CHAPTER-I

INTRODUCTION

Children are the most precious human resources and they deserve the best possible upbringing. Any nation, which neglects them, would do so at its peril.

The investment in child health is a direct entry point to improve social development, productivity and better quality of life. In recognition of this reality, a great concern for the child-welfare was expressed time and again at the global plane. The World Health Year 1984 spot lighted the basic truth that we must all safeguard the healthy minds and bodies of the children, not only as a key factor in attaining health for all by the year 2002, but also as a major part of each nation’s health in the twenty first century. In this context a declaration was made at the first world summit for children held in 1990 at Rome, to end child death and child malnutrition on the prevalent scale by the year 2000 and to provide basic protection for the normal, physical and mental development of all children of the world. The deadline set to ensure the attainment of this fundamental health standard has already expired, but the security of our children’s health and growth still remains elusive despite several combative efforts.

1.1 New Challenge

The gain made in child survival over the past few decades has resulted in more children reaching school age and more children entering school educational folds. This is a very positive development but there is growing concern that continuing poor health and low nutritional status of the school children must be addressed if the full potentials of these recent advances are to be realized. If India is to fulfill the commitment even belated, it should ensure more rapid decline in the
reduction of moderate and severe malnutrition in school age children. It is therefore important that increasing attention should be paid to improve the health and nutritional status of the school age children.

1.2 Etiology and Problems of Health and Nutrition

School children often face health and nutrition problems that affect their intellectual and physical developments and their capacity to attend school and their ability to learn. The etiology of impaired cognitive development is now a central area of concern as improvement in cognitive performance produce opportunities for better individuals and better nations

Until recently relatively few large-scale studies that document levels of malnutrition, prevalence of iodine deficiency disorders and other nutritional deficiencies among school children were available. But today an understanding and awareness of the heavy burden of morbidity among them is growing. While a better picture of the health and nutritional status of the school age groups are being built, the true extent of the burden of ill health and malnutrition is yet to clearly emerge.

The United Nations Sub Committee meeting on nutrition held in Oslo in 1998 concluded that more data on health and nutrition of school age children are needed to assess their scale of problem (United Nations, 1998). It also believed that the scales of nutritional problems were previously underestimated. Traditionally the main health indicator used by health planners was mortality rate. School age children have lower mortality in comparison with under five-year age group and therefore received low priority. However recent studies in different parts of the world have shown that the prevalence of malnutrition, iodine deficiency disorder and anemia are high in this age group. Thus necessitating more studies in the nutritional problems of school children in specific areas or settings.
1.3 Global Scenario

Evidence from the most comprehensive studies in school children nutritional status indicated that this group suffers from various levels of stunting and underweight, and in some regions wasting that are comparable with preschool children (United Nations, 1998) While these studies cannot claim to be representative of all school children of the globe, yet they consistently show very high prevalence rate for stunting and underweight, specially among African, Asian and South American school children. One of the largest and most recent studies that assessed the anthropometrical status of school children in developing countries has been carried out in West and East Africa, South and North Asia and the Indian subcontinent. Three important findings were generated from this work. First the over all prevalence of stunting and underweight was found to be high in all five countries, ranging from 48 to 56 per cent for stunting and from 34 to 62 per cent for underweight. The prevalence of wasting was found to be particularly high in Vietnam and India affecting 21 and 31 per cent of children respectively. Children in Vietnam and India also showed higher levels of underweight and stunting than children in the other three countries. The full physiological implication of these findings although unclear may offer a window of opportunity to improve the growth of school children (Dolan et al 2000). Such studies at macro-level, no doubt may serve as an indication of a broad general trend, but the true dimension of the problem and its associated consequences will be revealed if issues are also examined at micro-level and hence an effort in the present study is made in that direction and the city of Aligarh is chosen for a through examination.

