The effects of camp on health-related quality of life in children with chronic illnesses: a review of the literature

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CRD summary
The authors concluded that although some camps improved health-related quality of life in the short term, the results were inconsistent, studies had methodological problems and further research was required. Overall, this was a well-conducted and clearly reported review and the authors' cautious conclusion reflects the limitations of the included studies.

Authors' objectives
To evaluate the effect of camps on health-related quality of life (HRQL) in children and adolescents with chronic illnesses.

Searching
MEDLINE (1966 to May 2004), CINAHL (1982 to May 2004) and PsycINFO (1840 to July 2004) were searched for articles published in the English language; the search terms were reported. Reference lists from relevant identified papers and reviews were screened and a handsearch for other studies was conducted. There were no attempts to locate unpublished studies.

Study selection
Study designs of evaluations included in the review
Studies with any quantitative or mixed-methods design were eligible for inclusion in the review; qualitative studies were excluded. In the included studies, data were collected from 1 to 2 days before camp and from immediately after camp to 1 year after.

Specific interventions included in the review
It was clear that studies that evaluated camps were eligible for inclusion. Camp interventions varied widely in the included studies, with most lasting 10 to 14 days (range: 1 day to 4 weeks). Some were provided free; others did not report costs. Where reported, the qualifications of camp health-care staff varied from one nurse to several health professionals. Camp interventions and activities also varied: where reported, some included disease-specific education plus information or activities focused on physical and psychosocial functioning, whilst others focused only on physical functioning or symptom management.

Participants included in the review
Studies of children and adolescents with any chronic illness were eligible for inclusion. In the included studies, the participants were aged from 6 to 25 years and most were Caucasians from middle-class socioeconomic backgrounds. The majority of the camps included children with a single condition, most commonly asthma, diabetes or cystic fibrosis; other single conditions were epilepsy, arthritis, spina bifida and cancer; some camps had children with a mix of conditions. Some children were newly diagnosed while others had had the condition for more than 3 years.

Outcomes assessed in the review
Studies that assessed any dimension of HRQL (physical, psychological, social, role and cognitive functioning) were eligible for inclusion. The HRQL domains most commonly assessed in the included studies were:

- social (including social skills and social support);
- cognitive (including disease-specific knowledge, assertiveness and communication skills and diabetes management knowledge);
psychological (including self-concept, anxiety, attitudes towards illness, locus of control, depression, grief recovery, stress and coping); and

physical (including weight, skinfold thickness, exercise tolerance, pulmonary function, sputum culture, blood tests including blood glucose, calorie intake, range of motion and daily activity).

None of the included studies assessed all HRQL domains.

How were decisions on the relevance of primary studies made?
Two reviewers independently conducted searches and selected studies for inclusion.

Assessment of study quality
Two reviewers independently assessed validity using the following six criteria: camp interventions with respect to the number of aspects included (social, physical, psychological and cognitive); study design; description of the participants and recruitment; health status of comparison group; number of participants; and expected HRQL outcomes (number of dimensions measured using report of child or proxy). Each criterion was scored from 1 to 3, giving a maximum possible score of 18 points. Any disagreements between the reviewers were resolved with the aid of a third reviewer.

Data extraction
The authors did not state how the data were extracted for the review, or how many reviewers performed the extraction. For the outcomes of interest, levels of statistical significance were extracted from each study.

Methods of synthesis
How were the studies combined?
The studies were grouped by outcome and combined in a narrative.

How were differences between studies investigated?
The studies were discussed with respect to the six defined quality criteria. Other differences were apparent from the text.

Results of the review
Eighteen studies were included (the number of participants was not reported for all studies). Of these, six were pre-test post-test studies with repeated measures. The review authors stated that most studies did not explicitly state the study design. The sample size ranged from 13 to 256.

The quality scores ranged from 5 to 13 out of 18 (mean 8).

Seven studies did not explicitly report inclusion and exclusion criteria, and none of the studies described methods used to recruit the control groups. Only 3 studies involved more than 100 children. Five studies used standardised measures and provided evidence about the reliability and validity of the tools; 6 studies did not report on the validity of the tools used; 5 studies used measures developed for the study.

HRQL.

Physical dimensions (5 studies). One study reported a significant improvement in physical and social activity 2 weeks after camp in children with cancer, but this was not maintained 4 week after camp.

