

**INVESTIGATION OF THE SOURCES OF NUTRITION
INFORMATION OF PRIMARY SCHOOL CHILDREN AND AN
ASSESSMENT OF THE PRIMARY SCHOOL NUTRITION
PROGRAMME (PSNP) AS A VEHICLE FOR NUTRITION
EDUCATION TO PRIMARY SCHOOL CHILDREN IN SOUTH
AFRICA**

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CONTENT

	Page number
ABSTRACT	1
INTRODUCTION	2
LITERATURE REVIEW	
Sources of nutrition information to schoolchildren	4
- school	5
- family and traditions	7
- media	7
- peers	9
Nutrition education in schools	9
Nutrition programming for schoolchildren	14
AIM	14
METHODS	
Study population	15
Data collection and analyses	17
Ethical considerations	18
RESULTS	18
DISCUSSION	24
RECOMMENDATIONS	
Messages that should be conveyed to schoolchildren	26
Strengthening nutrition education through the PSNP	29
CONCLUSION	32
LIST OF REFERENCES	31
ADDENDA	
Addendum A: Sites for data collection	40
Addendum B: Research model	41
Addendum C: Media	42
Addendum D: Lindiwe's story	43
Addendum E: Conceptual framework for causation of malnutrition/child survival/child death	44
Addendum F: Specific nutrition messages for schoolchildren	45
Addendum G: Workshop report	48

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ABSTRACT

Malnutrition and specifically undernutrition is a worldwide problem and in South Africa it is most prevalent among black and coloured children in rural, peri-urban and in low socio-economic areas. Available data on the nutritional status of primary school children indicate that acute and chronic malnutrition is evident. The presidential PSNP was started in September 1994 to address hunger in schoolchildren and to improve the learning environment. As part of comprehensive integrated nutrition programme the PSNP should include a significant nutrition education component. This would allow a more longterm and sustainable effect on the health and well-being of children and the population at large. Unfortunately nutrition education often falls through the cracks of education policy because of competing interests on the education agenda as well as other fiscal, technical, political and resources constraints. This study will try to identify the source of nutrition information of school children as well as quantify and qualify the information from these sources in order to suggest key nutrition messages that should be directed at school children and their sources of information. Options will be suggested through which the PSNP can be used to strengthen these nutrition education messages.

KEY WORDS: primary school children, nutrition education, nutrition programmes, feeding schemes, curriculum, nutrition knowledge, eating habits, nutrition information, nutrition messages, media

INTRODUCTION

Malnutrition and specifically undernutrition is a worldwide problem and in South Africa (SA) it is most prevalent among black and coloured children in rural, peri-urban and in low socio-economic areas. Available data on the nutritional status of primary school children indicate that acute and chronic malnutrition is evident. National data indicates that at least 20% of primary school children are stunted ie suffer from chronic malnutrition (Vorster et al 1997; Jooste et al 1996; Badenhorst et al 1993; Steyn et al 1992) and that as many as 48% of rural black children are underweight (Vorster et al 1997). Assessment of the dietary intake of these children revealed that younger and older schoolchildren had the same energy intake despite differences in energy requirements (Badenhorst et al 1993; Steyn et al 1992). According to biochemical data coloured children had the highest prevalence of iron and folate deficiencies and in general micronutrient deficiencies among primary school children were iron, folate and vitamin A (Vorster et al 1997). The nutritional situation of pre-school children mirrors that of primary schoolchildren (SAVACG 1994) with the additional problem of a low calcium intake (Vorster et al 1997).

Optimal nutrition is important for normal development, health and well-being of man and the quality of society (Vorster & Venter 1992). Together with lifestyle and the environment in which people live, nutrition is the one major determinant of health and disease in the individual person, the family and the community at large. The health impact of diseases can be prevented or reduced by nutritional measures (SCN News 1990).

Improvement in nutritional status presupposes changes at all relevant levels influencing nutritional status. Nutrition is identified as a priority area in the Reconstruction and Development Programme of the South African Government of National Unity. One of the RDP projects targets schoolchildren through the presidential Primary School Nutrition Programme (started September 1994). This programme is a feeding programme but has the potential to be developed into a successful comprehensive integrated nutrition programme. The Health Systems Trust therefore commissioned several projects as part of a national evaluation to assist in the development of the PSNP.

The largest government sponsored school feeding programme in the world ie the United States School Lunch Program was authorized in 1946 (Radzikowski & Gale 1984) with the objective of safeguarding the health and well-being of children, and to support farm income through increasing the consumption of domestic products. Since then this programme has also been utilized successfully as a tool for and as reinforcement of the nutrition education given to schoolchildren (Meeting Report 1994).

This differs greatly from the South African PSNP which sets out to address the plight of hungry children. However there is an attempt to redirect the PSNP to also have a more longterm and sustainable effect on the health and well-being of the children and population at large.

The goals of Education for All and Health for All are inseparably linked. Both aim at equity and must be achieved concurrently. Good health is essential for effective learning and education is a powerful means of enabling children and adults to attain and maintain health and well-being

(Dhillon & Philip 1992). However, despite the affirmation of many countries on the importance of health promotion at the 42nd World Health Assembly (Technical discussion on the health of youth) (Dhillon & Philip 1992) nutrition education is often neglected in education policy because of competing interests on the education agenda as well as other fiscal, technical, political and resources constraints.

This study will investigate the sources of nutrition information of primary school children and will assess the PSNP as a possible vehicle for nutrition education to primary school children in order to address the problem of malnutrition in South Africa.

