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Psychological Impacts of Pediatric and Adult Burns Injuries: A Scoping Review

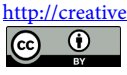
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Abstract

Background: Burn injuries posit a significant public health burden particularly, in low- and middle-income countries (LMICs). Beyond the physical impact on individuals, burn injuries have prolonged psychological effect that distress the emotional well-being. Over the years, survival rates from burns have improved due to advanced medical care. However, these gains have been overshadowed by the emotional disturbance that the victims have to endure during treatment and after recovery. Literature shows that a majority of burn survivors experience persistent or unresolved psychological challenges affecting their quality of life. This paper reviewed and synthesized literature on psychological impact of adult and pediatric burns injuries. **Methods:** Articles were searched PubMed/MEDLINE, PsycINFO (psychology/mental health focus), CINAHL (nursing & allied health), and Embase (biomedical focus) databases from 2010 to 2025. In addition, literature from trusted sources like Google scholar, World Health Organization (WHO), Centre for Disease Control (CDC), NGO reports and Burn foundations' publication was also accessed. Descriptive statistics and thematic analysis were used to synthesize the findings from the studies. The search yielded a total of 1362 relevant titles, and after excluding all the articles that didn't meet inclusion criteria, a total of 39 articles were included in the review. **Results:** The most common psychological health outcomes among patients with burn injuries include, anxiety, post-traumatic stress disorder (PTSD), depression, fear, stigma, self-esteem, concerns about self-image, and being suicidal. Women, young people, patients who lack emotional and social support are the most affected. **Conclusions:** Healthcare systems should recognize the significance of screening for psychological disorders on burn injury patients and integrating post-conventional treatment and psychological sup-

port in recovery.

Keywords

Burn Injuries, Psychological Disorders, Anxiety, Depression, Post-Traumatic Stress Disorder, Coping Strategies, Emotional Support, Scoping Review

1. Introduction

Burns are injuries that affect the skin and other deeper tissues [1]. They are injuries caused by either thermal heat, electricity, radiation, chemicals or frictions [2]. Globally, burn injuries account for approximately 180,000 deaths annually, with 90% occurring in low- and middle-income countries [3]. Although the global burden of disease attributable to burns is substantial, this is disproportionately concentrated in low- and middle-income countries, with the highest incidence occurring among children under 5 years of age [4]. In addition, burns remain a significant contributor to Years of Life Lost (YLLs) and Disability-Adjusted Life Years (DALYs) [5].

The degree of severity of burn is dependent on the depth and size of the injuries and they are categorized into three classes. A 1st degree burn is considered minor as it only affects the epidermis, 2nd and 3rd degree burns go deeper in the skin causing swelling, reddening and splotching of the skin and are normally severe [6]. For 3rd degree burns, pain is more intense, burns are deeper and are associated with scarring after physical healing [7].

Minor burns are easy to manage as they heal faster, usually after a few weeks. However, for severe burns, the clinicians do a suitable first aid followed by wound assessment before initiating appropriate treatment which may involve medication, wound dressing, and/or surgery [8]. Burn injuries do not only have physical impact on the survivor, but also serious psychological disturbance that affects their emotional wellbeing. The psychological impact arises from the experience of the traumatic incident, impaired body functions caused by the injury, disfigured body appearance and loss of property or loved ones among others [9]. Some studies have shown that a large proportion of burn survivors experience symptoms of stress or develop some form of psychological disorder [10]-[13]. Some of the commonest psychological distress seen in burn patients are post-traumatic stress disorder (PTSD), depression and anxiety. The symptoms of these conditions can be seen immediately after the incident and can persist to over a year after treatment, depending on the severity of the burn and treatment outcomes [10].

The review would help in identifying the gaps in literature as well as providing a good foundation for evidence-based practice. Beyond burns management, issues related to long term effects of burns are left out and this is depicted in the scanty literature that is available on this area, especially in low- and middle-income countries (LMICs) [14]. This review, sought to locate, collate and synthesize literature

across different populations and settings, on the psychological impact of adult and pediatric burn injuries with the aim of consolidating knowledge and exposing knowledge gaps for further investigation and informing policy.