Children of school age suffer approximately 11 per cent of the global burden of diseases. Iodine deficiency disorder (IDD) is a major public health problem worldwide. According to Benoist (2001) iodine deficiency disorder affects about 740 million people. Its consequences on health are the result of hypothyroidism and the main one is associated with impaired development of fetal brain. Iodine deficiency continues to represent a significant problem alongside efforts to iodized salt, distribute supplements and to generate increased awareness of the problem.
Over the last 20 years, the international community mobilized to eliminate IDD under the leadership of WHO, UNICEF and ICCIDD. It resulted in remarkable progress in IDD control, especially in Africa and in South East Asia where the endemic is the most severe. It is estimated that 68 per cent of the population of affected countries have currently access to iodized salt. However, out of the 130 affected countries, about 30 countries have no programme, salt quality control and monitoring of population iodine status is still weak in many countries, exposing the population to an excessive iodine intake and subsequently to the risk of iodine induced hyperthyroidism. In addition IDD is re-emerging in some countries, especially in Eastern Europe after it had disappeared (Benoist, 2001).

High levels of iron deficiency and anemia are reported in most studies and in some countries the increased levels of anemia among adolescent girls and boys are universal. This has direct implications on their growth, cognitive development and, in adolescent girls, who are at risk of early pregnancy and increased risk of mortality.

There is limited information on the extent of distribution of vitamin A deficiency although recent surveys indicate that this is a problem of public health significance in the school children. Lack of vitamin A results in reduced immunity, increases the risk of disease and may lead to increased absenteeism. Deficiency of vitamin A in this group is also likely to reduce the effectiveness of interventions to reduce anemia.

Overweight and obesity is emerging as a new problem in schoolchildren in countries including India, undergoing nutrition transition. The increasing evidence of an association between stunting and obesity suggests that obesity could represent a major problem of developing countries in the future.

1.4 Indian Scenario

India is one among the 23 nations around the globe where the people have serious health problems, have characteristically low body weight and substandard status, which may have its origin from wide prevalence of under nutrition during
early childhood. (Susheela et al, 1998). Moreover India has a sizable proportion of young population coming almost close to 36 per cent of the total population (NIPCCD, 1998). But unfortunately one third of the world malnourished young children are found in India (Udisha, 2000). About 50 per cent of the adult Indian population and 53.4 per cent of the children are reported to have body mass index (BMI) below the normal (Rao, 1998). Children at special risk amounts to 73 percent and India are one among the high-risk countries with 73 per cent of moderate to severe malnourished and underweight children. This proportion is much higher than even the poorest countries of Sub Sahara in Africa, observes a UNICEF report. The sad state becomes more pronounced when a comparison is made between India and the rest of the developing world. Human development report indicates that India rank 96 in child malnutrition among 97 developing countries on human development indicators (Bellamy, 2000).

The right to food is fundamental, yet its skewed food availability retards the economic progress of large masses of people whose collective endeavor culminates in a nation’s progress. The satisfactory nutrition of today’s school children is important, because it is this social segment that will be tomorrow’s workforce. Patrice Engle, who heads UNICEF feels, problems of child malnutrition need urgent attention as malnutrition deprives children of a good future and lays a heavy burden on national economy. (The Times of India, August 2000)

The magnanimity of the great loss to Indian economy has been established in a recent study coordinated by Department of Women and Child Development, which estimated that the annual loss of productivity to the Indian nation on account of malnutrition is of the order of more than Rupees 33,000 crores a year (Times of India, September, 2000). This is understandable because malnutrition adversely affects the productive life expectancy. Iodine deficiency disorders and anemia further bring down individual productive capacities because low iodine and hemoglobin does not allow strenuous activity for long period, thus affecting productivity of work. Similarly another study observes that cost of malnutrition to the country is anywhere
between 10 and 28 billion dollars annually in lost productivity, illness and death. (Times of India, August 2000).

