REVIEW OF LITERATURE
CHAPTER II

REVIEW OF LITERATURE

Various aspects pertaining to the present study entitled "Determinants of Nutrition and Reproductive Health Cognition among School Going Rural Adolescents" are reviewed in this chapter with the objective of understanding the nutritive requirements and reproductive health needs of adolescents. Further studies on adolescent education were reviewed to identify the areas of education not covered by research studies reported so far. The review has helped in designing the present study. The information collected is summarized under the following heads:

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2.1.1 Nutritive Requirements of Adolescents
2.2 Nutrition Promotion Activities
2.2.1 Integrated Child Development Services (ICDS)
2.2.2 National Nutrition Monitoring Bureau (NNMB)
2.2.3 Nutrition Cell
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2.3.4 Adolescent Health Intervention and WHO

2.3.5 Adolescent Education in Schools

2.1 Nutrition during Adolescence

Adolescence as defined by Patnam and Desetty (2002) is a stage of lifecycle when there is growth spurt with maturation of the reproductive system.

Nutrition needs are high during adolescence and choices made during teen years profoundly affect health both now and in the future as stated by Sizer and Whitney (2000).

The importance of optimum nutrition for health and human development is well recognized. Good nutrition is of prime importance in the attainment of normal growth and development and in the maintenance of health throughout life (Singhai, 1991).

Adolescence, a period of transition between childhood and adulthood is characterized by an exceptionally rapid rate of growth. Most of the adolescents are in school during this growth period. The United Nation’s sub committee on nutrition meeting held in Oslo in 1998 concluded that more programmes on health and nutrition of school age children are needed to assess their genuine requirements.

Gupta et al. (1990) found from their study that a remarkable percent of adolescent is to have low birth weight and less weight and less height as compared to the standard values. Several studies which have been reported
from developed and developing countries have indicated that the rate of low
birth weight, pre maturity and neonatal-infant mortality decreased among
those concerned with the quality of human resource development through
intervention programme.

Adolescents have low mortality among different age groups and have
therefore received low priority. However, recent studies have shown that
prevalence of malnutrition and anaemia is high in these age groups. Hence,
the assessment of nutrition and health status is become most essential for
comprehensive care especially of the adolescent girls.

Venkdeswaran (2002) reported that the nutritional deficiencies that
occur during adolescence will lead to consequences in later years including
osteoporosis, obesity, hyper lipidemia, sexual maturation delays and final
adult height.

2.1.1. Nutritive Requirements of Adolescents. Adolescence is a
period of rapid development mainly increases in height and weight, deposition
and redistribution of fat, increase in lean body mass and enlargement of many
organs including sexual components (Singh, 1998). These changes result in
an increased need for specific nutrients mainly iron, calcium, protein, energy
and vitamins as reported by Rao and Ramnaik (1995).

In the opinion of Steang and Story (1999) adolescence is a crucial time
for bone development and the requirement for calcium is high. There is a
lean body mass increase from 25 to 60 kg in boys and from 22 to 45 kg in
girls; body fat increase from 7 to 9 kg in boys and 5 to 10 kg in girls.
Elizabeth (2002) also reported that during adolescence children gain 15-20 kg weight and 30-40 cm height and they need calcium and other vital nutrients.

Barker (1998) suggested that milk may be a better supplement than calcium for strengthening one’s bones. Centre for human nutrition stated that increase in milk consumption among adolescent girls enhance their bone mineral contents (Centre for Human Nutrition, 1998).

Harnack (1999) found from his study that adolescents often choose soft drinks over milk which is quite unsuitable to meet the increased requirement of calcium during adolescence. A number of key behavioural patterns including frequent meal skipping, regular snacking and incidence of dieting among girls are observed at this age. The consequences of these habits are likely to affect not only short term health but may also hinder health in the longer term (New et al. 1999). Studies with adolescents and adults have shown that taste is one of the most important influences on food choice (Barr, 1994).

A balanced diet is essential for the growing boys and girls in a family. But girls generally have additional needs as compared to boys (Balagir, et al. 1998). Godfrey (1991) stressed that adolescent girls who enter their reproductive phase with low iron stores, need special care and attention.

