Chapter 2
Review of Literature
CHAPTER – II
REVIEW OF LITERATURE

2.1 MID DAY MEAL : IT’S IMPIRICAL STATUS -

Review of literature formulates a base line for any research. It is therefore necessary for any researcher to go through the relevant data related to the work. Review of literature makes aware about the methods used in research and content already investigated by the researchers. Review of literature makes a solid foundation for research. This chapter deals with the previous works already done in this field.

2.2 GLOBAL SCENARIO:-

Mid-day Meal programme in world- child and child nutrition has been a matter of concern all around the world. The nutritional status of a child affects the overall development in later age. The major countries who are providing Mid-dayMeal to overcome the problem of malnutrition are namely USA, Africa, China and Japan.

Farzana Afridi, Syracuse University (2007) studied the impact of school Meal on school participation. The results indicate that cooked school meal program did not have an impact on enrollments over and above the effect which may have been induced by the pre-existing program of distributing raw food grains to primary school students.

Anthropometric Reference Data for Children and Adults: United States, 2003–2006 by Margaret A. McDowell et al. shows that NHANES data add to the knowledge about trends in child growth and development and trends in the distribution of body measurements, such as weight and height, in the U.S. population.
Silke Pietzsch et al. (2003) studied the Mid-day Meal in Sri Lanka. In his study he observed the cost for 100 children and the ingredients of the Mid-day Meal. The results reveal that the cost of MID-DAY MEAL for one child was 80-100Rs / month. The overall result reveals that Mid-day Meal had a positive impact on enrollment. At the same time Mid-day Meal had positive effects at the local level.

Abigail Burgess and Valda W. Bunker (2002) worked on 90 primary school children in the Portsmouth area of UK. In their work they observed the physical development with respect to Mid-day Meal. The studied reveals that macronutrient content was enhanced significantly.

Prakash Khanal (2002) studied Nepal deworming programme ready to go worldwide. He reported that PSNFP (primary school nutritious food programme) had a positive impact on health status of school children, as in most of cases worm infection had fallen 30% similarly the percentage of anemia decreased and there was remarkable growth in girls enrollment.

Florencio, Cecilia A (2001) in their work emphasized that the school- based feeding programme are beneficial for school children.

The strongest Relationship between school feeding programme and attendance was presented in 1982 by Gall and Ec K Road under the sponsorship of CARE in the Dominican Republic, similar works carried by Anderson Et al, CARE Srilanka.

World Bank Research had been carried out in Cebu, Philippines. Results show the positive relation between the programme and school education.

2.3 NATIONAL SCENARIO

Jain Y. Italia, K. Ashokan, R. Kaul, D.K. Shukla & V. Muthuswamy (2008) shows that it has been hypothesized that iron deficiency might be beneficial to the sickle cell patient by reducing the percentage of sickle cells, thus reducing painful crisis. We suggest that iron deficiency anaemia is a potential problem in our sickle cell patients and iron supplementation should be given only in proven cases of iron deficiency anemia to improve their general condition and work efficiency.

Mid-day Meal cooked by dalits go waste, by Akshaya Mukul, Jun 7, 2011. The report said that in the three districts upper primary school children take less Mid-day Meal than those in the primary sections because the "upper primary children belonging to general category are more aware of caste system and do not like to take Mid-day Meal prepared by SC cooks."

Need for better anthropometric markers for prediction of cardiovascular risk in nutritionally stunted populations by S. Sivasankaran, M.K.C. Nair, George Babu & A.M. Zufikar (May 2011) Department of Cardiology Sree Chitra Tirunal Institute for Medical Sciences & Technology, Child Development Centre, Medical College & Department of Pediatric Cardiology Sree Avittom Thirunal Hospitals, Results shows that the calf measures could be the indirect markers of the contribution of early life growth perturbations to adult onset diseases in adult life. Essentially calf anthropometry defines the best possible growth for the most affected segment in growth perturbation and can be ascertained in early adulthood.