LITERATURE REVIEW

Sources of nutrition information to schoolchildren

There are a number of sources of information for school children such as the family (mostly the mother), the school teacher, and the media. The indirect educational effect of participation in feeding programmes is also another possible source, but not described in the literature. Chilean schoolchildren ranked their family (mostly the mother), the school teacher and television respectively as the most important sources through which they learn about nutrition (Ivanovic et al 1991). Television (TV) (as the most preferred type of medium) might not be allocated the primary position by children, but indirectly it might play a more significant role as adult Canadians rated TV highest amongst their actual and preferred sources of information (Lambert-Lagacé 1983)

The School

Despite the affirmation by countries attending the International Conference on Primary Health Care organized by WHO and UNICEF in Alma-Ata, USSR, in 1978, and more recently the forty-second World Health Assembly (Technical discussion on the health of youth) on the importance of educating young people on health issues (Dhillon & Philip 1992) nutrition education is often neglected in education policy because of the crowded education agenda and competing interests.

It has been suggested (Van der Vuynckt 1985) that there is an urgent need for a broader and more comprehensive approach to nutrition education in schools which would include

- 1) improved training in nutrition for all school teachers so that teachers can become important facilitators
- 2) the development of locally specific nutrition messages and appropriate teaching support materials for primary schools and secondary schools which should correspond to and be supported by adult education, and other community based nutrition education programmes
- 3) organization of school gardens that provide both nourishment and nutrition education to in-school and community groups
- 4) development of more effective school feeding programmes that reach the vulnerable malnourished children
- 5) improved tertiary level training in nutrition for nutrition, health and education professionals and

- 6) coordination of education sector activities with activities of nutrition, agriculture and other agencies

Health teaching is vital and is even more effective when augmented by the many other opportunities for learning about eg the environment (school grounds, sanitation, buildings), school health services (early detection, referral, emergencies), meals at school (supplied or brought from home), social environment to encourage good relationships (staff, students and parents), sport and other group activities, and associations between the school and the community.

The relative success of the USA school health curriculum (Dhillon & Philip 1992; Gates et al 1994) showed that teachers should be adequately trained, that the curriculum should be adapted to local needs and that students need to be exposed to a sequentially developed curriculum.

Children are capable of understanding dietary guidelines although they might find the terminology somewhat confusing (Rickard et al 1995b). This is however no reason to delay nutrition education until children can understand the full message. All students prefer active learning strategies with a personal effect on their own health and well-being (Murphy et al 1994). Teachers should therefore identify strategies to encourage application through doing (using poems, comics, experiments etc). The play-approach (Rickard et al 1995a) through which internal cognitive transactions and intrinsic motivation are the primary forces that determine healthful choices, or the PRECEDE model used by the American Cancer Association (Contento et al 1992) which categorizes factors influencing health behaviour as predisposing factors,

enabling factors and reinforcing factors and which aims to develop health skills in children are both models that could be used.

Family and traditions

The family is most probably the most important source of education for most children in most societies of the world, including South Africa. Quantification and qualification of this source of nutrition information was however not found in the literature. Because formal knowledge about nutrition does not always correspond with practice, it is important to consider the nutrition-related behaviours that are set as examples for children by care-givers in each household. A low socio-economic and educational level of mothers increases the relative importance of teachers as a source of information, compared to mothers (Ivanovic et al 1991; Osler & Hansen 1993).

The Media

The mass media has a major potential to influence the knowledge and attitudes of readers and viewers (Parham et al 1986) although it is very difficult to predict consumers' response to a specific nutrition message (Story & Faulkner 1990; Achterberg 1994). There are three kinds of media messages that should be considered:

- . formal health promotion through the media
- . the advertising of food products (advertisements and promotional articles)
- . indirect nutrition messages that act at the subliminal level (for example, popular

television characters who are seen consuming alcohol, or visual reference to food accompanying non-food articles or advertisements)

According to De Sifontes & Dehollain (1986) the degree of exposure to mass media (TV, radio, newspapers, etc) is a determining factor in children's food preferences at all socio-economic levels, and TV is the medium exerting the greatest influence (Crockett & Sims 1995). Television has been cited as the most common source of health information for all Americans (Lank et al 1992) and for American children the time spent watching television during the year exceeds the time spent at school (Cotugna 1988). In South Africa research findings indicate that two-thirds of urban African youths have access to television, and that they watch television more often than they listen to radio (University of Natal 1991 in Botha 1993).

Several studies have highlighted the impact that the media has on nutrition education. Research in rural Mexico showed that the use of mass media techniques for nutrition education was just as effective as direct, person-to-person contact (Cerqueira et al 1979). Studies have shown that the media - especially TV - did not promote good eating habits and good health (Cotugna 1988; Story & Faulkner 1990; Donkin 1993). A possible reason for this adverse effect of media on health knowledge and behaviour is that nutrition messages that are conveyed are often inaccurate, misleading or difficult to interpret (Lank et al 1992; Taylor & Guthrie *date unknown*). For nutrition education to have a favourable impact, it is suggested that the messages conveyed should be short, simple and positive (Nowlin, 1994). Little information on the use or impact of the media on nutrition education is available in South Africa. Content analyses as well as an analyses of the norms set by the various sources of communication available

throughout the country is therefore important if the media are to be used as a means of providing nutrition education to South African schoolchildren.

Peers

Peers do not seem to be a direct source of nutrition information to school children (Ivanovic et al 1991), but have a considerable impact on behaviours during the preteen years (Crockett & Sims 1995) and influence attitudes strongly during adolescence (O'Brien & Bierman 1988). Although not strictly peer education, the Malvani experience (Bhalerao 1981) where children facilitated maternal involvement in the programme as well as the Child-to-child initiative (Werner & Bower 1982) where older children act as nutrition educators of younger children (or of family members) are examples of the potential schoolchildren have as educators.

