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Review

Reducing Lower Extremity Amputations via Peer Support Interventions: A Scoping Review

Sophia A. Sorrentino [1], Brittany M. Cook [1], Sanam N. Jhaveri [1], Mohammad S. Javed [2], Tze-Woei Tan [3], David G. Armstrong [3] and Ryan T. Crews [1,*]

[1] Dr. William M. Scholl College of Podiatric Medicine's Center for Lower Extremity Ambulatory Research (CLEAR), Rosalind Franklin University of Medicine and Science, North Chicago, IL 60064, USA; sosorrentino@gmail.com (S.A.S.); sunnyjhaveri2@gmail.com (S.N.J.)
[2] Lake Forest College, Lake Forest, IL 60045, USA; javedms@lakeforest.edu
[3] Department of Surgery, Keck School of Medicine, University of Southern California, Los Angeles, CA 90033, USA; tze-woei.tan@med.usc.edu (T.-W.T.); armstrong@usa.net (D.G.A.)
* Correspondence: ryan.crews@rosalindfranklin.edu; Tel.: +1-847-578-8437

Abstract

Patients with diabetes and/or peripheral artery disease (PAD) are at risk for lower limb amputation and a subsequently higher mortality risk. Peer support interventions have been shown to increase diabetes self-management and glycemic control. This scoping review aims to synthesize the current literature on peer support interventions in reducing lower limb amputations. A PubMed search was conducted in June of 2023, excluding publications prior to 2000, focusing on two themes: (1) peer support and (2) the patient population of interest (i.e., individuals with diabetic foot disease and/or PAD). Studies were included if they addressed the population of interest, involved a peer support intervention to improve lower extremity health, and had outcomes pertaining to the health of the lower extremities or programmatic metrics such as participant satisfaction or program adherence. Out of 1730 publications initially identified, six met the inclusion criteria. These six studies were categorized as group foot care education studies (n = 4) or group cognitive behavioral studies (n = 2). The group foot care education studies showed mixed results, which varied from no effect to significant improvements in foot care, self-management, and complications. There was a trend of improvement in self-management behaviors and physical activity in cognitive behavioral interventions. Despite showing promise in other settings, there have been limited investigations of peer support interventions to improve lower extremity outcomes and avert amputations in persons with diabetes and/or PAD. Further studies are required to conclusively determine the efficacy of peer support interventions to reduce lower extremity amputation rates.

Keywords: peer support; diabetes; peripheral artery disease; amputation; diabetic foot ulcer

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1. Introduction

Individuals diagnosed with diabetes mellitus and/or peripheral artery disease (PAD) are at an increased risk of lower extremity amputation. Unfortunately, the five-year mortality rate in persons with diabetes and PAD ranges from 53% to 100% for major and minor amputations combined, 52% to 80% for major amputations alone, and 29% to 69% for minor amputations alone [1]. Armstrong et al. determined a respective 46.2% and 56.6% five-year mortality rate after minor and major amputations in patients with diabetes, comparable to the five-year mortality rate of all cancers at 31% [2]. Despite a decline in the early 2000s,

lower limb amputations in persons with diabetes in the US increased from 2010 to 2020 [3]. By 2020, there were 6.1 non-traumatic lower extremity amputation hospitalizations per 1000 adults living with diabetes [3]. The primary precursor to amputations in persons with diabetes is a diabetic foot ulcer (DFU), with 84% of such amputations being preceded by a DFU [4]. Within Medicare beneficiaries with concomitant diabetes and PAD, Fowler et al. reported a five-year lower extremity amputation rate of 3% [5]. Similarly, in a large-scale trial of individuals with PAD (13,385 participants) that received medication to prevent major adverse cardiovascular events, 2.9% of participants underwent at least one lower extremity amputation within the median follow-up time of 30 months [6]. Within the sizable proportion of participants with diabetes in the trial (38%), infection was the most frequent driver of amputation, with 58% of the amputations attributable to it [6]. Additionally, higher amputation rates are found in individuals with diabetes and PAD who are African American, Native American, or Hispanic [7,8]. This large-scale problem warrants additional efforts to limit amputations in persons with diabetes and/or PAD. It is possible peer support interventions could help to reduce the unacceptably high incidence of lower extremity amputations by helping at-risk individuals to learn and implement preventative behaviors in an understanding environment.

