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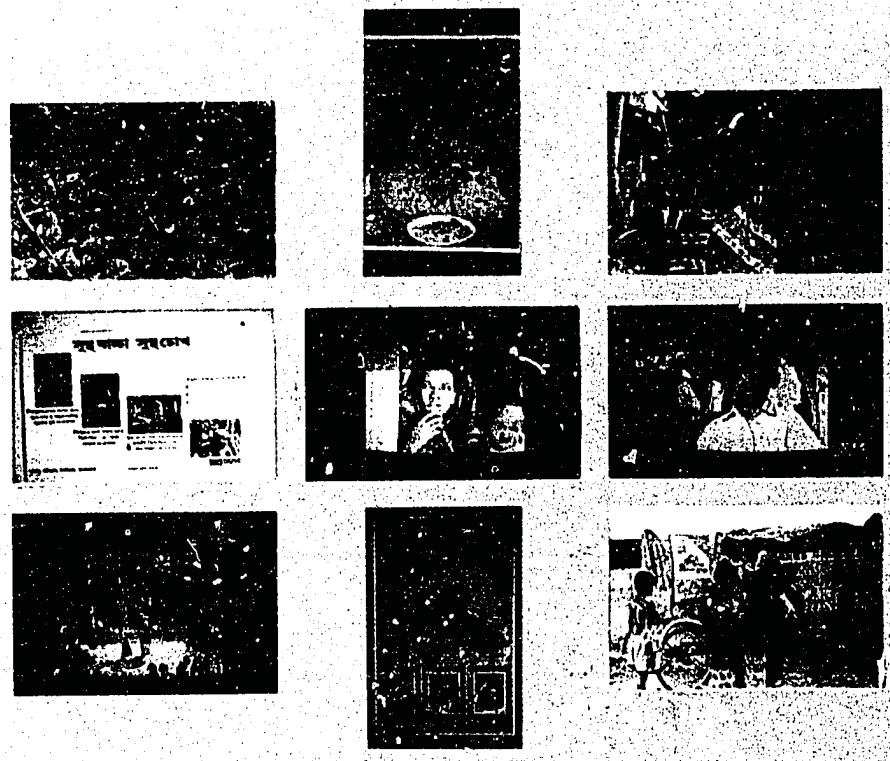
PREVENTION OF VITAMIN A DEFICIENCY IN BANGLADESH

A SOCIAL MARKETING APPROACH



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A Social Marketing Approach

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Preface

The most visible clinical manifestation of vitamin A deficiency is Xerophthalmia. The devastating effects of vitamin A deficiency on the eye and the high prevalence of Xerophthalmia have led many to consider vitamin A deficiency as an ocular disease. Physiological functions like vision, reproduction, growth, and maintenance of epithelial and bone structures depend on vitamin A, to great extent. Vitamin A deficiency did not attract must attention until the late 1960s and early 1970s, when people became aware of the fact that vitamin A deficiency is a major public health problem, especially in the developing countries.

The fact that vitamin A is essential to combat infection was duly recognized by McCollum 75 years ago. Ophthalmologic complications of vitamin A deficiency for the past 40 years held the interest of the scientists. Sommer et al. in the early eighties, found that a mild xerophthalmia (Bitot's spots or night blindness) in a child increased the probability of death due to an increased risk of respiratory infection and diarrhea 6-9 times.

It is estimated that at least 13 million pre-school children have damaged eyes caused by vitamin A deficiency. Physiologically over 40 million pre-school children are vitamin A deficient and every year, about 500,000 pre-school children develop active corneal disease due to vitamin A deficiency. Large number of these children die as a result. Some 3 million children under 10 years of age are blind from vitamin A deficiency, worldwide, at any given time.

Vitamin A deficiency is one of the major public health problems in Bangladesh. About 1,000,000 children suffer from vitamin A deficiency and of those 30,000 go blind each year. Recent studies confirm that vitamin A not only prevents and cures xerophthalmia, but also reduces mortality and morbidity in children. The main determinant of vitamin A deficiency in Bangladesh is the dietary intake of vitamin A which is inadequate for the majority of households in Bangladesh. The Bangladesh Nutritional Blindness Study, (1982-

1983, Institute of Public Health Nutrition and Helen Keller International) found that 25% of children eating solid foods, had never been given any green leafy vegetables and two-thirds had not eaten them in the past week. Changed infant feeding habits were identified to be the key to the prevention of nutritional blindness Nutrition Education was therefore recommended as a vital intervention for reducing vitamin A deficiency in Bangladesh.

Many nutrition education programs are currently undertaken all over the world. Evaluations of these programs are rare and there appears to be a general agreement that many of the common nutrition education programs have not been very effective in changing food behavior. One of the reasons for the lack of success is the failure of many programs to address the needs and problems of the target groups. Nutrition education programs are often based on the ideas of program planners rather than on careful prior investigation to identify the target groups, their problems and the possible remedies. Even if indigenous dietary beliefs and practices are studied, the obtained information is often not properly translated into the final educational message.

Therefore, in 1990, a pilot mass media campaign was launched by Helen Keller International in Comilla district, one of the seven districts with the highest prevalence of xerophthalmia. The message and media strategy for this campaign were developed on the basis of a qualitative research in the area. More than two hundred individual in-depth interviews and 16 focus group discussions were carried out with different segments of the population.

Results show that although respondents acknowledged the health promoting effects of green leafy vegetables for their children, consumption frequency was low, especially among infants. Furthermore, when no explicit reference was made to green leafy vegetables, respondents referred to foods like milk, rice and banana and not to green leafy vegetables as suitable foods for their children. Green leafy vegetables are considered a low priority food. Nightblindness, as a disease affecting the eye, was known to most of the respondents. Few, however made a link between the disease and dietary deficiencies. On

the basis of the results, the message strategy was developed for the promotion of consumption of green leafy vegetables.

Social marketing, which is the application of commercial techniques to the promotion of social products and ideas, is a relatively new approach in the field of nutrition education. It is based on the principle that consumer perception must be the key determinant in the development of educational strategies and messages. To counter the weakness of mass media campaigns whereby audiences are treated as if they were the same, separate messages for relevant audience subgroups were developed. The mass media communication campaign was designed to test the effectiveness and practicability of a social marketing program to improve vitamin A status among the most at-risk segments of the population. Prior to the launching of the campaign, a media and message strategy had been developed on the basis of formative research.

Planners of health nutrition education programs doubt whether traditional nutrition education programs have at all been effective in changing food behavior. One particularly important issue in the debate is the effectiveness of different types of communication channels. The tension between reaching large audiences with mass media programs and producing significant behavior change with pilot outreach programs, has been identified as the central problem of nutrition education. Interpersonal education programs have been found to be most effective in bringing behavioral change and improve nutritional status among target groups. Large scale expansion involved in training and supervising health workers and cost per man hour of there worker. On the other hand, mass media has the advantage of reaching large audiences at a very low cost. There is however little evidence that current mass media programs have been able to induce behavioral change or improve nutritional status.

Acknowledgment

We would like to take this opportunity to express our gratitude to Dr. Fatema Alauddin of Family Development Services and Research (FDSR), Mr. Abu Yusuf of Program for the Introduction and Adaptation Contraceptive Technology (PIACT), Mr. Ashok Sethti and Ms. Banani Kakkar of Manoff International and Dr. Lodhi of Helen Keller International for their contribution in planning, designing and conducting the formative research studies. We are grateful to Dr. Frances Davidson for providing technical support to the project. Ms. Susan Sarker and Mr. Nael Islam deserve our thanks for going through the manuscript. We have benefited from their suggestions. Ms. Sylvia Eken has been kind enough to advise us on the layout and design. We express our gratitude for that.

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We are deeply indebted to all our colleagues for constantly encouraging us by providing valuable support as and when needed.

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EXECUTIVE SUMMARY

In March 1990, the Mass Media Communication Campaign was launched in one of the 64 districts of Bangladesh, as a pilot program. It covered a population of about 4.5 million. The project was designed to test the effectiveness and practicability of a carefully conceived social marketing program to improve vitamin A status among the most at-risk segments of the population, through increased consumption of vitamin A rich foods. The program also aimed at determining the level of expansion that might be achievable through the existing vitamin A Capsule (VAC) distribution program by demand creation. VAC distribution and nutrition education are two interventions employed by the Ministry of Health (MOH) to address the serious vitamin A deficiency problem of Bangladesh.

The project was managed by Helen Keller International (HKI), Bangladesh, in collaboration with the Institute of Public Health Nutrition (IPHN) and UNICEF. Social marketing consultation was provided by The Manoff Group. Manoff consultants produced a social marketing workplan in early 1988 and the development phase was conducted over the next two years, at a slow pace owing to a series of natural disasters and program management changes. The workplan was devised to evolve a creative and media strategy that would lead to real attitudinal and behavioral change; that would transcend simple education and be suitable for both mass media and inter-personal dissemination.

Strategy was developed out of a qualitative research program undertaken in the formative research phase. In this phase, attitudes and perceptions regarding vitamin A rich foods, and resistance to consumption of vitamin A rich foods, were brought out. The findings regarding the image of vegetables coincided with the findings in Indonesia (The West Sumatra vitamin A Social Marketing Project). Consumption was low and vegetables were seen to be a low priority food. Though nightblindness was high in Bangladesh it was a poor motivator to feeding children green leafy vegetables. Considerable

resistance existed, mainly fears of diarrhea in younger children; 'disliking of vegetables' among older children and some problems of availability and cost.

To overcome resistance a culturally relevant, believable and actionable intervention matrix was developed working with the mothers. This matrix included measures to reposition vegetables as vitally essential to the daily diet and to introduce powerful motivators beyond nightblindness and blindness prevention though without excluding them. These interventions were then pre-tested with considerable success. Manoff consultants in collaboration with HKI staff and an advertising agency instituted the creative process.