2. Materials and Methods

This review adopted the Arksey and O'Malley, a methodological framework which was improved by Levac *et al.* [15] [16]. The framework utilizes six steps that include the following; identification of research question, identifying relevant studies, study selection, charting of the data, collating, summarizing and reporting of the results and consultation as shown in Table 1.

Step one: Identification of research question

This scoping review was guided by a primary research question: "What are the psychological impacts of adult and pediatric burn injuries that have been reported in literature across different settings?". The research question aimed at identifying psychological disorders experienced by burn injury patients documented in the literature.

To answer the question, we applied the PCC framework (Population, Concept and Context), a structured approach that was recommended by Joanna Briggs Institute (JBI) to guide the mapping of existing literature and identify the knowledge gap [17].

Table 1. PCC FRAMEWORK for psychological impact of adult and pediatric burn injuries.

Criteria	Determinants
Population	Pediatric and adults burn injuries victims. This means that the study included individuals of all ages with burn injuries
Concept	Psychological symptoms and disorders. They include PTSD, anxiety, depression, feeling sad, worries, body image, and coping strategies
Context	Healthcare facility or community setting. They include hospitals, rehabilitation centers, burn unit centers, outpatient clinics and community settings in both high and low-income countries
Time (optional)	Publication dates. We limited our review to studies that were published between 2010-2025

Step two: Identification of relevant studies

Relevant studies were identified through a comprehensive search strategy which involved going through electronic databases, including; PubMed/MEDLINE, PsycINFO (psychology/mental health focus), CINAHL (nursing & allied health), and Embase (biomedical focus) databases. In addition, literature from trusted sources like Google scholar, World Health Organization (WHO), Centre for Disease Control (CDC), NGO reports and Burn foundations' publication were also accessed to ensure inclusion of non-peer-reviewed data that may be containing valuable data to enrich the study. However, none of the studies identified through these sources met the inclusion eligibility criteria.

A comprehensive database specific search strategy was developed. Each strategy combined vocabularies and free-texts, adapted to the indexing structure and the syntax of each specific database. For PubMed/MEDLINE, (MESH) and title/abstract terms were used, PsycINFO (psychology/mental health focus) incorporated the APA Thesaurus of Psychological Index Terms and free-text terms, CINAHL (nursing & allied health) adapted CINAHL Headings and free-text terms, and Embase (biomedical focus) incorporated Emtree terms and title/abstract/keyword terms. The search terms used included the following: "Burn", "Burn injury", "burn injuries", "thermal injury", "burn survivor", "burn injur*", "burn survivor*", "thermal injur*" AND "psychological impact", "psycholog*", "mental health", "depression", "depress*", "PTSD", "trauma", "anxiety", "anxiet*", "coping", "cop*", "body image", "emotional distress" AND "child*", "adolescent*", "pediatric", "youth", "adult*". These terms were derived from our research question, literature and local consultants with expertise in the study area.

Step 3: Selection of eligible studies

In selecting eligible studies, criteria that would ensure that relevant studies are included in the synthesis was followed. The steps typically involved screening of title/ abstract followed by full text review done by two reviewers guided by inclusion and exclusion criteria based on the PCC framework. In situations where there were discrepancies regarding eligibility of some studies between the reviewers, discussion on the same would be made and if the issue was not resolved, a third reviewer would be involved to ensure consistency in the study selection.

Inclusion criteria

Studies that met the following criteria were included; 1) Children, adolescents and adults with burn injuries. 2) Quantitative, qualitative and mixed-methods studies. 3) Studies that reported on psychological impacts for example PTSD, anxiety, depression, body image, fear and coping. 4) Studies done in any setting (clinical, rehabilitation or community) in any country. 5. Studies that were published from 2010 to 2025.

Exclusion criteria

Articles were excluded if they; 1) Focused on physical and function outcomes of the patients only. 2) The psychological outcomes were related to the caregivers of the patients only. 3) Studies published in other languages apart from English.

