REVIEW OF LITERATURE

A comprehensive review of earliest studies is of immense use in any research work which would promote a deep insight into the subject and is inevitable for vigorous conduct of the research study. The literature would help in orienting the researcher in the desired lines of thinking which is supposed to be a pre-requisite for a study, with these ideas in consideration. The literature on different aspects of the problem under study have been presented in this chapter under the following subheads:

2.1. **Importance and need for health and nutrition education.**

2.2. **Methods of nutrition and health education.**

2.3. **Effectiveness of educational packages on health and nutrition education.**

2.3.1. Effectiveness in terms of knowledge gain.

2.3.2. Effectiveness in terms of knowledge retention.

2.4. **Factors influencing food intake of the women in self help groups**

2.5. **Nutritional Assessment**

2.5.1. Dietary survey.

2.5.2. Anthropometric measurements.

2.5.3. Clinical examination

2.5.4. Bio chemical examination.
2.6. Food Technological practices and income generation of SGHs

2.6.1. Products produced by SGHs

2.6.2. Methods of marketing

2.6.3. Marketing Assistance available to SGHs

2.6.4. Related studies.

2.1. Importance and need for health and Nutrition Education

In the words of Seshadri (1997) Nutrition and Health Education has been defined as educational measures for including desirable behavioural changes for the ultimate improvement in the nutritional and health status of individuals.

Anderson J.W. (1999) defined nutrition education as that group of communication activities aimed at achieving a voluntary change in nutrition related behaviours to improve the nutritional status of the population.

Devadas (1999) cited that nutrition education is concerned with trying to persuade an individual or a group of people to modify their way of life with a view of improving their health and Nutrition by better use.

Health of women, when they become critically ill is linked to the health related behaviours. They adopt certain behaviours that are established during youth and contribute markedly, to today’s major killers such as heart disease, diabetes mellitus cancer, and so on. These behaviours include unhealthy dietary
habits, and place women at increased risk for serious health problems both now and in the future.

A study conducted by Nayar, et al., (2005) and Purcell (2001), reported the nutrition perception and health concerns of women that reflect gross misunderstanding as well as very narrow perspective.

ShanthaKumari and Shashikala Puttaraj (2004) have observed that absence of nutrition education particularly among women having low literacy with a increased income alone may not improve the household nutrition in general.

Even in case of low socio-economic groups they are the least likely to comply with dietary guideline recommendations and least knowledgeable about food and nutrition (Turrell, 1994).

Chaudary (2002) opined that the information, seeking behaviours of the community for nutritional knowledge is almost non-existent particularly in developing countries. Most of the communities adhere to indigenous and traditional knowledge passed on from one generation to another.

The promotion of wholesome dietary practices can help mitigate, the deleterious effects of developing nutrition, related problems and those with marginally poor nutritional intake should receive anticipatory guidance,
including appropriate nutrition education (Stang, 2002, Rahmankhan and Faruk Ahmad, 2005).

Nutrition education is one of the best methods by which awareness can be created to implement intervention measures and modify their dietary pattern (Frabisher, 2001).

Nutrition education is concerned with trying to persuade an individual or a group of people to modify their way of life with a view of improving their health and nutrition by the better use of available resources both traditional and modern and both man-made and natural (Devadas, 2000).

Nutrition education is appropriate for women, as mothers are the chief decision-makers of the children’s eating habits. Nutrition education had a significant impact on knowledge, attitude and practice. Intensive nutrition education for longer periods may help furthering their knowledge which in turn might help them adopt improved dietary practices (Yegammai., et., al, 2002).

Hoelscher, et al. (2002) cited that nutrition education programmes have an impact on adolescents to enhance the present and future health of adolescents and also to reduce the rising prevalence of chronic diseases with nutritional roots such as type 2 diabetes and obesity.
The behaviour change was not expected for a very short duration and this is consistent with the results from the study conducted by Reinhardt et al., (2002). They have observed that behaviour change slowly over time and must be reinforced constantly to be effective.

Behaviour change is said to be when changing from what are considered to be undesirable practices, from the point of view of being conductive to good nutritional status or good health to desirable practices (Seshadri, 1997).

Most recently, a review of various nutrition intervention programmes showed that more programmes appeared to concentrate on knowledge based objectives rather than those related to behaviour change skills (Paxton, 1999).

Coreney (1995) postulated that nutrition education was more likely to be effective if educational methods were directed to at behavioural change rather than dissemination of nutrition information alone.

It is true in context of dire poverty, health education programmes alone cannot solve the formidable problems of ill-health and under nutrition which beset our rural communities are at least equipped with the basic knowledge, as to how best they can use their meager food resources to feed themselves and their children adequately at least to mitigate it, if not to entirely ward off malnutrition, when nutrition education reinforced by income generating programmes, contribution can be truly significant. The importance of health
education even in the current context of poverty, therefore, should not be underestimated (Nutrition Foundation of India, 1989).

Vidhya (1993) stated that an effective communication does not intend in giving simply the information but more of education therefore one can treat education and communication as synonymous in the process and product.

According to Swadener (1994) nutrition education is essential because the quality of their nutrition has a direct impact on their growth and development as well as their nutritional status throughout the life. The early years in a child life are critical for the formation of health promoting nutritional aspect and behaviour. Reaching children to this age is important because it is easier to inculcate healthy habits in early years. Further the author reported, nutrition education for preschool children can be done at the home, preschool, day care centre and also through massmedia.

Koblinsky et al (1992) reported that nutrition education programmes conducted for parents have increased their knowledge significantly to plan diets for their children, about nutritious foods and thus it could improve the nutritional status of the children.

2.2 Methods of Nutrition and Health Education

The educational process involves the use of all the methods, techniques, procedures and illustrative materials to communicate the ideas in a more
meaningful way to influence knowledge. United Nations Agencies and International Organizations have firmly acknowledged that many problems can be overcome if effective communications are used not only to educate the people but also to change their behaviour patterns. The aim of nutrition communication is to use innovative techniques found on behavioural change theories and experiences to encourage people to adopt and sustain new behaviours relating to food and nutrition (Valyaselvi and Allig, 1994).

In the Indian context, methods used for education include demonstration dramatizations, songs, films, discussions, meetings, exhibitions, field trips and mass methods such as television, radio have reached the individuals at a greater extent. The use of a package of education aids had positive effect on the nutrition knowledge which may ultimately improve their nutritional status. A study conducted by Saibaba, et al., (2002) showed that Information Education Communication (IEC) interventions to women brought about a positive change in understanding the concept and also translated some of them into action. The results obtained following intervention suggest an improvement in the practice of right cooking methods.

The audience who exposed to new information for the first time, some of them may appear a little uncomfortable use of flip charts, drawings, posters that are easily viewed should be utilized to make the proceedings interesting. Reading matter if distributed should be in local dialect, large font, easily
understandable and must convey only key messages. It would be a good idea to stage plays for adolescents that convey messages in an interesting and light-hearted manner. This method could also be used for adolescents who do not have formal schooling (Gupta 2001).

Ray (2003) reported that the interpersonal communication is more effective in changing behaviour. This has been found to be the single most important means for effective dissemination of development messages in rural areas. It consists of a face to face exchange between two or more individuals. The message flow is from one to a few individuals. Feedback is immediate and usually plentiful and the messages are often relatively high to socio-emotional content. Guptill, et al., (1993) also reported the above findings. They found that intervention was considered successful in using face to face nutrition education methods.

Brug, et al., (2003) opined that nutrition education is an innovative and promising tool to motivate people to make healthy dietary changes. It provides opportunities to obtain feedback about their dietary behaviours, motivations, attitudes, norms, and skills and mimics the process of “person to person” dietary counselling. The available evidence indicates that it is more effective in motivating people to make dietary changes than general nutrition information.

Joshi and Singh (2002) developed and evaluated educational material for nutrition education and concluded that the structured dissemination of
knowledge in the form of educational booklet has a positive impact in raising
the levels of knowledge in the area of health and nutrition.

Jacoby, et al., (1993) in their study used two different educational
methods a recipe pamphlet and counselling. They concluded that when place,
time and message are adequately chosen a simple method may be an effective
way of good communication.