The observation of National Institute of Nutrition (NIN) (1988-89) on adolescent girls of rural and urban slum was that 10-20 per cent of the girls had poor haemoglobin levels. Jondhale et al. (1999) viewed that the
prevalence of anaemia among adolescent girls is a matter of great concern as these girls enter reproductive life soon after the attainment of their menarche.

Nelson et al. (1994) also stated that in adolescent girls, anaemia if persisted into the reproductive years will affect the health of their offspring.

Chatterjee (1998) reported that an analysis of the data on height and weight of adolescent girls in Kerala revealed that 49-67% would have been at risk during pregnancy in the age group of 15-19 years. Pant and Solanki (1989) had reported that height and weight of adolescents are found to be far below National Centre for Health Statistics (NOHS) standards. Jondhale et al. (1999) in their study among lower class adolescent girls in Parbhani found that none of the girls was aware of the importance of nutritive diet for their growth. An American study also reported that the weights for height of adolescents were less than standard values (Pribi et al. 2001).

WHO (1997) has documented that a determinant of malnutrition is lack of nutrition knowledge. In the opinion of Ali (1992) an individual’s nutrure is determined by food availability, purchasing power of the people, distribution of income, food consumption pattern, intra-family food distribution, level of nutritional knowledge, levels of employment, illiteracy and ignorance. According to Bull (1998) adolescent’s food preference and food selection are influenced by social and external pressures.

Chakravarti (1987) also pointed out that the fundamental determinants of health, apart from the genetic constitution are nutrition, environment and lifestyle. The health of any rural Indian society is directly linked with value system, cultural traditions, socio-economic set up and political organization.
Devadas (1992) found from her study that general knowledge relating to food and nutrition were below average for 15 percent of the study subjects. According to the subjects, expensive foods were more nutritious. However, no significant association was observed between the socio-economic status of the families and their views.

A study carried out by Gupta (1985) on the energy balance of 300 female subjects which included manual workers, educated working women as well as housewives showed that manual workers had shorter heights and lower weights, and they obtained most of their nutrient requirement from cereals. Nutritional status of women can be considerably influenced by attention during adolescence with "spin off" benefits also to the children they bear later. Everett (1995) also found that, in Indian states a woman’s body size which reflects the maturity of her skeletal growth and her early nutritional status is often positively related to better birth outcomes.

One Chinese study demonstrated complete catch up during adolescence of a cohort of girls who at 10 years of age were 20cms shorter than a normally nourished cohort (Sun, 2001). Thus mid day meal programmes for adolescent girls could have very long lasting benefits.

Adolescents during their growth period should be informed about their nutritive requirements which will form a strong base to develop good food habits. They should have an idea of nutrient deficiencies too. Nutritive value of the locally available food materials should also known to adolescents which will help them to have wise selection of food stuffs in order to meet their increased nutritive needs.
2.2 Nutrition Promotion Activities

The Government of India is making concerted efforts to reduce the prevalence of malnutrition in the country. A frontal attack on poverty, unemployment and malnutrition became national priority from the beginning of V Five Year Plan (1974-78). In consensus with this, the scheme of Integrated Child Development Services (ICDS) was launched in 1975, first in 33 community development blocks covering urban, rural and tribal areas. Later it covered more than 4000 community development blocks. The National Health Policy (NHP) identified nutrition as a problem needing urgent attention and in 1993 a national nutrition policy was formulated. Also in 1995, the Government of India launched National Programme of Nutritional Support to Primary Education (NSPE) (United Nation, 1998). Though the primary objective of this programme is to improve school attendance, it is likely to have a major impact on nutritional status of school children.

2.2.1 Integrated Child Development Services (ICDS). The main objectives of this scheme are:

1. To improve the nutrition and health status of children in the 0-6 year age group
2. To lay sound foundation of psychological, physical and social development of the child.
3. To reduce mortality, morbidity, malnutrition and school drop out rates and
4. to impart nutrition and health education to mothers for making them more competent in looking after the nutritional and health needs of their children.

Services such as supplemented food for children, pre school programmes and nutrition education programmes for women are provided by female workers (anganwadi worker) at village level. The programme currently covers over 50 per cent of the development blocks in India and is being expanded throughout the country.

ICDS programme evaluation studies have indicated that components of the programme relating to women tend to be neglected in comparison with services for children. A special ICDS project carried out in Gujarat and Maharashtra indicated that after completing an in-service training programme, anganwadi workers acknowledged that educating women was part of their job and had enough confidence in their skills to be effective educators (Griffiths et al. 1991).

