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A scoping review of photovoice for people living with diabetes

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Abstract

Objectives The purpose of this review was to examine the characteristics of published photovoice method studies for people with diabetes, including the purposes, the methodological variations, and the main strengths and challenges during photovoice research.

Methods A scoping review was conducted with citations retrieved from the databases MEDLINE, CINAHL, Cochrane Library, PubMed, and Web of Science. Studies published before 18 March 2023, when the search was conducted, were included.

Results Thirteen studies met the inclusion criteria. Synthesizing all the included sources of evidence, study purposes fell into three domains: using photovoice in the context of a multi-component intervention($N=2$), examining the feasibility and effectiveness of modified photovoice method($N=2$), exploring the experiences and needs of diabetes or the issues related to diabetes self-management($N=9$). The photovoice method contributes to recording and reflecting on communities' strengths and concerns, facilitating critical dialogue. Only three studies discussed explicitly and documented its impact on reaching policymakers and social change.

Conclusion The photovoice method is a useful research approach for yielding vast visual information to identify divergences on which to focus and then generate policy recommendations and promote health behavior practices. However, substantial challenges remain in the implementation of photovoice research, which limits its practical benefits. Consistent reporting of the research steps and study findings, such as using a reporting flow diagram, is needed to help maintain order in the photovoice method.

Keywords Diabetes, Community-based participatory research, Photovoice, Scoping review

Research background

In recent years, enthusiasm for patient-engagement research on people with diabetes has grown. Recent realist reviews have found that diabetes is drawn into community involvement programs so high rates of participation can be achieved and maintained, and projects can foster the development of cohesive partnerships between researchers, patients with diabetes, and wider communities, where the lived experiences of participants contribute to increased accessibility and effectiveness of interventions, which can potentially support the achievement of health outcomes [1]. However, research on the social determinants of health indicated that the living conditions of people with diabetes, including cultural background, economic circumstances, and built environment, can interfere with the potential effectiveness of interventions [2]. In response to these issues, The International Diabetes Federation (IDF) Guidelines

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recommend that community members, lay health workers, and other stakeholders actively engage people in communities to assist people with diabetes to respond flexibly to dimensions of culture, ethnicity, psychosocial situations, and disability [3]. By focusing on the real needs of people who have diabetes, developing productive collaborative relationships with surrounding stakeholders, and proving services that are suitable for all, then the coverage and delivery of services such as community resources and diabetes care may become more equitable and the practical benefits of interventions will be guaranteed.

Photovoice, a community-based participatory research method, is appropriate and promising in diabetes participation research, the strategy generates a series of valuable insights to understand the life experiences of specific participants and can be used to inform the development of interventions that are responsive to the needs of the patient population [4]. Photovoice asks participants to take photos and retell life experiences, followed by group discussions that generate new knowledge, facilitate critical dialogue on important issues (including personal, social, and policy), and promote the dissemination of research findings to advocate for change [5]. Compared to other research methods, Photovoice uses photographs to inspire meaning-making, insight, and shared dialogue among participants, creating visual discoveries that are more impactful than written materials, which particularly supports patients with limited literacy skills. The collaborative, capacity-building intent of Photovoice has been proven. Hence, it may be a more effective tool for communicating participants' perspectives and engaging decision-makers to a wider audience [6].

Photovoice research on diabetes has been increasing recently. Photovoice empowers diabetes to feel valued and more skillful [7] and appears to contribute to enhanced knowledge of community assets and their actual needs [8], enhancing their ability to enrich understanding and self-efficacy [9]. Nevertheless, recent systematic reviews of the use of photovoice in public health show that [10] strong heterogeneity was indicated for health knowledge, and its post-treatment effect did not translate into positive health behaviors or physical and mental health outcomes, longer-term community functions, or healthservice outcomes. This may be due to the multiple challenges in implementing the photovoice method. With this in mind, this scoping review aims to explore photovoice-related research conducted with persons with diabetes to answer the following questions: (1) What research purposes are being addressed using photovoice methods in people with diabetes? (2) What photovoice component variations exist in the included studies? (3) What (if any) strengths and challenges arose during photovoice research?