Health for the Millions (2002) reported that, for many rural societies,
communication through puppets, drama, story telling, and music are
advantageous since they involve almost no cost and they involve the
community members directly, so that they share the responsibility for the
development of learning objectives what information is relevant and the needs
to be communicated.

Carruth, et al., (1995) conducted a study to find out the increase and
retention of knowledge by cartoon approach in nutrition education. The
experimental group’s knowledge was improved after the exposure to nutrition
education. The retention test scores revealed that the amount of information
lost during six week’s time lapse was not statistically significant.

Mass communication greatly increased the audience interest of nutrition
education, Television remains one of the most powerful services of
communication. There are several advantages of using the screen to draw
attention to health issues because images are always remembered longer than verbal messages. Government programmes on Television convey messages regarding the small family norm and also cover issues such as immunization, age at marriage, and nutrition for the pregnant and lactating women. They provide the ideal medium to draw attention to important issues (Esfarijani, et al., 2003).

Toby, et al., (2004) expressed that to effectively educate the public, nutritional professional must help to critically analyse the advertisements related to nutrition information. Media literacy should be an important topic in nutrition education with all groups.

Ramadasmoorthy, et al., (2002) conducted nutrition education through television broadcasting for villages on “supplementary food for babies”, “cooking rice” and “importance of greens”. The study highlighted the problems faced when introducing a new communication technology to a community without adequate initial research and pre-testing. It was reported that low viewing figures for women was attributed to their high workload and cultural norms within the villages.

At present, the situation had widely changed and many women even in villages are exposed to viewing television. The problems stated are mass media communication involves some type of hardware equipment that enable a source of one or a few individuals to reach a large audience. Feedback is limited and
delayed and the messages are often relatively low in socio-emotional content (Singhal and Rogers, 2001).

Cerqueira, et al., (1989) have done a study on, “A comparison of Mass Media Techniques and a Direct Method for Nutrition education in Rural Mexico”. It was found that nutrition concepts were learned equally well using the direct method of education as with mass media.

Nutrition education programme delivered through direct methods has been shown to help low – income individuals to improve their food buying, meal planning and preparation and food safety, knowledge, skills, practices and behaviours in several studies with the expanded food and nutrition programme. Various research studies indicate acquisition of nutrition knowledge can positively influence dietary intake and nutrition and health education has a vital role in it (Chawla and puri, 1996) (Monte, et al., 1997) and Guldan et al., 2000).

Some relative advantages and disadvantages of face to face and mass media approaches are given by Australian National Health and Medical Research Council’s Nutrition education Report (1989).
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<tr>
<th>Methods</th>
<th>Advantages</th>
<th>Disadvantages</th>
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<tr>
<td>Face to face</td>
<td>➢ Interactive</td>
<td>➢ Expensive</td>
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<td></td>
<td>➢ Reliable</td>
<td>➢ Penetration weak</td>
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<td></td>
<td>➢ Provides social support</td>
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<td>➢ Allows for modding</td>
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<td>➢ Approach sequencing easy</td>
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<td>➢ Follow up easy</td>
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<td>Mass Media</td>
<td>➢ Cheaper contact</td>
<td>➢ Weak engagement of users</td>
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<td></td>
<td>➢ Large numbers reached</td>
<td>➢ Unreliable dilution of content</td>
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<td>➢ More acceptable for many people</td>
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<td></td>
<td>➢ May stimulate self initiated change</td>
<td>➢ Follow-up difficult.</td>
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<td>➢ Potential for further development</td>
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Various research suggest that the selection of message, method, time and place are crucial to the success of any programme. There is very little literature available on nutrition education to the women. To conclude as Whitehead, (1983) stated that disseminating information for changing behaviour must be a clear intention of a program, if nutrition education of facts and information to help individuals develop the attitudes, values, and skills
needed to make informed decision and practice healthy behaviours (http://portal.unesco.org).

2.3 Effectiveness of educational packages on health and Nutrition education

For communicating messages related to selected issues, a visual should be made for each message. More visuals with discussions improve the learning, suggestions were made by the experts to include visuals in the manual and to make the subject matter more interesting. Games are also an excellent media it can also be used for communicating messages and improving health and nutritional knowledge. In this content oral communication forms are very important for strengthening literacy skills. Development of songs and other forms of oral communication are important media for imparting health and nutrition knowledge and was reported by Seth (1993) and Khanna (1991).

Kumari and Roy (1991) quoted that to impart knowledge to the target group it is necessary to supplement verbal message with visual message. The visual message in the form of illustrative materials enable the learner to see and form correct concept, conceive an idea, overcome language barrier and get motivated to action. It is often interesting to arrive at certain inferences on the efficacy of extension methods / visual aids to impart knowledge on specific themes. The following review illustrated such attempts made over time. These citations would provide a base for the present approach in this study.
Pierre and Remoriz (1992) informed that it is necessary to develop appropriate learning materials for teaching nutrition education to women. The author has suggested educational materials like songs, jungles, puzzles, cloth food models, role playing, games, field trips magic tricks, dramatic presentations, stories, puppets, pictures fell boards and computer lessons can be used for teaching nutrition education among women.

Lujan et al., (2004) conducted a nutrition education programme through radio for two months to the adults including women. After two months (post intervention) it was found that there was an increase in the consumption of pulses, salads, fruits and juices, cereals and fish and a decreased consumption of meal, sausages, pasties, fresh fries, bread and egg among the participants.

Oenema et al (2002) studied the impact of web based computer tailored nutrition education to create personal awareness regarding the intake of fat and fruits and vegetables. Significant differences in awareness and intention to change were found between the experimental and control group at post test. The result indicated the interactive web based computer tailored nutrition education, can lead to changes in determinants of behavior. However the author has suggested that research on long term behavioral effects and the practicability of teaching nutrition education, simple educational packages should be preferred.
Juichen et al (2002) conducted a study to assess the nutritional knowledge and dietary practices among the employees at a worksite. The nutrition education was given through television. The employees who participated in the nutrition education programme have gained knowledge on nutritional aspects and improved their dietary practices.

Joshi and Singh (2002) conducted a study with women to teach them about the nutritional aspects through booklet. It was found that 62.00 percent of the women have gained nutritional knowledge.

Pushpa and Sheela (2004) studied the impact of nutrition and health information conducted through different media. The results of the study revealed that only 59.00 percent of the rural respondents were able to receive the message through television. Since the respondents are not having the access to television it was found that radio and individual conduct (face to face interaction) with extension worker will be more popular and viable media to educate the mother on nutrition education.

Anupameshah and Gupta (1996) inferred that all the three visual aids of flashcard, puppets and slides helped the adolescent girls and young women in acquiring knowledge. Further it was concluded that 83 percent of them learnt better through visual media which not only arouse interest but also enrich learning situation by sustaining interest, promoting better understanding and motivating thinking and action.
Hyunsook et al (2001) reported that the degree of nutritional knowledge in the treatment group of elementary school children was higher (66.00%) in all aspects such as diverse food intake without one side diet, eating breakfast every day choosing good snacks for health and eating less processed foods. Further it was found, that games, doll playing and roll playing methods had great impact among children for imparting knowledge. The author suggests that a well designed programme for nutrition education to the children will help to change the food habits and help them to grow and to live as healthy adults.

Kapur et al (2003) conducted a study to provide intervention on maternal nutrition knowledge among mothers for 16 weeks. It was found that after the intervention the mother had scored significantly at one percent level.

Harigai (2004) found that dietary knowledge attitude and behaviour of the middle age women were improved significantly after receiving the nutrition education.

Davadas et al (1992) studied the impact of the nutrition education programme on preparation of low cost nutritious foods, on deficiency disease and desirable food habits among the households. The result of the study revealed that all the participants had obtained scores above 50.00 percent and two third of them secured above 80.00 percent in the nutritional knowledge test.
2.3 Effectiveness in terms of knowledge gain

Agarwal and Rai (1990) found that on the whole more women than men gained knowledge from TV viewing in the areas of agriculture, health and other areas of agriculture, health and other areas of their interest.