1.5 School Children Scenario

School children constitute a major segment of the community whose health and nutritional status will indicate the changing trend of nutritional profile of a region. Approximately 25 per cent of our population comprises of school children (Verma et al. 1998). They are the inheritors of our past and the seeds of our future. It is to them that the world bequeaths its achievement and its treasure, yet they are at the end still in the process of gaining attention to their problems. Only one third of the school children that too from higher socio economic groups were found to be apparently healthy (Agarwal et al. 1998). This fact serve as an eye opener as any deviation from normal health in this age group is likely to have adverse consequence in future adults population. The main nutritional problems facing the school children include growth retardation, stunting, underweight, iodine deficiency, anemia and vitamin A deficiency. In countries experiencing the nutrition transition overweight and obesity are also the growing problems in the school children.

1.6 Malnutrition: A Major Risk Factor

According to WHO malnutrition though declining continues to be a major health problem in South East Asian regions. Millions of people still lead sub optimal lives because of nutritional deficiencies and imbalances (WHO, 1997). Studies have reported a large section of children specially the urban poor in India are suffering from varying grades of malnutrition. It has been estimated that about two third of children do not take adequate nutrition that leads to protein energy malnutrition, beside, macro and micro nutrient deficiencies continues to affect the physical and mental health of the children. Das (1998) stress that malnutrition is a universal problem in the country and its eradication needs to be taken up on priority as a national campaign. This is a major risk factor, that not only impairs cognitive
development but also increase the mortality rate, decreases the productive life expectancy and work potentials in children

1.7 Growth Indices

Growth in children is a sensitive indicator of the general state of health as well as nutritional status of the community. The monitoring of the growth and development, to detect deviation from normal, provides one of the simplest but important methods of assessing the health of a child.

New information that is emerging from the recent studies into the nutritional status strongly suggest that school children suffer from higher levels of undernutrition than have been previously acknowledged. This is particularly true in case of underweight, stunting and wasting which is increasingly being used as an indicator of population well being and an indicator for poverty.

The overall prevalence of underweight and stunting was found to be particularly high in India. The degree and prevalence of underweight and stunting in young children should get high priority because of its long-term consequences for entry into school, learning, educational performance and productivity. In spite of this, there has been relatively little information gathered on the nutritional status of the school children and this is reflected in the lack of clear guidelines for assessing their growth and the functional significance at various threshold points.

Micro and macro deficiencies such as deficiency of iodine, iron, and vitamin A are a major problem in developing countries. These can negatively affect the physical and mental development including learning abilities of school children and increase their susceptibility to infection.

1.8 Iodine Deficiency Disorders

Iodine deficiency affects an estimated 1.6 billion people worldwide and an estimated 60 million school age children (Dolan et al 2000). In India there is
increasing evidence of wide spread distribution of iodine deficiency, collectively referred to as iodine deficiency disorder (IDD). According to salt department statistics 1994, more than 1.5 billion population of the world are at the risk of iodine deficiency disorder of which an estimated 200 million people are in India, out of which 50 million are children.

Data indicates that goitreous children have a poorer school performance than non-goitreous children. Studies on school children living in iodine deficient areas in a number of countries indicate impaired school performance and low intelligence quotient as compared with matched groups from non-iodine deficient areas.

A less obvious but more serious condition affecting millions of iodine deficient children includes impaired mental function, poor intellectual performance, lower I.Q., muscular disorders and impaired co-ordination and sluggishness.

Current research indicates that iodine deficiency results in lowering the average intelligence of the entire school age population by as much as 10 to 15 I.Q. points. The number of primary school age children in endemic areas is estimated to be 40 million. The total I.Q. points lost in these children amount to 400 million (Salt Department, 1994). It is only now becoming evident that continuous iodine deficiency is interlinked with the problem of child survival and child development.

Even as iodine deficiency perpetuates social and economic deprivation, it also lays waste the already scarce national resources invested in primary education (GOI, 1995). It is well understood that preventing iodine deficiency raises the learning capacity of school children and improves school performance (Salt Department, 1994).

