REVIEW OF LITERATURE
Malnutrition is implicated in more than half of all child deaths world-wide. Three quarters of the children who die world-wide of malnutrition-related causes are mildly to moderately malnourished and betray no outward signs of problems. (UNICEF, 1998) Malnutrition can take a variety of forms that contribute to each other, such as protein-energy malnutrition and deficiencies of micronutrients such as iodine, iron and vitamin A.

In South-East Asia, it was reported that 51% of under five children are moderate to severe underweight, 18% wasted while 52% stunted. (UNICEF, 2000). Around three million preschool aged children annually are estimated to be affected clinically and another 227.5 million sub-clinically by vitamin A deficiency at a severe and moderate level based on serum retinol distribution (Underwood and McClatche, 1996).

In India, the reported figures for underweight (53%), wasting (18%) and stunting (52% stunted) reflect similar trends among children under five years of age (UNICEF, 2000). According to recent NNMB survey (1996) of the rural population in eight states, the prevalence rates of Bitot’s spot in preschool children ranged from 0.4 percent in Karnataka and Orissa to 5.6 percent in Madhyapradesh. The pooled prevalence of eight states being 1.1 percent which is much higher to the WHO criteria for prevalence of VAD.

Thus, Protein Energy Malnutrition and VAD still remain as significant public health problems in India.

Childhood malnutrition is known to have serious consequences. Chronic protein energy malnutrition in children seriously compromises their growth, development and learning capacity, and sets up a disastrous trend towards damaging the productive capacities of nations at large (UNDP, 1997). It has become increasingly clear that protein energy malnutrition and even mild vitamin A deficiency impairs the immune system, reducing children’s resistance to diarrhoea, which kills 2.2 million children a year, and measles, which kills nearly 1 million annually. Malnutrition of Vitamin A deficiency is also long known to cause blindness.
Thus, malnutrition results in adverse consequences affecting growth, development and immunity of children. Several factors are involved in causation of malnutrition.

2.1 Malnutrition and Environment: Interrelation

Perceptions of child malnutrition have changed significantly in recent years. From being seen as a problem of protein, then calories, child malnutrition is now seen to be caused as much by frequent infection and poor feeding practices, as by lack of food itself (UNICEF, 1995).

The conceptual framework of multiple and interrelated determinants including health, nutrition, environmental, social, economical, political, etc. are involved in the causation of malnutrition. The causal factors of vitamin A deficiency are similar to that of protein-energy malnutrition. These can be as categorised by levels, as immediate, underlying and basic as represented as in Figure 2.1. (UNICEF, 1998)

As depicted in the conceptual framework, inadequate dietary intake and disease are the most significant immediate causes of malnutrition. Disease, in particular infectious diseases affect dietary intake and nutrient utilisation. In most cases, malnutrition is the combination results of immediate dietary intake and disease. These are results of underlying causes.

The underlying causes may be grouped into 3 main clusters- basic health services and a healthy environment, household food security and maternal and child care. Of the 3 clusters, the first two are pre-requisites for adequate dietary intake and the control of common diseases among children. However, to ensure adequate nutrition and proper health care, there also has to be a system to ensure that food and health services are properly used for the benefits of children.

The basic causes of malnutrition in society relate to the background of the society and factors external to the society. The economic structure of the country, the distribution of wealth and resources, the per capita income of the country constitute
the basic causes. These factors are determined by the political and ideological superstructure.

Figure 2.1 Causal Framework of Malnutrition

Thus, the framework emphasises the multi-sectoral nature of the problem of malnutrition. The cause emerges in the environment and this complex public health problem requires multifaceted strategies to combat it. Effective communication at immediate, underlying and basic cause level can prove to be potent in combating the problem of malnutrition. Nutrition and health education through communication in community can play a critical role in support of nutrition promotion efforts at various levels targeted towards nutrition improvement.
2.2 Preventive and Remedial Actions

Efforts are being made worldwide for the prevention and control of malnutrition. Several strategies are available for improving nutritional status, but each has its own inherent limitations. Nations are using different interventions depending upon their resources and expertise.

The two main strategies commonly used worldwide are short term and long term.

A. Short term: Short-term strategies include supplementation.

Supplementary nutrition programmes are conducted worldwide in order to treat malnutrition and improve growth and nutritional status by providing extra food to prevent dietary deficiencies among the socially disadvantaged populations. In order to prevent and treat VAD, oral doses of vitamin A are administered to the vulnerable children.

To combat malnutrition and ensure good nutritional status the government in India has initiated several feeding programs with an aim to provide additional food to children to fill the gap between intake and the requirement. However, many of these programmes were shown to have certain lacunae in its implementation resulting in poor impact of these programs. (Murthy, 1982) These programmes also have higher cost as compared with other interventions.

The strategy of administration of massive dose of vitamin A in India, has also shown certain limitations. According to the recent UNICEF report, (UNICEF, 2000) the nation-wide coverage of massive dose is only 25%. The reasons for poor coverage are noted as irregular and short supply of the vitamin, lack of pre-preparedness of the community, lack of supervision, etc. Exclusive reliance on a clinical approach rather than recommended extension approach is another drawback of this programme.

Besides this, supplementation programmes do not make the population feel responsible for taking steps to be self-reliant and independent. These programmes were conceived as a short-term measure to decrease the quantum of nutritional deficiencies until such time that the most rational and permanent solution takes over. Unless short-term measures are coupled with concurrent action to promote long term
measure, interim measures will continue indefinitely, which is an undesirable situation.

**Long term strategies**: These include dietary modification through promotion of appropriate foods. Dietary modification approach to promote sustainable improvements by encouraging market solutions and long term behaviour change among the high-risk groups. (FAO/ILSI, 1997). A well planned programme based on modifying behaviour patterns of a community can combat nutritional deficiencies in the long run. Dietary modifications are preventive, cost-effective and sustainable. They can be adapted to different cultures and dietary traditions and locally feasible strategies. As they are broad-based, aiming to improve the overall quality of the diet of a population and can address multiple nutrient deficiency simultaneously. (Gross and Tiden 1988; Gopalan, 1994).

One of the ways to achieve dietary modification is through nutrition education and communication. The ultimate solution lies in educating people to eat foods rich in vitamin A, ensuring regular and adequate intake by preschool children, pregnant and lactating women. (Ministry of Health and Family Welfare, 1991) Thus, nutrition education must be included as part of the solution.

### 2.3 Need for Nutrition Education

Nutrition education is a process that informs, motivates and helps people to adopt and maintain desirable practices for the promotion of their health. It is a social interaction aiming at modifying and improving the health and nutrition behaviour of the individual, the family and the community. (Lediard, 1991). Experts agree that if we are to address these problems nutrition education must be included as part of overall development efforts. (Hosmer et al, 1997).

Nutrition education plays an important role in combating malnutrition through dialogues, training, community participation and empowerment. Today, nutrition
education is recognised as a useful and effective vehicle for improving people’s nutritional situation. It can do so in three ways. (Huizinga, 1998)

1. **Transfer-of-technology**: Nutrition education can make people aware of new developments in food science and technology and show them how to incorporate these into their daily nutrition practices.

2. **Improved-decision-making**: Nutrition education can help people in making good decisions about nutrition issues, either individually or collectively.

3. **Social-mobilisation-and-learning**: Nutrition education can stimulate people to get involved in nutrition improvement activities and facilitate processes in which they learn from each other to analyse their nutrition problems and find appropriate solutions.

Nutrition education programmes are valuable at individual, family as well as community level and can influence politicians and community leaders to pursue nutrition promoting policies and reorient health services to meet the needs of women and children (Hubley, 1995). Thus, Health and Nutrition Education and communication are key components of any programme to improve the health of women and children.

### 2.4 Trends in Nutrition Education

Historically, nutrition communication evolved from primarily face-to-face instruction in non-formal health clinic settings in the 1950s and 1960s to a behaviour change approach in the 1980s that incorporated market research methodologies and mass media. Nutrition communication first came into prominence when findings of nutritionists revealed that faulty eating habits and beliefs and prejudices about food were amongst the basic causes of malnutrition. It came into even sharper focus when further research indicated faulty weaning practices to be a major contributing factor to childhood malnutrition. (UNESCO, 1987)
The Joint FAO/WHO Expert Committee on Nutrition of 1950 emphasised importance of nutrition education within the framework of comprehensive health sector activities and community development programs to improve human nutrition.