The formative phase also probed into social and cultural issues; into communications links and community participation issues. It was found that mothers seldom left the village environment and shopping was undertaken entirely by fathers; government health and family planning workers were known but not regarded as sources of health education; no village structures existed that developed community participation activities; NGO activities were minimal and radio reached some of the mothers.

Radio supported by television spots were selected to both emotively raise the image of vegetables and to overcome the resistances; spots consisting of short lyrical dramas were carefully targeted to each segment of the audience. This process was supported by promotions including posters, miking (roving loudspeakers), leaflets, direct mail letters and by the limited effort of available Government and non-Government health workers. Community participation was ensured through men's clubs, religious bodies, schools, political and health structures. Creating demand for VAC was limited to radio messages to health workers and the community. The VAC messages were broadcast for only one month at a time before the two distribution rounds in April-May and October-November. A baseline was undertaken in February-March 1990 and a repeat-evaluation study undertaken in May 1991 in both the intervention and control areas. Both studies were undertaken by an independent research firm.

The program was launched in March 1990 and ran for 16 months,

ending in June 1991. Over the period two monitoring and tracking studies were undertaken to check implementation and effect. Indications that messages were being received and compliances generated were strong and no reasons were found to change the message strategies. Concerns at the lack of inter-personal communication persisted as miking was not reaching mothers to the extent expected though revisions were made to scheduling. Miking was replaced, late in the program, by women visiting villages with recorded messages.

Lessons learned from the project have been wideranging and have also included findings from the external mid-term evaluation. Helen Keller International, Bangladesh has incorporated these into major elements of its new NGO Gardening and Nutrition Education Surveillance Project; a USAID funded nationwide homegardening project that will promote both the production and consumption of vitamin A rich foods through a social marketing approach.

Findings

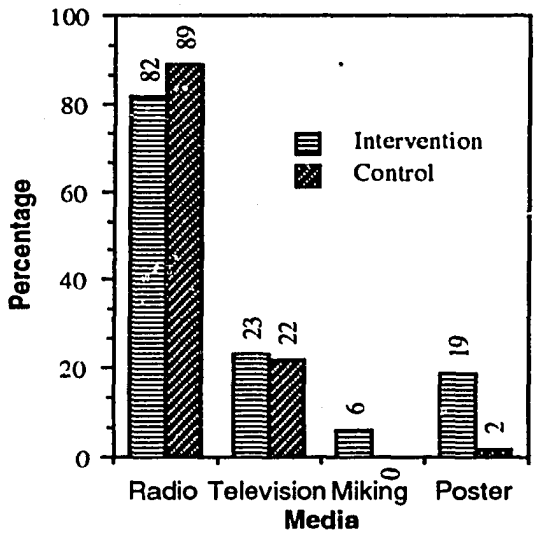
Message Receipt: Unprompted recalls of general messages about green leafy vegetables increased from 12.5% to 45.8%, in the intervention area, and increased somewhat less in the control area. It may be noted here that radio and television were received in both the intervention and control areas. Unprompted recalls of two specific program messages, reached 43.9% and 39.4%, respectively, in the intervention area and somewhat less in the control area.

Comprehension: Comprehension was high among those who heard messages, in both the intervention and control areas. For example, 80.7% understood the messages were about the nutritional value of eating green leafy vegetables.

Appreciation: 86.6% of mothers said they appreciated the messages because they talked about the benefit of green leafy vegetables while 11.7% only appreciated them because they raised awareness of nightblindness. This appreciation level correctly interprets the creative strategy.

Figure 1

Percentage of respondents who received Message through different Media at the end of the Communication Campaign in May 1991 in Comilla, Bangladesh



Sources of Messages Receipt: The program achieved a significant increase, in receipt of messages, primarily through Radio followed by Television. Poster at 19% and Miking at 6% recall were both low (Figure-1).

Sources of Supply: A number of indictors demonstrated shift in food consumption patterns and availability of green leafy vegetables in 1990 and 1991. Agronomists confirmed that as the 1990 research was conducted in February-March, at a high season for green leafy vegetable availability, while the 1991 research was conducted in May at the end of the main vegetable season, a decline in availability would be expected. More respondents claimed the need to purchase green leafy vegetables in 1991 and over 50% of them stated price as a restraining factor.

Shifts in Consumption: A significant increase in the number of children consuming green leafy vegetables is recorded in the intervention area and an insignificant decrease in the control area (Table-1). Similar comparative results are recorded in 24 hour recall. As over 90% of pregnant women and lactating mothers consumed green leafy vegetables in 24 hour recall, in both pre and post intervention periods, the data could not demonstrate any increase in the number of consumers in these segments. Pumpkin consumption increased slightly in both areas but compliance remained low.

VAC Distribution: The evaluation study shows a decline in VAC distribution in 1991 in both the control and intervention areas. It can be assumed that distribution constraints offset any benefit to the demand creation efforts of the program.

Results

Over a relatively short time span of 16 months the project has demonstrated a significant impact in increasing awareness of the need for and consumption of green leafy vegetables among children 6-72 months. In the 6-12 months old segment of children, however

Table 1

Consumption of green leafy vegetables by children of 6 - 72 months old (1 week recall) in March 1990 and May 1991, Comilla, Bangladesh

	INTERVENTION		CONTROL	
Age Child	1990 n (%)	1991 n (%)	1990 n (%)	1991 n (%)
6-12	212 (3.8)	278 (11.2)	88 (4.6)	179 (5.6)
13-24	139 (19.4)	97 (48.3)	69 (37.7)	753 (2.6)
25-72	756 (48.9)	538 (65.7)	362 (55.5)	975 (43.7)
Total*	- (24.0)	- (42.0)	- (33.0)	- (27.0)

*)=age standardized totals

consumption is still accomplished by few of them. Supply constraints at the evaluation period may have distorted the result negatively and it is reasonable to assume that the statistical increase in green leafy vegetable consumption accomplished by children - 24% to 42% - is a realistic minimum yardstick of result.

Cost Effectiveness Analysis

The program cost $ 299,068. Assuming that 18% more children (42 less 24%) consumed green leafy vegetables as a result of the program, this equals 146, 880 more children giving a cost of about $2 per successful intervention over 16 months or $1.50 on an annualized basis.

Should the program be replicated or continued to a similar population size the cost would come down to $1 per successful intervention. If the program could be replicated on a national basis the cost would be estimated at $1 million to achieve the same result over 1 year and improve the nutritional status of 3,500,000 children at a cost of 28 cents each.

Lessons Learned

The program has made significant contributions to the development of messages and media mix decisions in the furtherance of strategies to improve vitamin A nutritional status among children. The social marketing approach which involves a disciplined series of steps to evolve strategies through working directly with the intended beneficiaries has been proven to be a successful methodology. The need to reposition green leafy vegetables as an essential nutritional need to find motivators to consumption, beyond fears of nightblindness and to convincingly overcome resistance block, has been proven a successful formula

Mass media has proved its capacity to generate significant awareness. However, in particular, among the 6-12 month age-group, methods to ensure effective direct counselling are required to engen-

der behavior change. Unless experienced NGO field counsellors are in place this task is difficult. Miking proved not to be a successful replacement. Pumpkin was not found to be a satisfactory alternative to green leafy vegetables. Owing to existing high consumption levels by pregnant and lactating mothers, future programs should either drop these segments to give greater weight of effort to children or shift the message emphasis to increase the amount to be consumed per day (rather than to eat any amount per day as this program endeavored to achieve). Supply constraints persist and ways need to be found to resolve these constraints. VAC distribution enhancement seems to rest primarily with efforts to improve the distribution system itself.

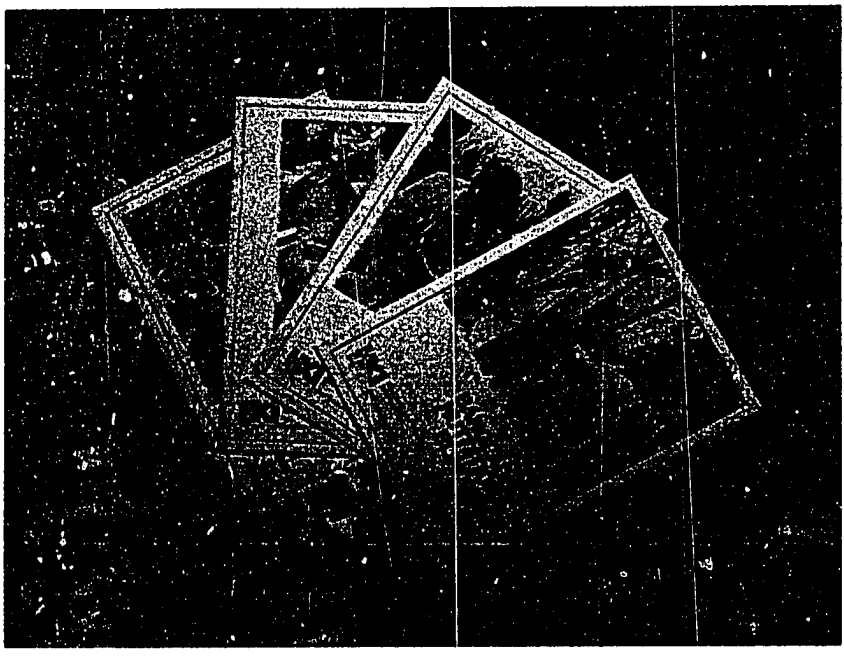
Recommendations

The mass-media program should be continued in order to understand the ceiling of accomplishment obtainable. Program messages and strategies, if possible, should be integrated into a national program of direct counselling through all NGOs engaged in nutrition education intervention in collaboration with IPHN. Ways need to be found to generate home gardening of green leafy vegetables economically on a much wider scale than home gardening pilot projects would allow - owing to cost factors and a new national program integrating both demands and supplies generation undertaken. VAC distribution strategies need to be improved as well as the retraining and motivation of the delivery system.

