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Nutrition education programs for burn survivors: A scoping review

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Abstract

Background: Despite the importance of nutrition education for burn survivors, only limited work has been done to ascertain what is known about these education programs. **Aim:** To scope the existing literature to ascertain what is known about the nature and outcomes associated with nutrition education programs for burn survivors, their families and caregivers. **Methods:** Arksey and O'Malley scoping review approach were utilized with searches across peer-reviewed databases and gray literature sources. **Results:** Six studies were retained. Five studies focused on burn survivors and one focused on healthcare professionals. One study reported improved knowledge regarding postburn nutritional support following the implementation of the nutrition counseling program. Three studies reported on the inclusion of a nutrition education component in comprehensive postdischarge rehabilitation programs albeit no nutrition-specific outcomes were reported. **Conclusion:** The review affirms the limited literature, highlighting a need for more work to implement and evaluate outcomes of nutrition education programs for burn survivors.

Keywords

Burns, education, nutrition

Introduction

The occurrence of burns can lead to several physiological derangements which put an intense strain on an individual's nutritional status. The resulting hypermetabolic state following the burn is often sustained and may persist for a prolonged period. In fact, severe burns can accelerate a burn patient's metabolic state (Saffle et al., 2012). Without nutritional support commensurate to their needs, persons recovering from burns are predisposed to infections, poor wound healing, prolonged inpatient stay, readmissions and their associated increasing healthcare costs (Dijkink et al., 2020), altered anthropometric measurements (such as weight), and altered laboratory indices (such as low serum protein levels and nitrogen balance) (Saffle et al., 2012). Working toward attaining optimum nutrition in burn patients, therefore, remains paramount.

Attaining optimum nutrition in burn patients is an ongoing process that does not end following discharge. Evidence suggests that support for caregivers often translates to better support for the burn survivor (Ravindran et al., 2013). Despite these, burn survivors and their caregivers are often ill-prepared to support the process, particularly after discharge. The impact of nutrition education in other disease states has been reported widely in the existing literature. For instance, in a systematic review that included six studies, the authors reported that the nutrition education intervention had a positive effect in reducing biochemical and anthropometric risk factors for chronic diseases in indigenous Australians (Schembri et al., 2016). Another study also observed that a nutrition education program for 3–6-year-olds was helpful in improving parental nutrition knowledge and positively shaping the family's eating habits (Kostecka, 2022). A recent randomized controlled trial has also reported that a tailor-made nutrition education

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program was helpful at preventing malnutrition in adult cancer patients undergoing radiotherapy (Zhang et al., 2022). Additionally, some studies have also observed a positive association between caregiver nutritional knowledge and improved feeding practices (Demir et al., 2020; Tessema et al., 2020). Despite the evidence regarding the impact of nutrition education interventions in other patient groups such as persons with chronic diseases, implementation of such innovative programs has received minimal attention among burn survivors and their caregivers which can adversely impact the recovery process (Bayuo and Wong, 2021). This is particularly critical considering the protracted nature of the postburn recovery process which has been noted to mimic living with a chronic ailment (Bayuo et al., 2020). Besides, burn units in most countries often lack structured nutrition teaching guides or educational programs that can prepare burn survivors and their caregivers for the period after discharge. The general lack of active follow-up services following discharge from the burn unit implies that burn survivors and their caregivers are often on their own with little to no professional support as they navigate the postdischarge period (Jagnoor et al., 2018). In fact, there is limited information available on nutrition education programs for burn survivors and their families and it remains unclear how such programs can be organized and implemented. Put together, the phenomenon of nutrition education continues to receive limited attention in the burn survivor population despite the importance of nutrition in the postburn recovery process. It is to answer this knowledge gap that the current review sought to ascertain what is known regarding nutrition education programs for burn survivors and inform further work in this area. Most especially, to scope and examine existing literature regarding the nature and outcomes associated with existing nutrition education programs for burn survivors.

