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Nutrition intervention strategies in chronically malnourished regions: preventing endemic goitre in Togo

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Abstract

Iodine deficiency disorders (IDDs) are an important problem in the world. Some 760 million people suffer from goitre and 1600 million are at risk. In Togo, a small West African country, the prevalence of visible goitre in 6–12-year-old children was 21.6% and 5.3% in two endemic regions in 1999. Goitre is considered endemic as it affects one adult in five. UNICEF–Togo (United Nations Children's Fund) in co-operation with the Togolese government has implemented different programmes with the aim of improving the survival and development of children and women and to defend and promote children's rights.

The aim of this paper is to describe the procedures followed and key results of a school-based nutrition education project implemented in Togo to prevent iodine deficiency disorders, by encouraging use of iodised salt.

Keywords

School-based nutrition education
Iodine deficiency disorders
Malnutrition
Children

Malnutrition is one of the most critical problems affecting developing countries. Children, the elderly and pregnant women are the most vulnerable groups to develop nutritional deficiencies. In some countries of sub-Saharan Africa, the percentage of malnourished children above 5 years of age is 48%. Iodine is an essential mineral stored in the thyroid. Its role in the body is an integral part of the synthesis of thyroid hormones. Iodine deficiency disorders (IDDs) are an important problem in the world. Some 760 million people suffer from goitre and 1600 million are at risk¹. Goitre – an enlargement of the thyroid gland, visibly a swelling at the front of the neck² – caused by iodine deficiency is the most visible disorder of IDDs but not necessarily the most important. Other disorders, such as mental and physical retardation, psychomotor deficiency in infants and an increase in miscarriages/still births in pregnant women, can be irreversible depending on their intensity and on the age at which they occur. Cretinism, caused by severe iodine deficiency in gestation, affects 11 million people and 120 000 children are born each year¹ with cerebral lesions, spastic diplegia, deaf mutism, shortened stature and hypothyroidism.

In Togo, a small West African country (56 785 km²), the prevalence of visible goitre in 6–12-year-old children was 21.6% and 5.3% in two endemic regions in 1999³. Goitre is considered endemic as it affects one adult in five⁴.

UNICEF–Togo (United Nations Children's Fund) in

co-operation with the Togolese government has implemented different programmes with the aim of improving the survival and development of children and women and to defend and promote children's rights. UNICEF is particularly concerned with IDDs in Togo.

Salt is a fundamental element for IDDs prevention, because it is consumed in households around the world. Other preventive methods are effective in some circumstances, but the best strategy is considered to be the iodisation of salt^{5,6}. Therefore programmes in many countries have promoted the production or importation of iodised salt as an important strategy for the virtual elimination of IDDs. In 1996 in Togo, the consumption of iodised salt was 1%⁷. With the instatement of laws and controls at the borders, the presence of non-iodised salt has become almost non-existent in spite of smuggled salt. Consumption increased to 73% in Togolese households in 1998⁴. Nutrition education projects are also indispensable strategies to provide knowledge and information to the population about iodine deficiency, its prevention and effects. For this reason, UNICEF–Togo started a nutrition education project in 1997.

The aim of this paper is to describe the procedures followed and key results of a school-based nutrition education project implemented in Togo to prevent iodine deficiency disorders, by encouraging use of iodised salt.

Table 1 KAP questionnaire

Question number	Items with multiple choice response (*) Key question
1	Show goitre by making a fist and placing it at the throat or use a picture of someone with goitre. Ask – What is this? (*)
2	Do you know anyone with a large and deformed throat like this?
3	Have you ever heard of something called iodine?
4	What is iodine? (*)
5	Can you name one or two symptoms or health problems caused by iodine deficiency (when you do not consume enough iodine)? (*)
6	Can you name a food that contains iodine or is enriched with iodine? (*)
7	Have you ever heard of iodised salt?
8	Does your family use iodised salt?
9	Where can you purchase iodised salt?

Methods

The aims of this nutrition education project were the following: (1) to increase awareness in the Togolese population about the importance of iodine and the repercussions of IDD; (2) to promote the utilisation of iodised salt within Togolese households; and (3) to translate the extended message to the adult population.

The first step was to determine an appropriate and efficient educational method suitable for school children, easy to access and usefully informant for the extended population. To illustrate this, the project compared the efficacy of three different educational approaches.

Fourth and sixth year children at public primary schools were the target population for this project. The number of pupils that participated was 20 per school, 10 fourth year pupils and 10 sixth year pupils (five girls and five boys). Overall, 613 children in 32 schools were included in this project, which was undertaken in two different regions of Togo: the Savannah region in the extreme north of the country and the Maritime region in the south. Each region was represented by 16 schools.