Nutrition education in schools

Nutrition education is a common component of nutrition programmes and can be successful as a nutrition intervention (Achterberg & Clarc 1992; Lewis 1992) especially as part of special programmes although evaluations of routine education undertaken by health- and school services are rare. Nutrition education may be defined as a multi-disciplinary process which assists the public in applying knowledge from nutrition science and the relationship between diet and health to their food practices. It is a deliberate effort to improve the nutritional well-being of people by assessing the multiple factors that affect food choices, tailoring educational methodologies

and messages to the target groups being reached and evaluating results. It can help individuals develop a knowledge base, make a commitment to good nutrition, promote selection of nutritionally adequate diets and develop decision-making skills. (Gillespie & Brun 1992). In this process the nutrition educator seeks to deliberately and progressively empower learners to act on food and nutrition-related issues, such that the learner will gradually become self-sufficient (Achterberg & Trenkner 1990). Nutrition education has been found to be most successful in addressing issues related to dietary intake where real choices exist but is less successful in situations of contradicting messages and if individual/household resources are being used optimally (Hornik 1985).

The nutrition educator must recognize that clients will always have a number of problems, and nutrition may or may not be a major concern amongst them (Achterberg & Trenkner 1990). Neither good food nor good nutrition represent the "best" or "most important" motivators to behaviour for most people. Nutrition education must therefore take place in the context that the choice of food for health is not an end, but a means to achieve a healthy lifestyle (Conference workshop 1982). Nutrition education messages around food intake must be in keeping with the realistic and available resources at the individual/household level (Hornik, 1985). An understanding of the food preferences, food habits, food ideologies and other social issues can help to make educational activities more effective by being more sensitive to the needs of the clients (Sobal 1991). In other words, successful nutrition education requires a message that is applicable to daily life (Sims 1987).

Traditionally, nutrition education has done little to address the issue of poverty (Hornik 1985). However, to have a real impact on hunger and malnutrition, educators must address the

underlying socio-economic, environmental and political causes of poverty. Nutrition education must also take place in the context that the choice of food for health is not an end, but a means to achieve a healthy lifestyle (Conference workshop 1982). Individuals should also be assisted to develop coping skills in order to decrease the possibility of relapse (Brownell & Cohen 1995).

Given the many different nutrition messages competing for attention, it is imperative to make key themes stand out in a way that is continuous and consistent to allow for diffusion and acceptance (Yarbrough 1981). It is also suggested that messages should be short, simple and positive (Nowlin 1994). As nutrition education is not the prerogative of any one discipline, but forms a part of the function of all health workers who might have direct contact with individuals/families/communities (Fjeld & Sommer 1981; JADA 1993) it is imperative to reinforce each other's messages (Hudnall & Wellman; Sutton 1996). Evaluation of nutrition education programmes is essential and should focus on all levels of learning.

Whilst information is necessary, it is not sufficient to promote sustained changes (Brownell & Cohen 1995; Glatthaar 1986). Successful nutrition education entails additional characteristics and activities which include:

- 1) programmes must be behaviourally based and theory driven. Active behaviour orientated methods embedded in a scientifically sound curriculum and based on social learning and social development theories are more effective for bringing about changes in behaviour. Target groups should be involved in the development, implementation and management of local nutrition education programmes (Scheider 1992).

- 2) family involvement must be incorporated into programmes for elementary aged-children. Children and parents participating in combined programmes had significantly more positive outcomes for knowledge, attitude and practice and parent-child communication levels (Lytle & Achterberg 1995).
- 3) programmes for middle to senior school students should include self-assessment of eating patterns. Personalization of nutrition education messages appear to be important in bringing about behaviour change (Lytle & Achterberg 1995). All students prefer active learning strategies which incorporate as much personal relevance as possible (Murphy et al 1994). Teachers should also find strategies to encourage application through “learning-by-doing” (Rickard et al 1995a; Contento et al 1992).
- 4) behaviour change programmes include intervening in the school environment. The use of the social learning theory as a model leads to consideration of the environmental barriers and opportunities as factors influencing behaviour change. Nutrition information should also be integrated into various subjects (Gates et al 1994) and not stand alone or be limited to one subject. More integration and cross referencing ensures reinforcement.
- 5) behaviour change programmes include intervening in the larger community on the same bases as in 4)
- 6) programmes include extensive instruction time. For nutrition education to be effective, enough time must be devoted to it. With limited time, nutrition education can generally

be expected to result the development of knowledge and cognitive skills, but not behaviour change. Sequential, multi-year programs which are appropriate in terms of cognitive development are the most effective for nutrition education. In the United states about 10-15 hours are spend per school year on nutrition education although the School Health Evaluation Study (Wellisch & Jordan 1984; Connell et al 1985) indicated that peak knowledge, attitude and practice scores were reached only after about 50 hours of instruction.

It is well known that the foundation for food choices are laid down in childhood. Poor dietary habits learned in childhood may persist into adulthood (Owen et al 1997). Nutrition education to schoolchildren therefore needs to be able to accomplish the following:

- . provide children with the correct knowledge on nutrition and dietary practices
- . tailor educational methods and messages to the various target groups according to age, learning ability, availability & acceptability of food, nutritional requirements, local culture, etc)
- . help individuals make a commitment to good nutrition
- . progressively empower learners to act on correct dietary knowledge
- . teach children the skills to analyze and understand the causes of malnutrition
- . empower children with the skills to be change agents in the community to address the underlying causes of malnutrition

Nutrition programming for schoolchildren

In populations where children are nutritionally at risk, availability of breakfast may make it possible for a child to be well nourished over the long term and may prevent or reverse nutrient deficiencies that affect cognition (Pollitt 1995). Studies in Peru and rural Jamaica (Chandler et al 1995) suggested that the benefits of breakfast are particularly noticeable among nutritionally at risk children. Because of the adverse effects of the low socio-economic status of the majority of South African children on their nutritional health an integrated approach to schoolfeeding should be selected with maximum integration of the nutritional intervention with other community development activities (Vorster & Venter 1994).