Methods

Arksey and O'Malley scoping review approach was utilized for this study and reported according to the PRISMA extension guidelines (Arksey and O'Malley, 2005; Tricco et al., 2018). This approach was used as it helped to map key concepts, ascertain what is known about nutritional education programs, and to identify gaps in existing literature. This review proceeded through the following steps: (1) identifying the research question, (2) identifying the relevant studies, (3) study selection, (4) charting the data, (5) collating, summarizing, and reporting the data.

We undertook extensive searches in both peer-reviewed and gray literature sources from inception to December 2022. Three members of the research team undertook extensive searches in the following databases (1) CINAHL, (2) EMBASE, (3) PubMed, (4) Web of Science. Additionally, the reference lists of identified papers were hand-searched manually for potential papers by the research team. In addition to the peer-reviewed databases, the research team also searched the following gray literature sources: Trove, Agency for Healthcare Research and Quality, MedNar and OpenGrey.

The following search terms were utilized: (burns or burn injury or burns trauma or major burns) AND (survivors) AND (nutrition or diet or dietary or food or nourishment or food intake or eating) AND (educational programs or programs or interventions) AND (caregivers or family members or relatives or informal caregivers or healthcare staff). Any study reporting a nutrition education program for burn patients/survivors and/or their caregivers (formal and informal) was considered eligible irrespective of the study type. Considering the scoping nature of the study, any unpublished thesis reporting on nutritional education for burn patients or survivors was also considered eligible for inclusion. Studies that reported only on the nutritional needs of the burn patients were excluded. Preprints were also not considered for inclusion in this study.

The identified studies were pooled into the Rayyan Intelligent Systematic Review Platform for deduplication purposes (Ouzzani et al., 2016). Title, abstract, and full-text screening were carried out by three authors. Any disagreements between the authors were resolved through discussion with the remaining authors. The references of the full texts were exported to Endnote X8.2. The retained studies were retrieved and screened to ensure that they met the inclusion criteria for consideration. See Figure 1 for the PRISMA flow chart regarding the study selection process.

Following the study selection process, we retrieved information regarding the authors, study setting, and participants (see Table 1). Additionally, we extracted data regarding the nature of the programs and outcomes if reported. Following these, we used the review aim as a heuristic guide to develop codes based on which a narrative synthesis was undertaken.

Results

Study characteristics

Six studies were identified and included (Chang and Wang, 2010; Hairston et al., 1999; Hashemi et al., 2014; Heydarikhayat et al., 2018; Lukman et al., 2020; Rezaei et al., 2020). Two of the included studies were conducted in the United States and reported on nutrition education programs targeting pediatric burn patients (Chang and Wang, 2010; Hairston et al., 1999). The third study was undertaken in Indonesia and it focused on nutrition education for adult burn patients (Lukman et al., 2020). The remaining three studies were undertaken in Iran and they focused on adult burn survivors (Hashemi et al., 2014; Heydarikhayat et al., 2018; Rezaei et al., 2020). The publication years ranged from 1998 to 2020.

Nature of the programs

The program reported by Hairston et al. was composed of 10 sessions, each session about 30 min to 1 h in length.

