2. REVIEW OF LITERATURE

Man belonging to diverse civilizations in different parts of the world had over centuries developed by trial and error dietary habitats consistent with his environment and his access to natural foods. Beginning with discovery of oxygen and concept of oxidation during the earlier part of 19th century, the spirit of scientific enquiry into food, food components and their metabolic functions has led to accumulation of a vast reservoir of precise knowledge on metabolism, function and essentiality to man of a wide range of nutrients (Narasinga Rao 1993). Based on this knowledge attempts have been made during past 6-8 decades to define the nutritional requirements and desirable dietary intakes by human beings for maintaining good health. The health of an individual as it is determined by his/her intake of nutrients and their utilization is referred as 'Nutritional status' (Robinson 1978). In fact, 'nutrition' is the key to human capital development, a pre-requisite for any growth (Rajgopalan 1983) and 'nutritional status' defines it in quantitative and qualitative terms.

Nutrition of man is much more than the sum of interactions of fifty or more nutrients that are required. It pertain to all that is relevant to man's well being through a good diet. Thus, it entails the translation of nutritional requirements in terms of food. The nutritional status and food consumption pattern of a country in macro level, and in different strata of population on micro level is said to be dependent on production and distribution of food. (Strauss 1986, Deolalikar 1988, Sahn and Alderman 1988, Haddad and Bouis 1991). An implicit assumption during the period of "green revolution" was that increasing yield was a sufficient condition for improving nutritional status (Harris 1987); most policy-makers believed that inadequate food supply was the major cause of malnutrition.

Achieving the sufficient food supply is indeed one part of a strategy to ensure household food security (Braun et al.,1992). But while food availability at national, regional, or local village level is one factor, it is not necessarily most important (Kenedy and Bouis 1993). For example, it is common to have 20-30% of a country's population consuming less than 80% of caloric requirements even though national level food availability is at or greater than 100% (World Bank 1996).Further more, an increase in household food intake often is assumed to improve the food intake of each of the household member. But results from a number studies now indicate that household consumption is often a poor proxy of an individuals caloric intake (Gracia and Pinstrup- Anderson 1987).This is because of the effect of increase in household food access on an individual members food consumption which can be modified by a variety of factors including the education of household members and characteristics of the individual such as gender,

age, birth order, etc.The strength and direction of each of these factors vary by socio-cultural environment. In a large number of third world countries children and women tend to consume a lower proportion of their caloric requirements relative to other household members (Piwoz and Viteri 1985, Haaga and Mason 1987, McGuire and Popkin 1989).

There are also differences in the allocation of nutrition and health care among various types of household members.A study in most agriculturally productive state of India i.e., Punjab found that in the first two years of life (years of peak mortality), expenditures for medical care for sons were 2.34 times higher than for daughters (Das Gupta 1977). Similar findings were also reported for Bangladesh (Chen et al.,1981).

It is recognized that widespread malnutrition prevalent among various segments of our population is largely due to economic factors. However, it can not be denied that social and cultural factors also contributed significantly to overall picture of malnutrition in India (Anonymous 1986). Another important fact is that despite adequate food availability in our country, our masses are not able to maintain required nutritional status. In many other developing countries the situation is more or less similar.This state of affair clearly indicates that some vital link is missing between nutritional status of individual/family/community and food availability. Unfortunately, the complexity of inter-relationship between nutritional status and food availability went unrecognized or was ignored in past, which led to simplistic policy recommendation that food availability and supplies should be enhanced to improve the nutritional status of masses. It is beyond doubt that this vital

missing link between nutritional well being and adequate food availability is 'ignorance' which is altering the whole course.Thus the practices of nutrition fall far short of the potentialities offered by nutrition science due to this vital factor i.e., ignorance.

This gulf of ignorance between science of nutrition and its true application i.e., to provide adequate and nutritionally balanced food to masses can only be bridged by education i.e. nutrition education (Robinson 1978). In true sense, people of all ages are the learners in nutrition-from infant and preschool child through the early establishment of food habits to men and women in the later years of life.They include those of high or low income; those of widely differing cultural backgrounds; full time homemakers and women who also work outside the home; and urban and rural dwellers. In view of the universal need for nutrition education and tremendous diversity of groups to be reached, Lachance (1971) suggested that nutrition education should be approached very systematically.

The international conference on nutrition (ICN) which was convened in December 1992 at Rome, was a culmination of more than two years of joint efforts by World Health Organization (WHO) and Food and Agricultural Organization (FAO) to increase the awareness of the extent and seriousness of nutrition and diet related problems, and the world declaration and plan of action adopted by ICN points to poverty and lack of even functional nutrition education as root causes of malnutrition (Dube 1996). India is a signatory to this world declaration.The genesis of the national Nutrition Policy (promulgated by Government of India in 1993) lies in this Rome Declaration.The

National Plan of Action on nutrition (NPAN) adopted by Government of India in 1995 is a logical sequel to the National Nutrition Policy.The NPAN highlights the systematic collaboration among national government agencies, sate government units, non-governmental organizations, the private sector and the international community.The health and nutrition education through generating awareness among the community regarding various aspects of malnutrition and strategies to check it; integrating nutrition and health education concepts into the school curricula; and use of established media channels like Song and Drama Division,Directorate of Advertising and Visual Publicity, Radio and Doordarshan (all under Ministry of Information and Broadcasting) for effective nutrition education are on priority agendas of NPAN.