Gorelick and Clark (1995) reported that the awareness about the personal hygiene, balanced diet and eating was significantly higher in the students of lower age groups as compared to the students of higher age groups. He reported that awareness of eating practices was observed to be somewhat higher in the adolescent belonging to nuclear families. However, no significant differences were found in the nuclear and joint family adolescents on the degree of awareness of balanced diet in the study.

Radhakrishnan (1998) observed that there occurred a medium to high level of knowledge gain for majority of the televiewers (92.00 percent).

Selvaraj (2000) found that the knowledge gained by the cotton growers of coimbatore district through drama mode of video exposure was 52.89 percent. He conducted that the drama mode was ideal for video lessons intened for the farmers.

Ravichandran (1998) found that substantial knowledge gain occurred through video among the participants in mushroom cultivation and bee keeping enterprises.
Reddy and Mruthyunjayam (1994) found that there was significant knowledge gain as a result of viewing from telecast.

Philip (1995) found that more knowledge gain was observed in straight talk and interview modes which was treated with both 2D, 3D visuals.

Beniwal and Khetarpal (2000) studied the impact of consumer literacy or knowledge of women consumers of Hissar city regarding food labels. After imparting consumer literacy a significant (P <0.05) gain in their knowledge regarding food labels was noticed as majority of them fell into the category of high (90%) and medium (10%) knowledge. Hence consumer literacy through lectures and demonstrations could be beneficial for enhancing the knowledge of women consumers regarding food tables.

2.3.2. Effectiveness in terms of knowledge retention

Kaur (1990) observed that women televiewers retained 72.80 percent of knowledge gained after a lapse of 15 days.

Sunderaswamy and Rao (1997) reported significant difference between knowledge level immediately after exposure to farm telecast and 15 days after the telecast. Radhakrishnan (1998) observed that more than 80 percent of the respondents were able to retain the knowledge gained after 10 days of exposure.
Selvaraj (1990) in his study on video teaching conducted that more than half of the information was found to be retained up to 15 days. Ravichandran (1992) found that young rural farm women were easily motivated to learn new skill through video education programmes compared to other age groups.

Philip (1995) observed that more than 50.00 percent of the knowledge gained through video exposure was retained after a lapse of 15 days.

Lawatsch (1990) investigated the effect of nutrition education among the experimental and control group on positive and favourable impact of eating varieties of vegetables and risk arising due to non consumption of vegetables was found among experimental group. It was found that experimental group had a higher nutrition knowledge score than the control group.

2.4. Factors influencing food intake of the SHG women

The nutritional status of any population is influenced by several socio-economic and biological factors. The life style, occupation, place of residence such as urban, rural are the socio-economic factors while the age, sex and physiological status are the biological factors.

Socio-economic status of the family of the women will provide an indication of the nutritional background of the women and social influence variables were more important in determining quality of diet than personality or social interaction variables. The single women’s higher-quality diet was
associated with more reliable sources of influence than those of the married couple’s, a condition attributed to the independence and competencies required by their single living arrangements.

Mcintosh and Shiffletl (1994) observed that different forms of social support have positive associations with good health and preventive health behaviour while other forms have negative consequences considering dietary intake as a form of preventive health behaviour. This exploratory research examine the association of types of social support systems with nutrient intake. The findings suggest that social supports which include close, physical proximity (marriage, neighbours, religions and salience) as opposed to simple emotional attachments to relatives, friends and community are significantly associated with higher intake of specific nutrients. It is also suggested that support system in which the elderly persons may feel dependent (relatives, friend and community) could possibly have negative consequences for dietary intake.

Busi et al (2004) conducted a study about the food and dietary intakes of the slum dwellers in the city of Visakhapatnam, Andhra Pradesh in India. The study reported that the family size, income and occupation seem to have reasonable effects on dietary intake. The dietary intakes were good in small families and also better with increased income. Among different occupation
groups the fishing group showed good food consumption pattern. With regular employment there was an even pattern of consumption of all kinds of foods.

Harwath (2000) reported that the socio-economic status differences in the usual food consumption patterns of a representative sample of 2195 people of 60 years old and above residing in Adelaide South Australia. The dietary instrument used was a self completed semi quantitative food frequency questionnaire which included additional questions about food preparation and cooking practices. Members of higher social class groups reported higher consumption of high fibre and vitamin C rich foods. (fruits and fruit juices vegetables whole grains and bread) and less frequent intakes of several fried and high fat foods and salt. Those groups were also more likely to report nutritionally favourable vegetable cooking practices.

Bianchetti (2000) reported the nutritional intake of a large population of non institutionalized elderly subjects living in an urban area studied in relation to socio-economic conditions (environment, income, and education) and health status (affective, functional and physical health) to identify the subgroups at risk for malnutrition dietary recall 24 hours was used to estimate the percent of older subjects with dietary intake of specific nutrients below two third of the 1990 RDA. Ninety percent of the subjects examined showed inadequate intake of thiamine and pyridoxine and 30 to 40 percent had deficiencies of retinal, vitamin C, niacin, vitamin B_{12}, Calcium, and iron. Only 10 percent had
inadequate intake of protein. Poor nutritional intake was correlated more strongly with socio-economic conditions, functional level, and effective status than physical health status.

Sidenvall and Lennernas (1996) examined the possibility of malnutrition in geriatric patients on admission to hospital by evaluation and comparison of their meal patterns between periods of working, retirement, and hospitalization, respectively. Forty-five elderly women aged ≥ 60 years were studied. By use of modified dietary history interviews, a retrospective assessment of food intake was carried out. A qualitative system for meal classification was then applied. In the retirement period, there was a strong reduction in daily eating frequency, when compared to working and hospital periods. Thus, the daily intake and also distribution of energy and nutrients seem to be reduced during retirement, which might lead to nutritional deficiency.

Hemalatha et al. (2003) and Kawatra and Sehgal (2005) reported that poverty, ignorance, and less availability of foods were the main factors contributing to poor food and nutrient intake. With better income, there could be better food. Income was observed to be significantly associated with energy and protein intake; larger the family, lower was the protein and calorie intake.

The nutrient intake pattern of urban men and women were analysed to study the influence of some biological and socio-economic factors. The socio-economic factors such as income, occupation, and migration have a profound
influence on nutrient intakes. While among the biological factors, sex and physiological status of women emerge as strong variables in influencing nutrient intakes (Busi and Saileela 2000).

Rahman and Rao (2000) conducted a study to quantify the variations in dietary patterns and nutrient intakes of families by income status with the use of appropriate statistical methods. The study revealed that the patterns of food consumption were different between families with low middle, upper middle and high income groups. The mean intake of foods such as total cereals and millets decreased significantly with increase in per capita income. The intake of quality foods increased significantly with increase in per capita income. The intake of almost all the nutrients was lower than the requirements in low income group families. In upper middle and high income group families, the intake was more than the (Recommended Dietary Allowances) RDA.

2.5 Nutritional Assessment

2.5.1. Dietary Survey

Food Consumption is one of the important determinants of nutritional status, and dietary assessment forms an integral part of nutrition surveys. Dietary surveys provide indicators for the types of food people consume and the manner in which they are cooked and eaten.

Dietary surveys constitute an essential part of any complete study on nutritional status of individuals or householders, providing necessary
information on food and nutrients, intake level, food habits and so on. Dietary survey was helpful to determine and evaluate intake levels of food and nutrients and special food practices, that is to assess what people eat qualitatively and quantitatively and find out the inadequacies in the existing dietary pattern and habits (Arokiasamy and Rao, 1994).

Bergstrom et al (1997) observed the adequacy of dietary intake and blood / serum concentrations of nutrients in 36 middle class women. A 24 hours dietary recall, anthropometric measurements and blood samples were obtained from all subjects. Less than two thirds of the RDA of the following nutrients were ingested for a percentage of the subjects: calcium (41%) vitamin A (61%) thiamine (8%) riboflavin and vitamin (14%). Blood and serum concentrations of nutrients below normal clinical ranges included vitamin B₆ (31% of subjects), carotene (23%) vitamin B₁₂ (14%) and folate (11%). No correlations were found between intake and blood and serum concentrations.

