SUMMARY AND CONCLUSION
In developing countries, malnutrition is seen to affect a large number of pre-school age children, taking a variety of forms largely as protein-energy malnutrition and deficiencies of micronutrients, as for example, vitamin A. An inadequate dietary intake to meet the physiological needs of both macro and micro nutrients appears to be one of the important causes of this problem.

Various programmes at the national level, which have been in operation for over a quarter of a century, have demonstrated varying degrees of success. Providing supplementary meals and administration of six monthly vitamin A doses to high risk groups of pre-school age children is a short-term solution to prevent and control PEM and vitamin A deficiency. Nutrition education towards fostering change in nutrition behaviour, on the other hand, is a long-term approach, which can improve overall diet, and could prove to be particularly appropriate for developing countries, as a feasible and cost effective approach towards prevention and control of PEM and VAD.

Participatory learning approaches involving people and building on their own experiences, developing problem solving skills, making learning interesting leading to better retention of the learnt information can be effective in this regard. (Burnard, 1989; Hubley, 1993) It is important to understand existing beliefs and actions and recognise needs of mothers, upon which can be built positive nutrition communication messages and participatory action programs aimed at combating key nutritional problems. Community health workers can play vital role in facilitating change in nutrition knowledge, attitude and practices. Training and capacity building of community health workers to is very crucial in this regard.

**Objective**

The present study aimed at developing a nutrition communication package, targeted towards initiating change in knowledge, attitude and practices with a specific focus on nutritional problems such as PEM and Vitamin A deficiency. The package was executed and its effectiveness was tested in the community.
Methodology
The study was undertaken in two selected slum areas of Mumbai, of which one area served as experimental group and the other one as control group. The study population included 320 mothers of pre-school age children and 10 Community Health Workers who were working in the experimental area.

The study was carried out in four phases viz. Situational analysis, Development of action plan for nutrition communication, Execution of nutrition communication actions and Evaluation. At each phase quantitative as well as qualitative methods of data collection were employed.

Results
Situational analysis
The findings of the situational analysis enabled to determine various aspects on which modules could be built on. It was evident, that with a high proportion of illiteracy and low educational status among both the parents and poor occupational status of the fathers, most of the families had poor source of income. A low standard of living was therefore inevitable. The diets of these children, however, were found to be inadequate both, in quantity as well as quality. Mean dietary intakes of these children were found to be much below the RDA. The child’s environment, in a broad sense, greatly determined the child’s nutritional status.

Mothers’ beliefs and limited knowledge about protein, energy and vitamin A foods affected knowledge, attitudes and food related practices scores of the mothers. Most of the mothers perceived animal food sources as "nutritious" and lack of awareness about ways to improve quality of preparations considering cost and time constrains was negligible. Mothers' beliefs and attitudes about many vitamin A foods and its seasonal availability led to low consumption of these foods. On the whole, low KAP scores were obtained by the mothers for specific aspects viz. PEM and VAD, in both the groups, suggesting the need for appropriate nutrition education.

Findings of media orientation and literacy revealed that mothers preferred cooking demonstrations and emphasised that they would like to gain information, which
they can make use of. Dramatisation element of films and television serials was enjoyed the most by them.

**Development of action plan for nutrition communication**

Development of action plan for nutrition communication focused on development of communication package for nutrition education of the mothers and training and capacity building of the CHWs to enable them to executed modules in the community.

Using the findings from the situation analysis, key issues and areas of focus were identified. Based on the key issues and areas of focus, themes were identified for the modules, around which the content of the nutrition communication modules was designed. **Participatory methods** were selected to promote change in KAP of mothers and these methods and materials were used through interpersonal communication. A plan of module was prepared in this stage.

Training sessions were designed for the CHWs based on the assessed needs. They were trained in practical aspects of communication and nutrition. The participatory approach formed the core of all the training sessions, which employed skill training, learning by doing, sharing of knowledge and skills, co-operative learning and problem solving methods. Evaluation of training and trainees by end of the training programme highlighted areas of strengths and limitations in order to improve the training as well as performance of CHWs.