Peer support is defined as a reciprocal relationship based on mutual respect, responsibility, and agreement with a foundation of commonality, empathy, and trust with the aim of providing help to all parties involved [9]. Peer support refers to individuals who are considered equals and falls within the larger category of social support, which refers to a broader spectrum of relationships that provide support [10]. Social support affects psychosocial factors that influence the management of chronic disease. A recent meta-analysis consisting of 11 studies and 3151 participants with type 2 diabetes mellitus found an association between lower levels of social support and depression [11]. Comparably, a cross-sectional study conducted in South Africa determined that individuals with diabetes with a higher level of social support suffered less emotional distress [12]. In addition to emotional impact, peer support can lead to enhanced diabetes management. Two meta-analyses of randomized control trials (RCTs) illustrated a correlation between lower HbA1c scores and peer support intervention [13,14]. Song et al. found a medium-strength, positive association between social support and diabetes self-care, specifically with the greatest association with glucose monitoring [15]. Furthermore, in a systematic review of published systematic reviews and meta-analyses of peer support in diabetes care, Litchman et al. found social support led to significant improvements in HbA1c, systolic blood pressure, diabetes knowledge, and diabetes self-management [16].

Instilling peer support interventions with diabetes self-management behaviors, such as foot care, could potentially reduce the occurrence of amputations. In a 2013 investigation of peer support for persons with type 2 diabetes, Whitford et al. generated 21 frequently asked questions regarding foot care over eight meetings from 29 peer support groups, demonstrating the relatively recent need and desire for diabetic foot care education, particularly in a peer support setting [17]. The aim of this scoping review was to identify and examine the available recent literature regarding peer support interventions with a lower extremity component and their influence on populations at risk for lower extremity amputations with the purpose of summarizing the structure, dynamics, and findings of these studies.

2. Methods

An advanced search on PubMed was conducted for articles published in the 2000s that reported on subjective and clinical outcome measures related to amputation prevention in patients with diabetes and/or PAD at risk of loss of the lower limb. The following search

string was used to retrieve relevant articles from the database in June of 2023: ((social support) OR ("peer support") OR ("group visits") OR (peer groups) OR ("group education") OR ("foot care education") OR ("psychoeducation") OR ("cognitive behavioral")) AND ((diabetic foot[MeSH Terms]) OR (peripheral arterial disease [MeSH Terms]) OR (foot health) OR ("foot care") OR ("diabetes self-management") NOT (arm OR hand)).

Publications were included if a peer support intervention was conducted with adults at risk for lower extremity amputations. At-risk adults were individuals with one or more of the following: type 1 or type 2 diabetes mellitus with a foot ulcer or at a risk level 1–3 for ulceration according to the International Working Group on the Diabetic Foot or PAD in the absence of diabetes. Studies required an aspect of peer support in their intervention such as the establishment of virtual or in-person peer support groups or the provision of education and/or treatment to patients in a group setting. One or more outcome measures pertaining to clinical (e.g., amputations, ulcerations, or physical activity), behavioral (e.g., self-care activities), or programmatic (e.g., participant satisfaction or adherence) outcomes were needed for inclusion. Review articles and studies published prior to 2000 were excluded from this review.

Eligibility assessment (Figure 1) was performed by two independent reviewers using the Rayyan software (https://www.rayyan.ai/) (Cambridge, MA, USA) in three stages: abstract and title, full-text screening, and data abstraction. Disputed articles were analyzed by a third reviewer, acting as a tie breaker. A consensus was reached by all reviewers on the included articles. Data was then abstracted from the included articles and compiled into tables. Outcome measures not directly related to lower extremity health, programmatic or behavioral adherence, or social support are not reported in Table 1 or Table 2. A completed Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews checklist for this project is available in this publication's Supplementary Materials.