Methods

Scoping reviews aim to systematically map the existing empirical data, identify, and synthesize key concepts in a particular research area. Our review was guided by the Arksey and O'Malley methodological framework for conducting a scoping review. The five steps to conduct a scoping review are as follows: (1) identifying the research question, (2) identifying relevant studies, (3) selecting studies, (4) charting the data, and (5) collating, summarizing, and reporting results [11, 12].

Eligibility criteria

A comprehensive search across five databases (MEDLINE (through Ovid), CINAHL, Cochrane Library, PubMed, and Web of Science) was conducted using the identified keywords and index terms for each database information source. An example of the search terms for the PubMed database is provided in Table 1. Because database platform search parameters varied, the format of the search terms was slightly modified to suit each database. No filters or limitations were applied to the search. The search period is until March 18, 2023. To complement the electronic databases, we also reviewed the references of the relevant articles and used Google Scholar to identify additional eligible records.

To be eligible for this review, a study had to meet the following inclusion criteria: (1) including a sample of diabetes; (2) describing the use of the Photovoice method; and (3) having been written in English. All study types were eligible for inclusion except for review articles, dissertations, and conference reports.

Study selection and data extraction

Before initial article screening, references were downloaded into EndNote for duplicate removal. The review process consisted of two phases of screening: (1) title and abstract review and (2) full-text review. In the first phase

Table 1 Search terms used on PubMed

Database	Search terms
PubMed	("diabetes mellitus"[Mesh] OR "diabet*"[Title/Abstract] OR "DM" [Title/Abstract]) AND (photovoice OR 'photo voice' OR photo-voice OR ((photo* OR camera) AND (community OR 'action research' OR ethnog*)))

of screening, two independent reviewers assessed the titles and abstracts of all results against inclusion criteria. In the second phase, full-text articles were scanned in detail again by two independent reviewers, and studies that did not meet inclusion criteria were excluded. During either phase of the review process, we would invite the third reviewer to resolve any disputes where a unanimous decision could not be reached.

Key elements of each article were extracted from the text and organized in spreadsheets, including first author, year of publication, location of study, sample size, study purpose, participants and recruitment strategies, data collection methods, ethics and analysis procedures, and summary of key findings of these individual studies. The data extraction was conducted by one reviewer and then discussed among the research team to reach a consensus. This evidence is presented as narrative accounts due to the photovoice foundation as an anthropological/ethnographic approach.

Results

Selection of sources of evidence

Figure 1 shows the process for selecting articles based on updated PRISMA guidelines. The search identified 2423 records from the selected databases. After the removal of duplicates, 1536 titles and abstracts were screened. Of these, 31 full-text articles were evaluated for inclusion. In total, 13 studies were reported after a full-text review.

Characteristics of sources of evidence

All identified studies were published from 2015 to 2022. Studies came from six countries: United States($N=7$), British($N=2$), Canada($N=2$), Italy($N=1$), Hong Kong, China($N=1$). Four studies of the included sources of evidence recruited participants from rural counties or deprived areas [13–16]. Three of the remaining nine studies predominantly included participants from low-income populations [9, 17, 18]. One study included participants in the context of homelessness [19]. All studies included diabetes. Only three studies used participants other than diabetes. Parents were included in two studies [17, 20], and the other included hypertensive patients [21]. Four studies focused solely on teens [17, 20, 22, 23].

Research purposes

Synthesizing all the included sources of evidence, two studies [9, 21] used photovoice methods for intervention, which investigated the use of photovoice in the context of a multi-component intervention for individuals with diabetes. Specifically, Leung et al. [21] incorporated photovoice as one of the components throughout a 6-week intervention, consisting of group