THE PROGRAM

Background

Vitamin A deficiency had been recognized as a public health problem, in the region where present day Bangladesh is situated, in the pre-liberation days. After the liberation of the country in 1971 and the establishment of a sovereign Bangladesh, vitamin A deficiency has received the attention of the Government. As a result, according to the recommendation of World Health Organization (WHO), the Government instituted the Blindness Prevention Program, Bangladesh in 1973. Since then, under the supervision of the program twice a year mass-distribution of high potency vitamin A capsule has been undertaken. The program also attempted a long term solution through nutrition education.



Set of four booklets, 10.75" x 8", in English describing the key findings of the Bangladesh Nutritional Blindness Study, 1982-1983

Helen Keller International in collaboration with the Institute of Public Health Nutrition conducted the Bangladesh Nutritional Blindness Study (BNBS, 82-83).

The study found prevalence of nightblindness four times higher than the WHO threshold for designating it a public health problem and recommended the following action programs:

- Preventing blindness due to malnutrition and vitamin A deficiency urgently needs to be established as a priority goal for health care.
- Preventing xerophthalmia, the major cause of serious eye disease in childhood, and improving overall child nutrition must be planned as closely linked activities.
- The National Nutrition Council, as well as concerned agencies, could take responsibility for improved intervention strategies.
- The government's blindness-prevention cell must be expanded and strengthened. Its working objectives should include all causes of blindness.
- All health workers should be aware of the causes of nutritional blindness and its potential for prevention and immediate treatment.
- Training needs to be intensified for the recognition and adequate treatment of corneal lesions immediately threatening sight — a medical emergency.
- Vitamin A 200,000 IU (VAC) must be available in every health facility.
- Feeding and Nutrition Education.
- The key to preventing nutritional blindness is changed infant feeding habits.
- In the longer term, food grown in the country must replace imported vitamins.
- Breastfeeding and more varied and nutritious weaning diets — including cheap sources of provitamin A such as sweet potato, yellow vegetables and fruit, and green leafy vegetables — need to be strongly promoted.
- The mass media should be called in to play a central role in diffusing policies for preventing blindness and improving child nutrition.

Objectives

According to the recommendations of the study mentioned above the Comilla project was undertaken by HKI. The objectives of the project are given below.

- *To increase the frequency of consumption of β-carotene rich foods by weaning-aged children in particular and by under 6 years old children, in general, through a communication campaign promoting specific dietary behaviors change;*
- *To encourage purchase or production of β-carotene rich foods;*
- *To improve dietary practices related to vitamin A status in maternal nutrition*

during pregnancy and lactation and breastfeeding practices through the communication campaign described above:

- *To increase effective VAC coverage in the Comilla District among children through enhanced worker performance and increased consumer demand:*
- *To establish blindness prevention and vitamin A child survival programs, as a health priority among district and community leaders, in Comilla district, and among national policy-makers.*

Project Organization

Under the overall guidance of the Country Director the Project Coordinator executed the program. Consultancy was provided by Manoff International (Appendix 1).

COMILLA AT A GLANCE

Population:	4.5 million
Pregnant mothers:	400,000 approx.
Lactating mothers:	400,000 approx.
Children 6-72 months:	816,000 approx.
Number of Thanas:	12
Number of Villages:	2963

Per capita income is U.S. $125;

87% of the population is Muslim; 12% Hindu; 1% Others

One half of infants born are low-birth-weight (below 2.5 kilograms)-highest in the world.;

The doctor-to-population ratio: 1:12,500;

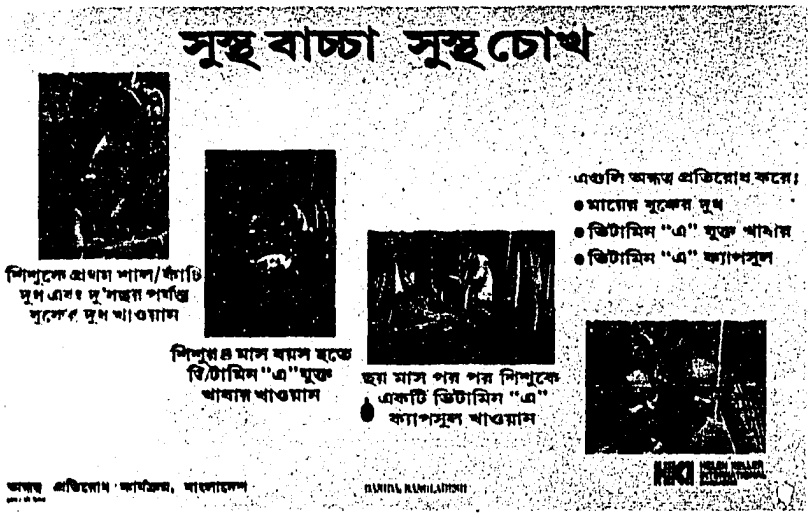
30% of the labor force are unemployed. Very few women work outside the home, and those who do are in urban areas;

The average Bangladeshi woman gives birth to six children (1982 Census) with an average of four surviving;

About 86% of the population subsist on caloric levels below those considered minimally required, with 15% of preschool age children suffering from severe malnutrition.

Project Location

Bangladesh became an independent nation on the 26th of March 1971. The country is bounded on all sides by India, except the South where it opens into the Bay of Bengal and the South-Eastern region where it has a small common border with Burma. The country has an area of only 55,598 square miles with a huge estimated population of approximately, 110,000,000. It is one of the most densely populated countries and occupies the eighth position by population in the world with about 80% of the population living in rural areas. Agriculture is the principal means of livelihood. The country is primarily a flat, alluvial delta, laced by numerous rivers and tributaries of the Himalayan drainage system. During the seven-month monsoon season these ri· ·rs overflow in lowland areas, seriously limiting agricultural output. Although paddy occupies over 80% of the cropped acreage,



Multicolored poster, 22" x 14", in Bengali to orient health extension workers, counsellors and monitoring team members.

Multicolored Training Manual, 11" x 8.5", in Bengali, used to educate counsellors and members of the monitoring team on vitamin A deficiency.

Bangladesh has an annual food deficit of over 1.5 million tons. Bangladesh's administrative structure includes five levels: four divisions, 64 districts, 460 thanas (upgraded thanas) and 39 thanas (urban area), 4,427 unions/wards (clusters of villages), and 60,215 villages. There are about 18,620,000 households with an average 6 inhabitants. The country has about 2,792 km of rail roads, 10,887 km of paved road and roughly 8,433 km of perennial and seasonal waterways. Waterways provide the cheapest mode of transportation. Comilla District which is Southeast of the Dhaka District and borders on India was selected as the location for the Nutritional Pilot study. This district is culturally, economically and socially representative of Bangladesh.

Control Area

The intervention area as stated above is Comilla district situated at the mid-south-eastern region of Bangladesh. The control area was selected from the neighboring Brahmanbaria district. However, the mass media campaign through radio and television reached both areas and made it difficult to keep the control area isolated.

The Social Marketing Workplan

The Social Marketing workplan according to which the project was run is given below:

Activity 1- Formative Research: Sub-activities: a) Appoint research firm; b) Prepare protocol and question guides; c) Test question guides; d) Undertake fieldwork: e) Transcribe tapes; f) Produce a dictionary of words and phrases; g) Tabulate and summarize findings; h) Translate findings; i) Write report: Resources: HKI Project Coordinator and the appointed research team, supported by the MG research team. *Activity 2*- Formulate Intervention Strategies; Resources: HKI Project Coordinator, supported by MG marketing consultant. *Activity 3* - Test Intervention Strategies; Resources: HKI Project Coordinator and the selected research company, supported by the MG research consultant. *Activity 4* - Produce Creative and Media Brief; Resources: HKI Project Coordinator, supported by the MG marketing consultant. *Activity 5*- Appoint Advertising Agency; Resources: Project Coordinator with HKI senior management; approval supported by the MG marketing consultant. *Activity 6*- Production of Draft Messages and Materials and Media Plan; Resources: Appointed advertising agency. Approvals: The Project Coordinator and the agency, with MG support, presented the project to HKI senior management for review. Radio spots were then recorded and approved. *Activity 7*- Pretest Materials and Messages; Resources: HKI Project Coordinator and the research company, supported by the MG research consultant. *Activity 8*- Amend Materials; Resources: HKI Project Coordinator and the advertising agency, supported by the MG

marketing consultant. *Activity 9* - Finalize Program; Resources: HKI Project Coordinator, supported by the MG marketing consultant. *Activity 10*- Produce Materials and Final Media Plans; Resources: Advertising agency briefed by the HKI Project Coordinator. *Activity 11*- Baseline and Evaluation; Resources: The HKI Project Coordinator and research company, supported by the MG research consultant. *Activity 12*- Orientation: Objectives: To orient the VAC distribution system to the program; to commence training and orientation of field workers (health workers or other field workers appointed); to ensure monitoring and supervision of field workers is in place. To orient,all interested parties - USAID, UNICEF and PVOs on the final project. *Activity 13*- Launch Effort; Resources: HKI support Project Coordinator, advertising agency and all other support mechanisms, supported by MG marketing consultant; Objectives: To launch the effort and assure that it is implemented as planned. *Activity 14*- Monitoring Project and Adapt as Appropriate; Resources: HKI Project Coordinator, supported by the advertising agency, research company, and by the MG research and marketing consultant. Objective: To monitor the implementation, and effectiveness, of the program, every six month (suggested three times over the two years of the project, and undertaken one month after VAC distribution months). To amend and adapt the program, accordingly.