The educational technology in India has come long way from the use of simple audio-visual aids to that of electronic media (Gopalan 1997).The history of radio broadcast for education can be traced back to the year 1932 when the All India Radio (AIR) started offering programmes for school for the first time.At present, several stations regularly produce educational programmes for schools, teachers and common public.Similarly, the television was in fact introduced in the country with main objective of using it for educational purposes.The first experimental television service in India was inaugurated at Delhi in 1956. During 1960-61, a series of social education programme were telecasted and curriculum-based school television programmes were launched at Delhi on an experimental basis. Educational television (ETV) was found to be very effective in improving academic performance of students and currently ETV programmes are being

telecasted in several languages.These programmes reach more than 500 million people of our population.

It is being increasingly recognized that health is not just a medical and/or biological responsibility, but it is a social and developmental entity (Bajaj 1987).For success of healthy development of people of a country, it is highly important to empower community so that the people become the subjects of the process and not merely its objects.This is more important from the point of view of developing countries in general and India in particular. According to Bhaskaran (1983) the people's knowledge, attitude and practice, especially in rural areas of India regarding various aspects of nutrition and health can be changed substantially in desirable direction through mass nutrition and health education campaigns, and mass media like radio,TV, films and press which are the instructional tools to accomplish the task.

The present problem for investigation is targeted on adolescent girls because morbidity and mortality of adolescent girls is an area of concern to every one in society (Anonymous 1992). But, such a vital issue has not been identified as a problem in a number of countries till recent past and therefore, have limited experience in developing approaches to deal with it (Sinha 1993). It is beyond doubt that multi-facet researches in the field of formal as well as informal education in India and elsewhere are gaining sufficient momentum and various teaching techniques at almost all the levels of education are undergoing radical changes in past few years. Educational practitioners have now turned their faces towards developing such teaching

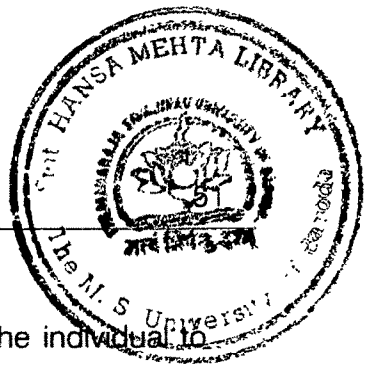
strategies which when used for different target groups, and subjects and situations, ensure better learning with greater interaction on one hand and maximum attainment of instructional objectives on the other. However, in the domain of science and art of nutrition, especially in community nutrition, most of the studies are limited upto assessment of nutritional status or nutritional patterns.The studies on 'nutrition education' are restricted to different teaching methods and their importance to increase the knowledge of nutrition as a subject in school, college or university level. In fact, there is dearth of literature especially, in community nutrition education, where attempts have been made to impart functional education to different target groups (for different nutritional problems) through different educational methods and to make a thorough impact analysis of employed educational strategies.

Reviewing the work related to various aspects of the subject of present study (which is highly diverse) at one place will not be able to depict the clear picture of present state of knowledge in the subject. Therefore, a fitting style has been chosen to provide the brief background of available related and other relevant studies in a thematic manner. Under each theme or section, the available studies have been reviewed in two sub-section i.e., studies conducted abroad and studies conducted in India.

2.1 STATUS AND IMPACT STUDIES IN NUTRITION EDUCATION

2.1.1 Studies Conducted Abroad

While discussing nutrition education Robinson (1978) stated that nutrition education can only be productive if it is based upon the nutritional



needs of target group, the factors that strongly motivate the individual to change his/her behavior and immediacy of goals. He (Robinson 1978) further emphasized that effective nutrition education is not limited to or guaranteed by any one method of presentation or any fixed content or group of instructional materials.

Shortridge (1976) opined that three principles are fundamental to learners success. (1) People learn best when supplied only with the facts, information and procedures essential to acquiring desired skill. (2) People learn best when given opportunity to practice the skill to be learned and (3) People learn faster when supplied feed-back about their progress.

Ikeda (1975) observed that nutrition education programmes are usually based on deficiencies revealed by nutritional status studies with scant attention on needs and interest of potential learners. In fact, in case of community or classroom the educator administer a test to measure learners' nutrition knowledge without emphasizing the weakness in education programme and the interests of target groups.

Osuchukwu (1978) undertook an investigation to determine dietary practices of the participants of the Weld country food stamp programme with an objective of providing insight into the nutritional significance of food stamp programme and its implication on nutrition education planning. The findings of the study revealed that mothers do need the knowledge of foods and nutrition to select balanced and nutritious diets for their families. The investigation also found that 72% of the participants ate less than one-third of

recommended daily servings of food rich in calcium, and about 70% of the recipients obtained less than one- third of recommended daily allowances for iron and vitamin-A.

Analysing the people's perspective in nutrition education in a case study of Thailand, Yodduemnern-Attig et. al., (1991) opined that efforts to combat malnutrition through community education are often unsuccessful,due to inadequate planning and poor understanding of target populations. Results of a child growth and development project indicated that nutrition education programmes can benefit from awareness that community members justify their nutritional and health behaviors according to indigenous rather than academic models.

Beatrice (1978) planned a research with an aim to identify food and nutrition competencies needed by elder adolescents by the time of completion of high school for satisfactory personal and family living. The specific objectives of the investigation were to :(1) identify basic food and nutrition competencies to be acquired by the older adolescents by the time of completion of high school; (2) analyse basic competencies acquired by youth who have graduated from high school and are attending college or not pursuing further studies; (3) compare differences in food and nutrition knowledge acquired by youth who studied food and nutrition in high school and those who did not, and differences in food and nutrition knowledge acquired by male and female respondents; (4) identify food practices and opinion about food held by youths who had graduated from high school; and (5) make recommendation for curriculum planning.