PRISMA flowchart of study selection

A PRISMA flowchart was used to illustrate the selection process which involved: identification of articles, removal of duplicates, title and abstract screening, and full-text screening for eligibility. This method enhanced transparency, credibility and reproducibility of the process (see **Figure 1**). The search yielded a total of 1362 studies, where 110 studies were retained for full articles screening. 39 articles were included in the review after excluding those that did not meet our inclusion criteria.

Step 4: Charting of the data

A structured extraction form was developed to capture important details of each

eligible article so as to give an elaborate and consistent data review used in literature (see Table 2).

Step 5: collating, summarizing and reporting of the results

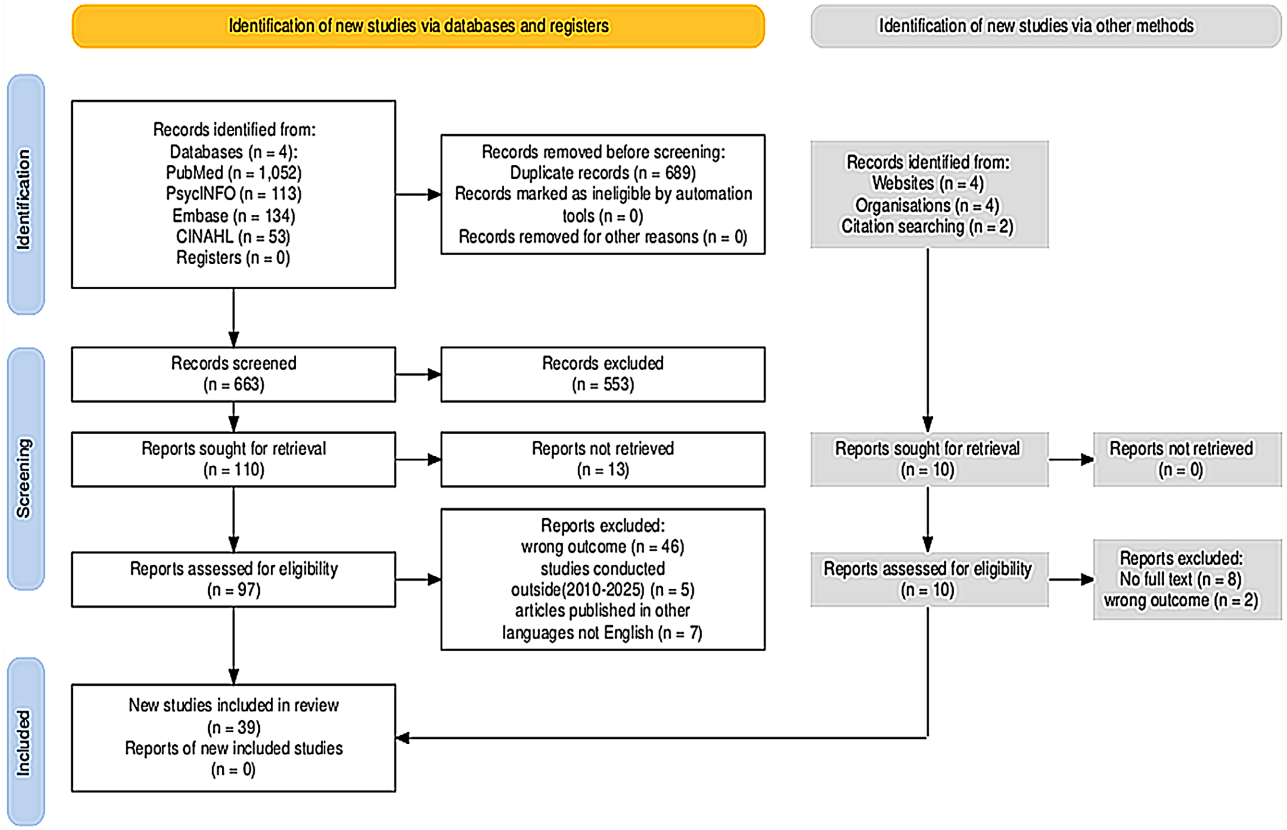


Figure 1. Prisma flow chart.