Nutrition education emerged as a major component of applied nutrition programs in 1960s. Communication techniques primarily of the traditional face-to-face didactic type, mainly lectures were employed. Sessions were designed to fill the gap in the knowledge of the people (Church, 1973). Messages were usually stereotyped based on western concepts ignoring beliefs and cultural practices, economic and practical limitations of the village households. Sometimes nutrition was in fact learned by rote by members of the audience. It increased knowledge but did not lead to behaviour change (Whitehead, 1973; Berg, 1973). By late seventies, new concepts and trends in nutrition education began to emerge. More attention was given to the communication support of non-formal nutritional education programs (UNESCO, 1987). Need to involve social and behavioural scientist was realised. Nutrition educators shifted to a more promotional approach.

In the 1980s new research techniques were incorporated that have proven especially useful in identifying behaviour susceptible to modification and in formulating specific messages. Nutrition educators used face-to-face as well as mass media. Market research methodologies were used and the focus was more on "product" as an idea. Some early examples were conducted in India, Tanzania, and Korea. India was able to change awareness of recommended weaning behaviour from 50% to 93% using culturally appropriate messages and a mixed media strategy. Tanzania pioneered mass media and showed that messages should be targeted. (Lediard, 1991) The Indonesian nutrition education and behavioural change project is also one of the earlier example successful nutrition education effort through social marketing.

The new nutrition education began by identifying individual behaviour and practices related to the problem that needed to be changed by the target audience. It uses community participation approach to endure practical solutions to the problem. Consequently, promoting healthful behaviours is now the primary thrust of most
nutrition education interventions. Past nutrition education initiatives have had some success but many failures in terms of improving dietary intake and reduction of the extent of malnutrition in a community or country. The failure occurred mainly because the methods were not such that could not lead to the desired behaviour change (Latham, 1997). Today nutrition education has become a creative and challenging discipline whose roots are only partially in nutrition and whose real source of inspiration comes from fields such as social and behavioural sciences, anthropology, market research and modern communications.

2.5 Nutrition Education to influence nutrition behaviour

Human behaviour plays an important role in the prevention, control, treatment and rehabilitation processes of most health and nutritional problems. The effective application of scientific advances in health and nutrition usually involves changes in behaviour of families and particularly mothers, to and promote positive food behaviour and improve their family’s health and nutritional status.

There is conclusive evidence that nutrition education can convey information, help people develop necessary skills and motivate people to make lifestyle changes. In a longitudinal study by Devadas and Premkumari (1983), an enormous improvement was registered in the frequency of use of GLVs by mothers. The dietary intake of the children had also improved after their participation in the nutrition education program. In Thailand, a study aimed at food habit modification in the population reported improvements in KAP. Prevalence of nutritional deficiency signs and symptoms also showed decline. (Tontisirin and Yhoun-Aree, 1993)

Food related behaviour is complex and determined by the interplay of many factors (Guthrie, 1994). Man’s behaviour towards food and health are influenced by several social and cultural factors. These factors are beliefs, values, attitudes, norms and traditions, social pressure etc. Because food behaviour is social, changing it often requires group decisions as well as individual decisions and actions. Nutrition
educationists have evaluated the relationship between changes in nutrition knowledge and changes in attitude and behaviour as a result of program interventions.

Earlier researches have shown that nutrition knowledge is positively related to attitudes towards nutrition. Schwartz has mentioned that knowledge change proceeds attitudinal change and change in behaviour (Schwartz 1975, 1976, Sims et al, 1976). However, various investigations have revealed that although nutrition knowledge is usually increased by nutrition education, change in attitudes and behaviour have not been as prevalent (Pierre et al, 1982; Kaplowitz et al, 1983; Ross, 1984). Johnson and Johnson (1985) reported impact of nutrition education in terms of knowledge, attitudes and behaviour, since these were the most commonly measured variables. A meta-analysis of 303 carried out by them demonstrated that nutrition education promoted significant improvements in knowledge (33%), while relatively small improvements in attitudes (14%) and behaviour (19%). Shifts in behaviour are relatively difficult to achieve with the most comprehension because it is directed at significant and sustained changes.

To bring about change, it is important to understand the process of change in nutrition/health related behaviour. The process of change in behaviour is discussed below.

Figure 2.2 Process of Change in Behaviour

[Diagram showing the process of change in behaviour: Not Interested in Change, Thinking About Change, Preparing To Change, Making Change, Maintaining Change, Relapsing, Appropriate nutrition behaviour]
Change in nutrition behaviour involves several stages. A model was originally developed by Prochaska and DiClemente (1986) on process of change. It was adapted to show the process through which people change risky behaviour like poor nutrition or unhealthy practices. (Figure 2.2)

**Stages of change in behaviour**

The stages of change in nutrition/health related behaviour are described below.

*Not Interested in Changing a Behaviour:* Initially people may not be interested in changing their behaviour, possibly due to lack of awareness or lack of motivation.

*Thinking About Change:* Once aware of the potential benefits of change, or the potential risk of continuing the behaviour, people go through a stage of thinking about change. They weigh up the costs and benefits of change and seek information to help them in the decision.

*Preparing to Change:* When the perceived benefits of change seem to outweigh the costs, and when the person really begins to believe change is possible as well as worthwhile, s/he begins preparing to change- perhaps needing extra knowledge, skill and support to move into action.

*Making Changes:* The person attempts to perform new behaviour. The early days of change tend to require positive decisions to do things differently. Support and reward are needed in this stage to make a change.

*Maintaining Change:* Once new habits are well-established, the person moves towards the process into a long term “safer” behaviour.

*Relapsing:* When a person is unable to maintain the change she returns to old habit or stops practising new behaviour. This could be due to changes in personal life, environment making it too difficult to maintain the change or change is no longer considered worthwhile. Relapse is normal and most people then move to the stage thinking whether to change or not.
People progress through all the stages, moving both forward and backward round the cycle of change as several factors are responsible for succession of change. Such factors are time, money, equipment, skills or health and nutritional services. For instance, in Sudan, a nutrition education program for pregnant women resulted in increased knowledge of basic nutrition, it had only a minimal effect on actual practice. This finding reflect the widespread belief that men and their guests should be given preference in food allocation of many healthy foods on the basis of tradition, (El-Hiday et al 1992).

A field trial to improve diets of rural Bangladeshi women through nutrition education showed low compliance with nutrition messages due to economic constrains and deep-rooted cultural practices of intra-household food allocation reported to affect the results. (Brown et al, 1994)

Thus, in selecting education strategies, one should consider whether the absence or incorrect performance of a target behaviour is due to lack of skills or the absence of conditions favourable for performing it (Graeff et al, 1993). Understanding the factors that constrain or prevent people from following desirable dietary practices and the enabling factors to overcome these “resistance point” is of critical importance. It requires planned efforts to understand the factors, which influence nutrition behaviour in order to bring about desirable behavioural modifications in individuals or communities.

Change in behaviour can be influenced by five ways as described by behavioural scientists. **Power**- one can pass a law and create a sanction; **Logic**- one can use logic by equipping people with certain facts; **Emotional appeal**- people can be swayed by arousing emotions; **Incentives**- providing someone with a reward for doing something and **Facilitation strategies**- making it easier to remove the obstacle that is preventing people from changing behaviour (ACC/SCN 1996).

Thus, theoretically, any behaviour can be changed, but the changes of actually doing it depend on the enabling factors, which influence behaviour. Nutrition educators can
take a leading role to **support** and **motivate** people to change. The above considerations are important in designing any educational approach.

### 2.6 Approaches to Nutrition Education

Today, we witness a plethora of approaches being used and tested for nutrition education in different nations of the world. While these approaches appear to be separate sometimes, different ones are used within the same national context to address different nutritional problems. Alternatively, different approaches can be used within the same intervention programme. In Thailand, for example, breast feeding promotion programmes earlier used the information dissemination approach, while vitamin A interventions have applied participatory communication approach (Valyasevi and Attig, 1994).

Some of the approaches in nutrition education commonly used world-wide are discussed below.

#### 2.6.1 Information Dissemination

Use of the information dissemination approach is perhaps the most common to all countries, in the region, and it is the one we most often associate with "nutrition education" (Tontisirin et al, 1995). It usually encompasses the wide-scale dissemination of information in the form of printed materials or mass media advertisements. Based on early education and behaviour change theories, this approach stems from the belief that if people receive the knowledge they need to change, then they will change their behaviours automatically. In other words, knowledge will lead to attitude change and then behaviour change.