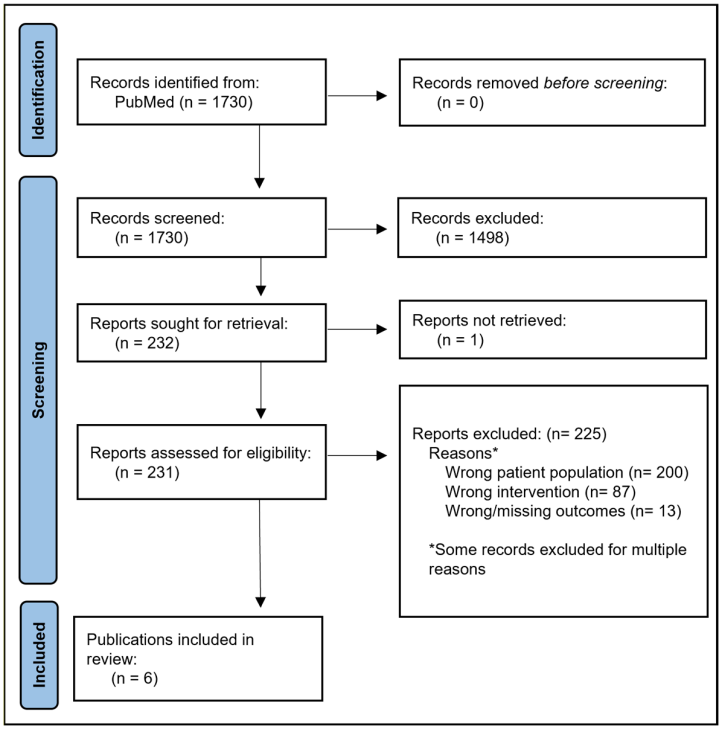


Figure 1. PRISMA Flow Diagram for Scoping Review.

3. Results

The PubMed search identified 1730 articles (Figure 1). After title and abstract screening, 232 articles were identified for full-text review. One publication could not be retrieved

(Qian et al.). Six articles were ultimately found to meet the inclusion criteria. Studies originated from multiple countries with a range of start dates from 2005 to 2016 (Tables 1 and 2). Study duration ranged from a singular but repeated 2.5 h workshop to 24 months. Four studies were RCTs [18–21]. The number of patients enrolled varied between studies. Five articles [18–20,22,23] focused on populations of patients with diabetes, while McDermott et al. [21]. focused on patients with PAD. The Annersten Gershater et al. [19]. and Vedhara et al. [20]. publications explicitly focused on individuals with a history of prior diabetic foot ulceration. Although not limited to participants with diabetes, the program evaluated by Woodbury et al. [23]. was a peer education program focused on foot health in persons with diabetes. The two remaining publications [18,22] focused on diabetes, studying broader populations of persons with diabetes without specifications of amputation risk factors.

For analysis purposes, the studies were further categorized into two groups based off the method of conduction of the intervention: group foot care education (Table 1) and group cognitive behavioral therapy (Table 2). Four studies utilized group foot care education as an intervention. Utz et al. [22]. and Ahmad Sharoni et al. [18]. provided culturally tailored group sessions. Vedhara et al. [20]. and McDermott et al. [21]. utilized a group cognitive behavioral intervention in populations with diabetes and PAD, respectively. The control groups commonly received only standard care or were provided with educational materials in addition to the original care they were receiving.

Table 1. Group foot care education studies.