The consequences of iodine deficiency disorder include severe mental retardation, goitre, abortion, stillbirths and low birth weight and mild form of motor and cognitive deficits. It has been estimated that on an average, school children suffering from iodine deficiency have an intelligent quotient (IQ) level about 13 per cent lower than the well nourished children (Pandav, 1998). Adolescent girls are an important target group for iodine deficiency disorder control because of the adverse
consequences on the fetal development of iodine deficiency during pregnancy and because they generally have a higher prevalence of goitre than boys (Dolan et al. 2000)

1.9 Other Major Nutritional Disorders

Iron deficiency (ID) is the most common nutritional disorder in the world and is estimated to affect more than 2 billion people of whom 1.2 billion suffer from iron deficiency anemia (Gillespie, 1998). It is estimated that more than 210 million school children suffer from iron deficiency anemia (Del et al. 1996). In India, more than 50 per cent of the school children are reported to be anemic (Vir, 1998). Another study observed that anemia in children, especially iron deficiency, is the commonest health problem in many developing countries with an estimated prevalence of 70 per cent (The Times of India, August 2000).

There is convincing evidence that iron deficiency causes impaired growth, development delay, and behavioral abnormalities and impair immune function, cognitive function, and school performance. National family health surveys revealed that iron deficiency not only affects children's physical performance, but also have an impact on their mental abilities. Studies have shown that anemic children have slightly lower IQ. They lag behind in the task, which requires higher mental abilities (The Times of India, August 2000). It also increases the risk of postpartum and prenatal mortality, intrauterine growth retardation, and low birth-weight.

Vitamin A deficiency is widely recognized as a major cause of blindness in children. It is viewed as a controllable nutritional problem in developing countries. It is estimated that 85 million school children are at increased risk of acute respiratory and other infections because they are deficient in vitamin A (Del et al. 1999). A recent data published by Ministry of Health and Family Welfare, Government of India throw light upon the fact that 30,000 to 40,000 children may lose their eyesight every year due to vitamin A deficiency in India.

Mild or sub clinical vitamin A deficiency causes impaired immune function and an increased risk of mortality from infectious diseases that can severely limit
school attendance and consequently academic performance. Vitamin A deficiency also reflects iron metabolism that means, with any iron supplement taken, subsequent improvement in iron status may be limited when vitamin A status is low. This is being increasingly recognized as a potential constraint when considering the impact of school based iron supplementation.

As school children have not been considered at risk for vitamin B, C and D deficiencies in the past, little is known about the occurrence or effect of these vitamin deficiencies in this age group. However examinations of the recent medical literature suggest that vitamin C deficiency is observed in many developing countries. The number of these recent case reports is surprising and little research has been conducted to determine the extent of prevalence of vitamin C deficiency (Johnston, 1999). Weber et al (1996) in a study observed that vitamin C supplementation has reduced the severity of symptoms associated with the common cold. In people who experience extreme physical stress, vitamin C may be of benefit in preventing respiratory infection. A recently published review concluded that vitamin C appears to improve human fertility by various mechanisms (Weber et al 1996). In another study on school children, it is revealed that a considerable number of children had low intake of vitamin C with a greater proportion having marginal vitamin C intake.

With regard to vitamin D deficiency an estimated 62 million people in India that include 16 million children are affected with dental, dental caries and associated health complaints. The result of recent study showed wide prevalence of problem of vitamin D deficiency in north India, which considerably modifies the clinical picture, and cause of metabolic bone (Kochipillai, 1998). National Nutrition Monitoring Bureau (1991) reported that though prevalence of dental caries is common with all age groups, its peak prevalence was observed in the school age group.

1.10 Commitment Unfulfilled

The high prevalence of various degree of malnutrition among children as evident from above data bears testimony to the pathetic state. In spite of the
declaration to combat it and provide “HEALTH FOR ALL” at world summits and conferences beginning right from Alma Ata Declaration 1978, National Health Policy 1993, World Health Year 1984, World Summit for Children 1990 and so on, the dream of safeguarding the healthy mind and bodies still remain unfulfilled in India.