Table 2. Data chart form.

Field	Description
1. Study authors, year & country	This helps in easing referencing and citation.
2. Title of the study	The title provides clarity of the study area as well as placing the study in a specific context.
3. Sample size and population	This includes the total number and characteristics of the participants in terms of age, gender and socio-economic status.
4. Study design	Quantitative, qualitative or mixed methods approaches, observational or follow up studies.
5. Psychological outcomes	Depression, trauma, anxiety, PTSD, psychological disturbance, psychological disorders, acute stress disorder among other related psychological impacts.
6. Time since burn occurred	Time is importance in estimating psychological adjustment, coping and healing psychologically.

3. Results

Characteristics of reviewed studies.

A total of thirty-nine articles were included in the review. The studies comprised of the following; 18 cross-sectional, 15 cohort, 4 qualitative, 1 intervention and 1 retrospective study designs as shown in **Table A1**. The age range of patients studied varied in each study however, only 2 studies included under 5-year-old children. The setting of the studies, in terms of country was distributed as follows: USA (n = 9), Pakistan and Australia each (n = 4), Canada (n = 3), Türkiye, Sweden, India, Iran and Germany, each (n = 2), Switzerland, Czech Republic, Lebanon, China, Finland, South Africa and Ghana each (n = 1) as shown in **Table A1**. The psychological outcomes reported in the studies included the following; anxiety, depression, Post Traumatic Stress Disorder (PTSD), self-harm, schizophrenia, resilience, mental/psychological distress, sleep disorder, body image dissatisfaction, psychiatric disorders, health related quality of life (HRQoL), low self-esteem, and delirium, see **Table A1**. Approximately 70% of the studies used standardized tool/scales to assess the mental status of their participants.

Psychological outcomes

Anxiety

Anxiety was one of the most reported psychological disorders among burn survivors in this review, mentioned by thirteen studies. Mason., *et al.*, 2017, reported the mental health of their participants 3 years before the burn and 3 years after the burn and found that the level of anxiety was increased post-burn [18]. Sirancova *et al.*, 2022, reported that psychological characteristics, for example neuroticism was related to the early development of anxiety after a burn injury [19]. Burn injury patients talked about catastrophizing thoughts, fear of fires or getting burned again, as well as general feeling of anxiousness following the injury [20]. According to Farzan *et al.*, 2023, whose study population was burn-injury patients age group between 20 - 40 years, reported that 52.6% of their patients had anxiety disorder symptoms [21]. A cross-sectional study, which looked at factors influencing the dignity of burns patients found that there was a significant association between anxiety and individual perceived dignity following a severe burn injury [22]. Duke *et al.*, 2018, looked at the long-term mental health outcomes after unintentional burn injuries and reported that a burn cohort had a higher admission rate for anxiety as compared with other types of injuries [23]. Brown *et al.*, 2024, assessed the association between the location of the burn and psychological distress and they found that head, neck and hand burns were significantly associated with anxiety symptoms and other mental health concerns [24]. Anxiety and depression play a crucial role in recovery of patients with burns, this is because physical and psychological components of burn recovery are intertwined, for instance poor mental health can worsen physical outcomes by undermining rehabilitative efforts [25]. The most used tools by these studies to measure anxiety were; Anxiety stress scales-21 n = 1, Hospital Anxiety and Depression Scale (HADS) n = 2, Beck Anxiety Inventory n = 2, Hamilton Anxiety Rating Scale n = 1, and SCL-90-R

anxiety and depression n = 1 [26] [27].

