A systematic review of nursing staff roles in diabetes camps

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This study aimed to clarify the roles of nursing staff in diabetes camps. A systematic search of ten health science databases identified ten articles for analysis. The records show that nursing staff perform healthcare, educational and administrative functions in camps for young people with diabetes. Most studies were conducted before the year 2000. The description of the activities performed by nursing staff can help in the development of guidelines and quality indicators in this field.

Type 1 diabetes is one of the most common chronic conditions in childhood and one that requires psychosocial and behavioural adaptations both for young people with the condition and for their families. Providing education and emotional support is one way that healthcare teams can benefit children and their families (Young-Hyman et al, 2016). One strategy that promotes education and support for the paediatric population is diabetes activity camps.

At diabetes camps, young people have the opportunity to meet and exchange experiences with other children and adolescents with their condition. Moreover, diabetes camps help young people to acquire independence in self-care, achieve better glycaemic control and improve their acceptance of the condition (Barone et al, 2016; Venancio et al, 2017, Weisserg et al, 2019).

Camps for young people with diabetes are common in countries such as the US and Canada. The camp format varies according to the specific goals. For example, day camps for children with diabetes and their parents might aim to provide family fun, while full-week camps, in which young people participate without parents' supervision, might target improving independence in performing diabetes self-management. Training for healthcare professionals who are willing to work in diabetes camps is commonly offered by organisations such as the American Diabetes Association (2012). Nursing staff are part of the healthcare team responsible for diabetes management and education in camps. To the authors' knowledge, most camp staff are nursing undergraduate students who volunteer or take this role as a summer job. However, the specific role of nursing professionals in this context remains unclear. Therefore, this study aimed to explore the role of nurses in diabetes camps, in order to inform guidelines on diabetes nursing.

Research procedure

A systematic review was conducted based on the following research question (Moher et al, 2009; Hastings and Fisher, 2014): "What is the role of nursing staff in diabetes camps?" Specific search strategies were used for each of ten major health science databases, as shown in *Table 1*.

The search was conducted in April 2019 and included primary studies describing the activities carried out by nursing staff in diabetes camps. Studies on camps for children with chronic diseases other than diabetes were excluded. No limit for language or timeframe was applied. **Citation:** La Banca RO, Cavicchioli MGS, Pereira J, Domingues G, Cerqueira NS, Monteiro OO (2020) A systematic review of nursing staff roles in diabetes camps. *Journal of Diabetes Nursing* **24**: JDN125

Article points

- The role of nursing staff at diabetes activity camps covers healthcare, psychosocial support and camp management.
- Studies on the role of nurses in diabetes camps provide recognition of these professionals' work and improve practice.
- Future studies are necessary to understand the required training standards for nursing staff in order to assess nursing performance and quality indicators.

Key words

- Children and young people
- Diabetes camps
- Peer support

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Author details can be found at the end of the article.

Table 1. Search strategies fo	the present	systematic	review
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Database	Search terms
PubMed	((diabetes mellitus) AND camping) AND nursing
CINAHL	diabetes mellitus AND camping AND nursing
Embase	'diabetes mellitus'/exp OR 'diabetes mellitus' AND ('nursing'/exp OR nursing) AND ('camping'/exp OR camping)
Web of Science, LILACS and SciELO	Topic: (diabetes mellitus) AND Topic: (camping) AND Topic: (nurs*)
PsycINFO	(Diabetes Mellitus) AND Any Field: (Camp) OR Any Field: (Camping) AND Any Field: (Nurs*)
Cochrane Library	(diabetes mellitus) in Title, Abstract, Keywords and (camp*) in Title, Abstract, Keywords and (nurs*) in Title, Abstract, Keywords
ERIC	diabetes AND (camping OR camp) AND (nurse OR nursing)
Scopus	(TITLE-ABS-KEY ("diabetes") AND TITLE-ABS-KEY ("nurse" OR "nursing") AND TITLE-ABS-KEY ("camping")



The East of England Diabetes Adventure Camp, 2016.

Two independent reviewers assessed the titles and abstracts of all identified studies and eliminated duplicates. The eligible studies had their full texts consulted. In order to reach consensus, the opinion of a third reviewer was sought in case of disagreement.