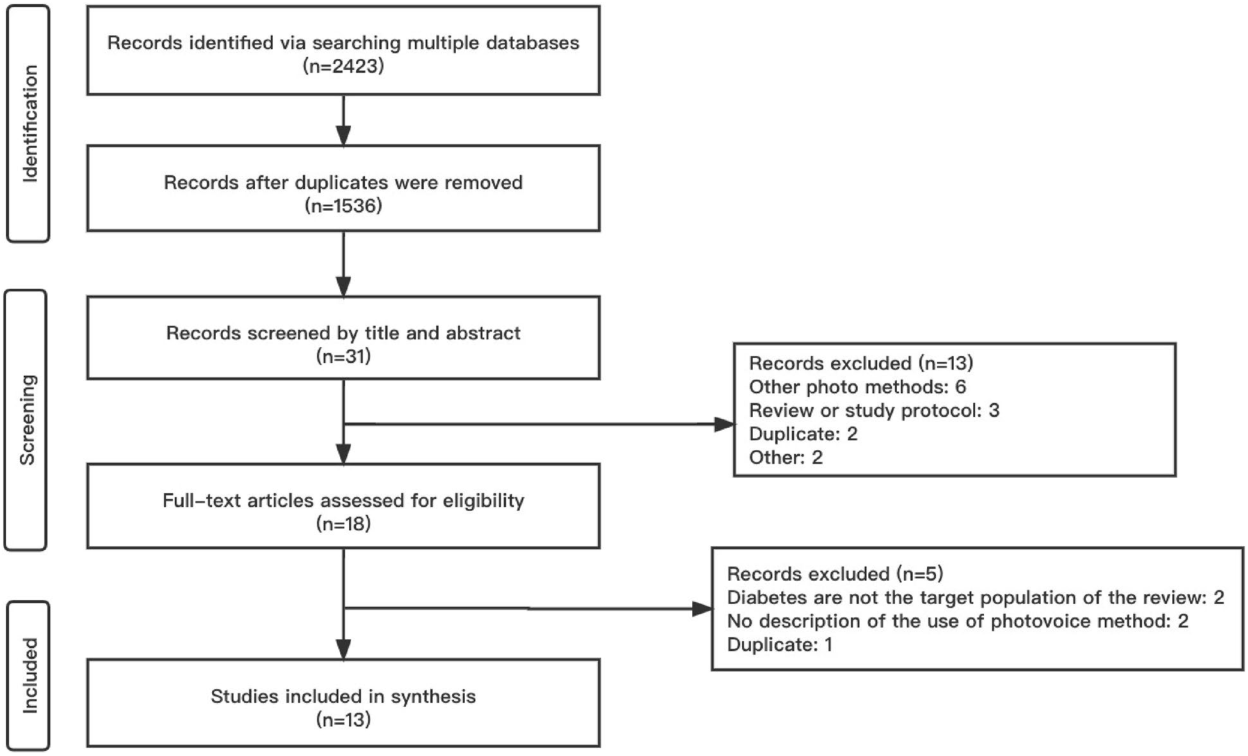

Fig. 1 PRISMA flow chart of included articles

meetings, taking and discussing photographs, identifying facilitators and barriers, self-reflection, and developing action plans to promote increased physical activity level as a management strategy to improve diabetes and hypertension. Post-intervention improvements were seen in the number of steps taken, lower body strength, and limb flexibility. In a randomized pilot study by Baig et al. [9], Latinos living with diabetes were randomized to 8-week diabetes self-management education intervention or enhanced usual care. The intervention produced positive effects on targeted outcomes, including enhancing confidence in diabetes self-management, stimulating conversation around successes and facilitators of diabetes self-care, and promoting social support and social cohesion within the group. Furthermore, Post-intervention found improvements in patients' diet and exercise habits but no difference in glycemic control compared to control patients.

Two exploratory pilot research [22, 23] both focused on the method itself, examining the feasibility and effectiveness of the online photovoice method. Given adolescents' engagement in social media, Malik et al. and Yi-Frazier et al. both assessed the feasibility and acceptability of using Instagram to implement the photovoice method and conducted qualitative analyses of the themes present in photos taken by participants. Malik et al. [22] found that 82% of participants reported that they "related to the photos posted," and 73% of participants reported "learning something new from the photos posted." In addition, 55% of participants who completed the acceptability questionnaire reported they "very much enjoyed" participating." Yi-Frazier et al. [23] also found that 43% agreed to participate, and 60% were actively engaged. However, although both studies were carried out in the adolescent population, the implementation of the online photovoice projects still faced great challenges.

The subject of qualitative inquiries varied, with more than half of studies focusing either on the experiences and needs of people with diabetes (i.e., the experience of adolescents living with technology and physical activity [20], the experience of people with lived experience of homelessness (PWLEH) and diabetes [19], African Americans (AAs) and Latinos' daily experience of managing illness [15], the need and experiences of patients with concurrent vision loss [24], the experience of personal and community resilience [16]) or the issues related to diabetes self-management (i.e., self-management education [13], the influencing factors of self-management in physical and social contexts [25], identify factors that influence care collaboration [17], identify the community assets that aid in illness control [18]).