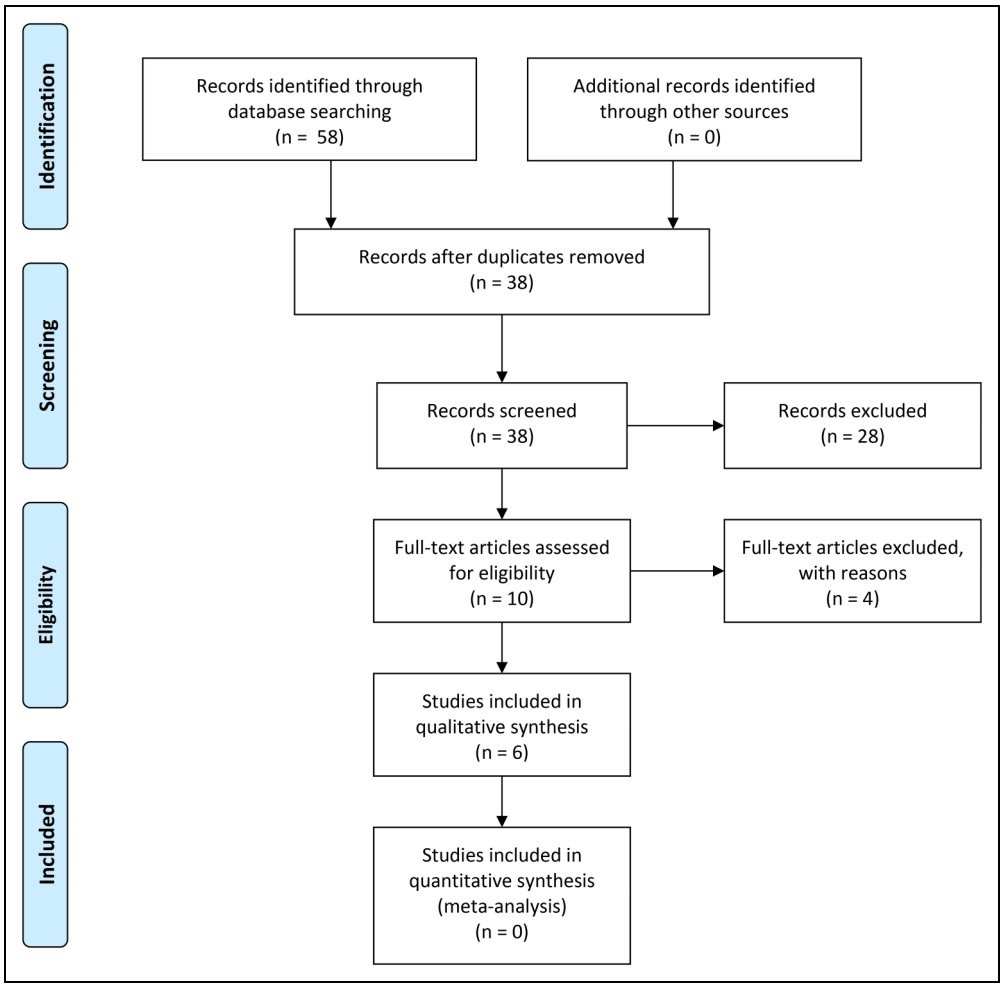

Figure 1. PRISMA Flowchart for Study Selection.

Chang and Wang also reported on a nutrition education program targeting healthcare professionals (Chang and Wang, 2010). Lukman et al. (2020) focused on delivering lectures and discussions led by physicians to improve the knowledge of adult burn survivors regarding the first aid management of burns and nutritional support. Iran reported that nutrition education as a component of a comprehensive postdischarge rehabilitation program (Hashemi et al., 2014; Heydarikhayat et al., 2018; Rezaei et al., 2020).

Outcomes of the programs

Lukman et al. reported improved knowledge regarding the first aid management of burns and nutritional support for burn patients following the implementation of their educational and counseling program (Lukman et al., 2020). The remaining studies did not report any outcomes associated with the nutrition education program.

Discussion

Six studies that reported on nutrition education programs for burn survivors were identified with one study reporting outcomes. Though this may suggest a limited number of peer-reviewed publications in this area, we acknowledge that burn units across the globe may have established protocols regarding nutrition education which may be included in discharge preparation charts and may not be available in peer and nonpeer-reviewed data sources. This assertion notwithstanding, the finding still draws attention to a critical need to develop and evaluate the impact of these nutrition education programs among the burn survivor population, their caregivers, and healthcare professionals. Even when they are included in comprehensive rehabilitation programs, there is a need to ascertain their outcomes alongside other postburn rehabilitation outcomes.