Vitamin D deficiency in breastfeed infants & the need for routine vitamin D supplementation by S. Balasubramanian, Kanchi Kamakoti Child’s Trust Hospital Chennai (March 2011), the results shows there is no consensus on the dosage of vitamin D that needs to be supplemented to pregnant women nor is there robust
scientific evidence to support implementation of a vitamin D supplementation programme for pregnant and lactating mothers.

The challenge of pneumonia & acute diarrhea at global, regional & national levels: Time to refocus on a top most priority health problem by Alok Kumar Deb, Suman Kanungo, G. Balakrish Nair, & Jai P. Narain (Feb 2011) National Institute of Cholera & Enteric Diseases (ICMR), Kolkata as per conclusion for a significant reduction in morbidity and mortality in the developing countries for pneumonia and diarrhea, evidence-based interventions are required.

Mehrotra Monika, Arora Santosh, and Nagar Veenu (2011) in their work on 400 school children between the age group of 7 to 9 years studied the Nutrition Health Status of Primary School Children of Bareilly District. They reported that the children from urban areas had better health status than children from rural areas.

Seetharaman (2011), NIRD, Hyderabad they found that Children belonging to four different age groups in both the States were very well comparable, but there was little or no difference between four major background variables (parent's education, family income, number of children and number of members in the family).

Manju Singh and Niharranjan Mishra (2010), studied on Mid-dayMeal programme in Meghalaya. The main objective of the study was to evaluate the performance of Mid-day Meal in Meghalaya. The overall results that there was lack of awareness regarding the Mid-day Meal programme. There is need of monitoring and basic infrastructure facilities to overcome lacunas.

Manju Narula (January 2009) studied the National Programme of Nutritional Support in Government Primary and Upper Primary Schools: A Case Study of Jharkhand. The results shows The basic aim of the state for Mid-day Meal is
to prevent malnutrition that was widely prevalent (59 percent) among the growing children. It not only gives rise to morbidity and mortality, but also prevents a child from developing into healthy adult.

**Savita Kaushal (March 2009)** studied the Best Practices in the Implementation of Mid-day Meal Programme in Rajasthan. The result reveals that serving of cooked food during lunch break has enhanced the attendance of children in schools.

**Rajinder Paul (January to December 2008)** conducted a study on Mid-day Meal programme in Kurnool district of Andhra Pradesh. The results show that Mid-day Meal Programme has improved the enrollment of Primary and Upper Primary School children.

In an another study correlation between overweight & obesity among school going children of Wardha city, Central India was observed by by D.R. Bharati, P.R. **Deshmukh & B.S. Garg (June 2008)**, who concluded, that at least 30 per cent of obesity begins in childhood. Conversely 50 to 80 % obese children become obese adults. Since, family characteristics have been found to be important for the predisposition of an individual to overweight/obesity, preventive and promotive efforts need to be directed towards family for the health of future generation.

**Iron transport & homeostasis mechanisms: Their role in health & disease** studied by S.S. Nadadur, K. Srirama & Anuradha Mudipalli (June 2008). The result reveals that in the past decade significant advances have been made in our understanding of iron uptake, storage and homeostasis mechanisms. The efforts to understand the perturbations in iron metabolism in certain inherited disorders have largely contributed to this success.
Chandra Shekhar et. al (2008) reported in his work that, school lunch programme as positive impact on physical and mental ability. Similar study was carried out by Cavez et al. (1996).

A Study of Best Practices in the Implementation of Mid-day Meal Programme by Dr. Yazali Josephine in Arunachal Pradesh (Dec 2008), as per the result the Mid-day Meal scheme has been implemented in the Papua Pare district successfully. The quality of Mid-day Meal needs to be improved. There is a need to have some matching between the supply of food grains and demand for the food grains and conversion money. The regularity in providing Mid-day Meal is required to be maintained.

Best Practices Adopted in Mid-day Meal Scheme: Case Study of Haryana by Dr. Manju Narula Assistant Professor,(July 2008) concluded that the Mid-day Meal scheme that is revised in 2004 (serving cooked meal) definitely help in increasing the attendance therefore Mid-day Meal have positive impact on enrolment and retention and ultimately leading to universalization of elementary education. Also bringing and retaining more and more children in schools especially girls and thus literacy reducing gender gap.