The information about IDD, its repercussions and its prevention, was presented in a message adapted to Togolese culture, traditions and social norms. This message was based on the experience of a Togolese family. This family had problems owing to iodine deficiency. The problems disappeared after consuming iodised salt.

The three educational approaches chosen for this project were based on Togolese culture and traditions: a puppet performance, an oral story and picture discs/flip charts. The puppet performance used an audio-visual approach: the message was transmitted via song, dance, voice and puppet shows. The oral story, performed by a traditional storyteller, is an audio method: the message was transmitted via voice and song. The picture discs and flip charts, paper material, is a written approach: the message was transmitted via pictures and the text. With the use of these three specific approaches the project compared the benefits of using either traditional African teaching methods, such as puppet performance and oral

stories, or modern methods, such as picture discs and flip charts.

Each school received one method, except for two schools that received the three methods (one school in each region). Ten schools in the two regions viewed the puppet performance, 10 schools listened to the story and 10 schools received the picture discs and flip charts.

To measure the impact and effectiveness of each approach, a Knowledge, Attitudes and Practices (KAP) survey was performed. The KAP questionnaire consisted of nine items regarding knowledge about iodine, iodised salt and IDDs (Table 1). KAP assessment was performed before and after intervention. After-intervention KAP data collection took place approximately three or four weeks after exposure. A second follow-up survey was performed after a two-and-a-half-year relapse; the KAP questionnaire was repeated again on the same group. The project was implemented in four stages as illustrated in Table 2.

Results

Response rate for the second KAP was 73.4%. Only 450 pupils participated in the initial and after-intervention KAP surveys. Grouping the three approaches under traditional (puppets and story) and modern methods (picture discs and flip charts), the results obtained were similar. The percentage of correct responses for both groups (traditional and modern) was not significantly different for key questions.

When analysing the traditional approaches separately, there were no significant differences between the two methods in responses to key questions 1, 5, 6 and 8. The knowledge score of fourth year pupils was below that of sixth year pupils. In general, the percentage of correct responses to key questions was lower for fourth year children. It appears that puppet performance first, and the discs and charts secondly, provided better understanding of the content to fourth year children. The story was more efficient at informing sixth year children than the puppet performance. The modern approach also provided good results for this target group of older pupils.

Some 38.4% of the pupils who participated in the first

Table 2 Stages of the project

Stage		Period
Stage 1: Initial KAP	Nine oral items asked to groups of 5 pupils at a time, 10 pupils in each class, 5 girls and 5 boys	October–November 1997 in Maritime region February–March 1998 in Savannah region
Stage 2: Message	Twelve puppet performances in the two regions. After each performance, a 15 min question session Twelve stories in the two regions. After the story the storyteller asked some questions and taught the pupils a song Twelve schools received the flip charts and the picture discs Flip charts were given to the teachers to conduct lessons in class Picture discs were distributed to school children The discs were used by pupils, they played with them and they showed them to their families and friends outside school	March 1998 in the two regions
Stage 3: First follow-up KAP	The same 9 items were asked to groups of 5 pupils at a time, 10 pupils in each class, 5 girls and 5 boys	April 1998 in the two regions
Stage 4: Second follow-up KAP	The same 9 oral items were asked individually to pupils found during the evaluation	November–December 2000 in the two regions

after-intervention KAP assessment were involved in the final stage of the study, i.e. second follow-up KAP survey after a relapse period. Analysis by class showed that, for fourth year pupils, those who received the puppet performance intervention method retained more knowledge than those receiving other methods, two-and-a-half years after the intervention was completed. The discs and charts also showed positive results (Fig. 1). Results were different for sixth year pupils. In this group the story provided better long-term knowledge for three key

questions. Picture discs and flip charts were again the second best method (Fig. 2).

In the final stage of the study (second follow-up KAP survey), 84.1% of pupils affirmed using iodised salt in their homes; this percentage was 96.2% in the first follow-up KAP, just after the intervention, and only 7.5% in the initial assessment.

Children’s preferences were different in the two regions. Comparison of preferences of method used, and results of the three intervention methods, in the two regions is illustrated in Fig. 3.