Formative Research

The objectives of the research studies were:

- *To identify the primary and secondary target for exposure to communication strategy;*
- *To develop key messages, for each segment of the target group, for attaining behavioral change;*
- *To identify barriers and resistance to be overcome to lead to the desired behavioral change;*
- *To determine the tone, of the messages, for each segment of the target group;*
- *To determine key appeals and promises needed to achieve the desired behavioral change;*
- *To identify the key authority figures who can lend credibility to the messages;*
- *To identify appropriate media to reach the target groups (s).*

Methodology: In the formative research phase, two local research firms were contracted to conduct 16 focus-group-discussions of five sub-segments of mothers, 1 each of mothers-in-law and fathers totaling 7 focus groups per homogeneous zone. In addition to those mentioned above, 1 group per thana was conducted among families claiming a high consumption of green leafy vegetables (at least 5-6 times a week). In total 16 focus group discussions were conducted. The group discussions were conducted by Program for the Introduction and Adaptation Contraceptive Technology (PIACT). The other research firm, Family Development Services and Research (FDSR), conducted the in-depth interviews totaling 210.

Results: The Results of these studies are grouped under different headings, as mentioned below for clarity. Mothers perception regard-

Multicolored poster, 29" x 19", in Bengali. Distributed all over the project area showing different targets.

ing illness, treatment and health , etc., are discussed under appropriate subsections.

General: In this section results other than on specific issues such as health, authority figures, etc., are discussed.

- The target mothers are exposed to very few external communication sources;
- besides their family and neighbors, rarely travel outside their households ;
- shopping is mostly done by husbands or male members of the household;
- less than 1/2 of them listened to any media, with a significant degree of frequency, and then mostly passively;
- the most popular programs listed were songs, drama and family planning;
- noon and 8-10 PM had emerged as the most popular time for tuning in;
- between 1/4 and 1/3 watched television occasionally;
- viewing time centered around 6-8 PM.;
- hardly any mother went to cinema, jatra and jari gan gatherings (Jatra is a form of plays performed on open stage during festivities and jari gan - a form of chorus - is occasionally performed at homes of the village leaders);
- very few mothers read newspapers.

In comparison fathers were much more mobile and came into contact more frequently with media;

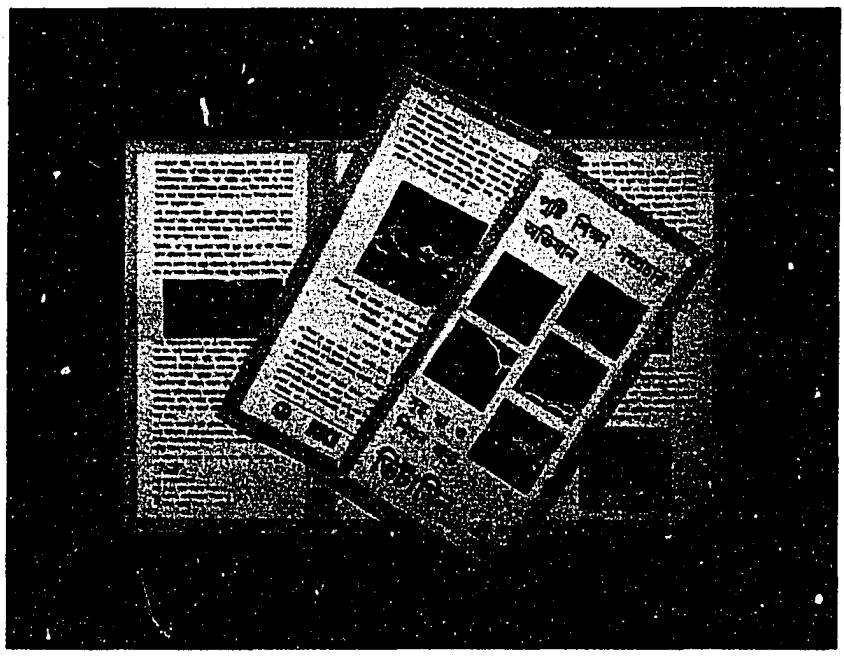
- 3/4 listened to radio; 1/2 watched television; about 8% attended village clubs; most went to market.

Health Status:

- a little under half the pregnant mothers and about 2/3 of lactating mothers were ill or felt unwell;
- mothers with 0-60 month children felt about half of them were not well;
- a generally passive attitude existed towards improving this health situation;
- general beliefs existed as to the steps that could be taken to eat better or take medicines but these steps were rarely taken except in extreme illness.

Vitamins and Vitamin A:

- the word 'vitamin' was known and understood but not vitamin A specifically;
- among all vitamin A rich foods were acknowledged as health promoting but were seldom mentioned when asked to list essential foods;
- considerable resistance existed to giving green leafy vegetables to children, like: fears of diarrhea, stomach upset' in young children and disliking' in older children;



Multicolored Brochure, 6 pages, 9.5" x 4.75", in Bengali, used to announce the project and to motivate government officers and social leaders.

- availability and cost were constraining factors;
- no children in the 6-12 month age group were given vitamin A rich foods beyond breastmilk;
- only 20% of children from 13-60 months received any vitamin A rich foods;
- most pregnant and lactating mothers consumed some vitamin A rich foods.

Nightblindness:

- nightblindness was well understood although it afflicted a relatively small percentage of children;
- causes and cures were little understood; some mothers felt it was not too serious as it went away in its own time.

Authority Figures: As regards health problems, mothers said they simply discussed them with husbands or older family members. There seemed to be no village-based authority on such subjects even though mothers had met and knew the government health and family plan-

ning workers. Doctors however, were clearly regarded as credible and believable sources of health information.

Target Groups: The research clarified as follows, the primary target groups:

- Pregnant Women -who possessed few resistances (except general fears of eating too much and thus having a large baby and difficult delivery);
- Lactating Mothers - who possessed no real resistances to vitamin A rich foods;
- Children 6-12 months - where considerable resistances existed and largely no supplementary food given;
- Children 12-24 months - where resistances persisted, were still breastfed and fed some supplementary food by the mother;
- Children 25-60 months -where resistances persisted and the child was on family diet and fed him or herself;
- Fathers - as the purchaser of market foods and the prime influencer in the family.

Intervention Testing

The intervention strategies were then produced. Next stage was the testing of intervention strategies through actual household trials of the proposed behaviors. The objectives of the trial were:

- To test comprehensibility, credibility and acceptability (effectiveness) of messages;
- To identify the problems in undertaking the desired actions according to the messages by the mother;
- To identify any further resistance points;
- To gain knowledge about green leafy vegetables consumption (e.g., liking, cooking procedures, etc.);
- To identify authoritative figures within the family structure.

Methodology: Seventy mothers were asked to follow the advice for 6 days (14 from each of five target groups) then revisited to understand their experiences.

Conclusion: The advice was successful in bringing about a significant improvement in the consumption of green leafy vegetables. Basic rationale used for trying the new behavior was found to be credible and motivating. Some minor revisions to phraseology were required.

Intervention Statements and Targets

Suggestions were put to target audiences through the following prototype messages.

Pregnant women: Doctors say that a pregnant woman like you, should eat green leafy vegetables like helencha shak, kalo kochu shak, lal shak, pui shak and shajna shak everyday.

- Eat at least 1 bowl of green leafy vegetables everyday.
- GLVs are rich in vitamins and will prevent nightblindness in the child in your womb, which is a serious disease and can even turn to total blindness.
- It will also give you strength and help your baby resist some other diseases.
- If you really want to eat GLV everyday you can find it from the field, around your house or from the market.
- Every time your husband goes to the market, ask him to bring at least 3-4 green leafy vegetables.
- You will find that some green leafy vegetable or the other is always available. Remember all green leafy vegetables are good for you. If it is not available in abundance, add it to other vegetables or fish and eat.
- If you are not able to find a green leafy vegetable on some day, eat 1 bowl of 'misti kumra' which is also rich in vitamins and also gives the same protection.

Nursing women: Doctors say that nursing mothers like you should eat green leafy vegetables like helencha shak, kalo kochu shak, lal shak, pui shak and shajna shak everyday.

- Eat at least 1 bowl of green leaves, everyday.
- GLVs are rich in vitamins and will protect the child that you breast-feed from night-blindness, which is a serious disease and can even turn into total blindness.
- It will also give you strength and help your baby to grow resistance to some other diseases.
- Doctors say green leafy vegetables eaten by nursing mothers do not upset stomach or cause stomach pain (nari betha) in the children.
- If you really want to eat GLV every day, you can collect or procure it from the field, around your house or from the market.
- Every time your husband goes to the market, ask him to bring at least 3-4 green leafy vegetables.
- You will find that some green leafy vegetable or the other is always available. Remember all green leafy vegetables are good for you and, through your breastmilk, for the child. If it is not available in abundance, add it to other vegetables or fish and eat.

- If you are not able to find a green leafy vegetable on some day, eat 1 bowl of 'misti kumra' which is also rich in vitamins and also gives the same protection. Do not worry doctors say that 'misti kumra' does not cause stomach upset or pain (nari betha).

Mothers of 6-12 months old children: Doctors say that the 'tola khabar' (Supplementary food) given to the child from 6 months onwards, should include mashed and softened green leafy vegetables like helencha shak, kalo kochu shak, lal shak, pui shak and shajna shak everyday.