This has been used as a practical approach for several years by policy makers because it is easy to implement through the existing communication channels but it does not work when used alone. This method is still widely used in many programmes with perhaps little or no effect. For instance, distribution of educational materials to clinics, hospitals, and health centres, television and radio spots on commercial stations to reach women in their homes were used as part of nutrition
education programme in Oman. However, the evaluation of the programme revealed that greater attention should have been given to face-to-face strategies in hospitals as high rates of illiteracy among Omani women were noted. (Smith, 1997) Thus, information dissemination need to be combined with other approaches to increase its effectiveness.

This approach can increase awareness and interest among target audiences. The information dissemination approach is a way to start the behaviour change process, because it becomes an important part of the person's environment. For example, television spots are a part of a person's mass media environment, and what they convey to a person makes him/her stop and think, at least temporarily. However, little is known about the magnitude of resources being applied to this approach or its cost effectiveness. (Valyasevi and Attig, 1994)

2.6.2 Education Communication

Educational communication approach aims at encouraging people to try a new behaviour and especially how to conduct these behaviours or use certain 'products' properly. This approach is therefore the first step at linking an individual's knowledge with proper action.

Educational communication interventions are used primarily through one-to-one (face-to-face) instruction in non-formal health care clinics like village or district health centres. Pamphlets, brochures, charts, posters and other printed materials are also used, based on the belief that a person can be convinced to adopt a new behaviour by using traditional teaching and class-room educational approaches.

The Information Education Communication (IEC) approach has been widely used by primary health care networks and extension activities in medical, home science and agriculture universities and colleges. This method does lead to behaviour change to some extent. (Piedrasanta, 1997). However, improvement in behaviour is generally smaller than improvement in knowledge (Johnson, 1985). Besides, the change is
limited only to a small-scale individual basis and not in the entire population. It is also difficult to sustain the change.

Besides face-to-face instruction, the large scale mass media approach is also used widely. Educational communication using mass media alone is suitable for situations, where nation wide mass media programs are being developed, since it is assumed to be a relatively effective way to tackle large scale nutrition issues affecting many people.

Unfortunately, too often, when mass media is strictly adopted to try and persuade people to use or try out a new product, service or behaviour, the audience is not always told how to conduct a new behaviour properly. In short, they are told what to do, but not how. Such programmes are also blocked by limited coverage, for instance where media programmes are largely restricted to urban areas and literate populations. Their impact is also lessened when the programmes target only a 'general audience' and do not consider socio-economic class, linguistic or ethnic differences.

Educational communication approach also rests largely on a top-down model of communication, where nutrition information is passed down the hierarchy from official or doctor to patient or counsellor to client. Sometimes, this strategy works, but it may be resisted when communities are not involved or encouraged to get involved in nutrition planning and intervention process. Such approaches are characteristic of "top down" government efforts, largely because they can be readily implemented through existing primary health care networks.

2.6.3 Participatory Learning

Participatory learning approach goes beyond telling people what to do and how to conduct new behaviours but to take proper action during and after learning.

Freire, the Brazilian pedagogue has given a central premise about educating adults that education takes place in the context of people’s lives; more than acquiring
technical information, learning requires doing. It is also more than that; it is learning through reflecting on the doing. In an intensive learning process of action and reflection where all participants are equal partners. It is known as experiential learning.

Several experts, Freire (1972), Knolb (1984), Pfeiffer and Goodstein (1982), Knowles (1980) have spelled out experiential learning. It is based on andragogical model which assumes that the adult learner is increasingly self-directed, brings to the learning situation considerable life experience, tends to be problem-centred (rather than content-centred), learns best by doing and requires a safe, accepting and interactive approach to learning. (9). Knowles (1980)

Knowles described experiential learning as synonymous with participant and discovery learning. The techniques used for participatory experiential learning as described by him are group discussion, cases, critical incidents, simulations, role-play, skills practice exercises, field projects, action projects, laboratory methods, consultative supervision (coaching), demonstrations, workshops, group therapy and community development.

Facilitators lead the group with questions progressing from the personal to the social level of analysis and action. The facilitators are interactive in their approach, using questions, pictures, cultural metaphors, stories and demonstrations to draw participants into discussion and focus on messages that need to be conveyed. (Elmer, 1998).

Thus, educationists believed that adult learning requires active participation of the learner in the learning process. The participants learn the best through experiential learning cycle. The learning cycle requires the learner to progress through four phases of the learning process. (Kolb, 1984; CEDPA, 1994) (Figure 2.3)
Figure 2.3 The Experiential Learning Cycle

1. **Concrete Experience**
The learner uncovers new information that requires a response on his or her part. The learner is no longer passive but equally active as teacher or facilitator. Here problems encountered through discussion, argument and action using the methods such as role plays, games, skill practice, group task, etc.

2. **Reflecting on experience**
During this phase, the learners sort out the information developed in the first phase. They analyse the experience by reflecting on what happened during phase I. Reflection may be an introspective act in which the learner alone analyse the experience or a group process whereby a sense is made of an experience through group discussion. The facilitator does not ascribe meaning or meanings to experience but allows learners to think for themselves. The methods used in this phase are mainly discussion and presentation.

3. **Generalising about the Experience**
In this phase the learners need to interpret what was discussed during phase 2 in order to determine what lessons can be learned. This means that the learner needs to look at the information and decide what it all means to her or him. In other words the learner draws **principles or lessons learned** from the experience and the discussion of it. The methods used in this phase are synthesis discussion, lecture, etc.
4. Application

During this phase the learner relates the new learning to her or his own life situation. He/she makes the connection between the learning setting and the real life situation. This link can be strengthened by providing opportunity to practice the learnings or by planning the application during learning sessions. This can be done through demonstration or practising new skills, action planning, etc.

It is important to build learning experiences into community education programmes. Participatory learning methods are effective because they involve people actively, build on their own experiences, develop problem solving skills, make learning interesting and result in better retention of the learnt information. (Hubley, 1993; Burnard, 1989)

Health and nutrition educators who advocate this critical reflexive method contend that active participation of learners leads to more comprehensive and effective development of problem-posing and decision-making skills to deal with health, food and nutrition issues and needs. Information and knowledge are used as elements for action, to transform food habits or social conditions. (Drummond, 1975; Minkler and Cox, 1980; Praun, 1982; Uphoff, 1987a,b; Werner and Bower, 1982)

This framework has been used with different audiences and in very diverse contexts, for example in addressing malnutrition in North-Eastern Brazil and Guatemala (Drummond 1975, 1977; Praun 1982).

In Republic of Niger, nutrition education experiences demonstrated a shift in the emphasis from didactic talks to mothers, towards using participatory methods. Community workers were trained using a ‘Learning through fun’ approach, involving them in the process of learning. They in turn involved village audiences using participatory communication techniques, which were found to be very effective. Subsequently the project expanded to 80 villages. (Smith, 1997).
2.6.4 Social Marketing

Social marketing attempts to apply advertising and marketing principles to popularise positive health behaviour. Its four “Ps” include product, price, promotion and place. Social marketing differs from traditional nutrition education in that it aims at changing specific behaviour and not only giving information, uses ‘consumer research’, uses several different channels (mass media and interpersonal) and monitor coverage and impact to modify the programme (Wallack, 1990).

Several nutrition communication programs based on social marketing techniques have been undertaken during the past 15 years, especially in Asia, the goal being to improve the knowledge, change attitudes, improve food practices and increase the consumption of vitamin A foods as well as promotion of breast feeding (Gillepsie and Mason, 1994).

One of the best known and earliest success stories in social marketing to effect nutrition behaviour change was the breast feeding campaign. In Brazil, breast feeding doubled as a result of this program. (Da Cunha, 1991). Social marketing of Vitamin A-rich foods in Thailand is also another example of successful social marketing programme. (Smitasiri, 1993)

2.6.5 Participatory Communication

The focus of a participatory approach to nutrition education is to involve community members in a critical, creative, reflexive and interactive process to assess, analyse and act upon issue of interest. It focuses on people's felt needs through the use of formative research which entails the collection of data and information to identify important factors that may affect a programme's acceptance. These considerations are then incorporated into communication programme's design. The working principle is rested on two-way communication and its development based on practicalities of community life. The process can be described as follows. (Figure 2.4)
Thus, as seen in the above figure, there is a two-way flow of information and feedback at all the levels in the community.