Busi and Saileela (1999) reported that the food intake of non-slum population was better than the slum population. The protein intake of non-slum women was adequate by 37 percent. A part from this group the energy and protein intakes in all groups was inadequate. But on the average, the energy and protein adequate of the diets of non slum men and women was almost
double the diets of slum men and women which may be considered as the cumulative influence of all socio-economic variable studied.

Randhawa et al. (1999) conducted a study in Mansa district of Punjab state with an objective to study the dietary pattern of the rural women. By employing proportionate random sampling method 132 rural women were selected caste wise, majority of the respondents like cereals like wheat, maize and rice and was more or less the same for all the three ethnic groups.

Rahman and Rao (1999) and Randhawa and Kaur (1999) estimated the food intake of 450 families by using weighment method. The nutrient intakes and energy values differed significantly between reference periods of one to seven days. There was a significant difference between reference periods in middle and upper middle income groups. Wheat intake differed significantly by reference periods in middle and upper middle groups. The intake of rice, total cereals and millets, milk and milk products, roots and tubers and spices and condiments were mostly same between reference periods in families irrespective of their economic status.

Markarinec et al (2000) conducted a cross sectional study to investigate the relationship between dietary patterns and BMI among 514 women with different ethnic background who completed a validated food frequency questionnaire. The study results suggested the ideas that choosing the right
foods may be important in weight control and that food based dietary patterns may be useful for dietary counseling.

Jose and Premakumari (2001) reported that the intake of energy, protein, iron, carotene, niacin, riboflavin and fibre were below the RDA in both the groups of govt (a) and private (b) aided homes but group A (Government aided home) elderly had significantly greater deficits when compared to the intake levels of group B (private aided home) however intake of nutrients like calcium, thiamine and ascorbic acid were higher than the RDA in group B elderly.

Harwath (1999) reported that two days records were used to estimate usual nutrient intake in a group of 53 adults of Dunedin, New Zealand. Information concerning dietary supplement use and food intake pattern was also obtained. The results were compared with specific recommendations for adults aged 51 years and above of the 1989 united states RDA. Mean intakes in the women for most nutrients were equal to or above the recommended intakes. The proportion of people with intakes below two thirds of the RDA however was highest for zinc, vitamin B₆, folate, calcium, copper and vitamin B₁₂. Somewhat surprising was the finding that the energy and nutrient intake of the healthy older women were similar to those of a comparison group of young active women.
Nes and Thoner (1990) reported that the diets of 469 free living and institutionalized elderly subjects were studied using 24 hours recall and three and four days diet records. Average daily energy intake was 6.3MJ in women and 9.3MJ in men. A relatively high percentage of the women were thin or underweight, 11 percent had a body mass index BMI below 18.5 and vitamin D intake was generally low and a majority of those who had their blood analysed had serum 25 hydroxy vitamin D levels below reference values. Average intake of thiamine and riboflavin indicate that some of the women may have marginal deficiencies. Average intake of calcium, vitamin A and C were satisfactory.

Brahmam (1994) reported that intake level of micronutrients such as iron, vitamin A, riboflavin and niacin to be lower than the RDA for both men and women although their energy and protein intakes were satisfactory. In a study of South Indian women in the age group (40-54 years) all nutrients excluding calcium were found to be low when compared to the RDA in 90 percent.

Wielen et al (1995) and Yadav and Singh (1998) observed the dietary intakes of the water soluble vitamins, thiamin, riboflavin, B₆ folate, B₁₂ and C in free living and institutionalized elderly persons living a western life style. Dietary intake of thiamine, riboflavin, and vitamin B₁₂ in general were found to be adequate. Vitamin B₆ intake was most frequently below the recommendations. A substantial proportion of the women had dietary folate
intakes below two thirds of the national and specific recommendations. In several studies vitamin C intake was adequate in free living elderly but tended to be low in institutionalized women.

Jose and Premakumari (2001) reported that the intake of energy, protein, iron, carotene, niacin, riboflavin and fibre were below the RDA in both the groups but group A (Government aided home) elderly had significantly greater deficits when compared to the intake levels of group B (private aided home), however intake of nutrients like calcium, thiamine and ascorbic acid were higher than the RDA in group B elderly.

Singh and Aggarawal (2001) observed that the intake of energy was 2183 k.cal, protein 69 g and fat 44 g per day. The intake of dietary iron was found to be 21 mg and vitamin A (carotene) 1543 mg. The average calcium intake of iron and vitamin A are lower then the RDA. In the lower socio-economic group cereals were the main source of energy, with the rise in the income, the share of expensive foods like fruits, meat, milk products and fats in the diet increased.

2.5.2. Anthropometric Measurements

Nutritional anthropometry is concerned with the measurement of the variations of the physical dimensions and the gross composition of the human body at different age levels and degree of nutrition. According to Jelliffe and Jelliffe (1997) anthropometric measurements were efficient tools in the
individuals or groups. Height, weight, mid arm circumference and skinfold thickness were the commonly used anthropometric measurements. Although genetically determined, they were strongly influenced by nutrition and they reflect the patterns of growth and physical state of the individual and indicated how they deviate from the average in body size, build and nutritional status at various ages.

Kullah and Ramnath (1995) conducted a survey in Andhra Pradesh and found that the height and weight measurements were significantly lower in the women as compared to their adult counterparts. However no differences in height were observed between the groups.

Sarojani et al (1993) reported that mean height of elderly men was significantly more than that of women. A similar trend was observed in the case of weight also. However no difference between sex with respect to mid arm circumference and skin fold thickness was observed. The mean mid arm circumference and skin fold thickness of 55 years and above groups was significantly lesser than the lower age groups. The fat fold thickness decreased as age advanced and a sharp decrease was noted in later years. The standard weight for men and women was found to be 64.8 kg and 52.7 kg respectively. In general a higher percentage of the women were severely undernourished and only 8.3 percent were normal, while 6.6 and 3.9 percent of them were categorised as overweight and obese respectively.
Rabe et al (1996) examined the correlation between height and arm circumference examined in 69 women subjects (36 women 46 to 49 years old) living in a low income area of central Jakarta, Indonesia during April to May 1993. Height was closely correlated with arm span. Substituting the arm span term as the denominator to calculate a body mass using arm span (BMA) index there was 32 percent increase in estimate of chronic energy deficiency (CED) for women and a 24 percent increase in estimate of CED for men. Corresponding estimates for obesity rate decreased by 45 percent and 81 percent for women and men respectively.

Chilima and Ismail (1998) studied that the 97 men and 99 women aged 40 to 50 years from Lilongwe, Malawi. Among Kyphotic respondents height was estimated from arm span using regression equations derived from the non-kyphotic respondents. Body mass index and corrected arm muscle were computed using standard equation. The mean age of the respondent was 45 years and 55 years among women and men respectively. Kyphosis was seen in 17.3 percent of all subjects and Oedema in 4.1 percent, men were heavier and taller than women, circumference and triceps skin folds than men. The mean BMI (kg/m²) were 19.7±2.6 for men and 20.3±3.0 for women. The prevalence of under nutrition defined as BMI <18.5 kg/m² was 36.1 percent among men and 27.0 percent among women. In contrast using mid upper arm circumferences (cut off being 23 cm for men 22 cm for women) 20.4 percent of the men and only 10 percent of the women were classified as malnourished.
Chabros et al (1998) examined the changes in the nutritional status of 45 years of 59 women and 43 men living in Warsaw, Poland, over a five year period. Anthropometric measurements such as body height, body weight, skin fold thickness and waist and hip circumferences were determined as well as BMI and waist / hip ratio (WHR). Significant decreases in body weight, changes in skin fold thickness and decreases in body fat were observed over the five year period. Low BMI (<20 kg/m²) was observed in three percent of the elderly women, changes in body height, the frequency of under nutrition and body fat were more noticeable in women compared with men. It was concluded that the lack of significant changes in average BMI indicated that there were no alarming changes in the nutritional status of this population.