- Take some cooked vegetable, mash them well and add it to the child's soft rice.
- GLVs are rich in vitamins and will protect the child from nightblindness, which is a serious disease and can even turn into total blindness.
- It will also help your child grow resistance to some other diseases.
- Doctors say green leafy vegetables when mashed well can be easily digested by the child, and does not cause stomach upset or pain (nari betha).
- If you really want to eat GLV every day. you can collect or procure it from the field, around your house or from the market.
- Every time your husband goes to the market, ask him to bring at least 3-4 green leafy vegetables.
- You will find that some green leafy vegetable or the other is always available. Remember all green leafy vegetables are good for your child.
- If you are not able to find GLV on some day, add some well mashed 'misti kumra' which is also rich in vitamins and also gives the same protection to the child. Do not worry as doctors say that 'misti kumra' does not cause stomach upset or pain (nari betha).

Mothers of 13-24 and 25-72 months old children: Doctors say that you should feed green leafy vegetables like "Taro leaves, Helencha., etc.," to children of 13-24 m/25-72 months everyday.

- Give at least 1/2 bowl (100 mg) green leaves, everyday.
- If the child still eats soft rice, mash the vegetables with it.
- If the child does not eat spices, take out 1/2 bowl of green leafy vegetables, while you are cooking it, before adding the spices.
- GLVs are rich in vitamins and will prevent the child that suffer from nightblindness, which is a serious disease and can even turn to total blindness.
- Doctors say green leafy vegetables can be easily digested by small children and do not cause stomach upset or pain (nari betha).
- If you really want to feed GLV everyday, you can collect or procure it from the

field, around your house or from the market.

- Every time your husband goes to the market, ask him to bring at least 3-4 green leafy vegetables.
- You will find that some green leafy vegetable or the other is always available. Remember all green leafy vegetables are good for your child.
- If you are not able to find GLV on some day, give your child 'misti kumra' which is also rich in vitamins and also gives the same protection to the child. Do not worry doctors say that 'misti kumra' does not cause stomach upset or pain (nari betha).

Message Strategy

The Manoff Group's Social Marketing Consultant formulated messages in consultation with the Project Coordinator and the appointed Advertising Agency. Three separate creative tracks were perceived in order to adapt the prototype messages into suitable mass-media forms. The tracks were:

- To raise the value of green leafy vegetables as an essential daily part of the diet;
- To motivate consumption through promoting general health benefit;
- To overcome resistances through convincing, culturally relevant solutions, carefully targeting each target audience depending upon eating patterns.

Since green leafy vegetables as a cure or preventive agent for nightblindness could not sufficiently motivate mothers and as research showed that this was not enough to raise the value of green leafy vegetables, the educational component was, therefore, shifted towards a need to reposition green leafy vegetables in the minds of the mothers centered on the idea that green leafy vegetables are bursting with vitamins essential to good health and growth.

Sweet pumpkin and lal shak (red color), two easily available vegetables are not covered if only green leafy vegetables are mentioned. It was therefore decided that lal shak and sweet pumpkin will also be mentioned as health promoting and to illustrate or mention specific green leafy vegetables most commonly consumed. The importance of quantity to consume was debated at length. Spoonfuls and bowlfuls proved cumbersome and impractical. Eventually the concept of promoting consumption every day was felt to be appropri-

ate to emphasize the need for larger quantity. To overcome resistance points (green leafy vegetables cause diarrhea, etc.), it was emphasized in the messages that well washed and well cooked and mashed vegetables do not cause any trouble of the stomach. This was authenticated by an authority figure, usually a medical doctor, who was found to be relied on by the mothers in the formative research.

The strategy for VAC was based on demand generation putting more emphasis on its benefit on general health of the child rather than the usual approach of showing it as a cure for nightblindness or as a preventive agent only. The above considerations were utilized to adapt and amend the prototype messages and the whole creatively converted into the media forms to be employed.

Media and Promotional Strategies

In the communications planning phase considerable care was given to developing a media mix that would be economical and practical to replicate on a national basis. Major constraints existed. Mass media reach seemed modest and effort would be required to maximize its reach and frequency. Existing inter-personal communications to mothers were extremely limited. UNICEF had just concluded a training program to government health and family planning field workers to improve their counselling skills on VAC and vitamin A nutrition in Comilla District with only a marginal result. Their recommendation was not to repeat it. NGOs operating in Comilla had few trained counselling agents in the field. In other areas of the country significant counselling resources are available from NGO field workers. The program did not possess the resources to employ, train and supervise its own field workers nor was this practical owing to the short-term nature of the project. The eventual media mix selected was:

- Radio - ensuring maximum reach through broadcast at preferred listenership times; within existing popular programing. Obtaining frequency through the use of short 1-2 minute spots, as well as announcements and PR through news and other programs. A total of 1,864 spots was eventually broadcast over the

government station over 16 months.

- Television - to gain coverage to providers, with some spin-off to target audiences. Reach and frequency objectives in the same manner as radio. Over sixteen months 269 spots were broadcast, with a heavier scheduling, during the World Football Cup and General Election periods.
- Posters - a total of 80,000 posters was produced at about 25 per village unit, and designed to remind audiences of messages received from mass media.
- Miking (roving loud-speakers) was employed in an effort to replace direct counselling and at lower cost. Two rounds of miking were undertaken. It was planned that each village unit would be visited at least once by a miker, i.e., about 3,000 miking stops per round.
- NGO and Government Field Workers - although no formal training was conducted the supervisory systems for field workers, both government and NGO were personally contacted and given posters and leaflets for each worker to ensure they knew of the program and its messages and motivate them to support the communications effort, even through only limited active involvement was expected.

Community participation activities involved workshops at district level, followed up by direct mail to all levels. Forty district level motivators attended a one day workshop. Almost 9,000 direct mail letters were sent to influencer figures, political leaders, NGOs and the health and family planning system. Leaflets, posters and flyers supported this activity. It was supported by a field office established in Comilla District.

Testing Messages and Materials

All messages and materials were tested with respective target audiences. The messages were well received, well understood but perceptions remained that vegetables were a poor people's food. They said since they cannot afford anything else they would eat vegetables. Therefore, the messages were revised to enhance the image of the vegetables. The field testing did not demonstrate any major drawback in the material.

The Manoff Social Marketing Consultant along with the Project Coordinator and Advertising Agency revised all the materials in accordance with the research findings. The pre-testing of the 5 radio

spots and two colored posters were carried out in Kashempur village of Laksam thana in Comilla district. Mothers were randomly selected from among:

- Mothers of 6-72 months old Children; Pregnant mothers; Lactating mothers.

In each group there were 7-8 mothers.

Final Materials

For 'Milking', Radio and Television similar messages (Bengali version) were used (Appendix 2).

Orientation and Launch

The program was launched in March 1990 with the Director, IPHN sending letters to all District Health Executives up to the Thana level proclaiming the inauguration of the program. Media were booked and posters began to be put up. Leaflets and letters were sent to all Primary Schools, High Schools, Colleges, all private practitioners in Comilla town, Union Council Members, etc., totaling about 9,000. All District and Thana Health Executives were given a one-day orientation.

Monitoring

The program was monitored in July 1990, three months after launch to check if the implementation efforts were working as planned and again in December 1990. The monitoring team was supervised in the field directly by the Project Coordinator as well as the Project Assistant stationed at Comilla. The team undertook direct interviews with 160 mothers in the first round and 128 mothers and 64 fathers in the second round.

They found mass media working according to expectations but miking was not reaching the targeted mothers. VAC distribution was found to be increased from a mere 25% in the baseline to about 40%. In the second round more emphasis was given on understanding the exposure and comprehensibility of messages. How far the messages

could motivate the audience was also assessed. Posters did not remain in place for a long time due to its colorfulness. Children pulled those off from most of the places after they were pasted by the health assistants, in some cases immediately after the posters were pasted, and decorated their rooms inside households.

Following the findings of the monitoring, the messages for miking were twice modified to make them clearer and more attractive and in the end, for the third round, female counsellors with cassette tapes replaced this effort, to try to boost the direct contact component as miking was not attracting mothers as anticipated. These counsellors visited over 3,500 villages. The poster was re-designed and more copies were pasted, this time by the Marketing Research Firm. In general no revisions to the basic messages seemed to be required. A high degree of comprehension and strong indications of take up of the interventions were in evidence.

Evaluation Results

In this section results of the evaluation study done in May 1991 has been discussed in details. Results are categorized under different self explanatory headings as general, shifts in availability , etc.

Table 2

Percentage of respondents who heard messages about green leafy vegetables in March 1990 and May 1991 in both intervention and control areas, Comilla, Bangladesh

	INTERVENTION		CONTROL	
Messages	1990 (n=600)	1991 (n=1002)	1990 (n=400)	1991 (n=601)
	%	%	%	%
Any Message	12.44	45.8	18.8	32.6
Specific Program Messages				
i. Eat everyday	19.8	44.4	22.8	36.8
ii. Eat to protect child from nightblindness	10.9	39.9	15.8	37.9

Table 3

Percentage of respondents recalled specific components of program messages about green leafy vegetables in March 1990 and May 1991 in both intervention and control areas, Comilla, Bangladesh

	INTERVENTION		CONTROL	
	1990 (n=78)	1991 (n=379)	1990 (n=63)	1991 (n=175)
Components	%	%	%	%
i. about benefits of consuming	20.5	30.9	14.3	32.0
ii. about nutritional value	73.1	80.2	63.5	88.6
iii. to become used to giving, eating glv.	59.0	68.3	49.0	67.1

General: A significant increase occurred in spontaneous recall of messages concerning green leafy vegetables in general. The increase was somewhat less in the control area (note: radio and television were received in both the intervention and control areas). A relatively high level of recall of specific program messages was achieved in both the intervention and control areas (Table-2).