Depression

Eleven studies investigated depression in patients with burn injuries. Both Sirancova *et al*, 2022, and Farzan *et al*, 2023, assessed the mental outcomes of burn injury patients several years after the injuries and according to their findings, 47% of their participants showed symptoms of depression [19] [21]. According to Ramachandran *et al*., 2017, depression was a major problem among burn injury patients, they found that 50% of their participants showed symptoms within a month and 26% in three months [28]. Brown *et al*, 2024, described depression as associated with the patient's burn location where head, neck and hand burns were significantly associated with the development of the disorder post-burn [24]. In a study conducted by Nelson *et al*., 2020, among young participants aged between 6 and 16 years they looked at the association between pain and psycho-social impairment, the findings showed that depression was significantly associated with pain among the burn injury patients [29]. Sex of the participant plays a role in the development of depression according to a study by Gavrilova *et al*., 2024, where they reported that women were at higher risk of developing depression following a burn injury [30]. Ghriwati *et al*., 2017 also described in their study that women and those who had larger affected body areas had elevated dissatisfaction as compared to men and those with a lower TBSA (Total Body Surface Area), and these differences were related to greater depressive symptoms [31]. Mental Health issues in some instances were significant contributing factors of burns injuries. Logsetty *et al*., 2016, did a population-based cohort study where they looked at their participants mental health 2 years pre and 2 years post burns. The study found that, while the burn cohort had an increased prevalence of mental health problems after burn compared to the control cohort, the burn group also had an increased prevalence of pre-burn depression (16.6% vs 7.8%; $p = 0.0005$) and substance use disorders (8.9% vs 3.2%; $p = 0.001$) when compared to controls [32].

The scales that were used by studies to measure depression were; hospital depression scale n = 1, Hamilton Depression Rating Scale (HAM-D) n = 2, Beck Depression Inventory BDI-II n = 2, DSM-IV, TR n = 1 and depression-Anxiety stress scale 21 n = 1.

Post Traumatic Stress Disorder (PTSD)

Post-traumatic stress disorder (PTSD), is another common psychological disorder that was reported by ten studies as occurring in patients with burn injuries. A cohort study by Chen *et al*., 2022, followed their participants 6 months to 3 years post-burn and reported that PTSD was one of the psychological issues encountered by their study population who were young burn injury survivors [33]. Another cohort study found that approximately half of their participants had a risk of developing PTSD after discharge from the hospital and that body image dissatisfaction was a potential predictor of the development of PTSD during follow-up [34]. Sex of the participant has a role in individual's risk of developing PTSD. Studies have reported that women are more likely to develop PTSD after burn

injury than men [30] [35]. Resilience has been associated with the development of PTSD, Bibi *et al.*, 2018, reported low resilience as increasing the manifestation of PTSD symptoms [30] [35]. Younes *et al*, 2025, did a quantitative study on psychological assessment of adults with burn injuries and found that 18% of their patients met the probable status of PTSD [36]. In their matched paired cohort study, Rosenberg *et al.*, 2015, found a higher prevalence of PTSD at the time of follow-up being 8% for the acute stress disorder (ASD) group and 4.71% for the non-ASD comparison group [37]. Nosanov *et al.*, 2022, reported that 24% of their participants screened positive for PTSD while Idrees *et al.*, 2017 found that 20% of their patients showed symptoms of severe PTSD [38] [39]. A follow up study assessed PTSD on burn injury survivors and calculated the mean score from the PTSD assessment score tool and found 23.8 ± 14.7 in the early hospitalization period and an increase to 24.2 ± 14.3, 3 months after the burn injury [40]. In addition, 20% of victims had a positive PTSD test after 2 weeks of treatment in hospital, a proportion that increased to 31.5% after 3 months [40]. Some of the factors associated with the development of PTSD among burn injury patients include; the presence of deep component of the injury, involvement of the upper extremity, ICU admission, and prolonged hospital length of stay [39]. Some of the standardized tools used to measure PTSD included; PTSD Checklist-Civilian Version (PCL-C), PTSD (IES-R) n = 1, PTSD Checklist for DSM-5 (PCL-5) n = 1, and (PC-PTSD-4) n = 2 [41].