The failure in meeting the goal may be attributed to an implicit assumption that the health status of people can be improved, independent of overall socio-economic development, through direct intervention in the form of universal primary health care. The provision of better medical care is, however, only a necessity, but not a sufficient condition to fulfill this goal. Indeed, the expert committee of the Indian Council for Social Science Research acknowledged this fact when it observe that, “Health is a function, not only of medical care, but of the overall integrated development of society; economic, cultural, social and political”. Similarly it is noticed that nutrition, environment, sanitation, literacy and other socio-economic factors play a greater role in determining the physical, mental and social well being of people, especially in the early stages of development. Evidence from the research studies indicates that in many European countries the improvement in health status began long before the dawn of modern scientific medicine. It was made possible by higher level of nutrition, improvement in economic and social conditions, sanitation, adoption of better health care and hygiene practices (Narayana, 1997). Similarly the objective for Health for All requires an integrated approach to overall socio economic development in which health is an integral component.

1.11 Determinants of Nutritional Status

The two major determinants of growth performance of individual and population group are (1) their inherited genetic potential for growth, and (2) the availability of those inputs, which are essential for the given genetic potential to find full expression. It is now generally agreed on the basis of available worldwide data, that current wide differences with respect to the level and pattern of growth between
populations are attributed not so much to any significant difference with respect to the former, as to glaring differences with respect to the latter factor (Gopalan, 1992).

The state of health is determined by an assessment of nutritional status. Nutritional status is influenced by the adequacy of food intake both in terms of quantity and quality and also by the physical health (growth and development) of the individual. But at the same time nutritional status also largely depends upon a set of complex and interrelated factors. The nutritional related problems are so rampant in our country that they cannot even escape the scrutiny of our Prime Minister, Atal Bihari Vajpayee who observed recently that malnutrition today is no longer considered the outcome of absolute deficiency, but is viewed as a multidimensional problem inter facing many developmental imperatives. (The Times of India, August 2000).

Although nutritional status of a nation is closely related to food adequacy, but even more importantly interrelated to its inter and intra household distributions, levels of poverty, status of women, access of people to health, education, drinking water, hygiene, sanitation, awareness and other social services. It was observed that nutritional status of children is influenced by a number of developmental efforts.

The high prevalence of various degrees of malnutrition among children and the paucity of studies determining the factors influencing it, as evident from the above data justifies the current study which is examining the question anew along with other important paradigms to determine the key factors that can be assessed to identify the school children at nutritional risk. Such measures are also needed to monitor the nutritional status of vulnerable population for establishing health and nutritional programmes and for combating any nutritional growth and developmental abnormalities.

In fact in India there are several nutritional and health care programmes currently under progress. But most of these programmes are catering to the need and requirement of either preschool or underprivileged children; with of course few exceptions, in majority of instances the schools where the children of different groups
are attending are neglected. These school children are even unaware of such programmes and are not benefited. So to understand their needs and problems, physical and mental growth patterns, to improve their health and nutritional status, specific investigations and studies are necessary to assess their nutritional status.

1.12 Awareness Among Children

Besides fulfilling the above goals, nutritional status investigations bring awareness among children. The modern era of school health should be based on the fundamental concept that the child should also learn what is necessary for protection, preservation and promotion of health. To achieve this goal regular monitoring of the growth promotion to assess the school children nutritional status should be given high priority. Data on normal growth pattern is essential to compare and evaluate the relative nutritional and health status of different groups of school children in different community setups. Research studies which involves children direct interaction with health aspect bring awareness among children about the concept and importance of nutrition, preventable and curable nutritional deficiencies, small family norm, education, anthropometrical measurement, personal hygiene and growth pattern etc.