In the above mentioned study only 13 of the 29 competencies evaluated by knowledge test were found to be acquired by all or some of the participants. Females scored significantly higher than males when subjected to knowledge test.Recommendations made by thorough analysis of results of the investigation included revision of high school food and nutrition programme and introducing home-economics teacher education at under-graduate level using competencies identified.

Usinger-Lesquereux (1994) in his article entitled "Community based nutrition education" emphasized that in recent time our challenge is to give people the tools they need to sort out all of the conflicting nutrition messages while continuing to trust the quality of the food they purchase.Community based nutrition education is one answer to this challenge. Community based nutrition education in fact implies that people themselves are involved in the design, implementation and most importantly the evaluation of the educational process.The focus of such nutrition education should be an outcome, letting the inputs be flexible.

The impact of a nutrition education programme on a group of adolescents was studied by H Olund (1990) in Denmark.The purpose of this study was : (I) to examine the structure of attitudes towards healthy food in a group of adolescent and (2) to evaluate the impact of health education programme on these attitudes.The strategy used was to make 14-year old school children learn about nutrition and dental health by teaching these topics to 10-year old children.A pre-test/post-test non equivalent control group design was used.The experimental group consisted of four classes of 14-year old

children from two schools and reference group of four classes of the same age from two comparable schools. The data were collected prior to, immediately after, and, for the experimental group, two months after the implementation of the programme. Factor analysis revealed three dimensions of the attitude : Prohealth, taste, and significant others. Analysis of covariance of the pre-test measures as covariates showed a significant effect of programmes on prohealth, no effect on taste and a significant impact by gender interaction effect on significant others. It was concluded that change in attitudes can be explained by two mechanisms dissonance arousal and discrepancy between personal attitudes and group norms; and that failure programmes should emphasize affection rather than cognition.

The investigations on incorporating explanatory models in planning nutrition education programmes in Thailand were made by Yoddumnern-Attig et. al., 1992). An international child development services project to develop a model process for providing age appropriate care and education to rural children through an integrated programmes of nutrition education has been undertaken. Using behavioral analysis and explanatory models, project results indicated that nutrition education can be facilitated by (1) recognizing the family as the unit of service, (2) focusing on solutions rather than problems, (3) using two stage promotional message strategy to encourage better child care taking, and (4) view potential new practice as behavioral process, rather than single entities aimed at a specific outcome.

Akram and Agboatwalla (1992) studied the impact of health/nutrition education programme in a squatter settlement of Karachi,Pakistan with the

aim of increasing the awareness regarding the importance of hygiene, immunization, oral rehydration, balanced food, etc.Total 700 individuals were reached by resource persons by means of 'snow ball'sampling. Primary health care workers of the area provided health/nutrition education to mothers in the community. A post-intervention survey revealed that health/nutrition education (intervention) was successful in modifying the approach of home management of diarrhea, fever, respiratory tract infection and malnutrition related diseases.

International centre for Diarrhoel Disease Research,Dhaka, Bangladesh carried out an impact study on targeted food supplementation progamme in combination with nutrition education in Bangladeshi urban slum children(Fauveau et. al.,1992).An energy dense supplementary food, together with nutrition education to mothers, was given to a group of moderately malnourished children aged 6-12 months in a poor slum community of urban Bangladesh. Mothers of age and sex matched control group of children received only nutrition education. Both the groups were followed closely to register monthly weight gain and morbidity. During the first three months of intervention, the mean monthly weight gain of supplemented children (in combination of nutrition education to mothers) was 205 g vs 159g in case of children of control group (p 0.05). In the following three months, differences in weight gain were no more significant. It is concluded that nutrition education to mothers of control group's children may have been responsible for limited differences between the two groups.

Apart from above mentioned studies, some very important re-

searches on nutrition education strategies for school students and other learners were carried out during 1970s in United States of America. A nutrition education programme for high school students using games and other discovery methods resulted in improved nutrition knowledge and attitudes although food preference did not show any significant change (Spitze 1976). From the study it was concluded that high school level students could be interested in nutrition but did not want to do so by reading books, listening to lectures or taking tests.Several researches (Chelik 1974; Shoup 1975) have also suggested that teaching nutrition to others at school levels are quite innovative techniques. In one programme, teenage girls in teams of two taught fourth and fifth grade students, while in other high school students are recruited as nutrition education volunteers. Both programmes took place in class room setting and reported to be effective.

The more actively the learner participates in the nutritional educational process, the more effective will be the programme. A study by the Scony Vacuum Company, cited by Craigh (1971) showed that only 10% of information on nutrition studied is retained by reading alone.Retention is increased by 20% and 30% through hearing and seeing, respectively. By both hearing and seeing the information retained increased to 50%.The learner will retain 90% of what he says as he is doing something concerned with the information.

2.1.2 Studies Conducted in India

The international conference on nutrition held in December 1992 in

Rome is in fact, a major land mark in the field of nutrition and India's National Plan of Action on Nutrition (NPAN) which is a sequel to National Nutrition Policy (NNP), it is an answer to call given at Rome for eradication of malnutrition (Anonymous 1996). It was strongly felt in NNP that programmes of nutrition education have to be long term measures in dealing with problems of malnutrition and its causative effects in different segments of the population. In fact, it had been decided in seventh plan that integrated schemes for imparting education on nutrition and other related aspects like health, environmental and personal hygiene, child welfare, etc. etc., would be taken up through mass media and inter personal communication. so as to extend coverage in terms of both beneficiaries and content. Lots of development in the domain of nutrition/health education planning has taken place in India since the status assessment of health/nutrition education in 1978 (Pandit 1982) to adoption of National nutrition policy in 1993 and National plan of action on nutrition in 1995 (Gopalan 1995). Still the research and development efforts in macro as well as in micro level, especially in field of non-formal nutrition education which is highly required in our country having such a diverse socio-economic conditions, cultural diversities and above all a very high illiteracy rate in different segments of population, is far less than what should have been.