So the scope of ICDS scheme has also been enlarged to include adolescent girls under its cover. A beginning has been made by inclusion of adolescent girls as beneficiaries of iron tablets (once a week) under ICDS (ICDS, 1995). The scheme for adolescent girls focuses on school drop outs in the age of 11-18 years. The scheme currently underway in 507 selected ICDS blocks of the country involves selecting three girls to assist the anganwadi worker for two days a week; the girls also receive a daily food supplement similar to that of pregnant and lactating women. It envisages
making the adolescent girls better future mothers and tap their potential as social animators,

2.2.2 National Nutrition Monitoring Bureau (NNMB). The data on the relative nutritional levels of the population was available through NNMB surveys. The NNMB surveys documented low intake of vitamin A and iron among girl children and adolescents. It is increasingly being recognized that differences in nutritional status in determining the gender disparity in young child mortality (IIPS, 1995).

2.2.3 Nutrition Cell. Nutrition cell under the State Nutrition Division (SND) is responsible for conducting diet and nutrition surveys. It also conducts workshops for creating awareness for prevention, control and elimination of protein energy malnutrition and micro nutrient deficiency with special emphasis on nutritional anaemia. Nair (1999) reported that anaemia is a major public health problem of India and other developing countries which is more common among reproductive age woman and young children. Devedas (1999) also stated that in India two out of every three women suffer from iron deficiency anaemia. According to Barbin and Barbin (1992) adolescents develop iron deficiency anaemia because of rapid growth and the start of menstruation.

A number of studies have found that malnutrition is more frequent and often more serious in female children (Chen, Huqan D' Souza, 1981; Chaturvedi, et al. 1996; Chatterjee, M. 1998).
2.2.4 Nutrition Health Clinic. Nutrition Health Clinic is a pilot project at Safdarjang hospital at New Delhi, which was started recently in 2002. It provides counselling, nutritional and immunization services to adolescents in addition to clinical service. A study done among adolescent girls under the Nutrition Health Clinic in Delhi in the year 2002 reported that 35.5 per cent in the lower middle class group were under nourished (The World Bank Publication, 1996).

2.2.5 Nutrition / Health Education and Environmental Sanitation Project (NHEES). In order to educate children on the practical way of achieving adequate nutrition within their means through appropriate choice, preservation and preparation of foods and to develop desirable personal hygiene practices NHEES project was launched in rural schools in 1979. The project is co-ordinated by NCERT, New Delhi and funded by UNICEF.

Many aspects of personal hygiene, nutrition and environmental hygiene can be achieved by self effort within the resource of the family (WHO, 1994).

2.2.6 Nutrition Education. The unfortunate state of nutrition in India is attributed to several factors. Poor dietary intake caused by poverty and ignorance about proper feeding is the main causative factor. Lack of awareness regarding nutritional needs and paucity of information also aggravate the problem (Krishnaswami, 2000).

According to Balagir et al. (1998) nutritional status of under privileged communities had attracted considerable attention in India. So they pointed out the need for nutrition education to school children, parents and teachers
especially pertaining to locally available cheap and essential nutrient rich foods.

Nutrition education is defined as obtaining knowledge by learning important aspects that are necessary for proper nourishment (Chieppa, 2000).

According to Hoorweg and Niemeijer (1989) nutrition education aims to compensate deficits in nutritional cognition and should achieve most effect in situation where ignorance plays an important role in the causation of malnutrition.

FAO (1995) reported that nutrition education aims at preparing the adolescent boys and girls to fulfil their future role as well nourished, productive adults and parents and are helpful in delivering positive nutrition improvement messages and eliminating harmful food taboos.

Varghese (1993) also recommended nutrition education for adolescent girls because in his study, it was found that nutrition education helped the girls to develop correct concepts on nutrition.

Mathew and Benjamin (1980) in their study on health education, evaluation, behaviour and practices of rural Tamil Nadu reported that behaviour regarding diet and weaning can be changed more effectively in a comparatively shorter time. There are two potential products of nutrition education. The first is to increase nutrition knowledge, while the second is to change attitude (Olson and Sims, 1980).
Prema and Gouri (1993) revealed that nutrition messages could be integrated successfully into the ongoing functional literacy programme and such an effort may lead to sustainable results in terms of family nutritional improvement status. Similarly Hemalatha and Prakash (2002) found that the education programme had a positive impact on the knowledge, attitude and practice in the urban population, whereas in rural population, a definite change in the level of knowledge only could be noticed.