One study reported no change in the parent's report of the child's physical functioning immediately after camp or 4 months after camp, but counsellors perceived a significant improvement in the child's physical activity and level of independence at the end of camp compared with the parents. In addition, the strength of some muscle groups had improved significantly.
Three studies assessed pulmonary function and weight in children with cystic fibrosis.

One study reported a significant improvement in exercise capacity and peak work load, but no significant improvement in resting pulmonary function after camp; sputum culture indicated no cross-infection.

One study reported a significant improvement in nutrition and reduction in respiratory rate after camp, but no significant difference in spirometric measures of lung function at rest.

One study reported no change in pulmonary function after the first summer camp, but a significant increase in pulmonary function and weight after the second summer camp.

Social dimension (2 studies). One study reported a significant increase in the duration of physical activity 2 weeks after camp in children with cancer, but this was not maintained at 4 weeks. Mothers reported a significant increase in their child's participation in social activities and a reduction in self-engaged activities after and at 4 weeks after camp.

One study reported a significant increase in the children's knowledge about cancer and its treatment and the establishment of a relationship that continued after camp.

Psychological dimension (7 studies). Three studies assessed children's attitudes towards their illness. One of 2 studies that used the Children's Attitude Towards Illness Scale reported no change in attitude among children with epilepsy after camp; the other reported a significant improvement immediately after camp among children with asthma, diabetes and spina bifida. One study reported less anxiety, improved feeling of well-being and more confidence in participating in activities among children with asthma; parents reported improvement in activities and asthma management 3 months after camp; children's knowledge of asthma improved significantly immediately after camp but the improvement was not maintained at 10 months after camp.

Two studies measured self-concept. One reported no significant change in self-concept during camp among children with cystic fibrosis, while the other reported significant improvement in self-concept scores after camp in children with and without diabetes.

One study (that also assessed attitudes towards illness) reported a significant decrease in anxiety after camp in children with asthma, diabetes and spina bifida; returning campers reported significantly greater anxiety than first-time campers.

Two studies assessed children's locus of control. One reported a significant positive relationship between internal locus of control and total illness behaviour in children with asthma, while the other reported a significant improvement in internal locus of control in children with diabetes attending camp compared with a control group who did not attend camp.

Cognitive dimension (8 studies). One study reported that, after camp, adolescents with diabetes indicated they would use significantly more problem-focused strategies and fewer detachment strategies. A follow-up study 3 months after camp found that adolescents reported a significant decrease in open communication with their parents.

One study reported a significant improvement in diabetes knowledge after diabetic camp, but knowledge subsequently significantly decreased 6 months after camp.

One study reported a significant increase in diabetes knowledge and self-management skills after diabetic camp and a significant improvement in metabolic control 3 months after camp.

One study reported that children (with and without diabetes) had significantly improved diabetes-related knowledge immediately after camp.

Two studies evaluated an educational programme in children with asthma. One reported no change in children's knowledge 1 year after camp, while the other reported a significant increase in asthma immediately after camp although this decreased over time.
Authors' conclusions
Although some camps improved HRQL in the short term, the results were inconsistent and studies had methodological problems. Further research is required.

CRD commentary
The review addressed a clear question that was defined in terms of the participants, intervention and outcomes; inclusion criteria for the study design were broad, but this seemed appropriate given the topic. Limiting the search to reports published in English raises the possibility of language and publication bias, which the authors acknowledged. Methods were used to minimise reviewer errors and bias at the study selection and validity assessment stages, but it was unclear whether similar steps were taken in the data extraction. Study quality was assessed and extensively discussed.

Some information about the included studies was provided. However, sample size was not consistently reported, which made it difficult to assess the likely statistical power of the study to detect a difference. The narrative synthesis was appropriate given the differences between the studies. Overall, this was a well-conducted and clearly reported review and the authors' cautious conclusion reflects the limitations of the included studies.

Implications of the review for practice and research
Practice: The authors did not state any implications for practice.

Research: The authors stated that adequately powered prospective longitudinal studies of mixed method design, which include qualitative approaches and an appropriate control group, are required to assess children's perceptions of camps. Various qualitative and quantitative data collection methods should be used. The authors also suggested that all dimensions of quality of life should be measured using disease-specific HRQL and generic tools, and should include an assessment of autonomy, body image, family relationships and children's expectations and experiences.

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