In the following discussion whatever studies in nutrition education related to present theme of research are available from India have been reviewed.

According to Devadas (1993a), education in schools, which is a small

sector in the community, indicates only a fraction of the effort needed to reach the community. In order to bring about a total awareness in respect of healthy living, the entire community should be educated. Devadas and Premkumari (1983) trained a group of 49 multipurpose health workers and 9 health supervisors in a community development block in Tamil Nadu (comprising 76 villages and 1,00,000 population) for a period of 15 days in nutrition/health education programmes through discussions, demonstrations, film shows and meetings. The total number of people contacted through film shows were around 10,000. Through other methods 2330 men, 4242 women and 2733 children were contacted by the team of trained persons. Initially the nutrition knowledge of studied rural mothers was poor. However, the knowledge of the mothers had improved to a great extent after conducting the nutrition/health education programme. The conclusion drawn from the study pointed towards the need of more persuasion and longer period of education to enable the learner to adopt good nutrition practices on the lasting basis.

In a study at Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore nutrition education was imparted to illiterate rural women through the ongoing mass literacy programme to assess the gain in nutrition knowledge of the participants (Devadas 1993a). In this study, group-A consisted of 250 women who participated in the adult education programme and given nutrition knowledge through well designed education strategies. Group-B had 100 subjects who were also participants in adult education programme but without nutrition education. The subjects in Group-A belonged to four rural centres.The all aminators who conducted

the literacy classes for Group-A were given five days training in nutrition education and they in turn, conducted nutrition classes twice a week upto three and half months. In order to analyse the overall nutrition knowledge, attitude and practices, a questionnaire was administrated to all the members in Group-A and Group-B at the beginning and at the end of the study. The women in Group-A had improved their nutrition knowledge to a great extent after the exposure to the education programme.At the same time, subject who attended the mere literacy classes did not have any appreciable knowledge in nutrition.

Devadas (1984) studied 400 rural mothers who were beneficiaries of poverty alleviation programmes under 'lab to land' project of Indian Council of Agricultural Research (ICAR) and 'Food for work' programme launched by Government of India under IRDP (Integrated Rural Development Project). A group of 50 mothers was given ten days intense training in nutrition and Home Science after assessing their socio-economic background and initial nutrition knowledge. The nutrition knowledge of these mothers was compared against the knowledge of a comparable group who had not participated in nutrition education programme.The analysis of data revealed that those mothers who participated in nutrition education programme appreciably enhanced their functional knowledge of nutrition.

In a classical, action oriented nutrition education research project, Devadas et. al., (1974) attempted to find out if an indigenous cheap infant food could be popularized in the rural communities through imparting nutrition education to mothers. The aim of the study was to formulate infant

weaning foods based on locally available indigenous foods and to popularize an acceptable recipe among rural communities through imparting nutrition education to mothers regarding weaning food.Six ready to consume suitable mixtures for infants had been developed and of which maize-green gram mixture was found to be highly acceptable. Eighty grams of this food mixture (which provide ll.46 g of protein and 305 K.Cal of energy) was supplemented to l00 rural children per day, for a period of 12 months.These children were divided into two groups. In one group, the mothers of children were also given nutrition education on weaning food (experimental group), while in control group no such education to mothers was imparted. The effect of supplementation in general resulted in better increments in height, weight, hemoglobin levels and clinical picture of children, however, the improvement in nutritional status of the experimental group was significantly higher than control group.

Champakan et. al., (1967) undertook a study with major objectives to evaluate the nutrition knowledge of elementary school teachers and to measure the impact of teachers' nutrition knowledge on students.The study covered 47 teachers and l302 children in 22 schools of Hyderabad.A questionnaire, developed after adequate pre-testing was administered to the teachers to test their knowledge in nutrition.The teaching performance of individual teacher was assessed by careful observation on the spot. The impact of teaching on children's gain in knowledge and change in attitude was measured through objective type of tests administered before and after teaching.The time actually allotted for nutrition teaching and the time utilized by etcher were also compared.The nutrition knowledge of teachers was

found to be inadequate. Eight out of nine teachers in English medium schools communicated even wrong information while teaching.

The just mentioned study also reported that three to four weeks were available for teaching nutrition per year but, the time actually utilized was far below. The impact of teachers knowledge to nutrition was positively correlated with knowledge gained by the students, however, in general, knowledge of nutrition of teachers in elementary schools of Hyderabad was far below the satisfactory level.

In another study Champakan and Balsubramanian (l967) attempted to assess whether (1) proper training of teachers with regard to the content and methodology of nutrition education make a better impact on the knowledge of perspective teachers than to the routine normal case and (2) the better knowledge gained is utilized by the teachers in improving the nutritional standard of their own diet. Out of the 5 schools in Hyderabad which train teachers for elementary schools, 3 residential schools were selected randomly. Two of them served as experimental schools and third one as a control. The experimental and control schools had l00 and 72 teacher-trainees, respectively as subject. A well structured nutrition education programme was arranged in experimental schools for the participants of the study, which included preparation and supply of well planned and better organized teaching material; orientation of teacher trainees in nutrition related topics using teaching material supplied; diet survey in the hostels attached to the training schools; and informal discussions with warden and also among the teacher trainees in the hostel.