Iron deficiency anemia in sickle cell disorders in India D. Mohanty, M.B. Mukherjee, R.B. Colah, M. Wadia, K. Ghosh, G.P. Chottray, and D. JainY. Italia, K. Ashokan, R. Kaul, D.K. Shukla & V. Muthuswamy (2008) results shows that It has been hypothesized that iron deficiency might be beneficial to the sickle cell patient by reducing the percentage of sickle cells, thus reducing painful crisis. We suggest that iron deficiency anemia is a potential problem in our sickle cell patients and iron
supplementation should be given only in proven cases of iron deficiency anemia to improve their general condition and work efficiency.

Total body muscle mass estimation from bioelectrical impedance analysis & simple anthropometric measurements in Indian men Rebecca Kuriyan, Tinku Thomas & A.V. Kurpad (2008). In conclusion, the present study documented predictive equations for muscle mass derived from simple methods such as BIA and anthropometric measurements (circumferences and skinfold thickness) in Indian males. Increasing the sample size and using an external group to validate the equation are needed in future studies. Additionally studies for deriving predictive equations in women and individuals of different age groups need to be planned.

Prevention of childhood obesity should be an integral part of prevention of non-communicable diseases by A. Ramachandran & C. Snehalatha (June 2008) India Diabetes Research Foundation & Dr A. Ramachandran’s Diabetes Hospitals Egmore, Chennai, The importance of enhancing physical activity and improving the dietary habits from childhood itself has been emphasized, as the major step towards prevention of NCDs3,11. The study reported by Bharati and coworkers (June 2008) and many other Indian studies, some of which are quoted by them, send out a warning signal that, if preventive steps are not initiated and implemented at the national level, India is likely to face a major health hazard from the many NCDs associated with overweight and obesity, which are on the increase, among children. Education on healthy lifestyle has to begin at home; hence the parents have to be educated on these aspects for sustained effects.

Maternal nutritional status and practices & prenatal, neonatal mortality in rural Andhra Pradesh, India was studied by Mahtab S. Bamji, P.V.V.S. Murthy, Livia
Williams & M. Vishnu Vardhana Rao (March 2007- Jan 2008). the overall result shows that the mortality during prenatal, neonatal period was 8.2 per cent of all births. Malnutrition was rampant. Over 90 per cent women had 3 or more antenatal check-ups, had taken tetanus injections and had complied with regular consumption of iron-folic acid tablets.

A study on Human development, poverty, health & nutrition situation in India by G.M. Antony & A. Laxmaiah (MAY 2007) They reported that while India’s HDI value has improved over a time; our rank did not improve much compared to other developing countries. Human poverty has not reduced considerably as per the HPI values. The under nutrition among preschool children is still a major public health problem in India. The incidence of poverty at different levels of calorie requirement has not reduced in both rural and urban areas. The time trends in nutritional status of pre-school children showed that, even though, there is an improvement in stunting over the years, the trend in wasting and underweight has not improved much.

Evaluation of Mid-day Meal programme was done in six states in the year 1995. It was reported that, the school absenteeism was due to weather, illness, social customs, and other family problems. The children were often asked to stay at home to help or escort female members. Similar results were observed by Anant Laxmi (Dec 2007) Et al. our neighbouring countries Nepal, Sri Lanka and Thailand are also implementing few feeding programs to combat the problem of protein energy malnutrition.

The impact of school Meal on school participation: evidence from rural India by Farzana Afridi, Syracuse University, October, 2007. The results indicate that
cooked school meal program did not have an impact on enrollments over and above the effect which may have been induced by the pre-existing program of distributing raw food grains to primary school students.

Madhya Pradesh: A Report on the Implementation of the MidFox (March 2007) Fellow at Jawaharlal Nehru University. This investigation on the implementation of the Mid-day Meal Scheme Mid-day Meal is based on interviews conducted in four districts of Madhya Pradesh (Bhopal, Seoni, Barsewani, and Sheopur) during the last weeks of March, 2007. The key findings of the work are that while the Mid-day Meal has been widely applied, it clearly suffers from major failures in its execution. If the government would make some basic alterations to this system, it could prove to be a great asset to the nation.

