

## VII. EXTENSION AND TRAINING

### A. SERVICE ACTIVITIES

#### 1. Publications

The quarterly periodicals, namely, Nutrition (English), Poshan (Hindi), Poshana (Telugu) and a semi-technical bulletin Nutrition News, covering popular articles of public interest and scientific information on nutrition are being published. During the year, Urdu version of Dietary Guidelines for Indians - A Booklet was brought out.

#### *Publications reprinted during 2004-2005*

1. Some Therapeutic Diets
2. Diet and Heart Diseases
3. Fruits
4. Count What You Eat
5. Recommended Dietary Allowance
6. Dietary Guidelines for Mother and Child (Telugu)
7. Mother and Child
8. Diet and Diabetes
9. Dietary Tips for the Elderly
10. Nutritive Value of Indian Foods

#### 2. Training Programmes

This year, a total of twenty-six candidates have attended the regular training programmes of the Institute viz. (i) Post-Graduate Certificate Course in Nutrition (10 participants) (ii) Annual Training Course in Endocrinological Techniques (8 participants) and (iii) Techniques for Assessment of Nutritional Anaemias (8 participants). In addition, ad-hoc training programmes were conducted for 7 WHO Fellows, of whom four were from Bangladesh, two from Nepal and one from Orissa. In the training courses, care has been taken to expose the participants to the latest information both in theoretical as well as practical aspects in the field of nutritional sciences through lectures and demonstrations using multimedia educational approaches by the Institutes as well as expert guest faculty. Besides, visits to the Nutrition wards in the hospitals and community programmes were organized to expose the participants to prevailing nutritional problems in the population and IEC techniques in educating the community to prevent malnutrition.

#### 3. Extension Activities

##### *3.1. Exhibitions*

1. Portable exhibition was displayed at New Model High School, Doodhbowli, Hyderabad in connection with National Technology day Celebrations on 11th May 2004. Teachers, students and other staff members of the school (200) were explained about the importance of nutrition and health.

2. To commemorate 50th year celebration of the Gandhi Medical College, an exhibition stall with portable exhibition system was put-up in the Social and Preventive Medicine Unit of the medical college during 6th-17th December 2004. There was an overwhelming response from the general public and as well as the students (3000) of the medical college.
3. As part of 92nd session of Indian National Science Congress, a nutrition education stall was put up in an exhibition organized by ICMR, New Delhi at Ahemdabad during January 3rd - 7th 2005 at Nirma University, Ahmedabad. About 2000 people from different walks of life visited the stall during the exhibition.
4. As part of 2nd Nutraceutical summit an exhibition stall was organized on Nutrition & Health in the International Seminar & Expo during February 3rd - 5th 2005 at New Delhi. About 600 visitors visited the stall.
5. To commemorate Consumer Week Celebrations, a portable exhibition was put up on 15th March 2005 depicting the dietary guidelines for all the age groups. About 100 visitors, who participated in the consumer day celebrations, witnessed the portable exhibition.



*Sri. Narendra Modi, Chief Minister of Gujarat visiting the NIN stall in the 92<sup>nd</sup> session of Indian National Science Congress, Organized by ICMR, Ahmedabad, New Delhi*



*Consumer Week Celebrations on 15<sup>th</sup> March 2005*

### **3.2. Popular Talks**

1. Organized Nutrition awareness programmes (6) to the school children living in slums and youth volunteers of Confederation of Voluntary Associations (COVA) in the old city of Hyderabad in the summer camps organized by COVA between 25th April 2004 and 30th May 2004. About 700 youth volunteers including school children participated in the awareness programme.
2. A popular lecture on "Food, Nutrition and Health" and a cooking demonstration in association with Food and Nutrition Board, Hyderabad were organized to the employees of Andhra Pradesh State Transport Corporation (APSRTC), Karimnagar Depot on 25th May 2004. About 300 employees and their families participated in the programme.
3. A popular lecture on "Balanced diet, nutritive values of foods, health and nutrition" on the occasion of Telugu Academy Foundation day on 6th August 2004 was given to the employees (60) of the academy.
4. Delivered a lecture on "Nutrition and Health" with special reference to general Nutrition, low cost nutritious recipes, good cooking practices and Food and Personal hygiene to the cooks (150) working in Social Welfare Department hostels on 21st May 2004 in a training programme organized by the Department of Social Welfare, Ranga Reddy District.
5. Delivered a popular lecture on "Nutrition and Health" to the employees of a workshop South-Central Railway, Lalaguda, Secunderabad on 15th June 2004. About 180 employees including the senior officials and technical staff participated in the programme.
6. An orientation programme on "Nutrition and Health" including personal hygiene and cooking demonstration on low-cost nutritious recipes were organized for the volunteers (50) of an NGO i.e., Nriyjanjali Academy, Secunderabad working with HIV patients on 16th June 2004.
7. A popular talk on "Nutrition and Health" with special reference to the Nutritional requirements for school children was given to the delegates (70) in the 3rd International workshop on quality education for all on 7th July 2005, organized by ALPAKS Kids world, Hyderabad.
8. A nutrition awareness programme on 20th July 2004 for community health workers (60) (CHWs) in Mylaram Village, Bommala Ramaram Mandal, Nalgonda District was organized in association with Rural Organization For Social Education (ROSE), an NGO working in that area.
9. Demonstration of intervention material on Nutrition in the study settings of projects on Adolescent Girls and FMFH Programme for schoolchildren at MJM Girls High School, Shali Banda and Neo School Aizza, New Malakpet respectively, during the visit of Dr. Rukhsana Haider, Regional Adviser (Nutrition), WHO SEARO, New Delhi on 18th August, 2005.
10. A lecture on "Nutrition for adolescent girls" in Masjid-E-Jafferri Shariff was given to the adolescent girls (60) on 26th October 2004 in a programme organized by COVA in Yakutpura, Hyderabad.
11. A talk on "Nutrition and Health" with special reference to the nutritional requirements for HIV patients was given to women peer educators (50) and out reach workers in a training programme on "Nutrition and HIV/AIDS" organized by Research in Environment, Education and Development society (REEDS) on 29th October 2004 at Kodangal, Mahabubnagar District.
12. A popular lecture on "HIV and Nutrition" to the health educators (40) of an NGO i.e., Development Action for Rural Environment (DARE), Hyderabad on 28th December 2004.

