The effect of cardiovascular health promotion on health behaviours in elementary school children: an integrative review
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Authors' objectives
To present, analyse and synthesise research published between 1986 and 1998 that has described and assessed the outcomes of cardiovascular health promotion practices and programmes for elementary school children.

Searching
Potential studies were identified primarily from online computer searches of CINAHL, MEDLINE and Medscape. Studies were limited to those published between 1986 and 1998. No information was given on the specific search terms used to identify potential studies. Studies that were not available in journals or were doctoral dissertations were excluded, as were any duplicate studies.

Study selection
Study designs of evaluations included in the review
All study designs were eligible for inclusion.

Specific interventions included in the review
Relevant interventions were cardiovascular health promotion programmes aimed at children. The interventions evaluated in the studies included in the review were divided into three categories as follows.

School-based behavioural interventions: these included a rap contest, nursing classroom presentations, and social influences resistance training.

School-based behavioural interventions with the addition of family and/or community involvement: these included classroom curricula, health screening for children and parents, and home- and school-based programmes.

Studies that examined various influences on health, independent of the education system: these included community education and correlational studies regarding health attitudes and behaviours.

Participants included in the review
Elementary school children were eligible for inclusion.

The participants ranged in grade level from one to eight, with fifth-graders being evaluated most often (14 of the 22 studies included in the review). Of the 22 studies included in the review, 13 provided information on ethnicity, with African-Americans and Caucasians studied almost equally. Asian-Americans and American Indians were stated as being under-represented in less than 10% of the samples. The socioeconomic class of the participants varied, but there was a predominance of middle-class participants. The distribution of girls and boys was equal. The study locations included the major regions of the USA, Canada and Australia. Details of the participants' age and gender, and study location were not provided for each study.

Outcomes assessed in the review
Studies reporting cardiovascular risk factor reduction behaviours were eligible for inclusion. The main outcomes reported in the review included health behaviours, health knowledge and physiologic measures (serum cholesterol, saliva analysis, serum thiocynate, lung capacity, and urine for sodium or potassium assessment).

How were decisions on the relevance of primary studies made?
The author did not state how the papers were selected for the review, or how many reviewers performed the selection.
Assessment of study quality
The author did not state that they assessed validity.

Data extraction
The author did not state how the data were extracted for the review, or how many reviewers performed the data extraction.

Data were extracted on: the research design; the problem or variable examined; the type of sample (convenience or randomly selected), sample size, and age or class-grade range; the data collection methods; and the findings. The narrative included information on the specific types of interventions employed in some of the studies.

Methods of synthesis
How were the studies combined?
A qualitative synthesis of the studies was undertaken.

How were differences between studies investigated?
Heterogeneity was not formally investigated but differences between the studies were discussed narratively.

Results of the review
A total of 22 studies (n=20,407) were included in the review. A quasi-experimental design was used in ten studies, four were described as epidemiologic, four as exploratory, three as descriptive and one as qualitative.

School-based behavioural interventions (n=3).

A rap-contest anti-smoking intervention was found to have no statistically significant effect on attitudes; a nursing intervention had ‘negative long term (one year) retention of smoking prevention messages’; social influences resistance training reduced the onset of drug abuse but goal-setting strategies, behaviour alteration, and self-image enhancement had no effect.

Behaviour change school-based programmes incorporating family or community involvement (n=7).

A number of benefits were observed in these programmes. The benefits included favourable physiological changes such as decreased blood-pressure, and increased high-density lipoprotein cholesterol and decreased total blood cholesterol, a reduction in caloric intake from fat. Other benefits included positive eating behaviours, positive exercise behaviours, and improved knowledge of skills to change behaviour. One study reported negative correlations in Mexican students whose fathers created barriers to change. Home-based programmes were more successful than a school-based programme in behaviour change, with parent participation influencing positive effects. However, parent newsletters had no effect on the students’ cardiovascular knowledge or behaviour. A community-wide intervention had a greater effect on girls than boys in increasing exercise.

Behavioural, environmental and individual influences, independent of the school (n=7).

The children responded positively with increased knowledge to mobile health education resources for drugs prevention, but attendance was not a predictor of intent to use tobacco or alcohol. Relationships were observed between a family’s ability to change and grow and their practice of primary preventive behaviours, and family cohesion found to influence health work. In addition, mothers were important role models for influencing exercise behaviour in their school-aged children. Independent factors affecting exercise behaviour were found to include attitude, self-esteem, perceived benefits and gender.

Authors’ conclusions
Personal, behavioural and/or environmental interventions can have positive effects by reducing risk factor behaviours in elementary school children. Only a small number of studies have attempted to evaluate these types of interventions, and
many had methodological limitations reducing their internal and external generalisability. Little is still known about the best ways to modify unhealthy behaviours in children, about preventing the onset of unhealthy behaviours, and the delivery of preventive health information to children. This is especially so for minority populations, which were under-represented in the studies included in the review, and in countries other than the USA, Canada and Australia.

CRD commentary
This review would have benefited from a clearer presentation of the results. The literature search was limited to three databases and unpublished data (e.g. dissertations) were excluded. Thus, the results may be subject to publication bias. Few details of the methods of the review were presented. Some inclusion criteria were given but more detail would have been helpful. Information on the number of reviewers involved in assessing studies for inclusion and extracting the data was also lacking. Study quality was not formally assessed and it is difficult to draw conclusions about the validity of the results from individual studies. Some information about the individual studies was given, but important detail about the content of the interventions was lacking. A narrative synthesis was appropriate given the heterogeneous nature of the studies. However, the results of three studies presented in the tables were not discussed. The author's conclusions do not follow from the results presented and need interpreting with caution.

There was no information on the source of funding for this work.

Implications of the review for practice and research
Practice: The author stated several implications for nursing practice. More specifically, assessing gaps in systems of care; analysing risk factors for illness in primary settings and schools; becoming involved in the screening and implementation of programmes; encouraging community involvement through role models; enlisting parent involvement in screening and health education programmes; developing culture-specific materials for educating children and parents; developing holistic approaches to health education or primary prevention; supporting school health programmes; applying the roles of educator, promoter and researcher; and advocating children's rights to be safe, informed, and healthy by being a good source of positive and consistent health messages.

Research: The author recommended the evaluation of child-focused processes of care and structure of care outcomes; patient-focused outcomes to examine individual or personal factors impacting on health care decisions; process of care outcomes to identify effective ways to deliver health messages to families and children; and structure of care outcomes to examine the role of the advanced practice nurse in primary prevention or replication intervention programmes in varied settings. Research on the effects of mass media on health behaviours in children might also be enlightening.

Bibliographic details

PubMedID
11151472

DOI
10.1053/jpdn.2000.16710

Indexing Status
Subject indexing assigned by NLM

MeSH
Cardiovascular Diseases /prevention & control; Child; Health Behavior; Health Education; Health Promotion; Humans; School Health Services; School Nursing

AccessionNumber
12001005126
Date bibliographic record published
31/10/2004

Date abstract record published
31/10/2004

Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.