In the said study, two questionnaires were administered in experimental as well as in the control schools to the participants; one to judge the knowledge of teacher trainees in nutrition and other to collect the information about the routine of hostels regarding marketing, cooking and serving of food, and pattern of diet supplied in the hostel to trainee teachers. No teaching materials were supplied and no guidance for teaching was given in control schools. The teachers in the control school were allowed to teach all the topics in nutrition as per syllabi and according to their usual procedure.The impact of teaching methods was assessed through administering a test and score were compared with those obtained before teaching.The results of the study showed that the gain in nutritional knowledge was highly significant following the administration of nutritional programme in experimental schools but, in control school no such change was observed. Besides, a considerable improvement in quality of diet in experimental schools was also noticed as a result of the planned nutrition education programme.

Devadas et. al., (1975) investigated the effect of integrating nutrition education in primary school curriculum. One hundred pupils from each of the third, fourth and fifth standards of five different schools of Coimbatore city were selected randomly to form the sample of the study. A questionnaire was administered and also a test was conducted for all the children to assess their initial nutritional knowledge. On the basis of the initial knowledge of the children, appropriate nutritional concepts were selected for each class. Accordingly lessons were developed for subjects like English, Tamil, Science, Geography, History, Mathematics, and arts and craft, incorporating

the nutrition concepts to extent possible. Teaching aids such as charts, posters and flash cards were also prepared. Tests were conducted at the end of each lesson to evaluate the impact of integrated nutrition education in primary school curriculum.

The results of mentioned study revealed that there was a significant increase in the nutritional knowledge of the children who participated in integrated nutrition education programme as compared to those who did not participate in the programme (control group). This lead to conclusion that nutrition education through integrated approach should be introduced in school curriculum as it had a significant influence on the nutritional knowledge of children.

Apart from experimental studies and researches carried out in the field of nutrition education in India, some studies are also available which attempted to discuss the general scenario of nutrition education in the country. Future strategic studies for formulation of nutrition education programmes for each segment of the society to achieve the much desired goal of Alma Ata declaration i.e. Health for All By 2000 AD are also included.

Swaminathan (1983) evaluated the community nutrition programmes of the country and observed that approaches made by various agencies both government and nongovernment and in some areas even with international assistance in the field of community nutrition were in fact related to income generation activities. In the context of an agricultural country like ours emphasis was placed on increased food production including development

of new and cheap resources and products to provide nutritious foods to community. The evaluation of these programme revealed that these are mainly based on supplementation and even the supplements failed to reach the actual beneficiaries. Moreover, lack of educational efforts and virtual absence of community participation were the major handicaps of these nutrition programmes. Devadas (1983) while discussing the vicious circle of poverty and malnutrition stated that the key to better nutrition in India is not food gifts and parcels but education along with food production. It was further emphasized that nutrition education must be an integral part of education at all levels whether it is formal or non-formal, and should be an essential component of all feeding programmes.

Gopalan (1980) discussed the status of child health in India and pointed out that supplementary nutrition programmes in schools and communities always emphasize on feeding rather than on motivating mothers and other family members through informal nutrition education for changing and improving food habits and food quality, respectively. Nautial (1981), who surveyed school enrollments in case of children who were provided mid day meals opined that no doubt provision of mid day meals and nutrition in schools is likely to promote education by attracting new enrollments and reducing drop outs but, if nutrition education programme is coordinated with mid day meal programme much better results can be expected not only from the nutritional point but also from the educational point of view.

The above reviewed literature basically throws light on experimental and descriptive researches in nutrition education in abroad and India. Some

studies related to topics of common interest in nutrition education have also been discussed. As the present investigation mainly deals with community nutrition education, where mass media i.e., video (film) and audio (folk songs) have been selected as tools for imparting education, it would be highly desirable to review the related work in general as well as in nutrition education. As the sufficient literature in said aspect is not available and therefore, here attempt has been made to include whatever such related studies were available either in education or in nutrition education or in any other form of education. Following discussion is devoted on said theme.

2.2 MASS MEDIA IN EDUCATIONAL RESEARCH

2.2.1. Studies Conducted Abroad

Van Mondframe and Travesrse (l965) found no additional advantage from audio plus visual presentation, when simple pictorial stimuli were presented on visual and their names on audio. However, simultaneous representation of audio and visual stimuli were always found better than sequential presentation. Severin (1967) researched that a word as audio and related picture as visual was superior when presented simultaneously than when presented separately but, a combination of unrelated word and picture was inferior to separate presentation of word and picture.

Dahlberg (l978) designed a study to investigate the relationship between the presentation of audio and visual cues within the instructional television programme and viewers' recognition of these cues. The findings

of the study indicated that audio and visual cues were equally effective in communicating information.

Delong (1976) attempted a study to identify the expected trends in television utilization in Texas public schools and observed that individualizing instruction, teaching small groups, providing in service programmes for schools' staff members, recording and playing back students' performances, providing course in television for credit, informing the public about the schools' performance and providing video-taped programmes and video tape duplication service through the education service centres were likely to be prominent trends.

An investigation was carried out in USA to determine whether there could be any difference in the test scores of students of eleventh grade on selected short stories (Powers 1979). The student for the study was selected randomly and divided into three groups. First group of students was allowed to only read the printed short stories, while the second group of students were viewed only film version (audio + visual) of the selected short stories. The third group of students only listened the recorded version of the stories . The findings of the study on the basis of test scores of participating students indicated that reading was generally superior to other methods and the viewing of film versions of the short stories were relatively more effective than listening of recorded versions. The study concluded that audio and audio visual (video) programme could be useful supplements to printed material in educational programmes.

Macomber (1956) compared television instruction and conventional instruction in a college human biology course and found that TV taught group of students scored significantly higher than the students who had face to face instructions. Similar results were obtained by Wetler and Gable (1958) and Enders (1960) while studying the television teaching with that of ordinary class room teaching for junior high school and sixth grade children, respectively.