AIM

The aim of this study was to investigate sources of nutrition information to primary school children and to assess the PSNP as a possible vehicle for nutrition education to schoolchildren in South Africa.

Specific objectives were:

- 1) to describe and analyze the current sources of nutrition information available to school children
- 2) to analyze the quality and quantity of nutrition information from these sources
- 3) to identify which key nutrition messages (including methods) should be taught to

schoolchildren, teachers and parents

- 4) to identify how these nutrition messages could be conveyed and strengthened by the PSNP

METHODS

For the purpose of this study the following working definitions were used:

Urban: areas with a local authority and a population of 10 000-50 000

Small town: areas with a local authority and a population of <10 000

Rural: areas where school is not situated within a formal settlement and the population is dispersed (including "farm schools")

Study population

This study was of a descriptive nature (cross-sectional). Four provinces were selected for data collection. The provinces were selected in order to provide a reasonable representation of the range of urban, rural and informal settlements existing in South Africa.

In each province two towns from each category of urban, rural and informal settlements were randomly selected (Addendum A). The 1995/96 edition of the South African Road Map was used to classify towns into the various categories. Lists of schools receiving the PSNP were obtained from either the Department of Health or the Department of Education in the various provinces and were then used to randomly select one school in each of the selected towns/areas

in the four provinces (total of 24 schools selected). At each school focus group discussions were conducted with groups of four children from standard one and standard five respectively (total 48 focus group discussions) in order to identify the current sources of nutrition information to school children (Addendum B). Standard one and standard five students were selected to represent young primary schoolchildren who would be able to verbalize their perceptions well and the older (bordering on adolescence) primary school child. Focus group discussions with and observations of small groups of parents, teachers and health workers were also conducted in two randomly selected towns/areas per category to obtain information on their perspective on information provided to schoolchildren.

The study design does not allow for generalisation due to the small sample size, but the intention was to obtain an indication of the trends and not to prove significant difference between the various sources.

In order to describe and analyze the quality and quantity of nutrition information from the media, top magazines, radio and TV stations were selected using the official AMP ratings (Addendum C) as well as the various media sources identified by children during the focus group discussions. The South African Advertising Research Foundation indicated that the most popular radio and TV time-slots are between 4pm and 9pm (AMPS 1996). The 3pm to 9pm period was selected for this study to accommodate schoolchildren. Recordings were made of TV and radio broadcasts for 7 randomly selected days (representative of a week) during February 1997. A total of 126 hours of TV and 42 hours of radio were analyzed.

Data collection and analysis

Focus group discussions in each province were conducted by two interviewers resident in that particular province and conversant in all the languages used in that province. Communication with the children, especially the children in Std One in the rural areas, was difficult despite the use of interviewers who spoke their language and had a good understanding of their environment. Notes were kept by one of the interviewers in each focus group discussion. Tape recordings were also made in order to corroborate the notes. Interviewers were trained by the researcher to conduct the interviews and to keep notes. The notes were analyzed by the researcher to identify the various sources, messages and other relevant information.

A workshop with a small number of invited individuals with expertise in nutrition education, education in general and eating habits of the various groups were held to identify nutrition messages that are appropriate for schoolchildren, that should be included as part of nutrition education to schoolchildren, and that could be strengthened by the PSNP (Addendum G).

A scoring tool was developed for the analysis of nutrition information available in the South African media (p 23 and Addendum C). Coding and scoring was done by two dietitians who double checked each others scoring at random to ensure consistency in the application of the scoring tool. An independent statistician assisted with the design and analysis of the data using SAS and Quatro Pro.

Ethical considerations

Permission was obtained from the Department of Education to conduct the survey in the schools. Informed consent (verbal) was obtained from the headmaster of each school to interview children based on the powers vested in him. Informed consent (verbal) was obtained from all other people interviewed. All information generated by the focus group discussions was recorded anonymously. Written permission was obtained from the relevant publishers and station managers for the use of media materials.

RESULTS

Sources of nutrition information to school children

Sources of nutrition information mentioned by school children (in order of magnitude):

- Mothers (or primary caretaker)
- Teachers
- Health Workers - this was mentioned in the rural Western Cape, Northern Province and urban Eastern Cape.
- Fathers - mentioned as source of “negative” information eg. breastfeeding is seen as not good (Eastern Cape) and sweets and fizzy drinks are good
- Relatives / Siblings
- Children themselves based on the taste of food, their own conclusions or based on books like encyclopedias
- Media

Media:

Media was the least mentioned source of nutrition information. Magazines mentioned were Bona, Drum, Pace, You/Huisgenoot, Living and Loving and Kick-off. Children indicated that they do not read these magazines, but only page them in order to find pictures for school assignments. Television programmes mentioned were SABC 1, 2 and 3 especially programmes like Kideo and Soul City on SABC 1. Media messages that children usually could remember were brightly coloured combined with rhythmic music and activity of some sort. Rural areas of the Western Cape and Eastern Cape Provinces have limited access to television and radio. This was not so for the Northern Province. Radio programmes mentioned were Radio Xhosa, Sotho, Tswana, Lebowa, Metro and Radio 5. Newspapers as a source of nutrition information were never mentioned.