Mid-day Meal programme in kurnool district of Andhra Pradesh done by Rajinder Paul (2006-07) results shows the Mid-day Meal Programme was introduced in Primary and Upper Primary Schools to improve the enrollment of School Age children in Primary i.e., I to V and Upper Primary i.e., VI & VII Schools.

Assessment of nutritional status in Indian preschool children using WHO 2006 Growth Standards by Prema Ramachandran & Hema S. Gopalan Results - Growth of Indian children: In the first month after birth, the median weight of Indian children was little lower than the corresponding values of WHO standards.

Reetika khera (2006) worked on Mid-day Meal in primary schools and reported that the scheme had overcome many problems. This has become a universal scheme feeding primary school children. There are several challenges still faced by the scheme.
As per scientific report 18 (2006) by Sushma Sharma et al on Evaluation Of Mid-dayMeal Programme In MCD schools reported that in first round the hygiene and cleanliness of schools was not satisfactory. At the same time personal hygiene and cleanliness of utensils was not up to the mark. After the awareness programme out of 250 schools data was analyzed for 237 schools.

A total number of 117 schools (1 round) were compared with 120 schools (2 round). The overall result reveals improvement in served Meal, where is there was no significance difference in other parameters.

Today, the NP-NSPE is the world’s largest school feeding programme reaching out to about 12 crore children in over 9.50 lakh schools/EGS centres across the country. Several independent evaluation studies were conducted in 2005 including (a) a study by Pratichi Trust in Birbhum district, (b) University of Rajasthan/ UNICEF in Rajasthan, (c) Samaj Pragati Sahyog in Madhya Pradesh. (d) Seva Mandir in Udaipur district, etc.

These reports testify to the increase in enrollment, particularly of girls and to the narrowing of social distance. The reports also point out that the programme provides an important rallying point for the involvement of parents in school governance. At the same time some operational difficulties have been experienced by State Governments and Union Territory Administrations.

Central Government’s commitment to a universal cooked meal programme found reflection in the budget speech of the Union Finance Minister in July 2004, which stated: “The poor want basic education for their children: we shall provide it… We shall also make sure that the child is not hungry while she or he is at school…” The budget speech further promised: “…the whole of the amount collected as cess
will be earmarked for education, which will naturally include providing a nutritious cooked Mid-day Meal. If primary education and the nutritious cooked meal scheme can work hand in hand, I believe there will be a new dawn for the poor children of India”.

Infrastructural requirements continued to be met through convergence with other development programmes, including inter alia Sampurna Grameena Rozgar Yojana (SGRY), Basic Services for Urban Poor (BSUO), and Urban Wage Employment Programme (UWEP) for the construction of kitchen-cum-stores. Water supply requirements were met through convergence with Accelerated Rural Water Supply Programme (ARWSP), Swajaladhara and Sarva Shiksha Abhiyan.

The revised NP-NSPE, 2004 scheme also provided for a 4-tier institutional mechanism for programme management, through the constitution of Steering-cum-Monitoring Committees at the National, State, District and Block levels.

Similar Work was carried out by Dr.Mrs.Abhya R Joglekar in Raipur City (September 2004). She found a positive relationship between Mid-day Meal and overall development.

A study on Primary prevention: Why focus on children & young adolescents was carried out by Mano S. Selvan & Anura V. Kurpad* Department of Biostatistics & Applied Mathematics, The University of Texas M. D. Anderson Cancer Center, Houston, TX, USA & *Institute of Population Health & Clinical Research, St John’s National Academy of Health Sciences, Bangalore, India June 30, 2004. The result reveals that empirical evidence has shown that risk behaviours adopted in childhood or in the adolescent years may elevate the likelihood of developing cancer, heart disease, hypertension, obesity, or other health complications in the adult years. Hence,
it is essential to understand the latency period of disease onset, as well as its association with high risk behaviors and their patterns, frequency, and duration among a population’s youth.