CHWs participated in the development of nutrition communication modules by developing various communication methods during training sessions, giving their ideas and suggestions on plan of the modules and using them during practice sessions in the community. Plan of nutrition communication modules was revised and these were pre-tested in the community. The modules were finalised for the execution after incorporating feedback of mothers, CHWs and experts obtained during pre-testing.
Implementation

During this phase, nutrition communication modules were executed in the community. The first step was directed towards creating rapport with the mothers. Nine groups of mothers were formed for the intervention. Two sessions per week were organised for each group, each session consisting of one module. Eight such sessions were conducted for each group. After a gap of about 3 months, 5 revision sessions were conducted to reinforce the messages. Other activities carried out for the mothers included games, cooking competitions, social gatherings, etc.

The intervention spanned eight months. CHWs played a key role in execution of modules in the mothers groups. Various approaches viz. multiple use of communication channels, participatory and individualised approaches were used for execution of modules. Based on the suitability and appropriateness of logistics for module implementation, a few changes were made in the modules. Integrated food-based activities were carried out for the children with an aim to study their preferences, acceptance of various foods and to encourage intake of these foods.

Continuous monitoring was carried out to track nutrition communication activities as well as functioning of CHWs. Actions were taken collectively to improve the quality of the modules while necessary steps were taken to improve performance of the CHWs.

Evaluation

Evaluation carried out during nutrition communication activities (formative) and after the programme (summative) in order to study the process and outcome of nutrition communication programme, revealed the following findings.

Total, 110 mother attended the sessions regularly. In addition to these mothers, other women living in the neighbourhood also availed of the intervention. It was noted that CHWs, conducted almost all the sessions as per the plan.
Assessment of knowledge and skills of CHWs showed that all the field workers were able to address nutritional problems in the community and give practical guidance in difficulties expressed by mothers. They could suggest alternative ways to incorporate nutritious foods to the mothers. The emphasis was on explaining the problem using a food based approach rather than talk in terms of nutrients. The CHVs were able to elicit most of the aspects to be considered while dealing with adult learners and the ways they would use to make nutrition education sessions effective.

Improvement in performance of all the CHWs was observed with regard to personal qualities, communication and facilitation skills and overall conduct. They were motivated to examine their own practices and improve them in light of the learning from the modules and applied the nutritional concepts from the modules to their own family situations.

With regard to communication methods and materials overall, the methods used to convey messages were seen to be effective. It was observed that the mothers enjoyed role plays and cooking demonstrations more than charts with explanation though attempts were made to involve them by asking questions. Use of different communication methods with more interactions and in-built practical application was therefore emphasised to ensure effective communication.

The findings about effectiveness of module sessions revealed that all the modules were well accepted and understood by the mothers. Responses to the questions asked before and after the module sessions showed that almost all the mothers could comprehend the messages. Observations made during the sessions as well as during community visits revealed that most mothers actively participated in the sessions, many attempted to try out learnt things at home. Mothers became confident to discuss different issues of their concern. These sessions also facilitated other health-related activities of the project.

The findings of the KAP of the mothers revealed that in the experimental group, mothers were better aware of nature of undernutrition and food-based actions to prevent and control the same. A relatively greater proportion of mothers were
aware of foods and various preparations important to be included in child's diet. Change in knowledge about foods and preparations was also reflected in their attitudes and actual practices. Almost all mothers from the experimental group attempted to improve the nutritional quality of meals in day-to-day situations. The traditional practice of adding pulses and groundnuts to various preparations was strengthened. There was significant increase in frequency of consumption of some of the protein and energy foods.

A significant change in mothers' attitudes for vitamin A foods was noted and so a small increase was also observed in the purchase pattern for some of the DGLVs. Mothers incorporated pro-vitamin A foods in commonly prepared preparations to make these more acceptable. A significant increase in the mean frequency of consumption per week for DGLVs and carrots (P<0.05), papaya, orange and pumpkin (P<0.01). Such changes were minimal in the control group. Participatory evaluation activities revealed that mothers could apply the learnt knowledge and concepts in day to day situations.