Donini et al (1998) reported that the two equations for each sex of the women Italian population were developed to predict from selected measure of recumbent anthropometry, using data of 172 women and 113 men. The independent variables were knee stature, sub scapular skinfold, arm and calf circumference cross validation was conducted on a free living sample of 54 women and 30 men. The recommended equations have a 95 percent probability of predicting the weight of men or women to be within 1 4.9 or 6.1 kg respectively.
Bishnoi et al (2000) reported that anthropometric measurements were one of the indicator for assessing the nutritional status. The mean BMI was 18.9, 21.12 and 20.3 in Hissar, Bhiwani and Kurukshetra Zones respectively.

Jose and Premakumari (2001) reported that the mean height, weight, body mass index (BMI) and limb circumferences of group B (private aided home) were higher than group A (Government aided home). There was a significant difference in the BMI, mid arm circumference and circumference of both groups.

2.5.2 Clinical examination

Clinical examination is the most essential part of all nutritional surveys, since the ultimate objective was to assess of health of individuals and population group as influenced by the diet they consume. Clinical examination should also aim at eliciting reasons attributable to such diseases and should include for a suitable proportion of the sample with microscopic examination of stool specimens and of blood smears. The hemoglobin level of blood (expressed as g/100 ml) was a reliable index of the overall status of nutrition, in addition to its diagnostic importance in anacmia (Swaminathan 1989).

Garg and Singh (1993) reported that 67 women (41.6%) were suffering from anacmia and amongst them 21 (13%) had their haemoglobin count between five to seven per 100ml of blood. Crack angle lip, dry rough skin and bleeding gums were reported in five (31.1%) eight (4.9%) eleven (6.8%) and
one (0.6%) women respectively. Twenty three (13.7%) men and 17 (10.5%) women were edentulous.

Natarajan et al., (1992) conducted a study in a group of 420 people 163 women and 257 men with the mean age of 50 years from urban and rural population in India. In women anemia was the commonest 31.1 percent nutritional problem and angular stomatitis was the next problem.

Vasantha devi and Premakumari (1998) reported that the percentage prevalence of angular stomatities “bleeding gums, phrynoderma, glossitis and dry and rough skin were also prevailing more among the rural women than the urban women. The number of deficiencies suffered by rural and the urban groups were 2.5 and 2.1 percent respectively.

Bains and Mann (2000) reported that overall blood picture confirmed iron deficiency among 62 percent of the subjects, and no clinical symptoms such as paleness of skin pale and smooth tongue flat nails and koilonychia were observed in the subjects.

Jose and premakumari (2001) observed that the nutritional problems namely anaemia angular stomatitis cheilosis, spongy and bleeding gums xerophothalmia and glossitis were present in the women population. The trend observed was that members in groups ‘A’ (Government aided name) reported most of all problems than those in group ‘B’ (private aided home).
2.5.4. BIOCHEMICAL EXAMINATION

Biochemical assessment can revealed subclinical status of deficiency due to lowered intake of absorption or impaired transport or abnormal utilization of nutrient. Hemoglobin concentration is widely used as a measure for assessing the iron deficiency anemia. Determination of the haemoglobin level in blood and packed cell volume will give an indication of the degree and type of anemia.

Kullah and Ramnath (1995) found that anemia was present in eighty percent of men 25 to 45 years old and in 26 percent of women, 15 percent of elderly men and 31 percent of women over 60 years old. Lozano (1996) found that haemoglobin level of elderly in the age group of over 65 years was below 14 and 12g /100ml.

Garg and Singh (1993) reported that 41.6 percent of the women had anaemia and 13 percent had haemoglobin level of only 5 to 7g/100ml.

Woo and Teah (1994) reported that the anaemia may be present in asymptomatic men and women. The world Health Organisation Criteria of anaemia were used ie 13g/100ml in men and 12g/100ml in women. A cohort of 42 percent men and women with no apparent illness living in with community were screened. Excluding anaemia due to hemoglobinopathies 4.0 percent of men and 4.8 percent of women had anaemia due to identifiable disease and 4.5 percent of men and 2.8 percent of women had anaemia without identifiable
disease. The hemoglobin levels for the latter group tented to be just below 13 for men and 12g/100ml for women. It was suggested that in clinical practice the criteria for further investigation of anaemia should be below 12 for men and either 11 or 12g/100ml for women.

Atukorala et al (1998) observed that the iron intake was below 14 mg daily in 40 women and below nine mg in 24 men, eight women and three men had hemoglobin values below 10g/100ml.

Vijayaragavan (2005) observed that hemoglobin levels of population in different areas reveal that 88 percent women suffer from anemia and about 26 percent had severe anemia (<8g/dl).

Ahuja et al 1995 reported that mean hemoglobin levels of slum dwelling women as below with cut off points given by world Health Organisation further, those living alone were worse than those living with the family.

Wadhwa et al (1997) observed that anaemia predominantly iron deficiency anaemia is a major nutrition related health problem in the world. Aneamia in the women may be of multifactorial, etiology including nutritional physiological and pathological factors. The prevalence of anaemia was reported to be higher in women 39.4 percent as compared to men percent slum dwellers.

Chandrasekar and Bharma (1998) reported that the hemoglobin levels of the women was close to the normal value of 11g/100ml. In the same category
the hemoglobin level of men was higher than the standard value (12kg/100ml). The fact that these women and men were provided with vitamin/mineral supplements daily by their family could have attributed to the normal/higher hemoglobin levels. The hemoglobin levels of their counterparts living in old age homes/living alone was less than the normal values and they came under mild anemia group as per the standard classification. Women had lower hemoglobin levels compared to their male counterparts.

Bains and Mann (2000) reported that 62 percent of the women were categorized as anaemics. Marginal anaemia was observed in 21 percent, whereas 27 percent of women were mildly anaemic only 14 percent of the women suffered from moderate degree of anaemia.

Hemalatha et al (2000) compared the mean hemoglobin level of the housewives which was found to be on par with that of the office goers. The hemoglobin levels of the housewives (11.23 ±1.84g/dl) and the office goers (11.23 ±1.59g/dl) were significantly higher at one percent level when compared with that of the stone cutters (10.49±1.69g/dl) which was found to be the lowest.

Jose and Premakumari (2001) reported that the biochemical profile of the sub samples revealed that both men and women of group A (Government aided home) and women of group B (Private aided home) were moderately
anaemic (mean Hb < 10g/dl) but men of group B were only midly anaemic (mean Hb>10g/dl).

2.6 FOOD TECHNOLOGICAL PRACTICE AND INCOME GENERATION OF SGHS

With the availability of micro credit, the micro enterprises that women have started, run into hundreds. They mostly concentrate on cooking powder preparation mango jam, guava jelly, mango squash, masala powder, shops selling evoking vessels blue liquid and phenyl, managing quarry and blue metal work producing wire basket and bags, ink, shampoo, cleaning powder wheat and rice flour (Loganathan and Ashokan, 2001).

Food Technology has been defined as “the application of science and engineering to the production, processing, packaging, distribution, preparation and utilisation of foods”. (Francis Aylward, 2001). The area concerned primarily with some one branch for example with cereal, sugar or meat products. There is however an underlying unity in the food industries, based on the nature of the chemical components present in many different foodstuffs, on the engineering techniques employed, on common problems of microbiology, of hygiene and of nutrition. Therefore food technological practice will be of use to chemists engaged in food processing as well as to students preparing for careers in food industries.
The refining process removes reducing sugars, ash and other organic matter almost completely thus giving refined white sugar, which is sucrose of a purity above 99.9% on dry matter. Sugar refining is one of the processing method (Naville et al. 1987).

Williams, Berlin et al (1986) reported that the factory production of jam has developed from an originally domestic method of preserving fruit for use in the winter months and for preparing an attractive confection. The application of scientific principles has enabled jam to conform to certain standard, to be a uniform product with a reliable keeping quality, withstanding the shocks of transport and distribution the sugar concentration also has an effect on the rigidity of the gel and the optimum is about 67.5 percent although with increased pectin and acid jellies can be formed with 60 percent sugar. Normally 0.5 percent to 1.0 percent pectin is used in jam manufacture.