For data extraction and synthesis, the reviewers prepared a table in Microsoft Excel, consisting of the following items: authors; country and year of publication; study objective and design; characteristics of the nursing team; and nursing team role.

Identified studies

The search of the databases revealed 107 potential studies, and two other studies were included by unsystematic search of the reference lists. After reading the titles and abstracts, 18 full-text articles were analysed, and these gave a final sample of 10 studies for analysis. *Figure 1* depicts the screening and selection for this review according to Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) standards (Moher et al, 2009).

The studies included in the synthesis were published between 1954 and 2011; nine were in English and one was in Portuguese. Nine studies were experience reports and one was a qualitative descriptive study.

Results of analysis

Top-level details of the ten studies are presented in *Table 2*. The studies highlighted several roles for nursing staff in diabetes camps. The first of these was checking and assessing blood glucose data, as well as recognising and treating hyper- and hypoglycaemic episodes. Performing night rounds provides better supervision of glycaemic variation, which often has no signs and symptoms (Kaye, 1954; Geis, 1967; Alcântara and Gonçalves, 1985). The rounds are necessary for understanding glycaemic variations and preventing acute complications.

Nursing professionals were observed in all studies as key to the education process for self-management of diabetes. The supervision of and education on insulin therapy enhances individuals' quality of life as well as reducing the occurrence of inadequate insulin absorption and lipohypertrophy (Spray, 2009).

The role of nurses in promoting self-care and autonomy was observed in seven studies. By being encouraged in this, young people with type 1 diabetes change their attitudes and become active agents of their own diabetes management (Kaye, 1954; McFarlane and Hames, 1973; Hearnshaw, 1975; Rose, 1977; Alcântara and Gonçalves, 1985; Moran, 1985; Vogt et al, 2011). Greater adherence to the diabetes therapeutic regimen can provide young people with healthy lifestyle habits and optimise metabolic control (American Diabetes Association, 2019).

Although dietitians play a part in many camp educational teams, this review also highlighted nurses' roles in assisting carbohydrate counting (Vogt et al, 2011). It is especially relevant that nurses pursue additional education in the nutritional management of diabetes (Ojeda, 2016). Improving healthy-eating habits prevents hypo- and hyperglycaemic episodes, facilitates insulin dose adjustment and enhances safety during physical activity. Furthermore, by teaching carbohydrate counting management, nurses can help young people with diabetes to have a more diversified diet, dispelling the belief that people with diabetes cannot consume some foods, which can also improve their social life.

With regard to family involvement in diabetes care, the development of reports and post-camp meetings with family members reinforces the importance of sharing the learning benefits achieved at camp with all family members (McFarlane and Hames, 1973; Venancio et al, 2017). Nurses' role in family-centred communication was also described in one study, highlighting that some of the difficulties experienced by campers may be part of family issues with diabetes management as well. Nursing reports can contribute to family members



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Mary Bance describes how activity camps provide children and young people with an opportunity to develop independence, self-management skills and friendships with others with type 1 diabetes.

Diabetes Care for Children & Young People **9**: [early view publication]

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Peter Swift describes the impact that his local Diabetes UK voluntary support group, and particularly its development of an annual activity holiday, has had on young people with diabetes.

Diabetes Care for Children & Young People **3**: 101–5

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Figure 1. PRISMA flowchart.