Highly significant changes were noted in the knowledge, attitudes and practices of the mothers in the experimental group as compared to the control group (P<0.001). There was no association found between the change in KAP of the mothers and income as well as education level (P<0.01). This suggests that the nutrition communication modules catered effectively with all types of participants regardless of their income and educational status.

Assessment of nutritional status of the children after the intervention period showed significant change in intake of energy and protein while no significant change was observed in vitamin A intake. Findings of anthropometric assessment using all three indicators showed, that there was no statistically significant change in the nutritional status of the children after the intervention period. These findings suggest that change in nutritional status is a relatively long-term process and is affected by several factors. This change might be seen over time, if continued reinforcement is done to practice positive nutritional behaviour and barriers to change are reduced.
Better results with regard to mothers' nutritional behaviour observed in the experimental group could be attributed to the nutrition communication actions. Participatory approach and continuous reinforcement have resulted in positive change in nutrition behaviour of the mothers. The effective delivery of messages and facilitation skills used by the CHWs also initiated the process of change.

Effective nutrition education will not and cannot produce dramatic changes overnight in dietary behaviour. Nevertheless, it can be one of the best means to introduce dietary behaviour changes in the target population. The nutrition education efforts in the experimental area had definitely set in trend towards a positive behaviour change, which was less pronounced in the control area.

It may be inferred by looking at the better outcome seen in the experimental area, that the innovative nutrition education methods through participatory training approaches, played an important role in increasing the awareness in the community. The better performance was reflected in terms of higher proportions of mothers having appropriate knowledge, attitudes and adopting positive practices to change their dietary behaviour.

Another outcome of the nutrition communication action is the "Training modules for Trainers". These modules were evolved for training community health workers as a result of the training and capacity building process and experiences from working in the community.

During the process of intervention, mothers who showed interest and enthusiasm were identified and mobilised. Workshops were conducted for them to prepared them to work as "change agents" to initiate and support change in nutrition behaviour of people in the community.

Thus, enlightenment of mothers through meaningful and need-based nutrition education can initiate improvement of their nutrition behaviour, enabling them to eventually become more responsible for the health and nutritional well-being of their children. Training community health volunteers who are 'change agents' in
this process, can have a multiplying effect in facilitating the improvement of nutrition behaviour in the community and populations at large.

Conclusions
The findings of the study indicating initiation of positive change in nutrition behaviour of the mothers highlight the following.

- Nutrition communication actions planned to address specific needs of the target group, using a step by step approach and the participation of the target group, have brought about desired change.

- The use of participatory training approach with innovative communication methods was very effective in raising knowledge, modifying the attitudes and adopting health-promoting practices among the community mothers.

- The study emphasised that for effective communication activity, specific messages, use of multiple channels and skills of the facilitators are the essential components. The performance of the mothers in the experimental group in terms of KAP was better reflective of the effect of the nutrition communication actions.

- Training and capacity building of health workers is crucial for bringing about a sustainable change in the nutritional behaviour of the community. Training community health volunteers, who can become "change agents" in this process, can have a multiplying effect in facilitating the improvement of nutrition behaviour in the community and populations at large. Motivated and mobilised women in the community can contribute to the success of this endeavour.

Thus, the study demonstrates that development of nutrition communication actions based on specific needs of the target groups, with their participation can be effective. Vitamin A supplementation and Supplementary Nutrition Programme will continue to be important curative measures, however, educating the masses about nutrition so
as to ensure adequate dietary intake is an important and sustainable step to improve nutritional status and prevent and control micronutrient deficiency.

As the country has entered year 2000, nutritional problems still seem to be carried forward in a large measure. There is an urgent need to develop intervention programmes by restructuring the communication process to control malnutrition. In developing countries, where mass communication networks are still limited, a good integration of available resources and mobilising existing health workers and women volunteers, might potentially serve as part of the answer to solve the problems of malnutrition.