In a participatory communication approach most of the communication strategies are face-to-face group interactions between the nutrition educators and community members. Mass media, if used, need to be integrated with all the other activities. Local media can make the results of participation more visible and can further motivate participation in nutrition education activities.

(A goal of participatory communication is to build community members' capacity to solve their own problems.) It needs an initial stimulus and the continued support of technical expertise and funding from outside sources. Thus, the benefits of the participatory approach are it is community-based, draws on local knowledge, makes programs locally relevant and acceptable and develops self-reliance, self-confidence, empowerment leading to sustainable remedial solutions for the future.

In the last decade, a dramatic change has occurred in the definition as well as approaches in nutrition education. Recently, the concept of communicating nutrition has been introduced into the field of nutrition education. (Smitasiri, 1994) Communication has become vital in the field of nutrition education, which is regarded as a systematic attempt to modify or change people's knowledge, attitudes and nutritional behaviours and in turn, their nutritional and health status.
2.7 Communication

Communication is an essential part of all health and nutrition promotion activities. Nutrition communication is an umbrella term for a wide range of information and education interventions for influencing nutritional status, including nutrition education and social marketing (Lediard, 1991).

2.7.1 Components of Communication

Communication is a two-way process, which involves interaction between facilitator and learner or people in the community. Communication aims at change in Knowledge, Attitudes, Practices and ultimately Behaviour of people. The components of communication are depicted in the figure and each component is discussed below (Figure 2.5).

![Figure 2.5 Components of Communication](image)

Sender

People are exposed to communication from many different sources - a person or organisation. In health/nutrition education, credibility, cultural and educational background and communication skills of nutrition educator are important considerations for effective communication.

The sender or message source must always be "receiver oriented". The sender must continuously use the feedback to evaluate the meaning the receiver places on his messages, and find out if this meaning is what she/he intended.
Messages

Health promotion through nutrition communication must be based on sound information. Effective education messages must be developed with an understanding of local feeding practices and diet as well as mothers’ motivation and resistance to changing their feeding style and behaviour improving feeding practices during childhood (Piwoz, 1994).

The messages consist of what is actually communicated including the words, pictures and sounds used to get the ideas across. A message will be effective when the advice presented is relevant, acceptable and put across in an understandable way, actual content of the message i.e. type of words, letters colours and pictures, tone of voice used, perception and understanding depending on the visual literacy, language used.

Characteristics of effective messages as described by Hosmer et al (1997)

- Clearly presented and worded
- Simple and repeated frequently
- Consistent across all methods of delivery
- Anticipates and suppresses/answers counter arguments, suggests actionable next step (especially if using fear as a motivator)
- Persuasive
- Appropriately appealing (i.e. not too much fear, humour, testimonial)
- Culturally relevant

Messages can be made interesting by using entertaining approach and local culture and traditions. Excessive quantities of information should be avoided and key messages should be constantly repeated and reinforced without being boring (Gebreel et al). Communication programmes which use an entertaining non-didactic approach could be effective (lediard, 1991).
The types of appeals used in communicating health and nutrition messages are factual appeal, fear, humour, emotional appeal, positive appeals, negative appeals, etc. depending on the target group and objectives to be achieved. For instance, the campaign messages about nutrition needs during diarrhoea and breast-feeding in Egypt, used a mixture of emotion and information. The use of fear, however, was downplayed because planners thought it would hinder learning. Therefore, fear was used only very lightly and selectively and in contexts where anxiety was immediately relieved in the same messages. The appeal to fear should be used carefully and lightly. This not only is conventional communication theory, but was also demonstrated by the success of this campaign (Elkamel 1991).

Experiences over the past two decades have shown that communication strategies can be most effective when they isolate a limited number of specific (key) behaviours within the time and cost constraints of the people and target different messages to influence different groups of people, reinforcing them till eventually change occurs (FAO, 1997). In the current context of innovative communication, audience-centred activities such as formative research, pre-testing are crucial in the process of development and implementation of messages.

Channels

Channels are means of sending messages. Communication channels when used effectively, can influence positive nutrition behaviour. A variety of communication channels or methods can be used for nutrition and health education. Selection of channel depends on various factors like objective, target group and resources available, etc. Communication channels can be broadly classified as interpersonal or face-to-face channels and mass media on the basis of size, participation of audience and technology used, etc. These two types of channels can also be used concurrently in a programme. Identifying and appropriate use of the right channel of communication adds to the success of a programme.
I. Interpersonal or Face-to-face Channels

Interpersonal or face-to-face channels include all those forms of communication involving direct interaction between the sender and receiver. Examples of face-to-face channels with increasing audience size are one-to-one and counselling; small group (less than 12 persons); intermediate group/lecture (between 12 and 30); and large group lecture/public meeting (more than 30).

Interpersonal channels can use printed materials like charts, flip-charts, pictures, flash-cards etc. or methods such as discussion, demonstration, simulation, role play and traditional media with individuals or groups; or people.

1. One to One Communication

Counselling is one of the methods most frequently used methods in health and nutrition education to help individuals and families. One to one counselling and home visits are being used in several studies.

Cameroon Project (1985-89) used education messages targeted at individual parents and advising them of appropriate diet, feeding frequency and meal composition for healthy and sick children with the help of picture cards, group discussions, counselling cards, posters showed an increase in the number of mothers who knew to feed more following an illness, number of mothers who knew to continue feeding a child with diarrhoea and encourage the child to eat. Similar results were noted in Nigeria Promotion of the consumption of fortified pap, Tanzania- Promotion of ARF, Gambia- Improvement of feeding practices during and following illness, Bangladesh- promotion of use of ORT (UNESCO, 1986).

However such effect was not observed in other studies. For instance, nutrition education per se was not found to be a major factor in promoting recovery from malnutrition, in a randomised trial, carried out to test the effectiveness of Nutrition Education as a rehabilitation measure for childhood PEM (Glalthar et al, 1996).
This method can be effective in attending specific problems with individuals and families. However, the focus is on individual and not on the entire community. The health/nutrition workers need to be well equipped with counselling and interpersonal skills.

2. Group Communication

People can be organised in groups or existing groups in a community can be used for the purpose of nutrition communication. Group learning can be effective as it provides opportunity to the people to come together, identify and solve their problems. Participatory learning methods can be utilised in the groups. Group communication is widely being used in health/nutrition communication. (Northouse and Northouse, 1985)

Group communication methods have shown to be effective in several studies. An action programme in slums of Coimbatore, India, cleanliness drive and education through display-cum-lecture, film show, group activities like song, skits, etc. were used to disseminate health and nutrition knowledge. Evaluation of the study showed better nutrition and health knowledge and practices among the mothers. (Ramisetty, 1988) Group nutrition education efforts in Lesotho demonstrated that mothers who attends attended a clinic had a significantly higher increased knowledge of the appropriate timing for introducing animal protein rich foods and the use of Oral Rehydration Salts. (Ruel et al, 1992).

Working in groups not only increase knowledge, but can also influence nutritional practices. In a study in Bangladesh by Yusuf and Islam (1994), parents of children under 6 years of age were encouraged to feed increased amounts of vitamin A rich fruits and vegetables along with increased amounts of oils; through simple education program. Reduced prevalence of night blindness in children from 4.1% to 0.5% was observed over an 18 month period and no new cases of total blindness arose.

A peer education approach to implement a nutrition education and growth monitoring pilot program was used in rural Chuquisaca, Bolivia. The results revealed
that more children have been weighed. Mothers added cooking oil to the child’s meal as a weaning food. 85.7% of infants aged 4 months and less were exclusively breast-fed. (Charleston, 1993).

Thus, working in groups can be highly effective since participation and feedback can be achieved. It is possible to check whether the messages have been understood or need further explanation.

Methods and materials used in interpersonal communication

A wide range of methods and materials are being used for interpersonal communication. Simple visual aids like flash cards and flip charts are used in health services rather than mass media where nutrition communication forms an important component. (Vijayaraghavan, 1986). Group learning methods like role play, skits and songs and demonstrations, discussions have been extensively used, particularly for teaching nutrition to mothers, school children and other community members (Devadas, 1982; Devadas, 1994).

People based and traditional media like simulation, plays, puppets and songs developed on the basis of local needs could be cost effective. These media have shown to be effective in many health and nutrition education programmes (Rau, 1988; Candy and Grover, 1991).