	Geographical and Temporal Setting	Study Design and Patient Population	Intervention and Control	Outcomes—Explained	Outcomes—Results	Overall Finding
Ahmad Sharoni SK, Abdul Rahman H et al. PLoS ONE, 2018. [18]	Location: Malaysia Time Period: Feb 2016–July 2016 Duration: 12 weeks	Patients: Diabetes ± foot complications Patients Enrolled: 76 Setting: Public elderly care facility Design: RCT	Intervention: A single culturally tailored group foot care education session with a PowerPoint presentation and pamphlets was conducted with regular (weekly or biweekly) 20 min follow-ups by a nurse consisting of encouragement and one-on-one discussion for 10 weeks (n = 38). Control: Routine healthcare for diabetes was provided. Participants received intervention post-study (n = 38).	Foot Self-Care Behavior: Score range: 16–80 The higher the score, the better the foot self-care behaviors Foot Care Self-Efficacy: Score range: 10–50 The higher the score, the higher the self-confidence in performing foot care behavior Foot Care Knowledge: Score range: 0–11 The higher the score, the higher the foot care knowledge Foot Care Outcome Expectation: Score range: 6–30 The higher the score, the higher the self-confidence that the food self-care behavior performed would lead to a good effect	Foot Self-Care Behavior: Intervention: 57.19 Control: 47.35 $p < 0.01$ Foot Care Self-Efficacy: Intervention: 38.66 Control: 34.25 $p < 0.01$ Foot Care Knowledge: Intervention: 7.20 Control: 5.33 $p < 0.01$ Foot Care Outcome Expectation: Intervention: 23.33 Control: 20.60 $p < 0.01$	Group foot care education leads to improved foot care outcomes.
Annersten Gershater M, Apelqvist J et al. Adv Wound Care, 2023. [19]	Location: Sweden Time Period: 2008–2015 Duration: 24 months	Patients: Diabetes with neuropathy and previously healed ulcer below the ankle ± minor amputation Patients Enrolled: 138 Setting: University hospital multidisciplinary foot clinic Design: RCT	Intervention: Single participant-driven group education session on foot care with opportunities to share personal experiences led by a diabetes specialist nurse. Sessions were separated based on sex. Standard information also provided (n = 49). Each participant was given adjusted insoles, and, if necessary, adjusted shoes. Control: Oral and written standard information on self-care was provided in accordance with the International Consensus on the Diabetic Foot (n = 73). Each participant was given adjusted insoles, and, if necessary, adjusted shoes.	Days to Ulceration: First, second, and third ulcer recorded Mean number of days to ulceration (range) Remained Ulcer-Free: Number of participants who did not develop an ulcer Number of Participants with New Ulcers: Measured at 6-, 12-, 18-, and 24-months Self-Care Habits: Daily foot inspections, therapeutic shoe use, and regular chiropody visits	Days to First Ulcer: Intervention: 373 (4–701) Control: 373 (12–720) $p = 0.448$ Days to Second Ulcer: Intervention: 373 (206–603) Control: 457 (192–719) $p = 0.423$ Days to Third Ulcer: Intervention: 608 (505–686) Control: 680 (550–734) $p = 0.354$ Remained Ulcer-Free (n): Intervention: 15 Control: 28 $p = 0.268$	New Ulcer at 6 months (n): Intervention: 20 Control: 19 $p > 0.05$ New Ulcer at 12 months (n): Intervention: 20 Control: 13 $p = 0.013$ New Ulcer at 18 months (n): Intervention: 13 Control: 13 $p > 0.05$ New Ulcer at 24 months (n): Intervention: 12 Control: 16 $p > 0.05$ Self-Care Habits: No statistically significant difference	Group foot care education does not prevent the occurrence of foot ulcerations. Authors caution that this study was underpowered.