Gajalakshmi (1984) stated that integrating nutrition, health and environmental sanitation in the curriculum of the primary school children has increased their knowledge and developed good habits.

Khanolkhar et al. (1989) and Vasudeva and Sunderlal (1979) had stressed the need for strengthening nutrition and health education. Neglect in nutrition component in health education programmes was reported by Tandon (1980) also.

In Kerala, Protein Calorie Malnutrition (PCM) is rarely seen now. Children suffer from stunting of growth not attaining the correct height and weight appropriate for age. They also suffer from vitamin and micro nutrient deficiencies like iron, zinc, copper, iodine etc. Vitamin A deficiency leads to impairment of vision. All these conditions can overcome by the provision of a proper diet (Brittain, 2000). Juna (1999) in her study found that as the nutritional status index of the pregnant women increased the number of babies with low birth weight decreased.
Among the nutrition promotion activities prime importance is given for nutrition education programmes due to its cost effectiveness nature. Essential services with characteristics of public goods include Information Education and Communication (IEC) on available services for promoting desirable nutrition behaviour.

2.3 Reproductive Health during Adolescence

Adolescence is a period of childhood when there is a growth spurt with maturation of the reproductive system. International Conference of Population Development (ICPD) held at Cairo in 1994 recommended among other things, focussing on the adolescent and suggested development of an integrated approach to their reproductive health needs (Gupta, 2001).

Unfortunately the parents particularly in rural areas due to their unawareness and ignorance do not realize the developmental needs of their adolescents and hence fail to meet them as reported by Patnam (2002).

The adolescents of today are the future mothers and any strategy that prevents infection in the adolescent will have its own rewards by way of having healthy offspring. As stated by Shenoy (1999) adolescents of today are more likely to indulge in sexuality due to curiosity of experiencing what they have seen or read. The age of menarche is becoming earlier, and age of marriage is getting delayed so that there is long period of fecundity during which they may indulge in sexuality. These adolescents who are sexually active are likely to get reproductive tract infection (RTI) for reasons that are not clear. One postulation for this phenomenon is that protective antibodies are less in adolescence than the adult so they are more prone to Chlamydia,
gonococcal, HIV infections due to immaturity of the cervix. Balakrishnan (2001) pointed out that adolescent gynecologic problems are extremely distressing for the teenager; so special adolescent gynaecologic clinics are essential. Adolescence is the last chance for an individual to grow and realize the endowed genetic potential for growth and development (Elizabeth, 2001).

2.3.1 Child Survival and Safe Motherhood Programme (CSSM).

CSSM is designed to address the major causes of morbidity and mortality in women and children, all of which can be prevented with readily available and cost effective intervention. The programme aims to improve maternal health goals by providing a minimum of three antenatal check-ups and achieving universal coverage with between toxoid vaccine and iron and folic acid tablets.

The programme was initiated in 1992. This was a reinforcement of the already existing programmes on Mother and Child Health (MCH) with added components and set targets. Efforts on maternal and childhood anaemia prevention as also immunization of mothers and children were sustained and due to funding reasons the programme was renamed in 1997 with added components.

2.3.2 Reproductive and Child Health Programme (RCH). RCH is different from original Maternal and Child Health (MCH) and CSSM, programmes not only from the point of view of additional components, but also because of the new strategy of addressing regional problems to suit the local needs with national guidelines.
The package of services under RCH are all the services provide under CSSM plus

1. Emphasis on adolescent care with prevention of adolescent malnutrition and anaemia

2. Prevention and treatment of reproductive tract infection

3. Prevention and treatment of sexually transmitted diseases

Prevention of unwanted pregnancy, safe abortion and maternity care are the highlights of RCH programme.

The RCH programme is oriented towards the overall health needs of women and children and its implementation taking into consideration of the local demographic needs and conditions. It has a woman component and the child component. The child component consists of child survival and adolescent health (Sivadas, K. et al. 1999). The RCH programme, now in its sixth year, is currently operational in the entire country.