Specific nutrition knowledge mentioned by the children were:

- “children do not eat sweets, because sweets give you a running tummy (message from mothers) and tooth decay (message from teachers)
- “Healthy foods are fruit and vegetables, starches like bread, rice, samp and maize, meat, fish, chicken, eggs, milk “
- “Unhealthy foods are sweet foods, fatty foods and fast foods”
- “Pork is unhealthy” (causes demons)
- “Left-overs are not healthy foods” (from teachers)

In general there were no real gender issues around food mentioned, although in the Western Cape, intestines and chicken feet were seen as food for women. Most children were in support of breastfeeding, and very strongly so in the Northern Province. In rural and urban Eastern Cape children mentioned that their fathers were of the opinion that breastfeeding is not good.

Children in the Northern Province knew the exact recipe for the home-made salt-sugar-water solution used for oral rehydration. They mentioned their teachers and the SABC1 television programme Soul City, as their source of information. Brown bread was always mentioned to be good, but in practice the children ate white bread at home. In the Western Cape, milk shake was singled out as something that is “good food for little children”. This was most probably because the Nutri-A, given as part of the PSNP, looks and smells like milk shake. Other contradictory practices versus knowledge that were found, were that children ate fatty foods regularly but said: “that fatty foods are not good for you”. Especially in the Northern Province polony was mentioned in every interview as good for you. They did not always eat breakfast, but mentioned that “breakfast is important”. Their teacher told them that breakfast would prevent them from fainting at school.

Despite prompting children with regard to issues of hygiene, infectious diseases, poverty and development as part of the nutrition spectrum, they could not verbalize much information nor having been informed about these issues.

Other sources of nutrition information

Vendors at school

At most schools there were vendors who sell food to schoolchildren during breaks. Children buy from these vendors on a very regular basis. Some even mentioned that they only consume food from the feeding scheme when they do not have money to buy from the vendors. The types of foods for sale include bread (mostly white) with polony, vetkoek (with or without

filling), fried fish, meatballs or chicken feet, soup, French toast, sachets with cold drinks ("lollies"), packets of cheese curls or crisps (home packed) and some sweets (usually candy or hard boiled).

Mothers

Discussions with mothers indicated that they seldom discuss nutrition related issues with their children. Any discussions that might happen would usually be to give diet related advice in the negative eg "do not eat sweets". They mentioned their own mothers as well as information from the clinics and magazines as sources of their information.

School curriculum

Teachers reported spending varying amounts of time on nutrition education. Their verbal responses seem to indicate that in standards sub-b, 3 & 4 most nutrition education occurs in the curriculum and currently mostly in the form of dietary information. The time devoted to this ranges from 0-6 hours per year. None of them indicated that they had received any tertiary training in nutrition. Their most commonly mentioned source of nutrition information was their own schooling either in home economics, biology or health education. Their own mothers as well as magazines and newspapers were also mentioned as sources of nutrition information.

The interim health education curriculum include topics on growth and development, correct eating habits, physical activity, diseases of lifestyle (cardiovascular diseases, cancer, eating disorders) physically challenged individuals (diabetes & cardiovascular diseases, etc) and infectious diseases (tuberculosis). Material in the form of text books have not yet been identified and could therefore not be analyzed. However some of the previously used resource

material which were analyzed showed mixed messages (eg three/four/or five food groups) and some messages are misleading (eg. bread listed as one of the best sources of protein - no accompanying explanation). There is also very limited information on diseases related to developing countries and lower socio-economic situations, with a clear bias towards westernized diseases of lifestyle.

Health workers

Health workers appear to rarely discussed nutrition issues with primary schoolchildren. Nutrition education might however be included in talks to schoolchildren on the days that they visit the schools for immunization or sometimes teachers invite them to the school to talk on specific health issues. Posters in health services usually include those on immunization, AIDS, milestones for children as well as the odd breastfeeding promotion poster (distributed by commercial companies). Very few diet related printed materials were available in health services.

Advertisements

Advertisements available in supermarkets frequented by children from the selected schools were mostly limited to posters on Coke and Rama margarine, except in cities where supermarkets also have advertisements of foodstuffs available at a reduced price.

Analyses of nutrition information in the mass media

Out of a total of 126 hours of TV and 42 hours of radio, 420 (1.7 references per 30 minutes) and 39 (0.5 references per 30 minutes) nutrition messages occurred in television and radio respectively. Most of the nutrition information on television appeared in the form of advertisements (56%). Of these television messages, 95% were non-specific with only 2% positive specific nutrition messages. Advertisements also predominated in all other types of media. Radio Xhosa had 0.27 nutrition references per 30 minutes compared to 0.19 for Radio Good Hope.

Table 1: Number and quality of nutrition messages in magazines¹

Magazine	Number of nutrition messages	Specific messages			Non-specific messages		
		% accurate	% inaccurate	% misleading	% positive	% negative	% neutral
<u>You</u>	79	15.2	0	8.9	13.9	25.3	36.7
<u>FairLady</u>	48	12.5	2.1	8.3	8.3	27.1	41.7
<u>Sarie</u>	46	21.0	0	6.5	17.4	8.7	45.7
<u>Drum</u>	32	18.8	0	0	12.5	18.8	50.0
<u>RooiRose</u>	24	12.5	0	4.7	33.3	16.7	33.3
<u>Bona</u>	16	37.5	0	6.3	6.3	25.0	6.3
<u>Readers Digest</u>	13	46.1	0	0	23.1	7.7	30.8
<u>Pace</u>	8	12.5	0	0	12.5	50.0	25

¹ See Addendum C for definitions used in media analysis

Newspapers were excluded from analysis because it was observed that they usually contain less than three references to nutrition (mostly in the form of advertisements) and because of time constraints. For the magazines, none of the specific messages was inaccurate. Sarie magazine had most of the accurate direct information (21%). Most of the misleading nutrition messages were from You magazine (43.75%).

DISCUSSION

The current knowledge and sources of information that children have centres around dietary intake, and not on other nutritional issues such as growth promotion, food hygiene, healthy lifestyles, etc. They are still based on the long standing classic messages from the “old school of thought about nutrition”.