Bread making has been the oldest and most general food of the world ever since man acquired the herd instinct settled in groups more or less permanently in one spot and started to cultivate the ground. The fundamental materials are easy to obtain wheat flour, salt, yeast and water and making of bread of a sort is a relatively simple process (Kent-Jones et al, 1971) Biscuit dough are made mainly from flour, fat, sugar and water with minor amounts of flavours, colours and aerating agents and eggs and fruit. The doughs are formed
to the required shape by one of various processes and baked in travelling ovens to a moisture content of 1 to 4 percent (Gover, 1989).

2.6.1 Products produced by SHGs.

Women belonging to SHGs are engaged in Marketing hairpin, necklace, chains, key rings, decorative items, mementoes etc. These are produced from the thrown away “garbaged” coconut shells (District Rural development agency, 2008).

Home based activities including making lace products embroidery, readymade clothes, palm leaf containers bee keeping and honey processing, sea shell crafts have been taken up by SHGs in Kanyakumari.

Other enterprises include producing stationary products, purchase and sale of Agricultural land, procurement and sale of improved seeds, tailoring, rope making, vermi composting, nursery raising and food processing (Selvi, 2004).

An attempt was made by two investigators, Thangamani and Uma (2001) to analyse the micro enterprises undertaken by women beneficiaries of Loan Fund Scheme. The women were involved in a variety of activities such as book binding, clothing business, saree / blouses selling, tailoring and selling fancy item. They were selling food related items like snacks. A large number of them were vegetable vendors, tea stall and tiffin stall owners, coconut vendors
and fruit vendors. The other activities were selling flours of all kinds, grinding flour, selling rice wholesale and flower business. Grocery items such as pulses, soap, sugar, oil agarbathi, candle, lime stone were also bought in bulk and sold. They were also involved in metal business paper cover making, sheep rearing, preparing toiletry articles like detergent powder, phenyl, liquid blue indigenous shampoo and wire bags.

Biplab (2001) reports of enterprises including cultivation of mulberry plants and selling mulberry leaves, Bee – keeping, sale of honey, processing of cereals and pulses and producing edible oil with power driven Ghani.

SHG women trained by Krishi Vijayan Kendras (KVKS) produced various products such as agricultural and horticultural products, candle, Agarbathi, soft toys, poultry, Jeans and garments and bags (Kashibal, 2006).

The products such as coir products, food products, handicraft, herbal products, home accessories, jute products, miscellaneous palm products, paper product pots, textiles, toys, bamboo leaf products terracotta products, Tanjore painting and art glass works and wooden products are produced and sold in their marketing complexes by SHGs (Tamilnadu Rural Bazar, 2005).

Project – Rural Net, a CII : initiative to facilitate marketing of SHG products is guided by the National Bank for Agriculture and Rural Development (NABARD) and the Tamilnadu Corporation for Development of
women Ltd. a state agency. This relationship could prove mutually beneficial with Taj group of hotel able to procure fresh produce at competitive prices while supporting rural livelihood. This may be extended from Tamil Nadu to other states (Mohankumar, 2003).

2.6.2 Methods of Marketing

Success of marketing can be measured by certain criteria. A study done by Ali (1998) reveals that marketing success can be measured through increased sales / improved profit, reduced costs, customer compliments fewer customer complaints, effective advertising, visitors to outlets, increased positive media coverage and requests for sales brochure. This means that success of enterprise is not restricted to profitable marketing. It also depends on the methods of marketing.

SHG products are sold wherever they are in need, for example, idol of God Ganesh and candles at temples, local shops and by NGOs during festival season.

Kavitha.R. et al (2007) observed that in the present era of open market, customers get more options than ever before to choose from, making it difficult for a product to find a buyer unless it has some unique attribute over others. This has increased the competitive pressure on the business. Thus to maintain product distinction, companies are forced to innovate. While a need based innovation increase the perceived value of the product, offerings making it
more affordable. Knowledge based innovation helps companies to create new market and opportunities. Though much desired, many firms fail to successfully innovate.

Kumar (2006) examined the preference shown by women entrepreneurs while locating their business. His study was based on primary data collected from 120 women entrepreneurs from the state of Haryana. Analysis of data revealed that almost 50 percent women entrepreneurs were managing their business from their homes and one third had taken rented buildings. Preference of location further revealed that most of the women entrepreneurs wanted to operate their business near the market followed by their homes. It might be due to the dual function they have to perform, lack of finance and socio-economic factors. But due to stringent rules and regulations, they had to face problems while managing the business at homes.

Shanthi (2006) reported that among her subjects consisting of 300 women engaged in employment generating technologies, only 99 women started micro enterprises and only a third of them entered into the venture of marketing the products. Nearly half of them (50 percent) sold their products in public gatherings such as meetings rather and crowded venues, while less than 30 percent of them sold in the markets. Eighteen percent of them sold their products from their homes. While a negligible percent adopt door-to-door method about two percent of them sold their products at public places like
temples, churches, post offices and schools where people gather for a variety of purpose.

In the view of Rao (2002) many groups were producing quality goods at a fair price but absence of shops in the vicinity, paucity of funds to meet the rental expenditure and distant location of marketing centers were the problem faced. Since the marketing centers for SGH goods were located at distant places in many cases, the bank would extend credit facility to federations for purchase of vehicles like auto rickshaws and mini-lorries for transport of products to these centers.

2.6.3 Marketing Assistance available to SHG:

A number of agencies help women SHG members to market their products. Government itself facilitate this in a number of ways.

Tamilnadu Government has issued an order which permits direct purchase of requirements by SHG members instead of going in for tenders and quotations from cooperative and government organisations (Souneliah, 2008).

Rural Development Department has come forward to use information technology to aid and assist the rural entrepreneurs in finding worldwide market for their products. The web site market for their purpose provides useful information on over 700 products produced by the rural women self help group
for produce to Taj group of hotels. A Chennai based SHG Thendral would supply for first time. An online order facility has also been provided.

Mohankumar (2003) reports that the confederation of Indian Industry (Southern Religion) had initiated a pilot project to encourage linkages between SGHs and institutional consumers. For example initially SGHs from Vellore and Kanchipuram would supply a range of sea foods to Taj coromandel.

SGHs are given training in various essential areas of management and new technologies by government.

Training related to activities such as marketing, pricing, trading agencies involved etc is given to SGH women entrepreneurs (Mothilal et al 2005) The other areas involved supervision, storage, quality control measure, packing and processing of the produce and methods used for sale (Radhawa et al 2001).

There are other several institution arrangements at both the central and state levels like nationalized banks, (SIDBI, Rashtriya Mahita Kosh (RMK), DRDA, Prime minister Rogar Yojana (PMRY), NABARD, Tamilnadu corporation for Development of women (TNCDW), District Rural Development Agency (DRDA), Entrepreneur Development Programme (EDP), District supply and marketing society (DSMS), Swarnajayanthi Gram Swarozgar Yojana (SGSY) helping for the marketing of SGH products. SIDBI
was established in April 1990 under an Act of Indian Parliament as a wholly
owned subsidiary of Industrial Development Bank of India (Tripathy, 2002).

Rashtriya Mahita Kosh (RMK) or the National Credit fund for women
was set up in March 2003. RMK has a Marketing Finance scheme. The scheme
was introduced by RMK to help women beneficiaries to market their products
to NGO’s/Organisations.

The prime minister Rozgar Yojana (PMRY) was launched on 2nd October
1993. PMRY scheme was to provide easy subsidized financial assistance to
educate unemployed youth for starting their own enterprises in manufacturing,
business and service and trade sectors under the schemes SGHs may undertake
common economic activities for which loan is sanctioned without resorting to
onward lending to its members (Prime Minister Rozgar Yojana, 2007).

Tamilnadu corporation for Development of women (TNCDW) limited
was incorporated on December 9, 1983 under companies Act 195. TNCDW
activities include Entrepreneurs Development training for women, tamilnadu
women’s Development project (Mahalis Thittam) and District level training
cum marketing centers (Tamilnadu women, Development corporation, 2007).