Photovoice components variations

Table 2 shows the methodological variations of the 13 studies. The number of sample sizes in qualitative studies ranged from 4 to 40. Only one study [19] specifically reported the participants were involved from the outset, including identifying the priority, participating in the study design, taking and analyzing the photos, and disseminating the findings. All identified studies reported recruitment strategy. Our review also noted that four of the articles chose to recruit participants by collaborating with various agencies, clinics, churches, or other projects [9, 15, 17, 18]. It appears to be convenient and beneficial to the identification of target populations and the sharing and dissemination of research results.

The vast most studies [13, 15, 16, 18–25] (11) provided an introductory session at the start of study about study information, the photovoice method, camera operations, photo theme instructions, ethical safety issues when taking photos, although details varied slightly in each case. For example, to better understand the physical and social living environment influence on adherence to diabetes, participants were asked to shoot at least three positive and three negative elements about their health and diabetes self-care activities [25]. In particular, two of the studies [13, 20] conducted photovoice instructions via phone or social media. Our review found that nine of the identified articles [15, 16, 18, 19, 21–25] asked participants to explain their photographs in group discussion focus group discussion or a combination of the two. This is conducive to generating dialogue. Two studies [13, 20] of the remaining articles advocated individual interviews, and only one study did not develop discussion but only collected photos and photo narratives [17]. Importantly, four of the studies [19, 20, 22, 24] used a traditional photovoice structured interview guide known as the "SHOWeD" technique to guide member reflections.

All included studies reported approval from an institutional review board, and oral or written informed consent was obtained from the participants. A few of these [17, 20, 22, 23] also reported achieving informed consent from caregivers of the teen group. In addition, In three of these studies [13, 14, 22], a pseudonym was given to link excerpts to individuals to be used for privacy purposes.

Due to differences in study design and aim, a variety of approaches were used to analyze participants' narratives and photographs. For instance, some researchers used a hermeneutic phenomenological approach [13] and grounded theory [9] to dig into information. Content analysis [17, 23–25] and thematic analysis [15, 16, 18–20] are used in most of the identified studies. In particular, some studies also used the socioecological model as a

Table 2 Photovoice Components variations

Author (Year)	Location	Sample size	Recruitment Strategy	Photovoice Training& Instructions	Photovoice data collection	Ethical aspects	Program	Aim	Main findings
Robertson et al. 2023) [13]	Small rural town in Ontario, Eastern Canada	*N* = 14	Yes	Yes	Individual phone interview	Yes	Hermeneutic phenomenological analysis	Qualitative	Canadians' diabetic patients identified themes related to diabetes self-management education: (1) I don't want to be told what to do — Learning about diabetes education; (2) I've had to learn a lot of this stuff on my own —Depth and breadth of learning; (3) It didn't really get under control till I accepted it —Applying knowledge to daily life; (4) Paving for the future — Engaging older adults in DSME.
Scavarda et al (2023) [25]	Deprived area in Vallette, Northwest Italy	*N* = 10	Yes	Yes	Group discussion	Yes	Content analysisCoding: deductive reasoning	Qualitative	Type 2 diabetic older adults identified themes related to the role of the social and physical context in diabetes self-management: (1) the impact of gender (2) individual beliefs about illness and the influence of socialphysical elements of the environment on the management of diabetes self-care activities
Morrow et al (2022) [20]	British	*N* = 16	Yes	Yes	One-to-one video discussions SHOWeD technique	Yes	Reflexive thematic analysis	Qualitative	Adolescents with Type 1 diabetes identified themes related to experiences of technology and physical activity: (1) benefits of technology; (2) complexity and difficulty; (3) emotional impact; (4) reliance and risk.