Cost–benefit analysis for each method was assessed (Table 3). Flip charts were the most economical method,

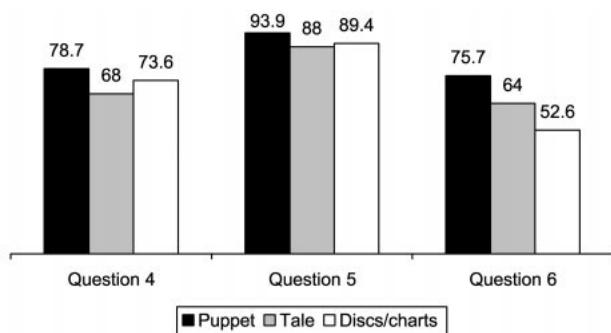


Fig. 1 Percentage of correct responses in fourth year children for selected items in the second follow-up KAP assessment by method of intervention

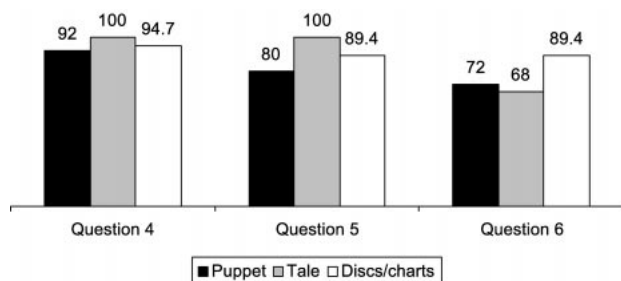


Fig. 2 Percentage of correct responses in sixth year children for selected items in the second follow-up KAP assessment by method of intervention

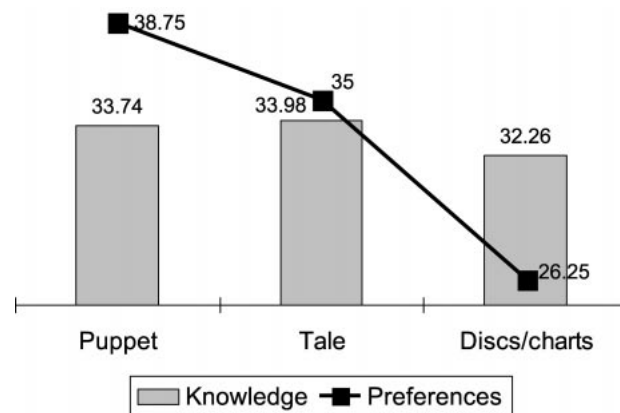


Fig. 3 Preferred method and comparison of efficacy between methods according to knowledge scores

Table 3 Cost–benefit analysis for each intervention method

Method	Cost (US\$)
Puppet performance	3.41
Oral story	1.36
Flip charts	0.36
Picture discs	2.18

followed in descending order by oral story, picture discs and puppets, respectively. Cost analysis demonstrates that picture discs and flip charts were the most cost-effective method while the puppet performance was the least cost-effective.

Discussion

Results of the PROFILES Togo survey⁸ estimated the dimensions of IDD in Togo as a public health problem, thus highlighting the importance of implementing intervention programmes and projects to improve the IDD situation in this country. Projections estimate that 7500 cretins, 25 000 severely mentally retarded children and 223 000 Togolese with intellectual deficiency will develop within the next five years unless intervention actions are implemented. Iodised salt is sold in many Togolese markets along with the black market sale of non-iodised salt. In 1997/1998, 540 tons of smuggled salt were found and destroyed.

Theoretical frameworks for effective community interventions suggest three levels of action are required⁹: first, to sensitise the population; second, to change lifestyles; and third, to create an environment that facilitates these new lifestyles and changes in eating habits. This nutrition education project aimed at having action at all three levels.

In Togo, nutrition and health education has not been considered a priority. There are no monitoring or evaluations that serve to track and improve the process of the strategies^{10,11}. This project confirmed that a nutrition education programme should be executed simultaneously with other nutrition programmes. Nutrition education that aims to change behaviour among the population must be a summary of different educational and communicative processes¹². Several surveys demonstrate that use of different communicative methods leads to different results in the nutrition education process¹³. The target population for the project was school children (fourth and sixth year). They learn easier, they are the best transmitters to the adult population and their participation in society must be promoted. The children and the population accepted the methods because they included their social norms and habits and they were adapted as required. The adaptation of educational messages to a culture is extremely important if a project is to attain its objectives¹⁴. To achieve success in a nutrition education programme, strategies must be adequate and population participation must be included¹⁵.

Transportation costs inflated the overall cost for the puppet performance and oral story. Working with local artists and groups to cut down on these costs could contribute to improving the cost-effectiveness of these methods.

Conclusions

All three approaches were well adapted to the target group and they provided knowledge and positive attitudes and practices regarding IDD.

The puppet performance was better suited to fourth year children as well as younger children. Oral stories were more appropriate for sixth year and secondary school pupils. Pictures discs and flip charts were less familiar to this target group; however, they showed positive results despite being introduced for the first time. Introduction of all three methods at the same time was not efficient; however, using different methods at different stages during primary and secondary education could be effective. A progressive intervention using different methods for different target groups would be optimal.

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