Undoubtedly, burn care has improved in recent times with decreasing mortality rates. Although the importance of nutrition in burn care has been highlighted, the current review noted the limited progress made toward evaluating the outcomes associated with nutrition education programs. More worrying is the fact nutrition education outcomes are not considered a component of the core outcome sets for burn survivors. Education is essential to improving the knowledge base of patients and their caregivers. This is particularly essential for burn survivors considering the protracted nature of the postburn recovery process. The limited follow-up strategies following discharge make the need for

Table 1. Data extraction.

Author/years/ setting	Study aim	Participants	Nature of the program	Outcomes related to nutrition	Key findings
Chang and Wang (2010) United States of America	To understand how to assess and implant nutritional care plan for the pediatric burn patient after discharge home from hospital	Healthcare professionals	Lecture on medical nutrition therapy for pediatric burn survivors following discharge	Postdischarge nutritional support care planning for pediatric burn survivors.	Participants able to develop a care plan includes risk screen, nutrition diagnoses, nutrition prescription, nutrition monitoring and evaluation.
Hairston et al., (1999) United States of America	To develop a multicultural hospital-based nutrition education program that will enhance the nutrition uptake of pediatric burn patients	Pediatric burn patients and their parents/ caregivers	A multicultural audience and focused on children with >50% Total Body Surface Area Burn (TBSA) undergoing rehabilitation either in the hospital or at home. The nutrition education program was composed of 10 sessions, each session about 30 min to 1 h in length.	Nutritional intake, weight, height, and knee-height measurements were not stated in the results.	The authors noted that the program was still in its initial stages and has demonstrated success regarding increased acceptability of foods by the foreign patients and improved dietary intake in several patients.
Hashimi et al., (2014) Iran	To determine the effects of Orem self-care program on quality of life of burn patients	Adult burn survivors and their caregivers (56 participants in the intervention group and 54 in the control group)	Nutrition education incorporated into a comprehensive postdischarge rehabilitation/self-care program. Five weeks of theoretical and practical training in self-care for 75 to 90 min (one session per week) using lecture, demonstration, and group discussion; Phone calls and in-person consultation every 15 days for 2 months during which the participants were encouraged to ask questions bothering them and receive support/ advice for 2 months following discharge.	No nutrition-specific outcome was reported	No finding regarding the participants' nutritional status was reported. After 1 month and 2 months of the use of self-care model, the quality of life of the cases improved from 73.33% to 83.78% and 98.12%, respectively ($p<0.001$).
Heydarikhayat et al., (2018) Iran	To evaluate the effects of a posthospital discharge follow-up on health status of burn patient	Adult burn survivors (44 in the control group and 42 in the intervention group)	Nutrition education implemented as a component of postdischarge rehabilitation program. Few days after hospital discharge, home visit based on patients' need was planned; the patients in the intervention group were contacted by phone to plan a schedule for the home visits. Patients were educated about exercising the involved joints, preworkout skin care, joint contractures, prompt notification in case of any problems, scar	No nutrition-specific outcome was reported	No findings reported regarding nutrition. Authors noted improved quality of life, anxiety, and scarring.

(continued)

Table 1. (continued)

Author/years/ setting	Study aim	Participants	Nature of the program	Outcomes related to nutrition	Key findings
			management, and nutrition. Telenursing was carried out by texting via social media, SMS, or phone calls. The frequency of the phone calls was once per week, but it increased in case of major problems or upon request up to 1.5 months postdischarge.		
Lukman et al., (2020) Indonesia	To increase the community's knowledge and awareness of the importance of nutrition in burn patients.	Adult burn injured patients	This event consisted of a lecture session and discussion session provided by the Division of Plastic Surgery, Department of Surgery of the hospital. The counseling was performed by a senior plastic surgeon and medical doctors. Topics in the lecture sessions were basic knowledge of burns, first aid for burn patients, nutrition in burn patients, and complications that may occur in burn patients.	Basic knowledge regarding the first-aid treatment, and nutrition for burn patients	There was a significant increase in the knowledge of the respondents before and after counseling the nutrition of burn patients ($p<0.05$). Thus, counseling is proven to increase knowledge in the general population that it should be performed routinely in various areas.
Rezaei et al., (2020) Iran	To compare the effect of telenursing and face-to-face training on the quality of life of patients with a burn injury.	Ninety adult burn survivors in three groups	Nutrition education delivered as part of a comprehensive telenursing aftercare program; Each intervention group received 1-on-1 telephone training and face-to-face training in eight sessions (two sessions of 15 to 20 min/week). The control group received regular care. The content of the provided materials was based on the latest articles and books including wound care; scar management, such as wearing pressure garments; range of motion training; complications of immobility and contracture; nutritional education; itching control; and the psychological consequences of burn.	No nutrition-specific outcome was reported.	No finding related to nutrition was reported. The authors noted significant differences regarding quality of life across the groups.