Table 2 (continued)

Author (Year)	Location	Sample size	Recruitment Strategy	Photovoice Training& Instructions	Photovoice data collection	Ethical aspects	Program	Aim	Main findings
Campbell et al. (2021) [19]	Toronto, Ontario, Canada	$N=8$	Yes	Yes	Focus group discussion SHOWeD technique	Yes	Inductive thematic analysis Theoretical framework: socioeconomic position	Qualitative	(1) the effects of homelessness on emotional and mental health, (2) the effects of homelessness on diabetes self-management (3) barriers to healthy eating in shelters; benefits and challenges to diabetes management after getting housed (4) access to diabetes care professionals and prescription medications.
Malik et al. (2021 [22]	Seattle, USA	$N=16$	Yes	Yes	Group discussion SHOWeD technique	Yes	Thematic analysis	Exploratory	Assessing the feasibility and acceptability found that 82% of participants reported that they "related to the photos posted," and 73% of participants reported "learning something new from the photos posted," and 55% of participants that completed acceptability questionnaire reported they "very much enjoyed" participating."
Leung et al. (2019) [21]	Hong Kong, China	$N=31$	Yes	Yes	Group discussion	Yes	Not analyzed	Intervention	Post-intervention improvements were seen with the number of steps taken, lower body strength and limb flexibility.
Baig et al. (2019) [9]	USA	$N=50$	Yes	No	Group discussion	Yes	Grounded theory	Intervention	The intervention produced positive effects on targeted outcomes, including enhancing confidence in diabetes self-management, stimulating conversation around successes and facilitators of diabetes self-care, and promoting social support and social cohesion within the group.

Table 2 (continued)

Author (Year)	Location	Sample size	Recruitment Strategy	Photovoice Training& Instructions	Photovoice data collection	Ethical aspects	Program	Aim	Main findings
Peña-Purcell et al. (2018) [15]	2 counties in Texas, USA	*N* = 19	Yes	Yes	Photo montage group activity Focus group discussion	Yes	Thematic analysis Theoretical framework: the socioecological model	Qualitative	African Americans and Hispanic/Latinos living with diabetes identified themes related to daily experiences of management: (1) daily life living with diabetes; (2) negative and positive emotions; (3) self-care supports and barriers; (4) needs.
Florian et al. (2016) [8]	Boston, USA	*N* = 11	Yes	Yes	Group discussion	Yes	Thematic analysis Theoretical framework: the socioecological model	Qualitative	Diabetes identified community themes related to community resources: (1) healthy food, restaurants, and prepared foods; (2) food assistance programs; (3) exercise facilities; church
Walker et al. (2016) [17]	Florida, USA	*N* = 40	Yes	No	Not discussed	Yes	Content analysis	Qualitative	Comparing adolescent and parental perspectives on Type 1 Diabetes: (1) diabetes supplies (2) food (3) coping mechanisms/ resilience (4) disease encroachment
Ives et al. (2015) [24]	East Harlem, British	*N* = 4	Yes	Yes	Group discussion SHOWeD technique	Yes	Content analysis	Qualitative	People living with diabetes, other comorbid chronic illnesses, and vision loss in East Harlem identified themes related to the needs and experiences: (1) effect of decreased vision function on personal independence/mobility and self-management of chronic conditions; (2) the importance of informing community members and health care providers about these issues.

Table 2 (continued)

Author (Year)	Location	Sample size	Recruitment Strategy	Photovoice Training& Instructions	Photovoice data collection	Ethical aspects	Program	Aim	Main findings
Yankeelov et al. (2015) [16]	3 rural counties in Southern of USA	$N = 23$	Yes	Yes	Focus group discussion	Yes	Thematic analysis	Qualitative	Older adults affected by diabetes living in three rural counties identified themes related to the experience of personal and community resilience: (1) daily life as a person with diabetes; (2) formal and informal supports; (3) barriers to taking care of their diabetes; (4) accessibility to fruits and vegetables; (5) changes to food preparation and consumption; (6) exercise supports and barriers.
Yi-Frazier et al. (2015) [23]	Northwest USA	$N = 20$	Yes	Yes	Individual interview Focus group discussion	Yes	Content analysis	Exploratory	Feasibility assessment found 43% agreed to participate, and 60% were actively engaged. Combining Photovoice methodology with social media in adolescents with type 1 diabetes identified themes: (1) diabetes care (2) humor (3) food

theoretical framework to help code and categorize the findings [15, 18].