District Rural Development Agency (DRDA) was introduced with effect
from 1st April 1991. The district Rural development Agency (DRDA) has seven
wings and the women’s wing helps women entrepreneurs. At present it is
engaged in market promotion and facilitating marketing of SGSY and SGH products. Towards achieving this DRDA has expertise in project planning, market research and product development gender sensitization and women development, various aspects of SGH development, (eg federation approach and micro enterprise) and entrepreneur development programme (EDP). In Tamilnadu marketing link of DRDA has been established which is called, as District supply and Marketing Society (DSMS) Government of Tamilnadu, 2008 and Ministry of Rural Development.

District supply and marketing society (DSMS) is an important agency helping in marketing. One of the objectives of DSMS is arranging marketing opportunities for SGH’s products and arranging other supply services such as packaging logo, brand etc. SGH are expected to register with DSMS and DSMS after assessing the quality of the products arranges for marketing through its salesman and sales outlets (District supply and marketing society, 2007).

Swarnajayanthi Gram Swarozgar Yojana a new programme known as swarozgar yojana (SGSY) was launched in April 1999. This is a holistic programme covering all aspects of self employment such as organization of the poor into self help groups, training, credit technology infrastructure and marketing SGSY is funded by the center and the states in the ratio of 75:25.
Exhibitions are organized periodically in urban centers which offer better price to the goods of SGSY swarozgaris. This also serves as a forum for sensitizing the SGSY group to the demand pattern of the market (Mandal, 2005).

DSMS facilitates marketing of rural products by way of linkages with retailers, wholesalers, distributors, cooperative stores and other private distribution networks organized in coordination with suitable agencies. It also assist in upgradation of skills introduction of improved technologies, product development and quality testing and control. Suitable linkages with purchasing organizations of the state and central government agencies/department and public sector undertakings for regular supply of rural products have been made. It lays down specification standards for the products and sets up a suitable display and sales center in urban areas and sale is facilitated through exhibition etc. It also helps in marketing of spices and other minor forest produces collected by different Development of Women and Children in Rural area (DWACRA) groups and NGDs by way of tie with institutions and through exhibitions (Mahalir Thittam, 2005).

2.6.4. Related Studies

The related studies presented here are about micro-financing usefulness of micro credit, SGH and bank linkages. Impact of SGH facilitators of marketing and method of improving marketing.
**Micro financing:**

Manimekalai (2007) in her study analysed the impact of micro financing of SGHs on women micro entrepreneurship in Trichirappalli District. She had taken five different models of micro financing and examined the comparative programme of the models. She arrived at the finding that the NGO facilitated model had proved better in empowerment indices and also in initiating micro enterprises. Social empowerment was found to be lagging behind economic empowerment. The translation cost differences showed that the SHG loan incurred the least translation cost. The study recommended that the SHG approach of micro financing might be encouraged in cooperatives to work for the empowerment of the entire women community.

**SHG and Bank linkages**

Bhatia and Bhatia (2000) through on few case studies highlighted that recovery of credit from members of SHG was higher than that from other borrowers and that involvement of SHGs had helped the bank brancher in recovery of old dues. They observed that there had been perceptible changes in the living standards of the SGH members in terms of ownership of assets, increase in savings and borrowing capacity income generating activities and income level as well.
Impact of SHG

The survey conducted among one hundred self help group members of Kanyakumari District regarding the impact of SHG training reveals the fact that the member had considerable improvement in their lives after becoming members of self help groups. Their lives were enriched both economically and socially.

In a case study by Thakur and Tiwari (2005) in Gujrat it was found that SGHs had shown a limited effectiveness in terms of their impact on rural poverty and their long term sustainability.

Usefulness of micro credit

It is micro credit which has helped women to launch micro, small and medium level enterprises (Loganathan and Ashokan, 2006) According to USAID (United States Agency for International Development) report, micro credit is now a proven strategy to reach poor women. The micro credit summit campaign reports that 14.2 million of the world’s poorest women now have access to financial services accounting for nearly 74 percent of the 19.3 million poorest served by Micro credit programme is a part of SGSY. Many studies reveal that DWACRA programmes did not satisfy the Govt. expectation and this is why the Govt. modified the DWACRA programmes like SGSY has SGH as an important component.
Facilitators of Marketing:

Sathysjit (2007) on the basis of his study concluded that the strategic processes in SSI took a short term view of the market and the customers. However the SSI had developed competence to work on uncertain conditions largely to meet the demand fluctuations of their customers.

Methods of improving marketing:

Sitavenka (2007) attempted to examine the entrepreneurial performance of women and their beliefs in the Indian context. About 40 women from the state of Andra Pradesh, who had been in business for a fairly long period of time formed the sample for the study. The study found that social factors gaining status in society recognition and respect motivated the women in sustaining the business.

On the basis of his study Naveen (2006) concluded that the rural folks have a strong saving habit. They save one third of their incomes annually across the three income segments studied. Almost 93 percent of the respondent were aware of life insurances. This research clearly indicated that the rural market is a vibrant market and holds tremendous potential for growth of insurance business, particularly because of the strong saving habit, changing aspirations close integration with the urban economy and an unprecedented exposure to information explosion.
This chapter on review of literature presented the earlier studies on importance of nutrition education, knowledge gain and knowledge retention of the health and nutritional information communicated through various educational media.

SHG in Tamilnadu have been performing well. Micro credit by SGHs has benefited the poor through their starting enterprises terms of ownership of assets increase in savings and borrowing capacity and increased income their lives have been enriched socially also.

The studies have also revealed that to be successful in food production, organization and marketing should be properly arranged and coordinated. The products have to be hygienically prepared and attractively packed and market survey has to be conducted and for all this training is essential.

It is also known that the common food technological practices engaged in are mango jam, squash masala powder, animal feed, goat rearing, dairying, pisciculture and flouriculture etc., food craft based activities, gem cutting, grocery paper, sottu Neelam, flour mill, book binding, bakery, vermi composting and successful entrepreneurs were above 30 years of age.

Also it is observed that the food technological and, marketing practices of small business are different from those of large businesses. This review of literature helped the researcher to gain sufficient idea and insight through this,
the methodology for the study was developed. The same has been presented in the next chapter.

The society for Development of Human abilities and Environment (OAZOANE) is taking efforts constantly to market the products of SHGs in a systematic way. In this direction, a series of stalls and sales counters are put up and all the products are exhibited for sale. These status are put up in direct level and state level exhibitions. These stalls are put up in district level and state level exhibitions. These stalls and sales outlets attract local consumer and sales are very impressive. Moreover, the sales networks are promoted among and within the self help groups to meet their domestic requirements. (The society for Development Human Abilities and Environment, 2006).

There is a new initiative, called the women’s economic empowerment in the market place – India cum Karaya project to enable women to market their products. The project aims to give market access to women, eliminate middle persons and overhead expenses, and keep the profits with the community. In this project women are not only the collectors of forest produce and makers different products but also sellers of these products in the market. These women are part of a community process that was initiated in 2002, in partnership with the Society for Elimination of Rural Poverty (SERP). Procurement centres are set up to arrange for the buyer – seller linkages – Buyers now pick up produce from the centre on cash – and – carry basis
purchasing committees monitor the entire process and ensure total transparency. The committees have only women who even decide on the grading of the produce and assessing its quality the women on the committee collect three percent commission to compensate for their loss of wages on that particular day. As a result women now have better bargaining power. They control the marketing process and their and their confidence level have gone up. There are no hassles in selling and they actually have money in their hands. (Revethi, 2006).

Indira Mahila Yojana was launched on 20 August, 1995. IMY is a centrally sponsored scheme, a strategy to empower women by ensuring them direct access to resources through a sustained process of mobilization and convergence of all the ongoing sectoral programmes.

IMY promotion of enterprises includes main loan scheme, revolving fund scheme, promotion and other innovative schemes.

The National Bank for Agriculture and Rural Development (NABARD) was established through an Act of parliament in 1998. NABARD is supporting the co-operatives in their efforts to improve credit linkage to SHG. NABARD entrepreneurial programmes focus on organizing the rural poor in feasible entrepreneurial activities, adopt simplified lending procedures to enhance accessibility of the poor and ensure flexibility to cater for varied entrepreneurial requirements under local conditions.
Integrated information systems for women Self Help Groups the government of India (Ministry of Rural Development) has provided a broad policy framework and guidelines towards the operation of self help groups under the Swarnajayanti Gram Swarazgar Yojana (SGSY) Scheme. The Information Dissemination Acquisition centre under the scheme which out as provider of expert guidance about agriculture inputs, agriculture outputs, pesticides market prices and market trends.