Table 1. *Cont.*

	Geographical and Temporal Setting	Study Design and Patient Population	Intervention and Control	Outcomes—Explained	Outcomes—Results	Overall Finding
Utz SW, Williams IC et al. Diabetes Educ, 2008. [22]	Location: USA Time Period: 2005–2016 (6 months) Duration: 10 weeks	Patients: African American with a diagnosis of type 2 diabetes mellitus Patients Enrolled: 22 Setting: Rural County, Central Virginia Design: Quasi-experimental	Intervention: Culturally tailored group diabetes self-management sessions were conducted for 2 h weekly over 8 weeks. Interactive group sessions were run by certified diabetes educators (CDEs) that focused on learning, storytelling, problem-solving, practicing self-management activities, etc., in a supportive environment. Individual goals were set at the first session and revisited at subsequent sessions. Information and resources were provided by CDEs (n = 13). Control: Three individual diabetes self-management sessions were conducted for 10–15 min with a certified diabetes educator (CDE) over 8 weeks. Individual goals were set and revisited at subsequent sessions. Information and resources were provided by CDEs (n = 8).	All values reported are post-baseline changes in the mean. + value = increase in self-care activity − value = decrease in self-care activity Foot Care: Defined as foot examination Comprehensive Foot Care: Defined as foot examination and hygiene	Foot Care: Intervention: +2.15 Control: +1.88 $p = 0.858$ Comprehensive Foot Care: Intervention: +3.64 Control: +0.38 $p = 0.189$	Culturally tailored group diabetes self-management leads to a non-statistically significant improvement in self-care activities such as comprehensive foot care examination (examination and hygiene).
Woodbury MG, Botros M et al. Int Wound J, 2013. [23]	Location: Canada Time Period: Apr 2012–Mar 2013 Duration: 62 total sessions of the same 2.5 h workshop	Patients: Diabetes community including spouses, caregivers, healthcare professionals/students Patients Enrolled: 294 attendees of which about half were reported to have diabetes. Only 33 participants with diabetes could be followed up post-intervention Setting: 12 communities in 10 provinces Design: Feasibility	Intervention: A peer-led self-management education workshop, referred to as PEP Talk: Diabetes, Healthy Feet, and You, was hosted by volunteer peer educators and diabetes healthcare professionals. The workshop consisted of introductions, experience sharing, slideshow and video foot care education, a case study, a practice self foot care exam, and group discussion. An accessible web-portal was developed for communication and access to resources. Control: N/A	Foot Complications: Number of participants who either developed an ulcer or underwent an amputation following the workshop Foot Self-Care Activities: Percentage of respondents who reported: Checking their feet more often Wearing shoes in the house Asking about their foot exam results Removing socks at doctor's visit Regular attendance at clinics for screening	Ulcers Developed (n): 1 Amputations (n): 0 Checking Their Feet More Often: 63% Wearing Shoes in the House: 80% Asking About Their Foot Exam Results: 50% Removing Socks at Doctor's Visit: 53% Regular Attendance at Clinics for Screening: 37%	A peer-led self-management education workshop leads to few foot complications and an increase in diabetes self-management. Findings are not statistically supported.

Table 2. Group cognitive behavioral studies.

	Geographical and Temporal Setting	Study Design and Patient Population	Intervention and Control	Outcomes—Explained	Outcomes—Results		Overall Finding
Vedhara K, Beattie A et al. Behav Res Ther, 2012. [20]	Location: UK Time Period: Not reported Duration: 34 weeks	Patients: Diabetes with psychological distress and previously healed foot ulceration within the last 12 months but without current ulceration Patients Enrolled: 17 Setting: Not reported Design: RCT + feasibility	Intervention: A two-phase group-based psychosocial intervention with the first phase aiming to decrease psychosocial risk factors and the second phase aiming to maintain the results of the first phase. The first phase consisted of following the therapeutic model used to identify and address psychosocial risk factors for ulcer recurrence outlined in the paper with weekly sessions over 10 weeks. The second phase consisted of self-reflection on participants' progress in achieving their goals and maintaining a reduction in their psychosocial risk factors, beginning two months after the first phase was complete, with three sessions held every two months. Sessions in both phases were 60–90 min long. The intervention was led by a nurse and podiatrist specialized in diabetes. Control: Usual foot care by primary care physician	Re-Ulceration Number of participants who re-ulcerated Social Support Actual and ideal social support reported at baseline, week 10 of intervention, and 3rd maintenance session Measured from psychosocial questionnaire Self-Care Behaviors Self-care behaviors reported at baseline, week 10 of intervention, and 3rd maintenance session Measured from psychosocial questionnaire Subjective Feedback Gathered from recorded interviews Please see article for qualitative feedback	Re-Ulceration (n): Intervention: 1 Control: 1 Actual Social Support at Baseline: Intervention: 24.3 Control: 22.8 Actual Social Support at Week 10: Intervention: 26 Control: 22.4 Actual Social Support at 3rd Maintenance Session: Intervention: 27.5 Control: 23.2 Ideal Social Support at Baseline: Intervention: 26 Control: 27.8 Ideal Social Support at Week 10: Intervention: 26.5 Control: 25.33 Ideal Social Support at 3rd maintenance session: Intervention: 27.8 Control: 27.8	Self-Care Behavior at Baseline: Intervention: 46.4 Control: 37.4 Self-Care Behavior at Week 10: Intervention: 50 Control: 37.2 Self-Care Behavior at 3rd Maintenance Session: Intervention: 54.6 Control: 39.8	A group-based psychosocial intervention leads to improved social support and self-care behaviors. Re-ulcerations occurred equally in both groups. Findings are not statistically supported.