Only three studies [16, 19, 24] discussed explicitly and documented its very impact in terms of social change, trying to make an effort to create a "window of opportunity to communicate to the wider community and policymakers. Vision voice multimedia exhibition and poster campaign were presented at local hospitals [24], various scientific conferences [19], community events [24], and public exhibition spaces [19, 24] to trigger a thoughtful, critical dialogue with members of community leaders and policymakers. The sole vision voice film about diabetes with concurrent vision loss was accepted to an international diabetes conference and created a pilot at a hospital-based primary care clinic while the medical team confers on the treatment plan [24]. Furthermore, participants were given the power to decide to whom they would present and then followed through on the presentations with city, county, and state government officials without the presence of the academic partners [16]. The remaining articles none described a specific policy or practice change achieved as a result of the study.

Discussion

Addressing health disparities and community empowerment requires sound research methodologies to document critical issues and help promote real policy change at the local level [26]. Photovoice is an appropriate tool that emphasizes how it can support the empowerment of research participants in the identification, analysis, and transformation of local problems, committing to advocating for social change [4]. The current review found Photovoice studies yielded vast visual information, facilitating better information sharing, acquiring unique experiences and perspectives, identifying divergences on which to focus, generating policy recommendations, and promoting health behavior practices. Thus, we conclude that using the photovoice method is a promising and meaningful way to empower socially disadvantaged populations with diabetes to be heard. Future reviews should be considered to explore the implications of photovoice method research in other chronic diseases.

Photovoice is also described as 'culturally appropriate', which targets participants identified as vulnerable or subaltern [27], whose voices are considered not to be sufficiently heard by policymakers. This review found that more than three-quarters of the included sources of evidence target participants in the context of low-income groups [9, 17, 18] among people with diabetes living in small rural county [13, 15, 16], deprived area [25], or homelessness [19]. In addition, specific ethnic groups are also targeted [15, 24]. It is similar to what most previous reviews have found [28, 29]. The yield of images and text and the richness and representativeness of the data depend on the number of participants in the projects. Future research with a larger sample size is needed to ensure sufficient diversity to address potential differences among people with diabetes by racial, ethnic, or socioeconomic groups.

Based on the findings of this review, this participatory visual method was proved effective in allowing a rare look at more private dimensions of experiences among people with diabetes, such as affective and identity associated with diabetes [25], through recording and reflecting participants' views and emotions. In addition, taking and commenting on pictures facilitated a multidimensional understanding of the research theme, linking participants' feelings and emotions with technology [20], physical and social environment [25], and community assets [18]. All in all, conducting the photovoice method is justified when the goal is to elicit rich narratives or generate knowledge about the experiences of a specific population. While it can be used to inform future interventions and knowledge translation, photovoice has been conceived of as a community intervention as well. This review found that although feedback on photovoice projects has been generally positive, the primary barrier is its widespread acceptability. It mainly exists in the early recruitment difficulties and the low retention rate. The commitment and efforts requested have been reported as the main obstacle to recruiting and keeping participants in the research. We encourage future research to spend more time on the explanation, including the study consent process and camera operation instructions, compensation processes should also be considered as a strategy to attract participants. With the widespread use of Photovoice methods, our review found that researchers are using Instagram rather than traditional photography as an improved application [22, 23]. However, researchers reported despite Instagram being an easy-to-access mobile application, it is difficult to keep true to the Photovoice methodology because the in-person component is a critical one. Moreover, Instagram did not work well as a data collection tool because it was deemed to be cumbersome to switch between their accounts and the group account. This is consistent with the findings of Pickering et al. [30]. We suggest that future research could identify patients who are truly interested in using Instagram in advance and consider using shared folders or shared procedures as data collection tools to ensure the smooth development of the project.