Undernutrition & childhood morbidities among tribal preschool children was studied by V. G. Rao, Rajeev Yadav, C.K. Dolla, Surendra Kumar, M.K. Bhondeley & Mahendra Ukey Regional Medical Research Centre for Tribals (ICMR), Jabalpur, India July 22, 2004 the results show that More than 60 per cent children were underweight. Micronutrient deficiency disorders such as anemia and vitamin A deficiency were common among them. Unhygienic personal habits and adverse cultural practices relating to child rearing, breast-feeding and weaning were also prevalent among them.

Epidemiological study of child & adolescent psychiatric disorders in urban & rural areas of Bangalore, India by Shoba Srinath, Satish Chandra Girimaji, G. Gururaj*, Shekhar Seshadri, D.K. Subbakkishna, Poornima Bholale & Narender Kumar (February 2004) reported that Prevalence rates of psychiatric morbidity in 0-16 yr old children in India were found to be lower than Western figures. Middle class urban areas had highest and urban slum areas had lowest prevalence rates. The implications for clinical training, practice and policy initiatives are discussed.

A landmark work has been done by Jean Dreze and Goyal (2003). The work was planned and executed in three states, Chhattisgarh, Rajasthan, and Karnataka in 27 villages. Results revealed that, Mid-day Meal have a major impact on school attendance, child nutrition and social equity.

Jean Drèze and Aparajita Goyal (with Neha, Bhanupriya Rao, and Veda Zacharia) (January and April 2003) studied on the future of Mid-day Meal. They
reported that it is hard to think of a better use of public funds at this time than the provision of nutritious Mid-day Meal in primary schools.

Prevalence & etiology of nutritional anaemia among school children of urban slums Sunil Gomber, Bhawna, Nishi Madan, Avtar Lal & Kusum Kela Departments of Paediatrics,*Pathology & †Pharmacology, University College of Medical Sciences & Guru Teg Bahadur Hospital, Delhi, India Received October 1, 2003 The results shows that Childhood anemia continues to be a significant public health problem in school children aged 5 to 10.9 yr and iron deficiency either alone or in combination is the commonest nutritional cause of anemia. Pure or mixed vitamin B12 deficiency is an important but yet not commonly recognized cause of anemia among these children.

Surrender Misra and Manranjan Behera (2003) studied the impact of Mid-day Meal on primary school children entitled Child Nutrition and Primary Education: A Comparative Study of Mid-dayMeal Programme in Orissa and Tamil Nadu. The reported positive impact of Mid-day Meal on school enrollement, attendance and decline in drop-out rate.

In NP-NSPE, 1995 the cost of cooking was to be borne by the State Governments/ UT administrations. Unable to provide adequate funding for meeting the cooking costs, many State Governments/ UT Administrations resorted to distribution of food grains, rather than providing cooked Mid-day Meal. To ameliorate some of the difficulties experienced by the States and UTs, Planning Commission requested State Governments in December 2003 to earmark a minimum of 15% of Additional Central Assistance under the Pradhan Mantri Gramodaya Yojana (PMGY) towards cooking cost under the Mid-day Meal scheme. Nonetheless,
the programme continued to suffer on account of budgetary constraints in the States and UT Administrations.

Another work in this field observed nutritional and education impact of Mid-day Meal. An impact of social economic status on the outcome measure of school feeding programme among preschool children was one by Sivan Et al. (March 2001) The result revealed positive impact of the programme. Similar result was found me Devadas et al. (2002).

Receiver operating characteristics curve analysis of body fat & body mass index in dyslipidemia Asian Indians by A. Misra, R.M. Pandey*, S. Sinha, R. Guleria, V. Sridhar & V. Dudeja Departments of Medicine & *Biostatistics, All India Institute of Medical Sciences, New Delhi, India November 12, 2002. Reported that - The observations in dyslipidaemic Asian Indians suggest high prevalence rates of generalized and abdominal obesity, and that high values of W-HR alone predisposes to atherogenic dyslipidaemia. Further, obesity may be optimally defined by a lower cut-off of BMI. The revised criteria for the BMI-based diagnosis of obesity will lead to a more rational management of dyslipidemia in Asian Indians.