The media was not reported to be a source of nutrition information, although it is clear that children are nonetheless exposed to nutritional messages in the form of advertisements for food and beverages. There was in particular a heavy exposure to advertisements for alcoholic beverages. While these messages may not be overt, they are likely to have a subliminal impact on the knowledge, practice and attitudes of children. The contribution of incidental learning through advertisements, shops and vendors should also be investigated in order to guide nutrition promotion efforts to provide an enabling environment to support good nutrition. Conflicting interests between health and especially funding issues might actually become a stumbling block in endeavours to improve the quality of nutrition information available in the media.

The quality of nutrition messages should be improved as conflicting messages not only confuse children and adults, but can actually undermine educational efforts. To this effect negative and conflicting messages conveyed by fathers are a cause for concern. Negative messages around breastfeeding for example could impact on future practices of young adults via role modelling (boys) and if it was a source of conflict in the household could have a negative impact on practices of girls as future lactating mothers.

Knowledge of oral rehydration (ORT) amongst children in the Northern Province seems to suggest that TV is a source of information to schoolchildren (Soul City). The particular characteristics of programmes that are successful need to be understood if we are to replicate this success. However, there seems in addition to be a specific characteristic of the ORT programme in the Northern Province which has resulted in better knowledge in that region.

The phenomenon of children interpreting certain messages and not others needs further exploration. For example the PSNP implicitly promotes the importance of breakfast, milkshakes (Nutri-A) and brown bread as good foods. However dietary practice, including the taking of breakfast, seems relatively unaffected. Children, while recognising brown bread as more nutritious than white bread, continue to prefer the latter. Since foods chosen for feeding programmes can evidently affect knowledge and perceptions of their value, choices of programme foods need to be made carefully so that nutritious and affordable foods are promoted. Changing practice, however is more complex and other supportive alternatives are necessary if this is to be positively influenced. For example, until households themselves regularly eat and promote the importance of breakfast and of certain nutritious foods, children will find it difficult to put their knowledge into practice. Advertising companies know that advertisements do not directly impact on practice, but at the point of taking a decision, an

individual usually choose the "known" which is often the product that they have been exposed to most frequently. The relative availability of Coke and Rama advertisements in stores might therefore impact on children's practice. Educational experts suggest that learning cannot be managed by limiting choices, but if provided with decision-making skills children are better able to survive in a life of choices. Nutritionists and dietitians should therefore both promote the frequent transmission of food messages in as many ways as possible, but also support and influence the teaching of decision-making skills to children.

The literature emphasise that enough time should be devoted to nutrition education in order to be effective. It can be generally accepted that even the maximum of six hours of nutrition education in schools are not enough. Duplication in the curriculum through other subjects will also assist in reinforcing the messages.

RECOMMENDATIONS

Messages that should be conveyed to the children

A workshop with a small number of invited individuals with expertise in nutrition education, education in general and eating habits of the various groups were held to identify nutrition messages that are appropriate for schoolchildren, that should be included as part of nutrition education to schoolchildren, and that could be strengthened by the PSNP (Addendum G).

This method of generating key messages might not be totally objective and it is therefore advisable that the key nutrition messages as well as the strategies to include it in the PSNP should be circularised to a broader group of professionals (nutrition and education) and possibly

also be workshopped with parents and children in order to ensure generalizability.

The following were suggested by the working group:

The philosophy:

- Every child should be seen as a potential change agent with the capacity to improve the health and nutrition of their community
- Children should be encouraged to have a sense of responsibility for their own health

Methods used for nutrition education:

- Story based learning: eg. Lindiwe’s story (Addendum D).
- Story to be based on the conceptual framework for malnutrition (Addendum E) utilising the problem based approach.
- For each class/age group key messages as well as a list of key “activities” that children can act upon at home, school and in community need to be developed. A framework for developing this could be structured in the following way:

AGE	MESSAGE/ISSUE	METHOD(Teaching)	ACTIVITIES/ACTIONS
	- Household food security		
	- Diet		
	- Infections		
	- Political-Economics of malnutrition etc.		

- Children are not passive recipients of knowledge and therefore messages should be conveyed through hearing, seeing and doing

It might be prudent to find out from education specialists which methodologies are most useful for which age group. Methodologies like stories eg. Lindiwe's story and action-linked research that can be linked to stories might be appropriate. Messages must be graded. Different emphasis and more or less content in messages are required for different age groups. This can also be linked to different activities, depending on age. Thus the basic message stays the same, but will need to be embellished and deepened and be made more complex as children get older. The education sector needs to be involved to determine what message is appropriate when and how the message can be taught to the children.

General nutrition messages

In general the direct nutrition messages can be grouped under nine (9) headings. The specific messages as developed, based on the outcome of the workshop, are given in addendum F.

- 1) related to health outcome
- 2) related to feeding practices and diet
- 3) related to disease
- 4) related to micronutrient nutrition
- 5) related to lifestyle
- 6) related to care and the rights of children
- 7) related to mental development
- 8) related to the political economy and ecology of nutrition
- 9) related to local agriculture

The school curriculum needs to be developed to ensure that it is activity-based and centred more around the development of skills, and that the whole spectrum of nutrition is covered.

All the educational efforts need to be coordinated to ensure that educational messages are supportive of each other and not contradictory. Improvement of the tertiary education of teachers and other health workers in nutrition is essential. Government officials responsible for broadcasting services need to be informed of the poor "nutritional" quality of messages on TV and radio as they have a public health responsibility towards the children in South Africa. The airing of more messages on television and radio, especially children's programmes, that promote healthful food choices needs to be promoted. Printed media should also be involved in helping children develop healthful eating patterns.