Table 4

Percentage of respondents who gave reasons a) awareness about nightblindness b) awareness about nutrition and general health for appreciating messages in March 1990 and May 1991 in both intervention and control areas, Comilla, Bangladesh

	INTERVENTION		CONTROL	
Reasons for Appreciation	1990 (n=72)	1991 (n=379)	1990 (n=63)	1991 (n=17)
	%	%	%	%
i. nightblindness	5.6	11.6	14.3	16.6
ii. nutrition and general health	56.9	86.3	63.5	88.6

Comprehension: Among those who heard messages a series of questions was asked to determine whether the program's messages had increased comprehension of messages about eating green leafy vegetables (Table-3). The program seems to have had most impact in increasing awareness of the benefit of consumption of green leafy vegetables and raising although to a lesser extent and from a higher base, the concept of becoming more used to consumption. The message about nutritional value of green leafy vegetables has also been enhanced from an even higher base.

Table 5

Percentage of respondents who received messages through different media in March 1990 and May 1991 in both intervention and control areas, Comilla, Bangladesh

	INTERVENTION		CONTROL	
Media	1990 (n=99)	1991 (n=459)	1990 (n=75)	1991 (n=196)
	%	%	%	%
Radio	86.9	82.5	84.0	89.3
Television	13.1	22.9	18.7	22.4
Miking	-	5.7	-	-
Poster	1.0	19.0	2.7	2.0

Appreciation: A number of questions were asked of those who heard messages concerning what they appreciated most about them. The response was mostly in favor of "benefits of taking green leafy vegetables" (Table-4). The low level of appreciation concerning the subject of nightblindness, indicates that the message strategy to include the nightblindness issue as only part of the motivation to consume and to motivate more from the general nutritional benefit was both correct and was understood (Table-4). The preference for general benefit was both reported and significantly enhanced. The study confirms that the program did not shift knowledge about the causes and cures for nightblindness, as may be expected.

Sources of Messages: The coverage of radio, among those who heard messages remained relatively constant; recall of television increased significantly though the reach of television was still small. Mikings at 6% and posters at 19% (Table-5) recall were both low.

Receipt effort: The program achieved a significant increase in receipt of messages; primarily, through the use of radio and in general the messages were comprehended and appreciated according to their general objectives. The miking effort achieved only a limited result. Radio and television were received in both the intervention and control areas which accounts for a similar weight of receipt of effort in both the areas. The program ran for only 16 months and achieved a reasonable success over this relatively short period.

Shifts in availability and consumption:

Buying Patterns: The number of respondents who claimed not to purchase vegetables regularly remained constant at about 40%. Between 1990 and 1991 there are considerable shifts, however, among this group when asked why they do not buy vegetables (Table-6). The significant decline between 1990 and 1991 indicates that far fewer vegetables were being grown at home in the latter year than in 1990. This is reviewed in the next section on consumption.

Table 6

Reasons given by respondents for not buying vegetables in March 1990 and May 1991 in both in intervention and control areas, Comilla, Bangladesh

	INTERVENTION		CONTROL	
Reasons for not Buying	1990 (n=301)	1991 (n=597)	1990 (n=164)	1991 (n=364)
	%	%	%	%
i. grown in garden	64.1	28.8	63.4	17.6
ii. grown around house	44.2	9.7	31.1	8.8

Shifts in Consumption Patterns: Significant shifts occurred in both 1 week and 24 hour recall in total food consumption patterns, between 1990 and 1991, across all children 6-72 months of age. With one or two minor anomalies these shifts were identical in the intervention and control areas, the one significant exception being in consumption of green leafy vegetables (shaks). Consumption of tomatoes and beans, for example, declined from relatively high consumption levels in 1990 compared to no consumption in 1991 in both areas. Significant decreases in consumption of chapati (Pita bread) are also noted. However, the most significant statistical anomaly occurred in vegetable consumption both between 1990 and 1991 and between the intervention and control areas.

Table 7

Consumption of green leafy vegetables by 6 - 72 months old children in March 1990 and May 1991 in both intervention and control areas, Comilla, Bangladesh

	INTERVENTION		CONTROL	
Recall Period	1990	1991	1990	1991
	%	%	%	%
1 week recall	24	42	33	27
24 hour recall	12	26	18	13

In general, significant increases in green leafy vegetable consumption were recorded in the intervention area and somewhat significant declines occurred in the control area (Table-7). Agronomists have reviewed this data and point out that the 1990 data was collected in March and the 1991 data in May. They confirmed that a decline in availability of green leafy vegetables, over these two months is entirely predictable, February- March being a peak period for availability and May near the end of the vegetable season. The decline in tomatoes and beans is also consistent. To consolidate this

Table 8

Consumption of green leafy vegetables by age in March 1990 and May 1991 in both intervention and control areas (one week recall), Comilla, Bangladesh

AGE	INTERVENTION		CONTROL	
Months	1990 n(%)	1991 n(%)	1990 n(%)	1991 n(%)
6-12	212 (3.8)	278 (11.2)	88 (4.6)	178 (5.6)
13-24	139 (19.4)	97 (48.3)	69 (37.7)	75 (32.6)
25-72	756 (48.9)	538 (65.7)	362 (55.5)	975 (43.7)

we reviewed a tabulation of the kinds of vegetable grown and reported consumed in the two research periods. In March 1990 lau shak predominated in the growing and consumption pattern for green leafy vegetables. In May 1991 this vegetable was replaced by data shak, pui shak and pat shak. This data is consistent with shifts in seasonality and lends credibility to the data.

Finally we are left to consider the fact that knowledge and awareness of the program increased significantly in both the intervention and control areas owing, presumably, to the accessibility of radio and television to both and yet practice has increased in the interven-

Table 9

Consumption of green leafy vegetables by 6-72 months old children in March 1990 and May 1991 in both intervention and control areas (24 hours recall), Comilla, Bangladesh

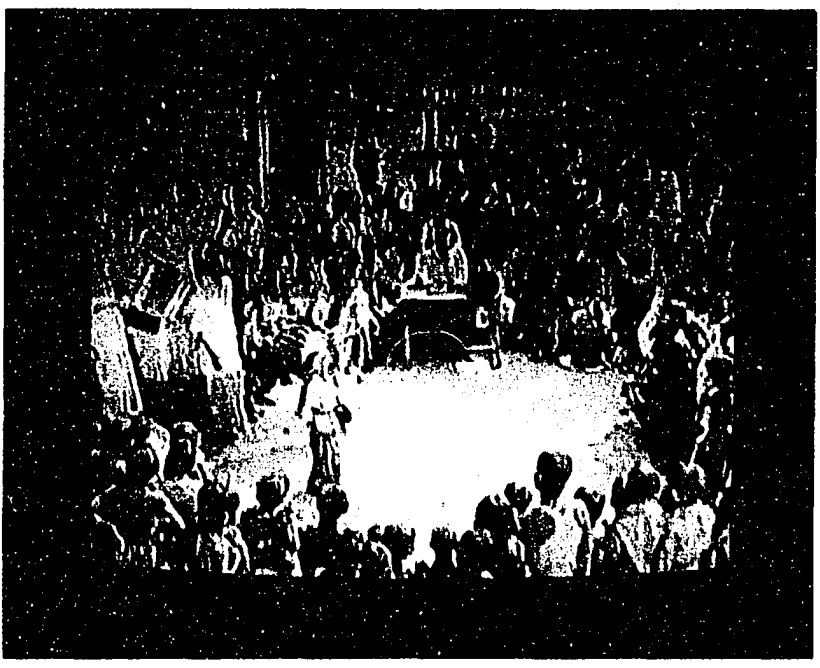
AGE	INTERVENTION		CONTROL	
Months	1990 N(%)	1991 N(%)	1990 N(%)	1991 N(%)
6-12	197 (3.6)	274 (5.5)	87 (4.6)	177 (2.8)
13-24	139 (10.8)	168 (26.2)	69 (23.2)	88 (6.8)
25-72	752 (20.4)	961 (35.6)	351(2.4)	534 (16.5)

tion but not the control areas. The data could not clarify this point.

An assumption may be made that the increased knowledge obtained in the control area halted an even greater decline in vegetable consumption in that area and that the difference in practice between the two areas has been primarily caused by the additional efforts, beyond radio and television, that were introduced into the intervention area being posters, miking, some unrecorded counselling and the whole community participation effort. The monitoring studies indicate this may be so as they recorded far greater shifts in compliance levels than the evaluation study, although the monitoring studies may not be regarded as statistically valid.

Differences in age groups: All ages of children in the intervention area increased consumption although the 6-12 age group is still at a very low level. This data is consistent with that found in other countries and

T.V. spot in Bengali showing a lactating woman's expression on hearing that a child may go blind due to vitamin A deficiency.



T.V. spot, in Bengali, showing the minstrel reciting the vitamin A story and song.

demonstrates the strength of the resistances to feeding vegetables to young infants. The level of increased numbers of consumers was highest in the 13-24 age group - over three times more children in this age group consumed green leafy vegetables, in 1991 than in 1990 over the last week and 2.5 times more over the last 24 hours. The increase in the 25-72 age group (Tables-8 and 9) was less, starting from a higher base.

Pumpkin consumption: Pumpkin was added to the messages on green leafy vegetable consumption. An increase in the number of children who consumed pumpkin was recorded in both the intervention and control areas but relatively few add pumpkin to the diet (Figure-2).