Other mental or psychiatric disorders not specified

A good number of studies reported mental/psychiatric disorders as affecting patients with burn injuries. One study, assessing the association between burn injury and mental illness found a significant increase of mental disorders for example, mood disorder, self-harm, and schizophrenia after burn injuries [18]. Another retrospective cohort study, found that burn injury was associated with psychiatric disorders in burn injury patients [41]. In their study on mental disorders among acute burn patients, Palmu *et al.*, 2011, revealed that the overall prevalence of Axis I mental disorders increased from the month prior to burn (40%) to (48%) during acute care post burn [42]. Kang-Auger *et al.*, 2025 [43], reported in their study that burns were associated with many types of mental health disorders including, eating disorder, sleeping disorder, substance use disorder and suicide attempts. Besides, the study established that the first 5 years after the burns was the period with the greatest risk, however the symptoms persisted up to 33 years later [43]. Similarly, a retrospective study on outcomes after burn injuries on intensive care found that 16.6% of their participants had at least one of the major psychiatric disorders [44]. Some studies have associated race and ethnicity with the development of mental disorders after experiencing burn injuries, Sibbert *et al.*, 2020 in their study found that burn patients from racial and ethnic minority groups had higher prevalence of post-traumatic stress disorders, dissatisfaction with appearance and concerns for loss of strength [45].

General Mental/Psychological Distress

Five studies described the psychological distress among burn injury patients.

According to Zaman *et al.*, 2023, psychological distress was negatively related to resilience [46]. A quantitative study done by McGarry *et al.*, on mental health and itch in burn patients, revealed that there is an independent association between itch and mental distress among adult burn injury survivors [47]. Idrees *et al.*, 2017, studied psychological reaction following a burn injury among female burn survivors in Pakistan and they found that 23% of those patients, presented with severe symptoms of psychological distress [39]. On psychological impacts of childhood face burns, Stubbs *et al.*, 2011, did a follow up study during the first two years after burns and reported that children with face burns requiring skin grafting appeared to have more psycho-social difficulties than those who didn't require grafting to treat facial burns [48]. Findings from a qualitative study done in South Africa, revealed some of psychological issues experienced by their participants included, loss of relationships, feelings of isolation and stigma [49].

Low self-esteem

Low self-esteem, though not a psychological disorder in itself, can increase the risk of developing mental disorders especially, following traumatic incidents like burns that have potentials of damaging individual's appearance. Several studies have highlighted the relationship between low self-esteem and burn injuries. One study found that low self-esteem was one of the psychological problems occurring in burn injury patients [50]. In a cross-sectional study conducted on 230 adults in Lebanon, 10% of the inpatients and 7% outpatients reported experiencing low self-esteem after their burn injuries [36]. Another quasi-experimental study reported low self-esteem in a majority of their participants after the burn injuries. Notably, 66% of the patients with facial burn injuries scored below average on a Self-esteem Scale indicating significant psychological distress [51].

4. Discussion

The aim of this scoping review was to synthesize literature on psychological impacts of burn injuries on both adults and children from the year 2010-2025. Out of the thirty-nine reviewed studies, only two were from Sub-Saharan Africa yet the incidence of burns is higher in African countries as compared to the western countries [52]. These findings highlight a research gap in addressing burn injuries and the associated impacts in African settings. Notably, the reviewed studies revealed that patients experience elevated levels and symptoms of psychological disorders following burn injury incidents [53].

Anxiety was the most mentioned psychological disorder among the burn injury patients, cutting across all the age groups, and affecting females more than males [54]. However, Farzan *et al.*, 2023, in the contrary, found that males and patients younger than 20 years had higher prevalence of anxiety symptoms as compared to their counterparts [21]. On clinical characteristics and anxiety, Farzan *et al.*, 2023, described that electric and chemical causes of burns as well as higher burn surface area > 30%, were significantly associated with higher prevalence of anxiety [21]. The probable explanation to this, is that electric and chemical burns are not

common but when they occur, they are often severe, and they tend to cause significant damage to the tissues as they affect the deeper layer of the skin and sometimes the internal organs. The lengthy process of treatment and the fear of not fully recovering trigger or worsen anxiety.