Strengthening nutrition education through the PSNP: the way forward

The PSNP must be seen as a vehicle for nutrition education for school children, but also for mothers, teachers and community. Ideally, there should be an interaction between health education in the curriculum and the PSNP, in a way that they are supportive of each other.

Options should be investigated through which the PSNP can be used as an avenue to reach pre-school children especially those aged 0-24 months. The use and promotion of Child-to-child (Institute for education *date unknown*) activities should be explored to this effect . As the prevention of malnutrition is essential at this very early age and early life nutrition plays a very important role in growth and development, health interventions eg weighing and immunisation sessions for younger children could be incorporated as part of regular community meetings around the PSNP.

Specific ways in which nutrition education could be strengthened by the PSNP are:

- 1) the promotion of local foods.
- 2) The development of food gardens in schools as a PSNP initiative. Although vegetables are not necessarily a good choice due to their low energy content, vegetable gardens can be used as a teaching aid for some of the nutrition messages mentioned above. Otherwise vegetables can be sold to raise funds for purchase of PSNP food and other items for school development. Foods like legumes, peanuts and maize would be more appropriate for school gardens. To ensure that children get the optimal educational benefit, they should take responsibility for looking after the gardens. It is however questionable, particularly in urban settings, whether the school garden could produce enough to make a significant contribution to the PSNP.
- 3) The PSNP should strengthen traditional healthy eating habits and should refrain from using traditional “unhealthy” snacks eg. biscuits though they might be very nutritious due to fortification.
- 4) Consideration should also be given to the provision of a warm, cooked meal at the start of the school day. A cooked meal could be supplied at school without disturbing school time, teachers and children through developing community kitchens at school which would employ community members (PSNP task group 1995).
- 5) The PSNP should strengthen the message of eating a variety of foods by providing a varied menu/programme to schoolchildren.

- 6) Proper preparation and cleaning facilities are essential in order to strengthen the message of hygiene. Provision of clean drinking water to schoolchildren should receive priority attention above providing other drinks as part of the PSNP in schools where there is no water.

CONCLUSION

Successful nutrition education can improve not only the nutrition knowledge, but also the nutrition practices and attitudes of schoolchildren. To ensure that nutrition education to South African school children is successful it would require a conscious effort by all to ensure better collaboration between nutrition and health workers, educationists, advertising/marketing agencies, food industry, the media and others. This collaboration is essential to improve the quality and quantity of nutrition information availability to schoolchildren and their sources of information. Nutrition messages should be accurate and non-conflicting and should create positive norms. The nutrition messages and methods suggested by this report should be ratified by a broader group to ensure that they are clear and appropriate. Similarly the recommendations with regards to the PSNP should be implemented in pilot projects to assess its appropriateness and generalizability.

LIST OF REFERENCES

Achterberg CL (1994): Qualitative research: What do we know about good nutritional habits?
Journal of Nutrition 124:1808S-1812S

Achterberg C & Clarc K L (1992): A retrospective examination of theory use in nutrition education. Journal of Nutrition Education 24(5):227-233

Achterberg C & Trenkner LL (1990): Developing a working philosophy of nutrition education. Journal of Nutrition Education 22(4): 189-193

Badenhorst CJ, Steyn NP, Jooste PL, Nel JH, Kruger M, Oelofse A, Barnard C (1993): Nutritional status of Pedi school children aged 6 to 14 years in two rural areas of Lebowa: a comprehensive nutritional survey of dietary intake, anthropometric, biochemical, haematological and clinical measurements. South African Journal of Food Science and Nutrition 5(4):112-119

Bhalerao VR (1981): Schoolchildren as health leaders in the family. World health forum 2(2):209-210

Botha W (1993): The role of the media in Education: A discussion document. Johannesburg: Education Foundation.

Brownell KD & Cohen LR (1995): Adherence to dietary regimens 2: Components of effective interventions. Behaviour Medicine 20(4):155-164

Cerqueira MT; Casanueva E; Ferrer AM; Fontanot G; Chavez A & Flores R (1979): A comparison of mass media techniques and a direct method for nutrition education in rural Mexico. *Journal of Nutrition Education* 11 (2):133 - 137

Chandler AK, Walker SP, Cannolly K & Grantham-McGregor SM (1995): School breakfast improves verbal fluency in undernourished Jamaican children. *Journal of Nutrition* 125:894-900.

Connell DB, Turner RR & Manson EF (1985): Summary findings of the School Health Education Evaluation: health promotion effectiveness, implementation and costs. *Journal of School Health* 55:316-321

Conference Workshop (1982): Considerations and recommendations of the Conference Workshop. *Journal of Food and Nutrition* 39(2):61-66

Contento IR, Kell DG, Keiley MK & Corcoran RD (1992): A formative evaluation of the American Cancer Society *Changing the Course* nutrition education curriculum. *Journal of School Health* 62(9):411-416

Cotugna N (1988): TV ads on Saturday morning children's programming-what's new ? *Journal of Nutrition Education* 20(3):125-126

Crockett SJ & Sims LS (1995): Environmental influences on children's eating. *Journal of Nutrition Education* 27(5):235-249