As demonstrated in previous reviews of the use of photovoice in public health [31], consensus has not yet been reached on one correct way to conduct Photovoice research. This review confirmed this finding. Given the variance in goals, studies also differed in the process involved in photovoice and how participation has been achieved. Our review with particular attention to how they instructed photovoice training, taking pictures, data collection, and ethical guidance. The majority of studies reported the instruction on the study information, digital device operation, and photo theme. This review found that, in most studies, the researchers' meeting with participants was limited to project presentations and the collection of photographs and photo-elicited interviews or discussions. In addition, some investigators chose to inform online [20] or mail the project description [13]. Thus, how well the participants grasped and cooperated with the study aim and photovoice method was not known. It leaves a potential barrier to the follow-up of the study. A study was considered to generate dialogue if participants discussed their photographs with one another [4]. However, two of the included studies advocated one-to-one interviews, and one study did not develop a discussion. It may be considered inadequate in terms of the quality and richness of the research theme and methodological implementation of the photovoice method on the extent of participation. Given the participatory nature of photovoice and its use within communities, Wang and Burris [4] emphasize that participants, as co-researchers in conducting a study, should be included in the research process from start to finish. However, this review found only one study adhered strictly to the principles of participation. In that study by Campbell et al. [19], the coresearchers of homeless diabetes were actively involved in all the stages of the research process: identifying the issues to be addressed, designing the study, collecting and analyzing the data, and disseminating the results through exhibitions. In addition, both academic and community-based researchers were asked to provide a manuscript devoted to reflexivity involving the experience and the value of their participation. This way provided new insights from a first-hand perspective, which helped guide primary care teams to work with patients with diabetes. In this way, the efforts of researchers, community workers, and relevant organizations such as the Clients with Diabetes Action Committee live on. It is recommended that future Photovoice studies incorporate this discussion and explore best practices related to reflexivity. Future research should attach importance to empowering participants' ownership of a project, improving the degree of participation, and laying the foundation for the smooth development of the research.

Despite included studies reporting the approval of the ethical procedures, most articles we reviewed did not provide sufficient detail to assess the ethical issues and solutions that arose during the implementation of the project. For instance, we were unable to know how to ensure participant safety and disclosure decisions and whether the privacy rights of strangers appearing in photos were protected. Future research should establish and outline comprehensive ethical best practices for photovoice work with populations of diabetes.

Photovoice allows for collaborative practice, empowerment, and identification of views, which is important to communicate to providers of healthcare and policymakers. Nevertheless, the process of reaching policymakers and the related outcomes, as well as the impact of social change, are not documented in most of the articles we reviewed. Analyzing the reasons for this, it may be that most of the current research only uses photovoice to serve the research purposes, such as intervention research or understanding the needs and experiences of the patient population, without follow-up actions, failing to realize the true connotation and benefit of the method. In addition, the research process of the photovoice method in the current study is not standardized, and the sample size is small, which leads to the low reliability of the research results, which may also be the reason why the researchers have not taken discussion, advocacy, and action. Moreover, perhaps the lack could be explained by the difference between the time needed for conducting a project and the time required for substantive policy or community change [31]. Future research should provide a clear justification for its omission, and we encourage continuing to include action and advocacy to achieve the expected outcomes and benefits.

Limitations

Some limitations of this review should be outlined. First, as this review includes a variety of study designs, we did not consider quality assessment tools but based on Photovoice components to discuss and evaluate participation in research. That may not be enough. Moreover, it contains only published journals in English. Grey literature and foreign language studies, which may have revealed other applications, were not included. Finally, extraction of data from individual studies proved challenging given heterogeneous reporting, which limited our reporting to a mostly descriptive format.

Conclusion

We examined the photovoice method diabetes literature and identified applications and design characteristics. The photovoice research approach, as a community-based participatory research method, proved to be useful in terms of generating knowledge because it allows us to identify and explore people with diabetes' views, needs, emotions, practices, and aspirations. However, this approach is not commonly used in research on diabetes-related interventions, and the extent to which photovoice methods uniquely contributed to improved outcomes in interventions remains unknown. Future research suggests increasing the use of photovoice with diabetes and involving community members through all phases of the process to ensure the intervention is maximally useful for patients. It is undeniable that the current review does not have enough evidence to support the photovoice approach as an effective way to make the voices heard by communities and policymakers. Thus, future research is badly needed to assess photovoice promises in terms of reaching policymakers and fostering social change. Finally, substantial challenges remain in the implementation of photovoice research, which limits its practical benefits. Therefore, consistent reporting of the research steps and study findings, such as using a reporting flow diagram, is needed to help maintain order in the photovoice method.

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Authors' contributions
Z.L. identified the topic area and research questions; Z.L. and J.G. contributed to the conceptualization of rationale and research question refinement; L.C. and J.G. conducted article search and data extraction. The first draft of the manuscript was written by L.C., and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

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Data availability
All data generated or analyzed during this study are included in this published article.

Declarations

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Not applicable.

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The authors declare no competing interests.

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