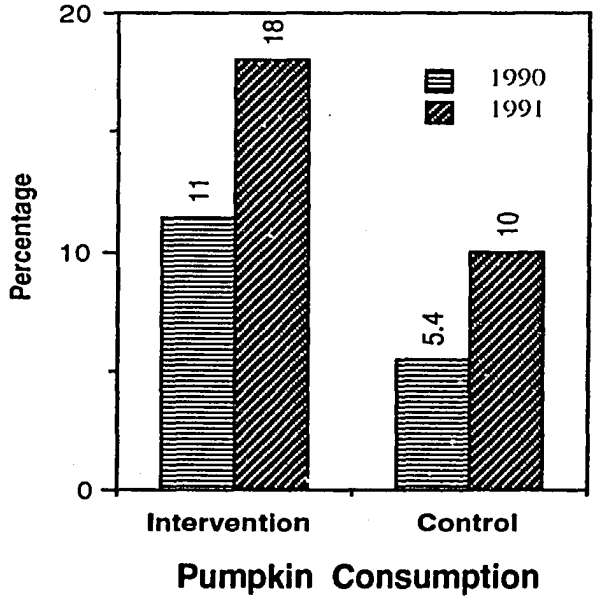
Pregnant women and lactating mothers: No dietary recall data was collected for pregnant women and lactating mothers. No changes

occurred in the number of times in a week, green leafy vegetables were consumed. The data shows that over 90% of these targets consume some vegetables, in 24 hours in both pre and post project periods. No conclusions can reasonably be reached as to the effects of the program on consumption of green leafy vegetables by these targets.

Findings on behavior changes: In view of the fact that seasonal variances in food consumption patterns affected the researched result, no definitive number can be put on the behavior change accomplished by the program. All the same as the data and normal seasonal variances in vegetable availability, indicate a significant decrease in availability from the baseline to the evaluation period.

Figure 2

Pumpkin consumption in March 1990 and May 1991 by children 6-72 months old (one week recall) in both intervention and control areas, Comilla, Bangladesh



It therefore can reasonably be assumed that the program has had a significant impact on the numbers of children consuming vegetables and that a minimum increase from about 24% pre-program to 42% post-program can be regarded as an acceptable indicator of behavioral change accomplishment, among all 6-72 months old children. The research data indicates, also, that the addition of pumpkin to the diet of VA rich foods do not seem to be a practical proposition. The research does not provide any reliable indicators of behavior change, among pregnant and lactating mothers as over 90% of them consumed some green leafy vegetables over a 24 hour recall in both the pre and post program-periods; and the research concentrated on numbers consuming rather than amount consumed.

VAC distribution: The evaluation study demonstrated that VAC coverage had declined in 1990 compared to 1991 in both the control and intervention areas.

No data support the cause of this decline. However, it can be assumed that inherent weaknesses in the distribution system overrode any benefit the demand-creation effort might have achieved. It is worth noting that the monitoring tracking studies undertaken immediately after each round of VAC distribution showed significant increases in coverage. It is possible that, as the evaluation study was undertaken 5 months after a VAC distribution round this conflicting data is caused by the problem of effective recall of receipt.

Cost Effectiveness Analysis

Although the precise level of behavior change that occurred as a result of the program is only approximately quantifiable it is reasonable to assume that among 6-72 month old children at least 18% more of them consumed green leafy vegetables as a result of the program (42% less 24%). If this is so then the program resulted in 146,880 more children (18% of 816,000) consuming green leafy vegetables. At a total cost of $ 299,068 this equals $2 per successful intervention over 16 months or $1.50 on an annualized basis.

Using the same materials and to the same population coverage, if

T.V. spot in Bengali showing a child who went blind because of vitamin A deficiency.

the program was to be continued, or launched elsewhere, it is estimated that yearly cost would equal about $140,000 or, approximately $1 per successful intervention. This figure would be further reduced if launched on a wider scale. Assuming it was practical to replicate the program on a national basis, it is estimated to cost about $1 million per year, and assuming an 18% increase in the number of children consuming green leafy vegetables occurred, over that year, the cost per successful intervention would equal 28 cents and improve the nutritional status of 3,500,000 children.

Lessons Learned

The lessons learned through the pilot project are listed below for the benefit of any future undertakings of this kind.

- A carefully crafted social marketing program that develops message strategies out of sound research, through working with intended beneficiaries, is capable of significantly changing the feeding practices of children and at reasonable cost.
- The concept that the best motivators for accomplishing increased levels of green leafy vegetable consumption among children needs to go beyond the sole issue of nightblindness and find more compelling motivators in the area of general health and nutritional benefit has been proven effective.
- Mass media can achieve significant levels of awareness and comprehension.
- The program, owing to its relatively short time-frame could not demonstrate the final level of awareness that could ultimately be achieved. However actual behavioral change requires a more con-

Brochure and leaflet, 9.5" x 4.75", with motivational messages to increase the consumption of vitamin A rich vegetables.

certed direct counselling effort than the program managed to generate in particular among the youngest (6-12 mo. old children).

- Miking turned out to be less successful than expected.
- A mix of mass media and direct counselling seems to be proven necessary.
- The high level of consumption of green leafy vegetables by pregnant and lactating mothers at over 90% in 24 hour recall indicates that this segment could be dropped in order to expand air time and counselling efforts to the feeding of children.
- Clear indications exist that supply, particularly on a seasonal basis, is a constraint to green leafy vegetable consumption.
- Ways need to be found to link demand with home growing on a wide scale to achieve permanent nutritional improvement.
- Pumpkin, presented as an alternative to green leafy vegetables, did not achieve the level of acceptance expected. Future programs should concentrate effort on green leafy vegetable consumption alone.
- The program itself did not record an increase in VAC distribution through using mass media to motivate the supply effort and create demand. The monitoring studies however, undertaken immediately after the VAC distribution rounds, showed significant improvement.

All the same it can be stated that the key element to successful VAC distribution is better motivation to distribute the product, in particular, to ensure that the children of correct age receive it. Monitoring studies indicated the high priority given to Extended Program for Immunization (EPI) had affected VAC distribution negatively.

Recommendations

On the basis of the of the findings of this evaluation, the guide for any future course of actions are laid below in the form of recommendations.

- The lesson learned and experience gained by the project be shared with the vitamin A community in Bangladesh and world-wide.
- The mass media campaign, as it reaches almost the whole country, be continued.
- Discussions should be held with MOH to institute a central policy on national vitamin A nutrition education program to be implemented by all government agencies and NGOs active in the field.
- NGOs active in nutrition education efforts and who have trained village-based counsellors take up the messages developed by the program to counsel mothers of 6-72 months old children.
- Consideration be given to finding ways to increase home gardening of green leafy vegetables, in ways which are replicable on a large scale and such a program combined with the demand-generation program through mass media and NGO field workers, be launched in as wide a scale as possible, so as to have an impact on the national nutritional status, specifically of children.
- Further steps are required to identify and correct supply and delivery constraints of IPHN, UNICEF and HKI.

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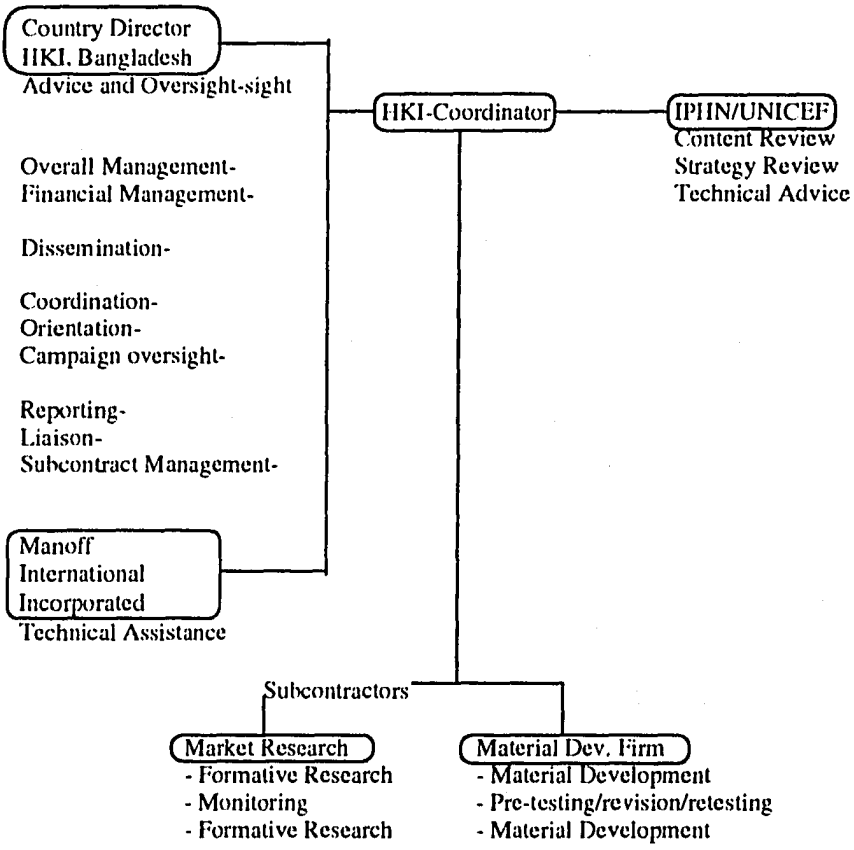
Appendix 1: Project Organization



Appendix 2: Final Materials

TV SPOTS

First TV Spot

Chorus	:	Allah has given means to stay healthy.
Song	:	Listen, Listen oh friends Lend me your ears Let me narrate my tragedy full of tears. The only son had I struck as sad luck born with eyes but for my fault blindness struck.
Commentary	:	I didn't know that children suffer from often weakness and sickness and night blindness if they are not given green leafy vegetables or pumpkin, lack of which turns the innocent children blind.
Song	:	Say some of our mothers & sisters. Eating vegetables may upset your stomach. That's untrue. If you wash the vegetables and cook them well they will be easily digestible for children.
Blind son	:	There will always be illness and diseases in this world. But Allah has given means to stay healthy.
Chorus	:	Allah has given means to stay healthy.
Commentary	:	Green leafy vegetable and pumpkin contain special vitamins. Thousand of children are sick and weak and even turned blind due to lack of these vitamins. Vegetables are easily available, so then they are not to be neglected.
Chorus	:	Allah has given means stay healthy.
Announcer	:	All pregnant and lactating mothers and children over 6 months old, to help stay healthy and well, need the essential vitamins, in dark green leafy vegetables or pumpkin, everyday.