In an experiment conducted by Pinto (1962) in Chile, high school students were taught history of the middle ages and modern times. On questions related to interpretation and description, the TV group did significantly better than the two groups taught without television. Contrary to this, Haskin (1975) and Sullivan (1976) by following experimental control group design for assessing the impact of video taped teaching and ITV lessons, respectively on students achievement found no significant measurable differences in achievement and preference among treatment groups.

California Assessment Plan (1980) examined the effect of television achievement at sixth and twelfth grade students from 99% of all students in these two grades. The findings of the study revealed that in both the grades students' test scores declined as television viewing increased. Although the relationship was more marked for the twelfth than for six grade, and the highest reading scores were obtained by those who watched least television and read the most, whether for school assignment or for enjoyment.

Besides school, college and university education, video has proved

very useful in community education programmes. Alison (1990) described her experience in use of video in agriculture and livestock rearing extension education in Portugal. Video films were produced covering subject areas as agronomy, wine production, livestock management, pest control measures, etc. These films were shown to farmers to educate them on above said aspects. This extension measure resulted in appreciable change in farmers' perception and knowledge in respect of crop production and livestock management. From the Alison's (l990) compilation video based education to farmers on the serious problem of pleuropneumonia, a highly contagious disease of cattle is worth mentioning. Pleuropneumonia is characterized by inflammation of lung prevra. The veterinarians were much concerned because if one animal contacts the disease, the entire herd is destroyed. A video film in close collaboration with veterinarians was produced explaining what pleuroneumonia is, how to recognize its symptoms and what steps are needed to prevent or control the disease. By providing accurate visual information on video, farmers learned about the disease and risk involved in moving cattle without proper health inspection.

The Peruvian project as cited by Kumar (1992) is another example of use of video in community education programme for rural development. The project aimed to inform, motivate and train rural people to improve agricultural production and general quality of life in villages. The challenge before the project was monumental considering the level of illiteracy among peasants and remote areas to be covered with appropriate and viable technology. Under the constraints of untrained, understaffed and under equipped extension service, the video was used to provide two way com-

munication between the technical experts and the people. The project produce video programmes after identifying the problems of the areas where project was planned to be implemented. The topics in which video films were produced concerned on a broad range of subjects related with rural development viz. agricultural production technique, nutrition and health, forestry, aquaculture, etc. These video lessons were used in combination with printed material, discussions and practical work. The training was conducted at farmers' work place. Detailed impact analysis had been made to assess the knowledge gained and utilized by the farmers.The findings of impact analysis broke new ground for working with video in rural areas as it has established a viable methodology for use of video as an instrument for grass root level training.As a result of the success of project, several efforts were made on similar lines in Mexico, Honduras, Brazil and Paraguay.

According to Robinson (1978) the effects of mass media like radio and television are far reaching as far as nutrition education programmes are concerned and he further stated that major resources of nutrition information for the American public are newspapers, magazines, books, television and radio. As given in Kumar (1992), video has proved very effective for imparting nutrition education to village communities in Philippines. The nutrition centre of Philippines developed appropriate video programmes to disseminate knowledge of nutrition to rural folk. The viewing of these programmes was followed by selling of supplementary nutrition product "Nutri-pack" (developed and produced by the centre) to audience at a nominal price. The impact analysis of the programme showed persistent success in increasing

mother's nutrition knowledge and improving pre-schoolers' nutritional status.

2.2.2 Studies Conducted in India

In India electronic media have played crucial role and will continue affecting programmes of national development. In fact, the tremendous progress we made in agriculture and allied sectors could be possible only due to mass scale educational programmes for farmers which are disseminated to every nook and corner of the country by radio and television (Anonymous 1994).

A large scale long term study was conducted in six villages near Lucknow with the objectives to determine the impact of radio broadcasted educational programmes and literacy classes on the spread of agricultural and health practices and to assess factors affecting the acceptance of innovations (Kivlin et al.,1968). Of the 6 selected villages two villages constituted radio treatment villages, two other formed literacy classes treatment villages and rest two served as control (i.e., no treatment villages). Radio farm forums were introduced by All India Radio in 1949. A forum consisted 10 to 20 villagers who gather together to listen the programmes about problems. There was one radio farm forum in each of the two radio treatment village.Each forum was provided with transistorized radio set and members listened 100 half hour talks in a year which focused on improved agricultural and health practices. In each of the two literacy classes treatment villages, literacy classes were used as a vehicle for diffusing information about

improved agricultural and health practices and for promoting their adoption. Two classes of 25 participants each met in one of the literacy classes treatment village and one class of 35 members in other village. These classes were organized for about a year, for two and hours daily, six days in a week.Two control villages were not subjected to any special treatment. All the villages were surveyed before the initiation and after the completion of the investigation to assess the pre and post level of knowledge and adoption of certain agricultural and health practices.

The results of the mentioned study clearly demonstrated that knowledge and adoption of agricultural practices were of much higher order in radio treatment villages compared to literacy treatment villages. In fact, there was no difference in literacy treatment villages and control villages. Though the knowledge, trial and adoption of health practices did not show any significant improvement in any case, however radio treatment villages showed highest averages.The study suggested that radio, in form of radio farm forums, has potential utility for educating rural masses in specific problem areas.

It is generally regarded that people retain 20% of what they heard, 30% of what they had seen and 50% of what they heard and seen. As given in Sharma and Lal (1994) a study carried out in 1981 on selected farmers in few villages having different degrees of urbanization indicated that functional education on problems related to agriculture given through slide shows and film shows, singly or in combination with radio were superior to use of radio alone, which is only an oral method. The most interesting finding was that

slide shows were found to be as effective as two media combination in increasing the respondents' knowledge. The study supported the need for adopting multiple channel approach to impart the informal functional knowledge to people on various problems related to community development.