1.13 Scope of the Study

This research particularly studies the impact of nutritional status on the body weight, height and overall physical development, prevalence of nutritional deficiency with special reference to iodine deficiency disorder among the children. Many studies reveal that body weight and height of the children reflect their state of health and nutritional status. Apart from these, various factors with in the environment also exert an influence on growth and development of children. To assess these factors, anthropometrical criteria have been one of the valuable means available for the quantifying of malnutrition, as body weight and height of children reflect their state of health and growth rate. Severe clinical forms of nutritional deficiency diseases such as anemia and goiter are easy to recognize. Mild and moderate form of these
diseases manifest themselves in varying degree of growth retardation, which may
well be recognized by the use of anthropometry, careful clinical examination and
biochemical test and dietary intake. The above premise was the major consideration
for the researcher to evolve unique procedural assessment criteria, where in all the
four instruments were used as tools of investigation.

Studies of this kind ultimately lead to remedial interventions. They help to
evolve short term and long term policies. They facilitate pragmatic priority planning
both at national and local plane. In view of these beneficial outcomes and because of
the fact that no such assessment study has ever been undertaken in this region, the
present study was undertaken in the city of Aligarh.

A special emphasis on the examination of growth has been made in the
present study because growth during childhood contributes significantly to attainment
of final body size of an individual. Improvement in nutrition and health status during
childhood is of critical importance as it is inextricably linked with the quality of life
of next generation and will go a long way in improving national health. Therefore
investigation of children’s growth pattern among communities is important.
Secondly, it is high time we must realize the potentials of children body’s opportunity
for growth and for planning appropriate health policies that ensures appropriate
growth of children in this region also.

Studies on physical development are important as they provide determinants
of a region’s health. Appraisal of the progress of a region in the field of health can be
made from time to time with the help of such studies.

A better investment vision in child health is precluding to sound development,
efficiency in productivity and a better quality of life. Thus it would be not wrong to
conclude that children’s health is tomorrow’s wealth. Hence to monitor the health of
the school children, measurement of weight and height are the simplest and one of the
reliable means by which the progress of a normal child is evaluated and the gross
abnormalities and malnutrition are detected, even when no other clinical sign of
illness is manifested. Anthropometric measurements with clinical symptoms like
goiter (lack of iodine) which also hinders the normal growth of children along with other consequences, if assessed at the earliest, remedial measures can be introduced to improve their nutritional status, as this is a period where in dietary deficiencies can be improved more easily than in later years. So a development oriented study of this kind is essential for gaining an understanding of children’s growth pattern and problems. It also helps to plan realistic curriculum suitable to the needs of the Aligarh specific children. The present study targets the school going children of Aligarh between 5 to 15 years, as it is expected that the nutritional and associated correlates would give indication of the influences of these factors on the level and distribution pattern of malnutrition among children. In view of the above premises the following will be the scope of the study, along with the assessment of nutritional status and growth pattern in Aligarh city:

1. To explore the extent of the common nutritional ailments particularly iodine deficiency disorder existing among the school children of 5 to 15 years age of Aligarh city.

2. To suggest and recommend the preventive, curative and remedial measures for any such problems as the study reveals so that the same could be used by various local, regional, national and international child welfare and health agencies run by government and non-government organizations.

3. To create awareness among school children about the common nutritional problems and iodine deficiency disorder by promoting health and nutrition education, while interacting with the subjects during visits and data collection sessions.

The present investigation could throw some light on the etiological factors that were directly or indirectly responsible for malnutrition and iodine deficiency disorder among children in general and school children in particular. The pattern of nutritional status distribution could also provide reference material to the state of Uttar Pradesh, as well as Aligarh district authorities on the basis of which Aligarh
specific health and educational programmes in schools could be profitability developed.

The study of some independent variables such as nutrition, familial and socio economic factors examined against the dependent variable nutritional status, if anticipated will help to unfold some of the most common causes for prevalence of malnutrition among these children. If association could be established between any of the above-mentioned factors, it would provide guidelines to develop appropriate strategies for government and non-government interventions. It is estimated that even a small reduction in the prevalence of malnutrition and nutritional deficiency could be effective in childhood and would result in large reduction in the low nutritional status and other complication later in adulthood.

The research findings could also add to the meager existing knowledge of nutritional status and iodine deficiency disorder among children. The study would serve as a beginning of many more investigations needed to be undertaken on Indian children living under different socio economic conditions, eating varied food and leading divergent life styles.