Second TV Spot

Music	:	
Commentary	:	They are our children.
Music	:	
Commentary	:	Lives of million of children are endangered every year.
Doctor	:	Be careful, while still there is time! How old is your child? (Doctor's voice from the background)
Mother	:	Six months.
Doctor	:	Then, from now on feed your child green leafy vegetables along with breast milk.

		Cook green leafy vegetables and pumpkin with a little bit of oil.
Grandmother	:	Will it not cause indigestion?
Doctor	:	No! If you cook it well and then mash it with rice, it will not cause indigestion.
		Green leafy vegetables and pumpkin have special vitamins which are very good for health and strengthen body's defensive powers against disease in the child.
Grandmother	:	GLVs have such qualities!
Doctor	:	Yes! GLVs are easily available, but therefore is not be neglected.
Jingle	:	

RADIO SPOTS

General Spot

Chorus	:	Allah has given means stay healthy.
Song	:	Listen, Listen oh friends Lend me your ears Let me narrate my tragedy full of tears. The only son had I struck as sad luck born with eyes but for my fault blindness struck.
Commentary	:	I didn't know that children suffer from often weakness and sickness and night blindness, if they are not given green leafy vegetables or pumpkin, lack of which turns the innocent children blind.
Song	:	Say some of our mothers & sisters. Eating vegetables may upset your stomach.
Doctor	:	That's untrue. If you wash the vegetables and cook them well they will be easily digestible for children.
Blind son	:	There will always be illness and diseases in this world.
		But Allah has given means to stay healthy.
Chorus	:	Allah has given means to stay healthy.
Commentary	:	Green leafy vegetable and pumpkin contain special vitamins. Thousand of children are sick and weak and even turned blind due to lack of these vitamins.
		Vegetables are easily available, so then they are not to be neglected.
Chorus	:	Allah has given means stay healthy.
Announcer	:	All pregnant and lactating mothers and children over 6 months old, to help stay healthy and well, need the essential vitamins in dark green leafy vegetables or pumpkin, everyday.

Mothers of 13-60 Months old children:

Son	:	Mother, I won't eat vegetables.
Mother	:	Why son?
Son	:	I don't like it.
Mother	:	I have cooked the vegetables quite Deliciously, why don't you try some.
Grand Mother	:	Daughter-in-law, if the child does not like the vegetables, why do You force him?
Mother	:	It is extremely essential for the child to have at least two or three spoonfuls of green, leafy vegetables, such as helencha shak, Kalo kochu shak, lal shak, pui shak & Shajna shak & pumpkin.
Grand Mother	:	Just listen now there's no need to upset his stomach by feeding him vegetables, OK.
Father	:	What you are saying is not right mother. I have asked the doctor, myself. If you thoroughly wash green, leafy vegetables and then cook them well with a little oil, there will never be any problem with digestion.
Grand Mother	:	But why should you feed the child green leafy vegetables?
Son	:	Because these vegetables are full of special vitamins which protects our children from weakness and illness sand also night blindness. Each year, thousands of children are becoming blind in Bangladesh, because of, lack of the special vitamins in green vegetables.
Grand Mother	:	What are you saying?
Mother	:	Yes mother, that's why I ask your son to buy more green leafy vegetables.
Grand Mother	:	Everyday we are learning something new. Come, my love, eat more vegetables.
V/O	:	Give children green leafy vegetables everyday.

Mothers of 6-12 Months old children:

Mother-in-law	:	Daughter-in-law, what are you putting into the porridge of your child.
Daughter-in-law	:	Mother, I am putting in some cooked green leafy vegetables.
Mother-in-law	:	Lord! The child is only 6/7 months old. Do you think he will be able to digest it? Won't he suffer from stomach cramp?
Daughter-in-law	:	No mother, your son has just heard from local doctor.
Son	:	Yes mother the doctor has said that from the age of 6 months you need to feed your child green leafy vegetables everyday; and if you thoroughly wash first and cook well with a little oil and then mash well also, he can easily digest them.

Mother-in-law	:	I am not sure if it's OK to feed leafy vegetables to such a small baby.....
Son	:	No mother, there is no problem in it. Leafy vegetables like helencha shak, Kalo kochu shak, lal shak, pui shak and Shajna shak and pumpkin are bursting with essential vitamins. Little children need them to grow healthy and strong and protect them from many illnesses including night blindness.
Mother-in-law	:	Probably you are right, but I have not heard such a thing in my life before.
Son	:	These are new conceptions of a new world.
Daughter-in-law	:	Mother, we are learning something new everyday.
V/O.	:	Give children from 6 months green leafy vegetables everyday - protect them from illness.

Lactating Mother:

Sister-in-law	:	Bhabi, here's some papaya and mango for you.
Housewife	:	That's very thoughtful of you, but why this concern?
Sister-in-law	:	You don't keep track of anything. When mothers nurse their babies, they need substantial amount of green vegetables like helencha shak, kalo kochu shak, pui shak, shajna shak and orange vegetables like pumpkin and ripe fruit like mango and papaya. These fruits and vegetables have a lot of vitamin in them to keep you healthy and strong.
Housewife	:	Vitamin?
Sister-in-law	:	Yes, Vitamin gives you strength. Lack of vitamin results in weakness, many illnesses and even night blindness in children.
Housewife	:	What are you saying?
Sister-in-law	:	Yes, listen from now on you must have one bowl of green leafy vegetables or pumpkin everyday.
Housewife	:	But, where will I get so much of vegetables?
Sister-in-law	:	Why don't you have them in the field? If not ask your husband to buy it from the bazar.
Housewife	:	OK, I'll tell him but....
Sister-in-law	:	There's no buts to it. The government doctor has told us about it. I'll have to go now. Do whatever I have asked you to. Eat green vegetables or pumpkin everyday.
Housewife	:	Lord! I'm learning something new everyday.
V/O	:	Nursing mothers, eat more green vegetables or pumpkin everyday to lead a healthy life.

Pregnant Mother:

Husband	:	Where are you, come and take the grocery.
Wife	:	Oh, my Lord, why have you bought so much of green leafy vegetables?
Husband	:	The doctor has advised you to eat a lot, of these vegetables, now you are pregnant.
Wife	:	Why?
Husband	:	For pregnant mothers, eating at least one bowl of leafy green vegetables is absolutely essential. These vegetables are bursting with special vitamins, many of which helps you feel better and help your baby grow healthy and strong.
Wife	:	What are you saying?
Husband	:	Yes, the doctor has said that green, leafy vegetables like helencha shak, kalo kochu shak, pui shak, Shajna shak and orange vegetables, like pumpkin, has special vitamins in abundance. For your health and the healthy growth of your baby, these are essential.
Wife	:	But I don't have any taste for vegetables now.
Husband	:	You are mistaken here. You need them everyday. If you cook your vegetables deliciously, you'll certainly yet them. Now go and cook.
Wife	:	I am learning something new everyday.
V/O.	:	Pregnant women, eat green vegetables everyday to live a healthy life.

POSTERS

Give Everyday

Green leafy vegetable and pumpkin are full of special vitamins, which are essential to keep your

Children healthy and strong, and help to avoid many illnesses including night blindness.

Give green leafy vegetables and pumpkin everyday.

Radio Spots:Vitamin A Capsules
(For Health Workers)

ANNOUNCER : Here is a message to all Health Assistants and Family Welfare Assistants from the Ministry of Health and Institute of Public Health.

May Allah be praised for the important work you all do to keep our children healthy and strong for the future of our country and the happiness of our fathers and mothers.

This is a reminder that this month is vitamin A month when we supply free vitamin A capsules to all children 6 months to 6 years old.

We pray and hope that it is truly possible for you all to accomplish the task of giving all the children 6 months to 6 years old in your areas a vitamin A capsule. Please make sure all the children 6 months to 6 years old, only, get them now.

Vitamin A capsules given twice a year really helps our children to stay healthy and strong and avoid many illnesses including night blindness.

Thanks, to all Health Assistants & Family Welfare Assistants, for all your good work.

(JINGLE)

(For Fathers and Mothers)

ANNOUNCER : Fathers and mothers of 6 months to 6 years old children listen. An important message for you, from the Ministry of Health.

VOICE : Yes, this month every child 6 months to 6 years old must get a free vitamin A capsule.

The capsules will help your child stay healthy and strong and avoid many illnesses including night blindness.

Vitamin A capsules are distributed by Health Assistants and Family Welfare Assistants. If your child, is 6 months - 6 years old, make sure, your child, is given one.

Yes, if your child is 6 months to 6 years old get hold of your nearest Health Assistant or Family Welfare Assistant and make sure your child gets a vitamin A capsules this month.

Jingle (There will always be illness and disease in this world ... but Allah has given means to stay healthy).

Note: *All spots (AUDIO-VIDEO), posters, leaflets and letters, etc., has "IPHN AND HKI IN THE INTEREST OF THE PEOPLE" printed, displayed, etc., at the end. Posters displays the name of all the three partners namely HKI, IPHN and UNICEF.*

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