2.3.3. The National Population Education Project (NPEP). During the phase (1998-2000) was given the new nomenclature of population and development education in schools in order to bring focus on the new thrusts and strategies. The two major thrusts are

1. "Integration of elements of ICPD reconceptualized population education.

In the year 2000, lectures were conducted with an objective to enhance the knowledge of students regarding critical issues of population and development and reproductive health. Teachers from only 60 schools from all of the 14 districts of Kerala state participated in the NPEP programme (SCERT, 2001).

2.3.4 Adolescent Health Intervention and WHO. The World Health report (1998) states that the full range of interventions for adolescent health is not yet developed. The methods developed by WHO are based upon the central principle of eliciting knowledge directly from young people on their expressed needs and in solutions to their problems which will work.

According to Patil et al. (1996) by acquiring health related to knowledge, skills and practices, children are well placed to pursue a healthy life and to work as agents of change for the improved health of their family and community.

WHO global school health initiative (Draft National Health Policy, 2001) made ten recommendations of which there have direct effect on adolescent health:

1. The school must provide safe water and sanitary facilities; protect from infectious disease; protect from discrimination, harassment; abuse and violence; and reject the use of tobacco, alcohol and illicit drugs.

2. Every school must enable children and adolescent at all levels to learn vital skills. Health education should include topics such as infectious diseases, (rubella vaccine should be made available to all girls before
marriage), nutrition, and preventive health care and reproductive health.

3. Every school should provide safe and nutritious food and micro nutrients to combat hunger, prevent disease and foster growth and development. It is particularly important to increase knowledge among adolescents about the value of condoms in giving dual protection from unplanned pregnancies and from STDs / HIV without encouraging in any way early sexual activity. Competent personnel should make these educational efforts. Periodic check-ups for oral, vision and hearing problems should be done. In areas where anaemia is prevalent fortification of foods with iron and antihelminthic treatment should be a priority.

UNESCO (1999) reports say fragmenting adolescent reproductive and sexual health into several subject areas in school does not help address the issue. So adolescent friendly IEC materials are very much required for more effective dissemination of health messages.

2.3.5 Adolescence Education in Schools. Adolescence Education is an educational intervention conceptualized in response to a long pressing demand to introduce elements of reproductive health in the school curriculum (SCERT, 2000).

The introduction of adolescence education in schools is one of the major thrusts of the National Population Education Project during its current phase which began in 1998 (NCERT, 1999).
For thousands of years the human life-span had been viewed as a tripartite age continuum, childhood, youth and old age. In societies like ours with predominantly agricultural economy and rural culture, it is accepted by many even now that individuals enter into adulthood directly from childhood.

However, the situation has now changed substantially because of certain significant developments. The average age at marriage is increasing particularly with the education of girls while the age of the onset of puberty is advancing because of better health and nutritional care of children. Now there is a considerably long period where the individual is neither considered a child nor given the status of an adult. This period is known as adolescence (NCERT, 1999).

Since the present school curriculum already incorporates a number of elements relating to adolescent world, the general framework of adolescence education focuses only on those aspects of adolescent reproductive health which are not incorporated in the existing curriculum Mohanty & Mohanty (1997) rightly pointed out that adolescence education is not merely a discussion of how babies are born but encompasses the biological, psychological and sociological aspects of human sexual behavior which helps development of a child into a healthy and responsible adult, capable of using his or her sex instincts to the maximum without being obsessed by it.

The WHO review of 19 studies found that sex education in school often delayed or decreased sexual activity and led to more effective contraceptive use and did not promote earlier or increased sexual activity in young people (Sapire, 1996).
Evaluation of the Literature and the Position of the Present Study

From the review it is seen that nutrition surveys mainly dealt with nutritional assessment studies leaving behind the causative factor for this condition. Studies revealed that in schools with high proportion of low income students there is real need for nutrition teaching. There is literature pertaining to the reproductive health needs of adolescents too. A review of few studies have been reported by World Bank (1996) that in rural areas approximately 15 per cent of girls are married before 20 years but they are not fully mature sexually. Hence, the assessment of nutrition and reproductive health knowledge of adolescents is most essential. Studies on nutrition as well as reproductive health cognition of school going rural adolescents in the age group 13-16 years are very limited; so the present study is undertaken to throw some light on the determinants of nutrition and reproductive health cognition, in order to formulate teaching - learning strategies specially meant for the rural adolescent population.