Traditional media also provides an alternative to the mass media communication. Even where modern media have penetrated, the traditional forms have maintained their validity, particularly when used to influence attitudes and promote change. They provide opportunity for discussion and prompts the public to ask what can be done to solve the problems. (Hubley, 1994). One becomes aware of certain wrong beliefs and practices and acquires knowledge and skills needed to change them. This media depends on people’s energy rather than on technology to achieve its goal. Story telling, drama, song, puppets shows, dance and folk media are being used effectively to communicate health and nutrition messages in several countries. (Contact, 1993).
This is unrivalled by any other form of communication. Its intimacy with the masses, ready availability, low cost, appreciation of young and old, men and women equally, its use of local flavour, idioms and expressions are some of its other qualities (Rau et al 1986). These channels can be more effective when followed with discussion.

Communication materials viz. printed material, slides, video-tape can be used in group for nutrition communication. The combined use of audio-visual media has been much emphasised during recent years, as it does not depend heavily upon literacy skills. A study undertaken to investigate the effectiveness of synchronised tape-cum-slide projector with discussion, among rural women in India for selected nutritional messages showed significant gain in knowledge as (Candy and Grover, 1991). Similar findings were noted in another study in Haryana which used coloured slides and commentary to disseminate nutrition knowledge about malnutrition and diseases. (Singh, 1993).

These materials for group learning are effective when followed by discussion. (Kaur and Hansra, 1990) These methods however, mainly impart knowledge and also require planning and initial budget.

There are other interesting approaches like use of traditional religious gatherings to give health education (PRIDE India, 1994, Winata, 1997). Innovative activities like games, quiz, competitions, village fair, can be used in health and nutrition education programs.

It is difficult to evaluate effectiveness of indivisual methods and materials, as these are usually used in combination. Each has its inherent strengths and limitations. Learning is achieved as a result of the synergy of the various methods used and it is difficult segregate the contribution of one method from others. Therefore, not too many studies about effectiveness of communication methods and materials are cited in literature.

The main advantage of face-to-face communication over mass media is that it create opportunities for questions, discussions, participation and feedback. It is possible to check that you have been understood and give further explanations. However, as the
size of the group increases, it is more difficult to have feedback and discussion. They have to be focused at particular target group as their coverage is limited. Thus it is necessary to articulate and promote workable communication methods for nutrition education involving people in order to achieve the impact. However, lack of inadequate programme documentation and process, reduced the possibilities of using these experiences as basis for other programmes in future.

II. Mass media

Mass Media are the best methods for rapid spread of simple information and facts to a large population at low cost. Mass media include broadcast media (radio and television) as well as print media (newspapers, books, leaflets and wall posters).

Broadcast media

During the last two or three decades, there have been profound changes in communication technologies, systems of information dissemination and the patterns of knowledge diffusion. Transistor radio has bridged geographical barriers and overcome literacy gaps. Television pictures are now available to most of the fast expanding population in cities, including the urban poor. Even larger numbers of country dweller are gaining access to the image of television satellite communication. These changes have of course helped in better flow of positive health and nutrition information for better prospective.

Use of Radio or TV is inevitable where very large audiences are required to be exposed simultaneously (Murthy, 1982). They are of special significance in the population prevailing low literacy levels. Recent studies have documented that broadcast media (radio and television) are an extremely cost effective ways to reach large number of people (Parlato et al. 1992).

Radio can popularise selected foods and new dishes. In Haiti, weekly radio talk on nutrition has been broadcast by nutritionist of the vitamin A program for several years. As a mass education measure a university in South India has accepted
willingly the responsibility of delivering nutrition lessons over the ‘All India Radio’. Staff members from various Home Science departments took the role in giving the talks. The program, namely ‘one green a day’, was broadcast in the morning hours during the whole month of October 1992.

Radio is very cost-effective provided that the programs are well rehearsed, well produced and broadcast, and unlike television, can reach the poorest members of the population (Gebreel et al, 1997).

Television has been recognised as an effective medium of communication especially in low literate communities. Television messages have tremendous power to change behaviour, but by themselves cannot bring about sustainable behaviour change. (Ldiard, 1991)

It is believed that with constant exposure to this medium over a period of time, an increase in the desired knowledge and consequent behavioural change may be created among the viewers. In Brazil, breast feeding doubled as a result of television program. URTNA, an association of African radio and television institutions representing 48 countries included effective use of radio to motivate, inform, and educate rural populations about child spacing, breast feeding, and maternal nutrition. The broadcasters and health professionals worked in collaborations for effectiveness (Demena 1995).

Television have made a tremendous impact in changing a population’s values and habits. Its potential, however, cannot be realised unless appropriate research and message testing have been done prior to any media campaign. (Da Cunha 1991).

In India, nutrition and health i.e. special audience programs were found to be comparatively low in relation to entertainment programs. A study carried out by NIN in Hayatnagar Block ‘AB’ revealed the appallingly low exposure of women to telecasts such as those on weaning foods, breast feeding and cooking, specially beamed to them. They were low on production quality, creativity, visual appeal, etc. (Murthy, 1982)
In developed as well as in developing countries, a growing addiction to television is being notified. The appearance of television as a vehicle to help in the acceleration of social change has added a new dimension to the Indian social scenario. Today India is fully equipped with necessary infrastructure to educate the heterogeneous, scattered population on aspects related to agriculture, health, nutrition, literacy and other developmental themes. Health promoters and educators need to be convinced that mass media can operate in public interest and should play a critical role in health and nutrition issues. However, the messages have to be continuously reinforced, as television alone is not sustainable in the population.

Printed media viz. newspaper, leaflets, wall posters, strip cartoons are also widely used to disseminate nutrition information. However, their use is limited for the literate population especially developing countries where low literacy levels are prevalent.

Mass media is very effective in spreading simple messages quickly to large populations but less effective for changing deep-seated attitudes or behaviours and selectively targeting messages to needs of specific groups. The danger with mass media is that it is a one-way method and can reinforce a top-down approach to health education. The effectiveness of the nutritional education campaign or programmes through mass media however would depend on the planning approach as well as the control and evaluation of the programmes. (Guzman, 1985)

The best method for achieving the empowerment process is inclusion of face-to-face communication along with the media channels, with communities and small groups which are selective and provide opportunity for discussion and feedback (Hubley, 1995). Furthermore, Nutrition education often involves influencing beliefs and attitudes and developing problem-solving skills. For these, participatory learning methods involving group discussions, sharing of experiences and problem-solving exercises will be more effective. Multiple channels are needed for a mutually reinforcing effect. A mix of face-to-face extension education and mass media can be used.
III. Multi-channels

A nutrition communication program that uses a multimedia approach including face-to-face communication, other traditional communication means, and mass media technologies is most likely to succeed (Lediard, 1991). Interpersonal communication is often given the lead role while the mass media play a more supportive role. Several nutrition communication programmes have tried using multi-channel approach for better success.

In Thailand, discussion groups, posters, T-shirts, games, tape cassettes and flip charts have been used to promote proper infant feeding practices and increase intake and production of locally available vitamin A rich food sources (Smitasiri et al, 1993). In Indonesia, radio spots, promotional marketing activities and counselling materials used to promote vitamin A rich foods, showed increase in consumption of DGLVs in different target groups (Favin and Griffiths, 1991).

A nation wide project in the Gambia combined radio broadcast with local housewives training and simple printed materials to teach rural women ORT preparation at home and dietary management for two years. The Gambian experience in incorporating nutrition education messages illustrated that substantial measurable increase in the feeding behaviour may be derived from an intensive, multimedia approach in the relatively short period of 1-2 years. Community based activities and face-to-face reinforcement of messages greatly enhance likelihood that recommended changes in behaviour will be adopted (Rasmuson et al, 1990).

In reality there is no such thing as the "best" method for all situations. Choice of method or channel involves taking into account a number of considerations which include the objective of the communication—i.e. whether to convey simple facts or change beliefs and attitudes, the time scale and urgency of the programme, the characteristics of the audience including their educational level and familiarity with different methods and of course how much money, trained staff and access to media that you have. (Hubley, 1995)
Effective exposure of behaviour change requires the integrated use of a mixture of communication channels, including mass media and interpersonal communication. However, it is essential to pre-test all the communication channels before their implementation. Program authorities need to monitor and change tactics, messages, materials, and channels as needed to meet changing audience needs. Besides using effective communication techniques, a range of behaviours often need to be changed require to address several target audiences.