The National Programme of Nutritional Support to Primary Education (NP-NSPE) was launched as a Centrally Sponsored Scheme on 15th August 1995, initially in 2408 blocks in the country. By the year 1997-98 the NP-NSPE was introduced in all blocks of the country. It was further extended in 2002 to cover not only children in classes I-V of government, government aided and local body schools, but also children studying in centres run under the Education Guarantee Scheme (EGS) and Alternative and innovative Education (AIE) Scheme. Central Assistance under the scheme consisted of the following:
a. Free supply of food grains @ 100 grams per child per school day, and  
b. Subsidy for transportation of food grains up to a maximum of Rs 50 per quintal.

In addition to food grains, a Mid-day Meal involves two other major inputs, viz., “cost of cooking” and “provision of essential infrastructure”, which are explained below:

a. Cost of cooking includes cost of ingredients, e.g. pulses, vegetables, cooking oil and condiments. It also includes cost of fuel and wages/ remuneration payable to personnel, or amount payable to an agency (SHG, VEC, SMC) responsible for cooking.

b. Provision of essential infrastructure includes kitchen-cum-store, adequate water supply for cooking, drinking and washing, cooking devices (stove, chulha, etc), containers for storage of food grains and other ingredients and utensils for cooking and serving.
2.4 THE SUPREME COURT ORDER

In a significant interim order dated 28 November 2001, the Supreme Court issued directions pertaining to 8 food-related schemes sponsored by the central government. Briefly, the order directs the Union and State governments to implement these schemes fully as per official guidelines.

Today, twenty-three out of thirty-five States and UTs have achieved full coverage of primary schools under the cooked mid-day meal programme. The defaulters include some of the larger states such as Bihar, Uttar Pradesh and West Bengal. As a result, only 55% of all children entitled to cooked Meal are covered today.

A Laxmaiah et. al. (1999) worked on impact of Mid-day Meal on educational and nutritional status of school children in Karnataka. A total of 2694 children were studied. The result indicated better enrolment and attendance, high retention with reduced dropout rate, a marginally high school performance of Mid-day Meal Children.

Similar work was done by Sneh Rewal for CARE. She got the same result as mentioned above. The above study covered 3839 children in 396 Schools in 21 districts of Madhya Pradesh. A study of Mid-day Meal programme and its impact in improving enrolment in Raygada, Orissa was done by Bishnupada Sethi. The result revealed that an increase in enrolment, increase in physical growth since the starting of Mid-day Meal.
2.5 MID-DAY MEAL PROGRAMME AND ITS IMPACT ON THE CHILD DEVELOPMENT

1990-91 the number of States implementing the Mid-day Meal programme with their own resources on a universal or a large scale had increased to twelve, namely, Goa, Gujarat, Kerala, Madhya Pradesh, Maharashtra, Meghalaya, Mizoram, Nagaland, Sikkim, Tamil Nadu, Tripura and Uttar Pradesh. In another three States, namely Karnataka, Orissa and West Bengal, the programme was being implemented with State resources in combination with international assistance. Another two States, namely Andhra Pradesh and Rajasthan were implementing the programme entirely with international assistance.

Dwyer, Johana (January 1986) worked on acceptance of breakfast programme on the classroom performance and found positive relationship.

The study of retention rate of the children in Karnataka state revealed that, it increased by 27% after the Mid-day Meal programme for school children.

The strongest Relationship between school feeding programme and attendance was presented in 1982 by Gall and Ec K Road under the sponsorship of CARE in the Dominican Republic, similar works carried by Anderson Et al, CARE Srilanka.

World Bank Research had been carried out in Cebu, Philippines. Results show the positive relation between the programme and school education. Several studies(Alaimo et al (2001) , Allen,l.H. et. al.(1992), Angeles et al (1993), Briendet. al. (1990),brownet.al.(1998),Calloway(1994) and Cartwrite(1958)carried out on primary school children confirmed the positive impact of Mid-day Meal .