It has been pointed out that people learn as much as from educational television as from traditional face to face teaching (Bhatia 1980). There was no difference, in case of 65% of all the comparisons, but in 25% of the cases, the television classes were better than conventional classes. Only in 10% cases the conventional classes were superior.

Few studies concerned with school television (STV), instructional television (ITV) and/or educational television (ETV) are available from India. Some important ones from them are being reviewed in the following discussion.

Christiansen (1962) conducted an evaluation of Delhi School Television Project and reported that the students who watched the television lessons performed better. Neurath (1966) in his evaluatory report of the Delhi School television project, regarding its impact on students learning stated that there was slight overall superiority of the results of students in TV schools over those of the students in non-TV schools.

Aghi (1979) studied the impact of science education programmes on satellite Instructional Television Experiments (SITE) in which selected

children from Rajasthan were taken as subject The results of the study revealed that there was no significant difference on knowledge on the application of information to solve the specific problem after viewing science programme.

Shukla and Kumar (1977) studied the impact of SITE on primary school children and reported that there was an evident improvement in language of children exposed to TV. Agarwal (1978) also studied the impact of SITE TV programmes and observed that the children of grade I to III did not understand the science programmes but they accepted the television.

CET (1980) conducted a study of satellite television (STV) programmes on the knowledge gained by senior secondary school students from Delhi and reported that STV lessons made a significant impact in the learning of subject material.

Since 1982, the Indian subcontinent in general and India in particular has experienced many fold expansion through advent of Indian satellite system. The expansion is unparalleled any where in the world history of communication and mass media. Agrawal (1991) conducted an investigation on tribal response to video viewing. For the purpose of the study the whole country was divided into five geographical parts viz., north, south, east, west and north-east. Within each region data were collected from five population strata viz., metropolis, state headquarters, district headquarters, taluka/tehsil headquarters and villages. In each region one metropolitan city, one state headquarter, four district headquarters, four taluka/tehsil headquarters and

four villages were selected. In total data were collected from 182 video parlours and 771 video viewers. Five separate interview schedules were developed for interviewing respondents from each of the five categories.

The findings of above mentioned study indicated that both deep and fast penetration of video has taken place in the Indian countryside and tribal belt. Moreover, video viewing attracted youth of remote areas, as for example in north eastern region 50% viewers were below 29 years of age. The villages in every part of country and a larger part of whole north-east India were untouched by mass media until recently but, video has helped to bring audio visual medium within the reach of tribes skipping the film projectors which could not reach them in early future.

Many researchers have conducted studies in the field of video instructional material (VIM) and its impact on teacher training programmes, and observed that in general, VIM was quite effective in terms of achievements and reactions of the teacher trainees (Dubey 1987; Yadav 1988; Singh 1989; Dixit 1991; Joshi and Dubey 1993).

Bhangoo and Kaur (1995) studied the impact of multi-media approach in learning by adult rural women. Total 500 adult rural women who were educated between primary and high school level were selected randomly from 10 villages of Ludhiana district in Punjab. An interview schedule was administered to measure their needs and interest in eight areas of home and family life. Two topics (i.e., (i) Use of colours for decoration of house and (ii) removal of strains from cloths) which received highest scores were identified

for teaching through selected methods in next step in which 140 women formed the sample. The education to these selected women on topic of interest was given with the help of three teaching methods and their four combinations as given below:

a. Printed material

b. Illustrated lecture/lecture demonstrations

c. Video film

d. Combination of a + b

e. Combination of a + c

f. Combination of b + c

g. Combination of a + b + c

The findings of said study revealed that there were differences in effectiveness of some of the selected methods and their combinations. The use of combination of three and two methods have been found to yield higher gain as well as retention of knowledge. However, a set pattern was observed regarding the use of the methods. Higher scores were obtained whenever video film was used for teaching topic on proper use of colours, while for the topic on removal of stains higher scores were obtained whenever lecture demonstration was used. This led to conclusion that the selection of visual-cum-oral methods should be according to subject matter of the study.

2.3 FOLK MUSICAL STYLES IN INFORMAL EDUCATION

In the present study folk musical style has been selected as one of the medium to impart nutrition education to target group and therefore, it has become imperative to review the studies in this context. Investigator could find related studies countable on finger tips after thorough literature survey. Moreover, studies available were not elaborative but, were a simple description of their usefulness in informal education programme.

2.3.1 Studies Conducted Abroad

The traditional folk media are tools of special nature and these tools of oral and functional transmission pose many challenge to mass media experts. According to Markham (1967) any communication network unfamiliar to masses,which does not function close to their cultural predispositions and institutional values, will have little impact and significance, and studies in this direction have stressed that no mass media can exit in cultural vacuum.

Folk music owes much to geographical traits and local culture. It is a living art which has been unceasingly treated as non-academic and less disciplined in form. According to Lomax (1970) singing of such styles presents a specialized act of communication which invites members of society for participation and with some modification can be used as valuable tool in informal education programme. The sung communication fashions out as group oriented communication because of conventional styles and song text traditionally known to participants.

According to Richmond (1970) in tribal societies or societies other than urbanites, folk music plays dominant role in daily life. The singing styles establish their cultural and linguistic identity. This form of music is remembered more faithfully, because to the folk singer(s) the whole meaning of song is emotional rather than logical. For using folk songs to communicate certain message to community some modification both in the form (style or structure) and content are required to make the message transmission effective . But the significance of musical modes as message carriers is subjected to social conventions. However, to hasten the change and educate the people through sung communication folk singers are required to be inspired by the educator.

2.3.2 Studies Conducted in India

Though some elaborative works on folk tradition of India are available (Rama Raju 1966; Srivastav 1974; Islam 1985) but, investigator could not find a single experimental study where folk songs were used as medium for educating the students or community.