Table 2. Summary d	pf studies included in analysis (<i>n</i> =10).		
Study reference and country	Study aim	Study type	Nursing staff	Nursing activities
Britain (1954), USA	To report the experience of a nurse in an educational camp for children with diabetes	Case report	Graduate and undergraduate nursing students	Nurses should always be alert and help to record and interpret blood glucose levels. Nurses teach children to recognise the signs of insulin shock and accompany children in activities at the camp. Nurses should be prepared to meet children's needs, such as correcting hypoglycaemia and answering questions
Kaye (1954), USA	To report the diabetes camp management and the educational strategies delivered to children	Case report	Registered nurses	Nurses should carry information from each camper, such as insulin doses and diet prescription; supervise and assist in insulin administration and urine testing; identify and correct hypoglycaemia; perform ketonuria tests when necessary; advise on the importance of rotating injection sites; be present in all campers' activities; and conduct night rounds
Geis (1967), USA	To present the diabetes camp routine and describe nursing staff activities	Case report	Registered nurses and undergraduate nursing students	Nurses should be equipped with emergency supplies, record current insulin doses, carry all medications required by the children and be responsible for administering them. Nurses also talk to staff about campers' needs, inspect cleanliness of housing, administer insulin injections, perform night rounds and perform teaching sessions. Moreover, nurses report campers' insulin doses and tests done during camp/diet/exams to their family
McFarlane and Hames (1973), USA	To assess children's needs, set goals for their two-week camp experience and assess nursing care based on subsequent changes in their home care	Case report	Diabetes nurses and undergraduate nursing students	Nurses analyse each child's data, teach them about diabetes, manage hypo- and hyperglycaemia, and administer insulin injections. It is also the role of the nursing staff to discuss and review each child's case with the medical staff; set goals and targets according to each child's need; apply nursing interventions; form groups with adolescents to discuss feelings; and encourage autonomy and competence. Nurses should also hold one-on-one meetings at the end of the camp to discuss the child's development with the medical staff and parents
Hearnshaw (1975), UK	To present how a diabetes camp helps and encourages children to self-manage diabetes	Case report	Not reported	Nurses should organise the injection and material room; supervise injections; help and teach children how to do their own injections; and teach about injection sites
Rose (1977), UK	Present a nurse's perception of working at a diabetes camp	Case report	Not reported	Nurses should teach and supervise insulin self-injection until the child is confident and doing it correctly. They should also encourage children's self-management of diabetes
Alcântara and Gonçalves (1985), Brazil	To present the contribution of nursing staff to a holiday camp for children with diabetes	Case report	Not reported	Nurses' work comprises organising the camp, participating in meetings with the healthcare team, and guiding the children and their parents. They also order the necessary materials and medications, prepare the work unit, develop part of the diabetes education programme, and guide and supervise glucose and ketonuria testing. Finally, they supervise the preparation and administration of insulin injections by children and conduct night rounds to detect signs of hypoglycaemia and other complications
Moran (1985), USA	Offer guidance to help nurses manage problems encountered during a camp for children with diabetes	Case report	Registered nurses	Nurses should identify each camper's behavioural characteristics and coping styles, and instruct them in the proper insulin administration technique and basic principles of diabetes management. They should help children to understand dosing principles and make decisions about insulin adjustments
Foster (1989), USA	To report the experience of a nurse in an educational camp for children with diabetes	Case report	Not reported	Nurses are responsible for performing night rounds, assisting with insulin applications and identifying hypoglycaemic episodes. They should be alert and vigilant at all times in the camp and carry a bag with supplies to resolve any acute diabetes problems
Vogt et al (2011), USA	To describe the experience of nurses in camp through the use of a reflective journal	Qualitative descriptive study	Undergraduate nursing students	Nursing staff monitor campers' health; provide them with health-related guidance; monitor and manage acute illness or injury; demonstrate skills in managing feelings (e.g. missing their parents); and have flexibility and critical thinking. Other nursing activities in camp are monitoring glucose levels, helping with medication administration and carbohydrate counting, and treating hypo- and hyperglycaemia

feeling safe and confident in the care of the children when they return home.

It is essential to acknowledge the difficulties encountered by each person with type 1 diabetes before planning and executing educational programmes aimed at strengthening self-care practices. The managerial role observed in this study suggests that nurses are ideal to lead education initiatives in diabetes camps. Nursing staff were recognised as being responsible for managing the camp's healthcare supplies and organising the emergency team (Alcântara and Gonçalves, 1985; Foster, 1989). Given that nursing professionals are trained to manage physical, human and information resources to achieve the best healthcare assistance (Molayaghobi et al, 2019), our findings reinforce the potential of nurses in coordinating the camp activities, providing better care to young people with diabetes.

Conclusions

The role of nursing staff at diabetes activity camps covers healthcare, psychosocial support and camp management. Studies on the role of nurses in diabetes camps provide recognition of these professionals' work and improve practice. Future studies are necessary to understand the required training standards for nursing staff in order to assess nursing performance and quality indicators. Moreover, future work in the field of diabetes nursing in camps should document the attributions of these professionals and broaden the current understanding of their roles, reinforcing the relevance of nursing professionals in diabetes camps and nursing education.

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