nutrition education more paramount to enable the burn survivors and their caregivers to be able to plan their dietary pattern to support their recovery journey. Such nutrition education may be brief and often included in the discharge planning teaching. The significance of nutrition to the postburn recovery however makes it important to ensure that there is enough emphasis and reinforcement of education episodes to potentially improve outcomes.

Across the included studies, only one study reported an outcome relating to knowledge about nutrition following burns. This finding emphasizes the need to evaluate nutrition education programs, particularly considering the critical role that nutrition plays in the postburn recovery process. Other outcomes relating to nutrition education such as self-efficacy, attitudes, changes in eating habits, food selection, balanced meal preparation, anthropometric measures, and laboratory indices may need to be evaluated as well to ascertain the effects of nutrition education programs. Additionally, more age-specific outcomes such as those related to children, adults, and older adults need to be included. Information about these outcomes can potentially help to drive further work to support the postburn recovery process.

Another concern that emphasizes the significance of nutrition education is the occurrence of malnutrition in burn survivors (Caldis-Coutris et al., 2022). Preburn malnutrition often detected at admission, and the subsequent involuntary weight loss are particularly worrying as they can lead to poor outcomes in the long term such as increasing frailty levels. In fact, malnutrition represents an underestimated, yet significant clinical problem in the burn patient population which may be overlooked (Fatyga et al., 2020). Nutrition education is therefore greatly needed with locally available materials to ensure that malnutrition even when detected at pre- or postburn phases can be managed adequately.

Conclusion and recommendation

Nutrition plays an important role in the postburn recovery process. To improve nutrition, there is a need to also focus on educating both burn survivors and their caregivers, particularly following discharge so they can plan and implement dietary plans that adequately support them. The review affirms the limited literature in this regard, highlighting a need for more work to evaluate the outcomes of nutrition educational programs for burn survivors and their caregivers.

Authors' contributions

Jonathan Bayuo: study conceptualization, funding acquisition, methodology, data search, analysis, and writing up; Joyce Pwavra: conceptualization, data curation, analysis, methodology, and writing up; Jephtah Davids: study conceptualization, funding acquisition, methodology, data search, analysis, and writing up; Joyce Pwavra: conceptualization, data curation, analysis, methodology, and writing up; Anita Eseenam Agbeko: methodology, data curation, and writing up; Pius Agbenorku: methodology, data curation and critical review of final draft; Paa Ekow Hoyte Williams: methodology, data curation, and critical review of final draft.

Availability of data and materials

All data for this review are included in the manuscript.

Declaration of conflicting interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Ethical approval

This is a scoping review and ethics approval is not required.

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References

Arksey H and O'malley L (2005) Scoping studies: towards a methodological framework. *International Journal of Social Research Methodology* 8: 19–32.

Bayuo J and Wong FKY (2021) Issues and concerns of family members of burn patients: a scoping review. *Burns* 47: 503–524.

Bayuo J, Wong FKY and Agyei FB (2020) On the recovery journey: an integrative review of the needs of burn patients from immediate pre-discharge to post-discharge period using the Omaha System. *Journal of Nursing Scholarship* 52: 360–368.