**Target groups/Receivers**

The first step in planning any communication is to consider the intended audience. Programs that used audience-centred approaches had a positive effect on nutritional status even among low income groups (Parlato et al, 1992). Consideration for education, age, visual literacy, culture, needs and interest of the target groups is vital for planning and developing any communication programme.

The primary target groups of nutrition education in most cases are women, because they tend to make the decisions when it comes to food, nutrition, and health concerns of the family. Mothers play an important role in child’s nutrition. Several studies have been carried out to educate mothers about nutrition in order to bring about positive changes in nutritional behaviour, have shown encouraging results (Kielmann et al, 1980; Rao et al, 1982; Devdas et al, 1984; Agarwal, 1986; Deshpande, 1994).

It is also important to provide nutrition education for school children and adolescents, as they are future parents and need to be aware of how to improve their dietary habits. This will help to positively guide children towards wise food selection right from an early age.

Child to child communication approach to spread health messages is being used successfully by several people (Bhoomikumar, 1996; CECCT, 1995). Improvements in knowledge about immunisation, diarrhoea, feeding practices among children were
reported by Bharadwaj et al (1992) as result of child-to-child campaign. These children in turn, disseminated health/nutritional messages in the community.

There are also many experiments of correlating nutrition education programs in school with other subjects. Integrated Teaching of Nutrition and Health in the primary schools in South India integrated nutrition and health concepts into all the school subjects. (Devadas, 1985) The findings showed significant gains in their knowledge and improvement in practices as a result of the program and reached their parents and the community leading to positive nutrition behaviour. Subbulakshami et al, (1997) successfully used school children as messengers for nutrition education to the mothers using children as messengers for nutrition education to the mothers to influence knowledge, attitudes and practices about various nutrients.

Communication interventions should aim to target various groups in the community who can influence the behaviour change. Programs should aim to reach not only mothers and care-givers but also those who make decisions and shape opinions about food consumption pattern in the households like fathers, family heads, mother-in-law. Involvement of the mother-in-law in a nutrition education program in urban slums may have a good impact on infant feeding practices. One can also target at the religious leaders, community leaders who can influence shifts in food behaviours. Buddhist Monks in Thailand played a tape recording of a prominent monk encouraging to change attitudes and practices of grandmothers in villages (Smitasiri et al, 1993). Hence reaching out to the influential people in the community is crucial.

The communication strategy can ensures continuity and co-ordination by establishing linkages with semi-formalised community interest groups like health committees, Mahila Mandals (Women Councils), Schools, Health Clubs, etc. and NGOs and GOs. These groups are identifiable platforms for sustaining communication dialogue, not only for continuity of the program but also for seeking approval of various activities in the programs (Trakroo et al 1996).
Mobilisation of community groups in planning and implementing development programs with integrating nutrition, can pay rich dividends (Smitasiri et al, 1998). These groups can be equipped with the necessary skills to sensitise, mobilise and organise communities for the promotion of their own health.

Thus, as pointed out by Achterberg, (1993), the stakeholders involved in a nutrition education intervention must encompass a variety of ever-expanding spheres from the individual, to the family, community, local development agents and governmental officials.

2.7.2 Process of Communication

The aim of communication is not only to exchange information but promote improvement in nutrition through the modification of human, social and political factors, which influence behaviours (Hubley, 1995). To achieve this aim, a successful communication must pass through several stages. (Figure 2.6)

Figure 2.6 Process of Communication

As depicted in the above figure, communication begins when the messages reaches and holds attention of intended audience. The participants interpret
understand the messages. These promote learning and produce change in behaviour. As a result improvement in health is seen.

Effective communication takes place when learners understand the true meaning of a message and put in practice. Improvements in health will only take place if the behaviours have been carefully selected to that they really do influence health. (Hubley, 1995) There is evidence that communication systems are more likely to gain attention and have messages accepted if they provide for interaction. (Gillespie and Yarbrough, 1984)

However, communication failure can take place as each stage and impede the final stage of improvement of nutritional/health status. Nutrition communication actions can fail due to various reasons. The following barriers can cause this failure.

- The messages reach only the better off and well-educated people and fail to reach those health is the poorest.
- Message not understood because of difficult and unfamiliar concepts, language, complex wording and confusing pictures.
- Ineffective use of facilitation skills by nutrition educator and learning environment. Cultural and social distance between the health educator and the community is not considered.
- Education materials produced elsewhere not adapted to suit the local community. Overemphasis on the “hardware” of communication e.g. slides, films, leaflets and visual aids rather than the building up of understanding, empathy and trust between the health worker and the community.
- Too much reliance on formal teaching methods such as lectures and talks rather than those in which the learner actively participates and feedback and discussion are encouraged e.g. group discussions, problem-solving exercises and role play.

Therefore, consideration for the above aspects becomes crucial in designing a communication programme to achieve appropriate results.
The public health communication model was presented as the basic model for successfully guiding nutrition communication process, based on experience from 40 Countries. This model contains five steps (Lediard, 1991).

- Assess the problem, the audiences’ present behaviour, knowledge, and attitudes toward the problem, and the delivery mechanisms available to influence those audiences.
- Plan a communication program and deliver messages to a specific audience segment through various channels in a way that is attractive, persuasive, and provides repeated exposure.
- Develop and pre-test materials for face-to-face, community, print, and mass media channels.
- Deliver materials, messages, and support needed to complement service delivery timing.
- Monitor and change tactics, messages, materials, and channels as needed to meet changing audience needs.

Nutrition communication is considered unique from other types of health communication or social marketing challenges because improved nutrition requires sustained and repeated individual behaviour. Furthermore, changes in eating behaviour have less tangible and less immediate payoffs than other preventive measures such as immunisation. The locus of change is usually home-based and often requires the collaboration of family members. People can be equipped with the necessary skills and sensitised and mobilised for the promotion of their own health. From this point of view, training and capacity building of volunteers in the community becomes imperative.

2.8 Training of Health Volunteers

People need not only tools to take action (such as information) but the guidance and encouragement to take proper action. Community health workers play important roles in the provision of services and the promotion of health in a community. They
should be equipped with the necessary skills to sensitise, mobilise and organise communities for the promotion of their own health.

Teaching and learning are essential to most nutrition education and promotion programs. Relatively large investments in human resources, particularly in initial training and in-service retraining, are required for successful community work. Hence it is essential for health professionals to acquire knowledge and skills to deal with the people effectively. Effective and affordable delivery of nutrition education depends on sound training so that knowledge and skills for behaviour change can be communicated to a target audience.

2.8.1 Need for Appropriate Training

Training programmes are being conducted for community health workers worldwide. Considerable research, knowledge and experience exist in many parts of the world where emphasis is on the learning rather than training and the trainer. (Rao, 1988) The content and the methods used for training are mostly aimed at providing knowledge to health workers. As a result, health workers convey the same information to the community that they were taught, without applying it in specific situations. For instance, an evaluation of performance of health workers after training in management of childhood illness in Ethiopia showed that health workers gave appropriate advice to the mothers but failed to adequately solve problems in majority of cases. (Simoes et al, 1997)

Qualitative assessment of nutrition communication skills in several countries found that health workers have difficulties using education materials and visual aids during group discussions. In depth studies of the nutritional messages given to mothers found that providers’ advice was usually vague and non-specific. It is important that health providers ensure that the advice they give is understood by its recipients (WHO, 1993). In addition, health promoters were found to require practical training in how to listen, develop solutions and provide tailored feedback to mothers, especially in areas where these types of exchanges are uncommon (CARE, 1989).
Training programmes that ought to be successful often fail because of poor communication. (Anand, 1988) Current status of training of various categories of health workers viz. doctors, public health nurses, health educators and health workers in art and practice of communication revealed that in practice, these workers were ill equipped to communicate with rural population. They were not trained in communicating health to the lay people. The other problems identified were with heath educators were their urban background, too much of theory and little practical work, language barrier, etc. while for grass-root workers, theory based training, lack of supervision and guidance, vertical communication (top-bottom) were the problems.

Hence, equipping the health workers at all levels with practical training in translating the nutrition/health concepts to mothers and applying them as per situation using communication skills needs due consideration. Volunteers from a community, who are mobilised and trained, can promote positive change in the community. Efforts should be made to achieve their potential (Stephen, 1992).