Dube (1963) described his experience in a community development project where folk songs were used as medium of communication. In executing the programmes, songs having direct bearing on one aspect or other on development work were improvised accordingly by talented field workers as one of the techniques. This approach not only made new song text popular but, also proved an effective device to retain the existing musical modes and conveyed the idea of rural development.

Ability and power of folk songs to attract the attention of people were described in a study by Bhattacharya (1970). Three youths of Jarwas, a hostile tribe of Andamans were confined in jail at Port Blair. To establish rapport with those unhappy captives, investigator started with playing audio cassette of best specimens of Indian classical music but those youths remained silent all the time keeping their heads low with dropping spirit. But when few specimens of the music of 'Onges', a neighbouring tribe of the Jarwas was played, the captive suddenly became attentive and so interested in whole affair that they started singing. The said experience illustrated that music also function as a medium for communicating the message when employed through the language and accepted melodic patterns of a community.

Parmar (1975) in his book 'Traditional folk media in India' discussed in length regarding harnessing folk music styles for imparting education to rural folk on various aspects of community development. It was also argued that though folk music is one of the most effective means for simulating sense of oneness amongst the various socio-economic-cultural groups and vast number of peasants but, the efforts to utilize folk musical styles in formal and informal education programmes are almost negligible. The major suggestion emerged from the said work was that the integrated use of mass media and folk media could be potential tool for communicating the educational messages.

2.4 SUMMING UP

Nearly a third of our population still lives below the so called poverty line. Nearly half of the total population of our country is still illiterate and remains totally untouched by any education system. The reach of mass media is not upto that standard which it should have been. There is no denying the fact that only few sections of our population, if at all, can be considered above the need of fundamental nutrition knowledge irrespective of their level of education, or of their economic status and this is so largely because our education for the most part is not designed to impart the required nutrition related knowledge and awareness perhaps except in case someone chooses to specialize in this area (Seghal 1993).

The present review has tried to compile the studies into three section based on their purposes and relevance. The sections are : status and impact studies in nutrition education, mass media in educational research and folk musical styles in informal education. Under each section studies have been further subdivided into studies conducted abroad and studies conducted in India.

From the studies reviewed in the first section, i.e., status and impact studies in nutrition education, it can be concluded that though in developed and also in many developing countries concentrated efforts have been made to educate the people regarding importance of nutrition through formal and informal nutrition education programmes and also through awareness cam-

paigns but, as far as nutrition education research is concerned the investigators have generally attempted to establish the effectiveness of one method over other. The studies dealing with community nutrition education using experimental designs involving various educational methods in combination with nutritional supplementation (on problem specificity) were almost lacking. Scenario of nutrition educational research and development in India appeared to be pathetic. Whatever researches in this field are available from India and reviewed here clearly depicted that nutrition education is still in its infancy.

The study reviewed in second section i.e., Mass media in educational research clearly demonstrated that in developed countries mass media are being utilized extensively in formal as well as in informal educational programmes. Educational television for school, college and university level has occupied a prominent place. There is no dearth of literature in this aspect. However, the sufficient studies on use of mass media like television/video in community education programmes and related researches are not available even from highly developed countries. Use of mass media, especially television, has found to be very effective in imparting school level education and enriching class room teaching through school television (STV), instructional television (ITV) and/or Educational television (ETV) (Joshi 1987). The researches on effectiveness of these programmes pointed towards positive impact on learning of students and improving the school curricula. But if we take nutrition education as a subject in consideration and look at these television educational programmes, we find that efforts are negligible.

From the studies reviewed in third section i.e., folk musical styles in informal education, it is quite clear that educationaists did not pay much attention to use this art in educational communication. Only very limited studies were available from abroad and as well as from India. Moreover, they were simple descriptive and/or in form of experiences. Not a single experimental study was encountered by the investigator during the course of literature survey.

From the ongoing discussion, it is clear that attempts on nutrition education research directed towards community development are meager. Although these needs i.e., development and execution of community nutrition education programmes on various nutritional problems in different segment of the society at different locations and action planning, have been acknowledged, there is very little experience in application of innovative educational methodologies in this aspect in rural communities.

The two main aspects of present investigation are : nutrition education and use of mass media (video and folk songs). The adolescent girls in rural communities of *Thar* desert are taken as target group and Anaemia is identified as the nutritional problem. Anaemia is an extremely prevalent condition common in human beings in general and women in particular in all continent and most common cause is iron deficiency. Thirty percent of world population is believed to be suffering from this disorder (Latham 1993). Eighty to eighty five percent of women population in India is said to be anaemic due to denial of proper nutrition in their growing and child bearing years (Khanna et. al., 1977; Matham et. al., 1979; Sood et. al.,1979). The WHO

supported studies of Sharma and Sharma (l992) and Chaturvedi et. al., (1994) indicated that 78% of adolescent girls in Rajasthan suffered from various grades of anaemia.The prevalence of anemia at such a high magnitude in rural communities of Rajasthan was the basis for selecting this disorder for present study.

In India, the whole nutrition intervention programmes are linked with central/state governments national developmental schemes. In a vast country like India with such a diverse socio- economic and cultural backgrounds of huge population, there is no other option before planners and policy makers than to integrate all nutrition intervention programmes with national developmental schemes. Devadas (l993b) rightly pointed out that all these nutrition intervention programmes should continue to be linked with national developmental programmes for women and children but, they must include nutrition education as an essential component which at the moment is absolutely lacking. Against this back drop investigator planned this study which includes nutrition education through innovative educational tools like video and folk songs with combination of nutrition intervention through iron supplementation.

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