- De Sifontes MZ & Dehollain P (1986): Effect of mass communication media in food purchasing at family level. *Arch-Latinoam-Nutr* 36(1):166-186
- Dhillon HS & Philip L (1992): Health in education for all: enabling school-age children and adults for healthy living. *Hygiene* 11(3):17-28
- Donkin A J (1993): Children's Food Purchase Requests. *Appetite* 21(3):291-294.
- Fjeld CR & Sommer R (1981): Ideas for point-of-purchase nutrition education. *Journal of Nutrition Education* 13(4):135-136
- Gates G, McDonald M & Dalton M (1994): Nutrition education in Missouri Schools. *Journal of School Health* 64(10):410-412
- Gillespie AH & Brun JK (1992): Trend and challenges for nutrition education research. *Journal of Nutrition Education* 24(5):222-225
- Glatthaar II, Fehrsen GS, Irwig LM & Reinach SG (1986): Protein-energy malnutrition: The role of nutrition education in rehabilitation. *Human Nutrition: Clinical Nutrition* 40C:271-285
- Hornik RC (1985): Nutrition education: A state of the art review. Nutrition policy discussion paper no1. ACC/SCN United Nations.
- Huddnall M & Wellman NS (1992): Missing the nutrition message of balance, variety and moderation. *Journal of Nutrition Education* 24(6):320-322

- Institute for Education (*date unknown*): Child-to Child. Institute of Education, London.
- Ivanovic R; Olivares M & Ivanovic D (1991): Sources of nutrition information of Chilean schoolers, metropolitan region, Chile, survey 1986-1987. *Arch Latinoam Nutr* 41(4):527-538
- JADA (1993): Beyond nutrition screening: A system approach to nutrition intervention. Comments. *Journal of the American Dietetic Association* 93(4):405-407
- Jooste PL; Wolmarans P; Oelofse A & Albertse E (1996): Needs assessment for nutrition support of primary school children in low socio-economic areas. *South African Journal of Food Science and Nutrition* 88(1):7-12
- Lambert-Lagacé L (1983): Media, nutrition information, and consumer reactions. *Journal of Nutrition Education* 15(1):6-7
- Lank NH, Vickery C, Cotugna N & Shade D (1992): Food commercials during television soap operas: What is the nutrition message? *Journal of Community Health* 17(6):377-383
- Lewis S (1992): Food security, environment poverty and the world's children. *Journal of Nutrition Education* 24(1):S3-5
- Lytle L & Achterberg C (1995): Changing the diet of America's children: what works and why? *Journal of Nutrition Education* 27(5):250-259
- Map studio (1995/96): South African road map. 12th edition. Struik Publishing group

Meeting report (1994): Nutrition at school: preparing for the future. Public Health Report 109(5):706-709

Murphy AS, Youatt JP, Hoerr SH, Sawyer CA & Andrews SL (1994): Nutrition education needs and learning preferences of Michigan students in grades 5,8 and 11. Journal of School Health 64(7):273-278

Nowlin B (1994): Keep it short and simple: How to master the 'sound bite' and other tips for crafting effective media messages about nutrition. Journal of the American Dietetic Association 94(9):971-973

O'Brien SF & Bierman KL (1988): Conceptions and perceived influence of peer groups: interviews with preadolescents and adolescents. Child Development 59:1360-1365

Osler M & Hansen ET (1993): Dietary knowledge and behaviour among schoolchildren in Copenhagen, Denmark. Scandinavian Journal of Social Medicine 21(2):135-140

Owen S, Schickler P & Davies J (1997): Food choice: how to assess attitudes of pre-adolescent children. Nutrition and Food Science (1):5-11

Parham E, King S, Bedell M & Martersteck S (1986): Weight control content of women's magazines: bias and accuracy. International Journal of Obesity 10:19-27

Pollit E (1995): Does breakfast make a difference in school? Journal of the American Dietetic Association 95(10):1134-1139

PSNP task group (1995): PSNP Business Plan 1995/96. PAWC

Rickard KA, Gallahue DL, Gruen GE, Tridle M, Bewley N & Steele K (1995a): The play approach to learning in the context of families and schools: An alternative paradigm for nutrition and fitness education in the 21st century. *JADA* 95:1121-1126

Rickard KA, Gallahue DL, Gruen GE, Tridle M, Bewley N & Steele K (1995b): Kindergarten students' food preferences are not consistent with their knowledge of the Dietary Guidelines. *JADA* 95:219-223

Radzikowski J & Gale S (1984): Requirement for the national evaluation of school nutrition programs. *American Journal of Clinical Nutrition* 40:365-367

SCN News (1990): No. 6

Scheider WL (1992): Fighting hunger and poverty: a strategy for nutrition education. *Journal of Nutrition education* 24(1):84-85S

Sims LS (1987): An overview of nutrition education research. *Journal of the American Dietetic Association* 87(9)Supplement:S10-S18

Sobal J (1991): Application of nutritional ethics in nutrition education. *Journal of Nutrition education* 23(4):187-191

South African Vitamin A Consultative Group (SAVACG) (1994): Anthropometric, Vitamin

A, Iron and immunisation coverage status in children aged 6 - 71 months in South Africa. South African Medical Journal 86(4):354-357

Steyn NP; Pettifor JM; Van Niekerk L & Nel JH (1992): Supplementary schoolfeeding and the nutritional status of primary school children in the Richtersveld. South African Journal of Food Science and Nutrition 4(4):103-109

Story M & Faulkner P (1990): The prime time diet: A content analyses of eating behaviour and messages in television program content and commercials. American Journal of Public Health 80(6):738-740

Sutton SM, Layden W & Haven J (1996): Dietary guidance and nutrition promotion: USDA's renewed vision of nutrition education. Family Economics and Nutrition Review 9(2):14-21

Taylor ML & Guthrie JF (*date unknown*): Food Ads - What's the message? Nutrition education through nonprint media. GEM no. 96

Van der Vuynckt S (1985) in Hornick RC: Nutrition education: A state-of-the-art review. ACC/SCN discussion Paper No1, United Nations.

Vorster HH; Oosthuizen W; Jerling JC; Veldman FJ & Burger HM (Nutrition Research Group (1997): The nutritional status of South Africans - A review of the literature from 1975 to 1996. Durban, Health Systems Trust.

Vorster HH & Venter CS (1992): School feeding programmes: Strategies for South Africa.