Caldis-Coutris N, Gawaziuk JP, Magnusson S, et al. (2022) Malnutrition in burns: A prospective, single-center study. *Journal of Burn Care & Research* 43: 592–595.

Chang Y and Wang G (2010) Medical nutrition therapy for pediatric burn patients after discharged home from hospital. *Journal of the American Dietetic Association* 110: A37.

Demir G, Yardimci H, Çakiroğlu FP, et al. (2020) Knowledge of mothers with children aged 0-24 months on child nutrition. *Selçuk Üniversitesi Sosyal Bilimler Enstitüsü Dergisi* 43: 270–278.

Dijkink S, Meier K, Krijnen P, et al. (2020) Malnutrition and its effects in severely injured trauma patients. *European Journal of Trauma and Emergency Surgery* 46: 993–1004.

Fatyga P, Pac A, Fedyk-Łukasik M, et al. (2020) The relationship between malnutrition risk and inflammatory biomarkers in outpatient geriatric population. *European Geriatric Medicine* 11: 383–391.

Hairston K, Hildreth M and Cucuzzo N (1999) A multi-cultural nutrition education program for burn injured children. *Journal of the American Dietetic Association* 99: A98.

Hashemi F, Dolatabad FR, Yektatalab S, et al. (2014) Effect of Orem self-care program on the life quality of burn patients referred to Ghotb-al-Din-e-Shirazi burn center, Shiraz, Iran: a randomized controlled trial. *International Journal of Community Based Nursing and Midwifery* 2: 40.

Heydarikhayat N, Ashktorab T, Rohani C, et al. (2018) Effect of post-hospital discharge follow-up on health status in patients

with burn injuries: a randomized clinical trial. *International Journal of Community Based Nursing and Midwifery* 6: 293.

Jagnoor J, Lukaszyk C, Fraser S, et al. (2018) Rehabilitation practices for burn survivors in low and middle income countries: a literature review. *Burns* 44: 1052–1064.

Kostecka M (2022) The effect of the "colorful eating is healthy eating" long-term nutrition education program for 3-to 6-year-olds on eating habits in the family and parental nutrition knowledge. *International Journal of Environmental Research and Public Health* 19: 1981.

Lukman K, Soedjana H, Septrina R, et al. (2020) Nutrition counseling need in burn patients. *Majalah Kedokteran Bandung* 52: 113–118.

Ouzzani M, Hammady H, Fedorowicz Z, et al. (2016) Rayyan—a web and mobile app for systematic reviews. *Systematic Reviews* 5: 1–10.

Ravindran V, Rempel GR and Ogilvie L (2013) Embracing survival: a grounded theory study of parenting children who have sustained burns. *Burns* 39: 589–598.

Rezaei M, Jalali R, Heydarikhayat N, et al. (2020) Effect of telenursing and face-to-face training techniques on quality of life in burn patients: a clinical trial. *Archives of Physical Medicine and Rehabilitation* 101: 667–673.

Saffle JR, Graves C, Cochran A, et al. (2012) Nutritional support of the burned patient. In: *Total Burn Care*. London: WB Saunders, 333–353.

Schembri L, Curran J, Collins L, et al. (2016) The effect of nutrition education on nutrition-related health outcomes of aboriginal and torres strait islander people: a systematic review. *Australian and New Zealand Journal of Public Health* 40: S42–S47.

Tessema DG, Girma E, Mekonnen TC, et al. (2020) The extent of maternal nutritional knowledge and practice during lactation in Kombolcha Town, South Wollo Zone, Ethiopia: A mixed study design. *International Journal of Women's Health* 12: 79–87.

Tricco AC, Lillie E, Zarin W, et al. (2018) PRISMA Extension for scoping reviews (PRISMA-ScR): checklist and explanation. *Annals of Internal Medicine* 169: 467–473.

Zhang Z, Zhu Y, Zhang L, et al. (2022) Nutritional education and counseling program for adult cancer patients during radiotherapy: a cluster-randomized clinical trial. *Supportive Care in Cancer* 30: 3279–3289.