PCL-C). A subscale of the Rorschach Clinician Rating Scale was used to assess capacity to tolerate stress in children. The relationship between low trauma symptoms and high resilience was consistent across all studies despite different measures of trauma employed.

Holaday et al⁹ found that resilient children displayed higher tolerance to stress as compared to nonresilient children; however, the authors acknowledged the limited power of their study. Acknowledging the critical role of caregivers in supporting pediatric burn survivors, two studies^{17,22} assessed caregiver trauma and resilience. Parents of pediatric burn survivors were shown to experience significantly greater levels of PTSD symptoms, particularly intrusion and avoidance, as compared to the general popu-

lation.¹⁷ Past trauma predicted more severe symptoms, in particular hyperarousal, intrusion, and stress. Resilience was negatively correlated with symptoms of PTSD and all three symptom clusters (intrusion, avoidance, and hyperarousal), and no difference between the sexes was found.¹⁷ Quezeda et al,²² however, found that resilience levels only in female caregivers of pediatric burn survivors predicted symptoms of trauma avoidance and intrusion that subsequently impacted on pediatric resilience.

Xia et al¹⁹ assessed trauma symptoms with the PCL-C associated with burn injury and found that the three resilience domains from the CD-RISC, tenacity, self-improvement, and optimism, negatively correlated with the total score on the PCL-C. Sveen et al²¹ explored PTSD trajectories at 3, 6, and 12 months after burn injuries in adults using the Impact of Events Scale. Four discrete clusters of response were identified. The "Resilient" cluster had low trauma symptoms pre and post, the "Recovery" cluster started with high trauma symptoms that reduced to low symptoms at 12 months, the "Delayed" cluster started with mild trauma symptoms and had moderate trauma symptoms at 12 months, and the "Chronic" cluster maintained high trauma symptoms consistently. Early predictive identification of recovery trajectories offers a key opportunity for early intervention, promoting resiliency.

Discussion

This integrative review sought to investigate the role of resilience within the arena of burn injury and recovery. Three main themes emerged associated with the role of resilience: relational strengths, positive coping, and resistance to trauma symptoms. These themes suggest that resilience plays a vital role in the recovery of burns trauma across the life span. Here, we have focused on the more explicit use of the term resilience and its measurement. However, wider aspects of the three themes identified are documented in the burn injury recovery literature: the importance of positive social and emotional supports from family, peers, and community or a religious or spiritual source;^{1,24-27} a positive versus avoidant coping style,^{27,28} including active attention to both the physical and emotional aspects of coping, often with the concomitant challenge of accepting the realities of injury and recovery;²⁶ and the robustness to resist ongoing breakdown of sense of self secondary to trauma or to engage in a restorative or transformative process of integration posttrauma that can result in posttraumatic growth.^{24,25,29,30}

This literature sits within the broader notions of human response to trauma via adaptation, coping, and meaning-

making versus traumatic breakdown^{31–35} and contemporary attempts to explore and acknowledge the developmental and relational origins and pathways to protective coping style and capacity.^{30,36} The overall picture is of the importance of personal and social context of recovery and the need to optimize the psychosocial strengths and supports for burn injury survivors and their surrounding systems of care.^{1,25,37} Although resilience can be hard to define in a circumscribed way, it is reassuring that in Bonanno et al's³⁸ study of the aftermath of the September 11, 2001, attacks on New York, resilience to PTSD was high, with results remaining robust even when broader versus narrower definitions of resilience were applied. However, those who were physically injured or actually present in the towers had higher levels of PTSD and less resilience. The notion that the intimacy of the insult as relevant is important and is mirrored in the burns literature around the importance of meaning ascribed to loss of identity or function and seen in the qualitative literature reviewed here.²³ Therefore, the survivor then has a more arduous task to resist traumatic breakdown or achieve posttraumatic recovery and/or growth. Holaday et al's⁹ association of past trauma with less resilience has some support in the burns literature³⁰ and is an important issue as many survivors have histories of chronic complex trauma. However, the past navigation of trauma can also provide the templates for positive adjustment and resilience: a fruit of prior posttraumatic growth.²⁴ The outcomes of the review reiterate the importance of assessing burn survivors and pediatric caregivers for pre existing trauma and vulnerabilities to target appropriate early intervention and support strategies promoting recovery.

Implications for research and practice

This review has highlighted important areas within the burns arena worthy of further investigation related to facial burns, validated assessment tools, and long-term resilience trajectories in recovery. Previous research has suggested that disfigurement associated with the burn injury, in particular facial burns, has a significant impact on sense of identity and quality of life.^{30,39} The current studies reviewed, however, did not find a strong association between type, size and location of burn, and the role of resilience. Given the significant visibility and distress associated with facial burns, investigation of the role of resilience, specifically in relation to facial disfigurement, is warranted.

The use of validated assessment tools to measure resilience is in its infancy within the burns arena. Of the five studies that used a validated tool to measure resiliency, four

used the CD-RISC. In a recent review of resilience measures, the CD-RISC was rated as one of the top 3 of 15 resilience scales for psychometric ratings.⁴⁰ However, despite significant increasing interest from a policy and procedures standpoint, there is no current gold standard measure of resilience available.⁴⁰ Furthermore, only one study was of a longitudinal design spanning a 12-month period.²¹ Given the evolving nature of resilience and the long-term context of burn recovery and rehabilitation, it is imperative that future research uses a longitudinal methodology to capture the breadth and depth of patient experiences as they transition through their recovery. Although there is evidence that resilience is malleable,⁷ there remains a dearth of intervention strategies directed to developing resilience within the burns context. The burgeoning evidence by Sveen et al,²¹ suggestive of four clusters of predictable recovery patterns, posits hopeful opportunities for early intervention to cultivate resilience in burn survivors and their caregivers. Given the vital role that resilience plays in recovery from burns, it is recommended that resilience be regularly assessed during the recovery period to help inform psychosocial intervention, treatment planning, and improve patient care.

Limitations and strength of evidence

This integrative review identified a small number of studies that met the inclusion criteria. Only one study was of a longitudinal design. However, these studies focused on a broad range of samples from acute through to long-term burn survivor recovery, with representation across the life span. Studies were based across six countries that encompassed both developed and developing nations, therefore giving a global perspective. The included studies explored a range of demographic and psychosocial variables associated with resilience and offered a breadth and depth of data using quantitative, qualitative, and mixed methods designs.

The incongruence of the methodological design was mitigated by the use of the integrative review method. A meta-analysis was not viable because of the differing scales used to measure resilience and trauma symptoms. Although the search strategy was comprehensive and targeted five key health care-focused databases, it is possible some papers may have been missed. To ensure rigor, the four authors independently reviewed all papers for inclusion in the review.

Conclusion

Resilience is a vital component of the recovery from burn injuries and has been shown to facilitate transformational

recovery over time. This integrative review identified three key themes encompassing relational strengths, positive coping, and the resistance to trauma symptoms. These are fundamental constructs associated with developing and sustaining resilience that resonate with the broader literature on burn recovery. Despite the limited evidence available, resilience is a significant component of adjustment to and recovery from burns trauma. In clinical practice, regular assessment of resilience will help to inform psychosocial interventions to better support patients during their recovery from their burn injury. To further understand how resilience may be nurtured and developed, particularly for those with preexisting vulnerabilities and trauma experiences, future research should focus on robust longitudinal studies, using validated measures, and assess the impact of interventions specifically designed to address low resilience in burn survivors and their caregivers.

Disclosure

The authors report no conflicts of interest in this work.

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