1.14 Objectives and Hypotheses

It is well recognized fact that genetic factor play an important role in determining growth potentials of an individual, favorable environmental factors were also essential for full exploitation of these potentials. Hence for maximum realization of these potentials, satisfactory socio economic environments as well as other conditions like optimal nutrition and adequate health care facilities cannot be ignored. Thus necessitating the need for specific studies on growth and development for specific population groups and in a certain community setting like Aligarh. A considerable variation was observed in the health and nutritional status of school children. At the end of the spectrum, a very small number of children exhibited only minimal growth retardation, at the other end some children suffered from extreme forms of under nutrition and in between were large number of children with various
degree of growth retardation. Therefore assessment of growth pattern of children is a good indicator of their nutritional status, health and socio economic level and in turn assessment of nutritional status with other parameters help in determining the underlying factors for growth retardation, prevalence of malnutrition and iodine deficiency disorder along with other abnormalities in school children.

Although school children constitute 25 per cent of the total population in India, relatively very few studies have been done to evaluate their nutritional status and iodine deficiency disorder, which have shown a wide range of prevalence of nutritional deficiency diseases (0.5 to 94 per cent). Moreover different studies have used different methodologies and different criteria for diagnosing nutritional status in India. Apart from this most of the studies have focused on the children of lower socio economic status. Hence there is a dearth of research that studies nutritional status encompassing such important variables as dietary habits and influence of environmental and socio economic factors in different communities in different regional and cultural settings. Apart from these the most important point is as no such studies have been carried out in and around Aligarh, so there is sufficient ground for undertaking region specific research of this nature.

The present cross sectional study is an attempt to carry out in-depth assessment of nutritional and iodine status by anthropometrical, clinical and biochemical examination and to determine the extent of the influence of various socio economic and dietary factors in relation to nutritional and iodine status of the children and to identify the prevalence of other nutritional deficiency disorders. With the seriousness of the problems on the one hand and lack of knowledge of determinants of nutritional status of children on the other, the present line of investigation was planned and carried out among school children of Aligarh city. The main purpose of the study is to investigate and identify various kinds and degrees of relationship that may exist between nutritional status, iodine deficiency disorder and socio economic and other factors. Focus is also directed to identify the most confounding factor associated with differences in growth performance and prevalence of Iodine
deficiency disorder among children with in the population. In view of the above facts
the specific objectives of the study were;

1. To assess the status of growth and development of school children both
boys and girls by using anthropometrical measurements.

2. To evaluate age and sex wise prevalence of underweight, stunting and
wasting among school children.

3. To assess the differences and associations in nutritional status by child,
family and social factors.

4. To study the food and nutrient intake and examine association of food
intake and nutritional status.

5. To assess the magnitude of nutritional deficiency disease among school
children by general clinical observation.

6. To assess the prevalence of Iodine deficiency disorders by clinical and
biochemical examination of urine iodine excretion level.

7. To study the association between the prevalence of iodine deficiency
disorders by child, family and social factors.

Based on the above objectives, the following hypotheses are formulated in
relation to the school going children of Aligarh city:

1. The growth and development of the children will be lagging behind in
comparison to ICMR and NCHS standards.

2. Among the three indicators the prevalence of weight for age will be more
than stunting and wasting with more prevalence in younger children than
older and in girls than boys.

3. The personal and social variables like age, gender, parental education,
occupation, family income will be significantly related to nutritional
status.
4. Family type, ordinal position, number of siblings of the child and religion will not be significantly correlated with nutritional status.

5. Food and nutrient intake will be significantly associated with nutritional status of the children.

6. The prevalence of nutritional deficiency disorders will be more in girls than boys with more prevalence in younger children than older children.

7. The prevalence of Iodine deficiency disorders in children will be positively related by nutritional status, socio-economic and dietary factors with more prevalence in older girls than younger girls and with more prevalence in girls than boys.