### 2.8.2 Training areas

Appropriate knowledge about nutrition and health is a prerequisite to be able to address the relevant issues in the community. Health workers need to be trained in various aspects in basic health care, basic nutrition and nutritional problems in the community. The program should include topics on basic nutrients, applied nutrition with specific emphasis on needs for vulnerable age-groups. An initial training may be given, wherein theoretical and practical inputs on basic health and nutrition facts during pregnancy, importance and care during ante-natal and post-natal periods, maternal and child care practice, birth spacing, breast feeding, immunisation, complementary feeding, prevention and control of PEM and other health related aspects should be emphasized. These areas have been used and stressed by many experts (Singh and Vashist, 1993; Ronaldo and Isabel, 1993; Datar, 1995) and agencies such as Ministry of health and Family Welfare, India.
Besides having knowledge in the area of nutrition, it is important to acquire **communication and interpersonal skills**. These skills include verbal skills such as questioning, paraphrasing, talking and presenting effectively, listening and paying attention, displaying praise and encouragement, etc. whereas non-verbal skills include eye contact, gestures and facial expressions, touch, appearance, etc. Effective use of these communication skills will facilitate learning (Piotrow et al, 1997). The efficacy of different communication skills on learning of the clients/patients has been studied in-depth by many researchers in the field of health (Dickson et al 1991, Hargie et al 1987), however, such studies are rare in the field of nutrition promotion.

In-service instruction of trainers should include a discussion of adult learning principles and examples of their application in the training sessions themselves. (Hosmer et al, 1997) CHWs could also be trained in knowing the community and rapport building; organising people and developing community resources; women’s participation in child welfare and development; working with community leaders; communication in community participation and innovative approaches to people’s participation in child welfare and development programs (NIPCCD, 1996).

However, it is crucial to assess the training needs at individual health worker as well community level prior to selection of training areas. Training courses of health workers require a great deal of planning to have adequate balance of theory and practice in nutrition/health and communication. A scope for openness and flexibility is needed in the training schedule. (Wener and Bower, 1987; Abbatt, 1992)

### 2.8.3 Methods and Approaches

The problem solving approach in training is most productive. Problem solving skills in nutrition communication can help the learners to identify and understand both positive and negative factors influencing their behaviour. It also helps to identify alternative behaviours to improve health and overcome the obstacles and hence implement new behaviours. (Singleton, 1994)
Training must provide opportunities to practise the skills. Practising a skill during training greatly helps trainees move from knowing about a skill to being able to do it. Repeated practice under supervision will enable trainees to perform the task in their work situation. Feedback to individual participant is essential to reinforce the positive behaviours and to overcome the shortcomings. (Graeff et al, 1993) Theory and practice can thus be combined in realistic conditions.

Lasting results are achieved through suitable environments where both the trainer and learner actively participate in the programme. Sharing of participant experiences during a training programme is known to be very valuable in the learning process and to promote collective thinking. (De Sa, 1995) Interactive learning methods like simulation, role play, discussion, demonstration, games, etc are most effective in training health workers. Use participatory approach for training health workers is of crucial importance in order to prepare them to use the same while training community women. Participatory approach was used by CHETNA (1992) to train the trainers in urban as well as rural communities to make programme self-reliant. The training showed a change in knowledge and skills of these health volunteers as well helped them at personal as well as professional level.

Thus, the community health workers and volunteers when well equipped with the necessary skills to sensitise, mobilise and organise communities can act as change agents for the promotion of health in the community.

2.8.4 In Service Training/Continuing Education

Continuing education of nutrition/health workers is crucial to bridge the gap between basic training and practice for effective work. Appropriate in service training should be imparted to equip and motivate them and accomplish their task efficiency. (Abbat, 1988)

An in-service training program was carried out for Balsevikas under ICCW. Improvement in knowledge and practices in nutrition, health was observed to be
statistically significant in the post-test. Improvement in knowledge scores after in-service training was also observed by Isely et al (1982); Puri and Mehta, (1988). An evaluation study on the performance of the grass-root level workers viz. community nutrition workers in the Tamil Nadu Integrated Nutrition project indicated that the grass-root level workers were well equipped to carry out their job functions in the field. The training conducted was effective and brought awareness among mothers about the need for nutrition and health care of children. (Devadas et al, 1989)

In addition to training sessions, frequent contact between the trainer and the health worker is necessary for adequate support and guidance. Periodical meetings and workshops can serve this purpose. Regular discussions among the co-field workers held at intervals can serve as a forum to share experiences and identifying specific solutions to the problems encountered.

Thus, in-service training is one approach for establishing frequent contact among health workers. It reinforces knowledge, permit horizontal and vertical flow of information. It has also contributed most significantly to the inculcation of intangible qualities such as leadership, organising skills in the village health workers (Kapadia et al, 1994). A combination of centre-based and field-based training has frequently proven successful. It can become an opportunity to develop training potential, increase the desire to learn and enhance quality of work undertaken.

Besides training the volunteers, it is important to promote permanent information exchange between training and implementation institutions, as well as more intensive technical co-operation between developing countries for sustaining the adopted health behaviours.

Thus, training of CHVs is a vital element for building successful programs.
2.9 Cases of Studies in Nutrition Communication

All programs of child-care and development are in the ultimate analysis aimed at bringing about changes in knowledge, attitudes and practices at the community level. Several such programmes world-wide have met with varying degrees of success. Some of the examples of nutrition education/communication experiences from different parts of the world are discussed here.

In rural Bangladesh, a study conducted by Brown et al, (1992) used family oriented teaching approach, involving the child's mother, father and grandmother. Practical food-based guidelines were provided. Messages were persuasive and memorable even after intervention period. Significant increase in consumption of energy-rich complementary foods in the treatment group was noted.

A study by Ahmed et al, (1987) in rural areas of Bangladesh employed community-based approach with active participation of the target group in development of messages and teaching aids. Need-oriented, specific, simple and suitable messages resulted in significantly higher scores for knowledge and cleanliness practices and growth status.

In another study in Bangladesh which evaluated impact of health education programme to promote consumption of vitamin A rich foods revealed that interpersonal communication was found to be the most crucial factor in promotion of vitamin A rich foods in the selected population. (Hussain, 1999)

Promotion of special dietary formula for young children with diarrhoea in Peru targeted messages at various groups. The communication strategy used multi-channels including print, mass media as well as people-based and traditional media. High coverage of nutritional messages was reported as a result, awareness about the product in 82% while 16% tried product and 12% adopted it was noted. (Versoza, 1991)
In Western Philippines, social marketing approach was used to combat vitamin A deficiency. Training modules were designed for health workers and training was provided to them. However, significant improvements were seen in knowledge not in attitudes. A change in a few beliefs was observed. (David, 1990)

A study in central Java for promotion of egg on the vitamin A status of children and women used of media mix. Shift in behaviour was noted. Egg consumption was significantly associated with vitamin A status, measured by serum retinol levels, in both mothers and children aged 0-24 months. (Sukaton et al, 1997)

In Niger, traditional communication techniques such as story telling and role plays were used to promote vitamin A food consumption. Appropriate messages were designed based on the qualitative research and health workers were trained in basic nutrition and communication. The final evaluation indicated considerable increase in consumption of vitamin A foods among the target population. (Mamadoulaibou, 1994)

A Rural Integrated Nutrition Communication Programme in Mali aimed at promotion of breast-feeding, appropriate complementary feeding, consumption of vitamin A-rich foods and growth monitoring and promotion used community-based approach. Formative research was carried out to identify specific behaviours and leading communication technologies such as social marketing and participative training were employed. Village-based health staff and volunteers were trained in communication skills using participatory methods. It was found that about 50% of women in the trial areas remembered the messages. Significant changes in maternal diet, child feeding behaviour and children’s growth were also noted. (Aravanta, et al, 1997)

In India, a study in tribal villages of West Bengal used individual, group and mass learning methods in order to control vitamin A deficiency. Nutrition education was also supported with small-scale horticultural activities. Improvement in knowledge, attitudes and consumption practices about vitamin A-rich foods was noted. No
significant changes were noted in serum retinol levels of the deficient children. (Chakravarty and Bulusu, 1993)

Devadas et al, (1994) used combination of approaches to improve child nutrition in South India which included community participation, use of local infrastructure formation of community groups, information dissemination approach and promotion of kitchen gardens. Improvements in nutrient intakes as well as increments in weights were noted.