Table 2. *Cont.*

	Geographical and Temporal Setting	Study Design and Patient Population	Intervention and Control	Outcomes—Explained	Outcomes—Results		Overall Finding
McDermott MM, Guralnik JM et al. J Am Heart Assoc, 2014. [21]	Location: USA Time Period: Jul 2008–May 2013 Duration: 12 months	Patients: PAD without impaired walking ability or exercise restriction Patients Enrolled: 194 Setting: Exercise center and medical center in Chicago, IL Design: RCT	Intervention: A two-phase group-mediated cognitive behavioral exercise intervention was conducted by a group facilitator. The first phase (months 1–6) consisted of weekly 90 min group meetings at an exercise center. Sessions consisted of group support, group discussion, goal setting, and self-regulatory skill instructions for implementation of home-based walking exercise (5 times/week, up to 50 min/session). Participants recorded their goals weekly and their walking activity daily. The second phase (months 7–12) consisted of telephone calls from their group facilitator for encouragement and review of the self-regulation skills. Telephone calls were biweekly for months 7 to 9 and once a month for months 10 to 12. Participants recorded their daily walking exercise. Control: Group education was provided weekly at a medical center on health topics (hypertension, cancer screening, vaccinations) during phase I (months 1–6). Exercise-related education was specifically not provided. Telephone calls reinforcing the education material provided in phase I were made to participants in phase II (months 7–12). Telephone calls were biweekly for months 7 to 9 and once a month for months 10 to 12.	All reported are post-baseline changes in mean. + value = increase in score − value = decrease in score Six-Minute Walking Distance: Distance in meters walked by patient after 6 min Physical Activity: Activity units measured over 7 days with a vertical accelerometer programmed to the patient City Blocks Walked: Reported by patient Walking Impairment Questionnaire—Walking Distance: Reported by patient on a scale from 0 to 100 0 = extreme limitation; 100 = no difficulty walking long distances Walking Impairment Questionnaire—Walking Speed: Reported by patient on a scale from 0 to 100 0 = extreme limitation; 100 = no difficulty walking rapidly Walking Impairment Questionnaire—Stair Climbing: Reported by patient on a scale from 0 to 100 0 = extreme limitation; 100 = no difficulty climbing 3 stair flights	Six-Minute Walking Distance (m): Intervention: +26.5 Control: −7.6 $p = 0.001$ Physical Activity (activity units): Intervention: +27.0 Control: −21.3 $p = 0.455$ City Blocks Walked: Intervention: +18.5 Control: +3.6 $p = 0.047$	Walking Impairment Questionnaire—Walking Distance: Intervention: +9.6 Control: +3.5 $p = 0.139$ Walking Impairment Questionnaire—Walking Speed: Intervention: +10.5 Control: +1.6 $p = 0.018$ Walking Impairment Questionnaire—Stair Climbing: Intervention: +8.0 Control: +3.8 $p = 0.246$	Group-mediated cognitive behavioral exercise intervention leads to significantly sustained improvement in some aspects of activity level in patients with PAD.

3.1. Group Foot Care Education Studies

Outcomes reported included foot care/self-management behaviors and foot complications such as ulceration and amputation (Table 1). Results of the studies varied. Statistically significant and non-statistically significant increases in foot care related outcomes were found by Ahmad Sharoni et al. [18]. and Utz et al. [22], respectively. Annersten Gershater et al. [19]. reported no prevention of ulceration occurrence or significant difference in self-care behaviors with group foot care education in an underpowered study. Increased self-management with limited foot complications was reported by Woodbury et al. [23] in a non-statistical analysis.

3.2. Group Cognitive Behavioral Intervention Studies

Outcomes reported included ulceration, social support, self-care behaviors, qualitative feedback, and physical activity (Table 2). Based on the results of the two studies, group cognitive behavioral intervention can lead to improvement in outcomes such as social support and self-care behaviors in diabetes populations and physical activity in PAD populations at risk of lower limb amputations. Vedhara et al. [20]. reported an equal occurrence of ulceration between groups and did not conduct a statistical analysis.