Depression was also described by many studies as affecting patients with burn injuries where the location of the burn, especially face, head and hands were found to be significantly associated with the development of depression in burn injury patients [50]. The face, head and hands are crucial in terms of appearance and functionality and therefore burn injuries in these areas can change the looks of the victims which can lead to feelings of shame and embarrassment, and consequently, leading to depression. Sex was mentioned by two studies [30] [31], to be a predictor of depressive symptoms in burn injury patients where females were more affected than males; a situation that is tied to appearance dissatisfaction. Other studies have found that there exist a predictive association between body appearance dissatisfaction and depressive symptoms in patients with burn injuries [23] [55].

Development of PTSD after a burn injury is common and some of the risk factors that have been cited in the literature include sex, age, coping strategies and availability of social support [56] [57]. The prevalence of PTSD is higher in women and this has been attributed to the perception that the physical appearance translates to beauty, an asset to women [58]. Younger age groups are more likely to develop PTSD as body image plays a major role, they are more bound to apparent difference in appearance [9] [58]. Some studies have shown that when burn survivors lack adequate emotional support, they become vulnerable to the development of PTSD. In addition, avoidance and ambivalent coping strategies increases the severity of PTSD [2]. Other psychological issues that were documented in the literature included psychological disorder for example, substance abuse disorder, sleeping disorder, eating disorder, self-harm and suicidal attempts [18] [19] [41]-[43].

Gap in literature and future research consideration

In this review, we found that 70% of the studies used standardized measures, a lower percentage as compared with Woolard *et al.*, 2021 study on the psychological outcomes following pediatric burn injuries, which reported that 88% of the studies in their review included standardized measures [10]. It is important for studies to use standardized measures as this would allow for more reliable and generalizable findings. The review also revealed that most evidence in literature is coming from high income countries; 64% of all studies included in this review were from HICs yet most of the burden, over 95% of burn injuries lie in Low- and Middle-Income Countries (LMICs) [15] [29] [52]. From the review, it is evident that research on burn management and prevention in LMICs, especially in sub-Saharan Africa, is scarce, hindering the development of evidence-based practices and policies to improve outcomes. This is a region where burn injuries are a significant public health issue much more than developed countries due to contributing factors like unsafe cooking methods, hazardous environments, lack of fire safety measures and struggling health systems [2]. Addressing these gaps through

targeted research, would be a critical step towards reducing the impact of burns in the region.

5. Conclusions

From our review, it is clear that patients with burn injuries experience psychological problems for example anxiety, depression, PTSD, among other mental disorders. It is important to note that the above-mentioned conditions occurred immediately after the burn and they may persist for years. Healthcare systems should recognize the significance of screening for psychological disorders on burn injury patients and integrating post-conventional treatment and psychological support in recovery, so as to improve mental well-being and quality of life of burn victims. There is a need to adjust and extend psycho-therapeutic support beyond hospital care.

Author Contributions

Tabitha Chepkemoi wrote the concept, conducted the search and wrote the initial draft. Late Mabel Nangami and Dan Pope reviewed the concept and the initial draft. Screening and reviewing of the paper were done by Judith N. Mangeni and Gelas Simiyu. The final draft of the article was prepared by Tabitha, and circulated among all the authors for revisions and approval.

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Institutional Review Board Statement

For this review, ethical approval was not required since no primary data was collected for the study.

Informed Consent Statement

Obtaining informed consent was not a requirement.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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Abbreviations

The following abbreviations are used in this manuscript:

LMICs	Low- and Middle-Income Countries
HICs	High Income Countries
YLLs	Years of Life Lost
DALYs	Disability-Adjusted Life Years
PTSD	post-traumatic stress disorder
PCC	Population, Concept and Context framework
PRISMA	Preferred Reporting Items for Systematic reviews and Meta-Analyses
HRQoL	Health Related Quality of Life
TBSA	Total Body Surface Area

Appendix

Table A1. Showing description of reviewed studies.

https://docs.google.com/document/d/1MZAvOujlwdErfrU4NnbqhixHoRiga7PU/edit?usp=sharing&ouid=110314667601326760467&rtpof=true&sd=true