In another study in rural areas in Andhra Pradesh, India, horticultural activities were supported with nutrition education. Face-to-face and popular communication methods to disseminate information on nutritional and horticultural aspects were employed. Increase in awareness about home gardening and in frequency of consumption of carotene rich foods was noted. (Vijayaraghavan et al, 1994)

Qualitative and quantitative data were used to develop a nutrition communication programme (NCP) and to assess its impact on nutritional status on under privileged school age girls (Agarwal and Kanani, 1998). On the basis of systemic behavior analysis, NCP consisting of nine modules was formulated and implemented in the experimental group. Impact evaluation showed that the NCP was successful in significantly increasing the knowledge level, reported behavior and nutritional status (dietary intake, hemoglobin status and growth profile) of the experimental group as compared to controls.

Animators involved in Mass Literacy Programme (MLP) in South India, were trained in various themes nutrition and they in turn conducted nutrition education sessions for mothers who attended MLP. Improvement in KAP scored was reported in this study. (Premakumari and Gowri, 1993), suggesting that nutrition education integrated into the literacy programme, using trained animators, can bring about appreciable improvements.
A nutrition education programme in urban slums in Mumbai employed nutrition education activities as part of community-based health care programme. The Interpersonal communication was used cooking demonstration, discussion, puppet shows, etc. while distribution of pamphlets, display of hoarding and posters as mass communication. The nutritional messages were reinforced from time resulted in a positive nutritional behaviour among the mothers. Change in KAP with regards to infant feeding, child nutrition, diet during pregnancy and lactation was noted. Retention of knowledge and practices was observed after two years after project period. (Kothari, 1999)

Health and nutrition education was given to the mothers in a voluntary agency-Sophia Rotary Medical Centre (SRMC) programme in groups by trained health workers, which was followed up by routine home visits. Nutrition education sessions included the use of films and other audio-visual aids, demonstrations, and competitions, etc. The results of the present study indicated improvement in attitudes and practices concerning children's health and nutrition as compared to the ICDS programme. This could be attributed to a motivated team of social and voluntary health workers who continuously reinforced messages imparted during class sessions and continuous support and ongoing informal training to these volunteers. (Agarwal and Udipi, 1989)

The data in this study show that nutrition education can positively effect changes in the attitudes and practices of mothers and is an extremely valuable tool in alleviating the malnutrition.

Besides these studies, large-scale programmes carried out world-wide have varying degrees of success. Examples of such programmes are Tamil Nadu Integrated Nutrition Project Barangay Integrated Development Approach for Nutrition Improvement in Philippines, Iringa Joint Nutrition Support Project (JNSP) in Tanzania, Food Habits Modification project and Social Marketing Vitamin A Foods, Thailand, etc.
The main features of these programmes include use of combination of strategies and innovative communication channels, effective use of marketing strategies using mass media and interpersonal communication, systematic process of development and implementation of communication, training and mobilisation of women's groups and high level community involvement. The highlight of these programme include declined in malnutrition and prevalence of Xerosis, decline in childhood mortality rates and improvement in the nutritional status of children, significant improvements in dietary intakes and food behaviour of people. (FAO, 1997; USAID, 1989; Tontisirin, 1993; Smitasiri, 1994)

Different nutrition education interventions may be undertaken depending upon availability of resources and expertise. Some may adopt new and innovative methods, while others use more out-dated ones such as purely information dissemination approach. In these cases, the gap between knowledge and action remains wide and so the results are uneven. However, experiences show that the most effective nutrition interventions are those, which are comprehensive, incorporate different types of approaches and seek people's participation.

Individual researches and organisational efforts have made to develop learning packages in nutrition/health communication and dealing with the community. These are termed as modules or manuals or learning packages to guide others in nutrition/health communication. A short description of such documents is presented in Table 2.1.

As evident from the table, most of this documentation is meant for health educators and trainers. Tips and suggestions for the educators are given in many of these learning packages whereas detailed guidelines to conduct sessions are given in a few of them. Some of them are content oriented and present only facts and information to be imparted. Almost all use graphics and illustrations to cater to low literate audience. A majority of these documents are field tested in community.
### Table 2.1 Nutrition Communication Packages.

<table>
<thead>
<tr>
<th>Name/Developed by</th>
<th>Areas covered</th>
<th>Target group</th>
<th>Gives training inputs/guidelines</th>
<th>Prominent points</th>
</tr>
</thead>
</table>
| Modules on Remedial dietary action plan on childhood illnesses  
Sinha, 1991, | Childhood illnesses: symptoms and signs, Remedial dietary guidelines. | Aimed at community mothers, can be used by Health/nutrition educators | No training inputs or guidelines | Practical tips on the content with simple and easy to understand messages.  
Content oriented.  
Field tested. |
| Modules on Educating Adolescent girls  
Trivedi, 1993, | Education, Vocation, Marriage, Menstrual hygiene, Dietary information and practices. | Aimed at adolescent girls in community, can be used by Health/nutrition educators | No training inputs or guidelines | Seek learner’s participation.  
Simple and easy to understand messages.  
Graphics are used.  
Content oriented.  
Field-tested. |
| Modules on feeding  
Hygiene Bidnur, 1997 | Hygiene practices while feeding and cooking, Hygiene practices in the surroundings. Personal hygiene. | Aimed at community mothers to be used by Health/nutrition educators | No lesson plans/ guidelines to deliver the content. | Field-tested and showed positive effect in community mothers.  
Simple and specific messages.  
Content supported with simple graphics. |
| Suchitra, 1997  
Simple and specific messages.  
Content supported with simple graphics. |
<table>
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<tr>
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<tr>
<td>Manual for Field Workers. UNICEF/UNFPA, Nepal, 1985</td>
<td>Aspects of community work and organising people. POPULATION EDUCATION, FAMILY PLANNING, MATERNAL AND CHILD NUTRITION, EARLY CHILD CARE.</td>
<td>Field workers from GOs and NGOs, Supervisors, Trainers and project managers</td>
<td>No lesson plans/guidelines to deliver the content. Tips are given for some of the activities. Graphics used to illustrate content. Sample check-lists, pro-forma to be in the community are provided.</td>
<td>Exercises, sample check-list, question-answer sheets, activity sheets to practise skills are provided. Ideas for activities like role play are given. Content well supported with graphics.</td>
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<tr>
<td>Nutrition Learning Package, WHO/UNICEF, 1989</td>
<td>Getting to know the community. Topics related to community nutrition. Communicating nutrition messages and solving nutritional problems.</td>
<td>Intended to be used by Trainers for teaching community health workers.</td>
<td>Tips are given for the topics but no detailed plan to carry out sessions.</td>
<td>Multiple activities and exercises. Ideas for games and other activities. Simple messages in the content. Content well supported with graphics.</td>
</tr>
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</table>
| Health and Nutrition Manual, CHETANA, 1993| Topics related to health and nutrition.                                       | Health workers          | No lesson plans/guidelines to deliver the content.                  | Used simple language to deliver difficult technical nutrition/health content.  
Can serve as reference materials to others working in community.  
Content oriented.  
Content supported with simple graphics. |
| Working with the Urban Poor, A manual for Trainers, UBSP, India, 1996 | About UBSP  
Aspects in health, nutrition, education, environment and sanitation.  
Participatory training methods.  
Programme aspects like budgeting, training, etc. | Trainers and managers   | Appropriate tips and guidelines to carry out activities.            | Practical exercises to work out solutions.  
Attractive graphics, illustrations and overall presentation.  
More useful for trainers to deal with community and participatory training.  
Less coverage on the content of health, nutrition, education, environment aspects. |
These packages have varying degrees of applications in their use depending on the situation. However, it is imperative that the nutrition communicators adapt these packages according to the needs of target groups while using them.

CONCLUSION

Thus, nutrition communication appears most effective when it is designed to modify specific behaviour of specific groups with specific needs. Communication techniques that draw on principles of advertising, community development, adult education and behavioural psychology have been used to help bring about changes in eating practices. To change eating habit, communication programs must learn what motivates food behaviour of mothers and other key household or community members. It is important to explore ways and means by which nutrition communication can be made more meaningful and relevant, and all channels available for this purpose can be effectively used.

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. Thus, communication should be an integral part of nutrition improvement programme. Involvement of target groups in program planning, development and implementation of communication programme will enhance sustainability of positive outcomes in long run.