4. Discussion

This scoping review indicates that there is varying evidence regarding peer support interventions in patients with diabetes or PAD at risk for lower limb amputation. The current literature represents a diverse range of studies analyzing a variety of peer support intervention methods and limb preservation-related outcomes. No conclusions can be drawn from the available evidence published due to the heterogeneity in peer support definitions, study designs, reported outcome measures, and inclusion/exclusion criteria. The population of interest in Utz et al. [22]. was African Americans with type 2 diabetes mellitus, a patient demographic with an increased risk for amputations. Outcome measures are often collected through subjective tools such as questionnaires and interviews, and many studies do not statistically analyze their data. In this review, two out of six studies did not include statistical analysis. Additionally, difficulty with recruiting patients or study volunteers was common in the studies. Annersten Gershater et al. [19]. reported a statistically higher ulceration rate at 12 months in the intervention group but cautioned that this was likely due to their smaller sample size. More objective, clinical outcome measures in higher-powered studies are needed to deduce the influence of peer support interventions on amputation prevention.

The idea of using peer support to prevent gangrene and associated amputations in persons with diabetes was proposed by Joslin almost a century ago [24]. With respect to diabetic gangrene, he noted, "Perhaps the best preventative measure of all which we have at the hospital is the exhibition to new-comers of a few patients who have had gangrene and amputations of a leg or a toe... Visiting diabetics cannot help drawing useful lessons from the causes of their gangrene but also from the good spirits which they show (p. 18)." This historic perspective underscores the long-recognized importance of social support in managing diabetes-related complications. However, our review reveals mixed evidence regarding the effectiveness of peer support interventions on amputation prevention. Furthermore, the degree of social support involved in each intervention varied. Social support post-intervention was only measured by Vedhara et al. [20]. The method of delivery of the intervention should be analyzed for its effectiveness in providing patient-perceived social support, which may have an impact on the study's outcomes.

A limitation of publications identified in this review include the lack of thorough documentation of participants' risk for ulceration/amputation in three [18,22,23] out of six

studies. Some enrolled participants in those studies were likely at the lowest level of risk, and study results were not reported according to risk level. Notably, Woodbury et al. [23]. collected data and reported outcome measures from their participants, which included patients with diabetes, family members, and healthcare professionals. Only outcomes from the patients with diabetes in the Woodbury et al. study are reported in this scoping review. Ahmad Sharoni et al. [18]. included patients with or without diabetic foot problems, and Utz et al. [22]. reported neuropathic symptoms in 23.8% of their patients with diabetes. Both studies did not further specify risk. Additionally, all studies focused on lower extremity health education or outcomes with the exception of Utz et al. [22], which was a general diabetes management study with two foot care-related outcomes but no specific emphasis on the lower extremity.

Further studies are needed to draw direct conclusions on the effects of peer support intervention on lower limb preservation. Quantitative outcomes with statistical analysis are important to form a consensus; however, qualitative feedback from participants is necessary to ensure that the intervention provided produces the desired peer support. Future research should focus on the development of a standardized protocol to deliver peer support interventions to individuals at risk for an amputation. A standardized intervention will allow for easier implementation for clinical use and can help create a better understanding of the role peer support can play in amputation prevention. Limb preservation requires a holistic approach; a patient's psychological, social, and physical needs should all be addressed.

5. Conclusions

The six articles included in this review were categorized based on intervention as either a group foot care education study or group cognitive behavioral study. Results from the group foot care education varied, ranging from no effect to significant improvements in foot care, self-management, and complications. Group cognitive behavioral studies showed improvements in outcomes that reduce the likelihood of limb amputation such as self-care behaviors and physical activity. Given the heterogeneity of study design and outcome measures, further randomized controlled trials focusing on peer support interventions and limb preservation outcomes are needed to establish their efficacy compared with standard foot education.

Supplementary Materials: The following supporting information can be downloaded at https://www.mdpi.com/article/10.3390/japma116030039/s1, PRISMA-ScR Checklist [25].

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