2.6.4 Problems of marketing

Marketing is an important area of functioning of the SHGs. However, they face different problems in the marketing of products produced by them. Some of them include lack of sufficient orders, lack of linkage with the marketing agencies, lack of adequate sale promotion measures, lack of permanent market for the products of SHGs absence of proper brand name, poor quality of products due to the application of traditional technology, stiff competition from other major suppliers and lack of a well defined and well knit channel of distribution for marketing (Vijayachandran and Harikumar, 2006).

Marketing problems from the entrepreneurs, point of view include change in the role, time management lack of education and requirement skill, lack of exposure to the business environment, less mobility of women, low risk taking capability, lack of access to credit, lack of information to credit

The problems are discussed in detail hereunder.

**Problems related to packaging**

The major difficulty in marketing articles produced by SHGs are packing and labeling (Rao, 2004) where goods are sold to consumers using self-service methods, packaging can perform an important information and promotional role. The package and labeling can inform the customer of what is inside and indeed can communicate a large amount of information directly. In addition the package can communicate the brand name both directly through name association and in directly by associating the brand with a distinctive type of packaging. Basically the packaging materials should be eco-friendly, economical and retain the utility and freshness of the product for a longer time. Proper package gives protection to the produce. (Palmar, 2004).

Problems related to marketing start right from the place of procurement of raw material. The raw materials or farm produce are to be properly stored, is hence a problem.

**Problems related to storage**

Agricultural produce are seasonal in nature. The produce has to be consumed all through the year, off season as well as in season. The storage of
the produce starts from the farm till it reaches the consumer. Agricultural produce is generally bulky. Hence the storage space and infrastructure required is large. The storage should be proper so that the grains are clean and protected against insects, pests, rodents, birds and of course theft. The storage of perishable agricultural produce like vegetables, fruits, flowers, eggs etc. pose major challenges to the marketer. The shelf life of these items is small. There may be considerable wastage if they are not properly stored (Badi & Badi, 2006).

**Problems related to transport**

Inadequate transport facility is one of the prime obstacles in the improvement of rural markets. India has one of the largest road networks in the world with, 2.466 million kilometers of road network. The movement of materials on bullocks cards in addition to manual handling is a slow and costly process. This leads to losses and pilferage of marketable items. The logistics, storage handling and transport cost impact adversely the rural marketing activities (Birsingh, 2006).

**Lack of Bank and Credit Facilities**

Hardly any bank is found operating in villages with a population of less than 2000. There are about five lakh villages of this category in the country. Due to lack of credit and banking facilities, the rural retailers are experiencing several problems not only in financing their business operating, but also in
making payments to the suppliers. For want of credit facilities, retailers are unable to carry enough stocks of credit different commodities (Singh, 2006).

**Problems related to finance**

Finance is the “Life-blood” for any enterprise. The access of women to external sources of funds is limited for the reason that they do not generally own properties in their name. Financial institutions consider women less credit worthy and discourage women borrowers on the belief that they may leave their business at any time. Under these circumstances, the women entrepreneurs are found to rely on their own savings and loans from friends and relatives which may not be adequate (Gannasen et al., 2002).

**Problems related to competition**

Women entrepreneurs do not have organizational set up and they are not able to spend much money for canvassing and advertisement. They have to face stiff competition from both organized sector and male entrepreneurs in marketing their products (Prahlad, 2007).

**Problems related to low-risk-bearing ability**

Risk – bearing is an essential requisite of successful entrepreneurs. Most of the Indian women are less educated and economically not independent. This reduces their ability to bear risk involved in running a business (Rajagobal, 2004).
Problems related to education

In India more than 50% of the women are still illiterate. According to the census of 2001 rural literacy rate stood at 59.4% as against urban literacy rate of 80.3%. Lack of education makes women unaware of business, technology and market knowledge and leads to low achievement motivation. It also creates problems for women in setting up and running business. Low education level leads to lack of awareness and herd mentality because of which villagers are unable to differentiate between good and bad quality brands (Banerji, 2005).

Scarcity of raw material

Most of the women enterprises are suffering from the scarcity of raw materials and inputs besides their high cost. In the purchase of raw material the middle persons either discount or give the minimum discount to the women entrepreneur (Rangarajan, 2006).

Problems related to non-availability of shops

Around 30% of the villages have no regular shops. According to Indian Market Research Bureau (IMRB), 60% of approximately 0.6 million villages do not have a retail outlet. Even the outlet density is low in rural India compared to urban India (Prahlad, 2007). Rural women need a place to sell their products.
Negligence of consumer research

Research of markets in general and consumer in particular and within that rural consumers is a neglected aspect of the economy. But before attempts are made either to produce or to market goods in rural areas, it is to be remembered that the purchasing habits and attitudes of the rural consumers should be studied carefully. But it has been completely neglected. In future years, the rural consumer will be the focal point of much of our marketing and distribution plans. Hence marketing research especially consumer research is essential. (Singh, 2006).

Inadequate Training Facilities

The training facilities given to the members of SHGs in the specific areas of product selection, quality of products, production techniques, managerial ability, packaging, other technical knowledge etc are not adequate to compete with strong units (Pillai and Harikumar, 2006).

2.6.5. Methods of Improving Marketing

Experts have offered many tips for successful marketing. They find a place here in this section.

Though the SHGs are producing quality products, they do not seem to have acquired the marketing acumen. Hence training for them is essential. During training using simple and natural language is essential for rural marketers (Amit, 2005).
Nayak and Kumar (2004) are of the opinion that in order to enter into export marketing knowledge and enhancement of awareness of export marketing and management is essential.

Weekly markets provide a strong base for development of tribal areas where from enormous possibilities generate for development (Prasad and Das, 2005).

In the view of Tripathy (2004) if the products are produced according to local demand patterns and are consumed in the same locality, there will be more profit. To sustain the community economic activities, leadership and membership training backed by participating management is a must for the SHGs. The SHGs in this stage, if imported entrepreneurial training combined with exposure visits to the successful micro-enterprise of the same nature, it would have a greater impact on the quality of the products produced by these poor beneficiaries.

Cheadle (2000) found that collecting and marketing of fresh produce was found successful in rural areas in Kenya.

About the factors responsible for successful marketing, it is said that a good understanding of needs of consumer is essential. Offering discounts, arranging frequent consumer exhibitions and attractive packaging will enhance sale of the products, products, products which are preferred by consumers
overseas may be identified and marketed. The products sold in overseas markets include wire bags, plastic wall hanging, jute bags, greeting cards, handicraft dolls, food products, oil and glass paintings and wood works. (Lakhsmi, 2003).

The basic aspects of marketing include retaining satisfied customers which means satisfying customer needs is the primary area as stated in the principles of marketing. These include satisfying customer needs and aiming at profitable sales volume rather than maximum sales volume (United States Small Business Administration, 2005).

In the view of Kothavall (2007) customer satisfaction plays a major role in success of a product. The perception with which the manufacturer products a product, and the expectation with which customer buys the product differ considerably. Communication between stakeholders can definitely help entrepreneurs. Engineering institutions with the help of continuing education programme can facilitate manufactures to improve customer satisfaction.

For successful marketing one has to do market research. Marketing research can be conducted by giving questionnaire to current or prospective customers. Market research will review identification with products already marketed and gives information on possible new products and services.
The relation between innovation and risk taking has also been noticed in the case of successful entrepreneurs. In fact, their hard work, commitment to the work, location of the business, nature of the product, economy of expenditure etc are the favorable factors for their success (Martin, 1999).

Providing on-line order facility can also make it possible for customers to order and purchase rural products through the click of the computer mouse (Tamilnadu Rural Bazar, 2006).

Government’s help in marketing of establishing a state level retail centre would also boost products made by SHGs (Valarmathi, 2003).