### **3.3. Radio talks**

All India Radio broadcast following popular talks in local language "Telugu" on different occasions:

1. Importance of Carbohydrates on 12th August 2004

2. Importance of proteins in the diet on 17th August 2004, and
3. Role of fats in the diet on 19th August 2004. AIR repeatedly broadcast these talks during the year.

#### 4. Special Events

##### 4.1. National Technology Day (11th May 2004)

A nutrition awareness camp was organized for school children, teachers and other staff members (200) of New Model High school, Dhoodhbowli in the old city of Hyderabad in association with COVA on 11th May 2004.



##### 4.2. National Nutrition week (Sep 1 -7 .2004)

A Nutrition awareness programme for farmers and cooking demonstration were organized to the farmers and their family members (40) on 3rd September, 2004 in association with Central Research Institute for Dry land Agriculture (ICAR), Hyderabad at Kodangal village, Ranga Reddy District.

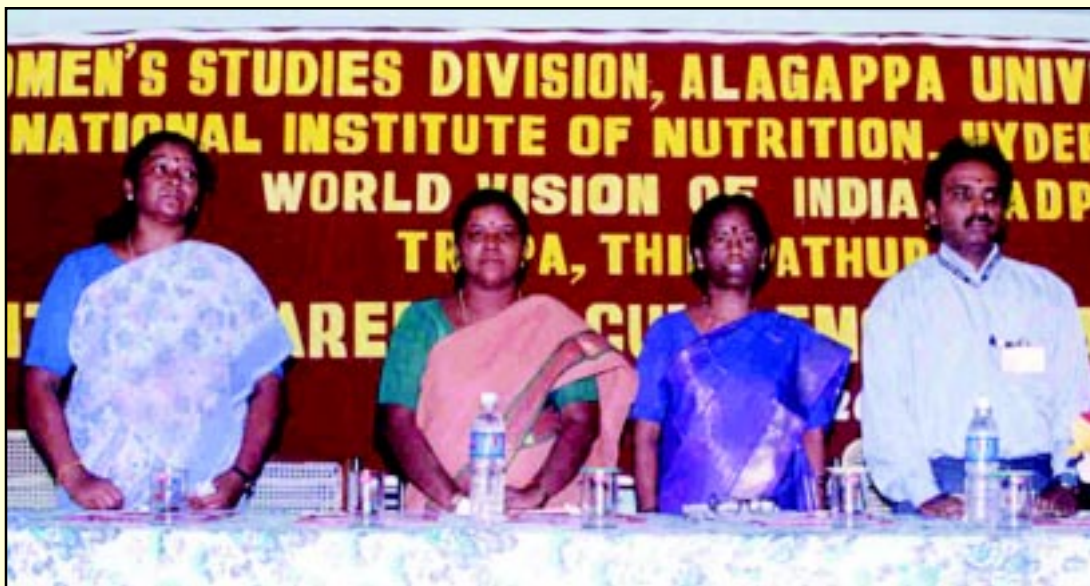
The Urdu version of 'dietary Guidelines for Indians - A Booklet' was released at a modest function organised in 'Urdu Ghar' in the old city of Hyderabad. Media covered the event.

Inter-school competitions in elocution, essay writing and painting were organised on this year's theme - 'Malnutrition - A silent emergency' over 170 students took part in various competitions. These contests were organised in association with the School Students' Nutrition Club and COVA

##### 4.3. World Food Day

Nutrition awareness programmes (3) were organized in Tamilnadu State. One camp was organized at Madurai on 15th October 2004 in association with Food Nutrition Board (FNB), Madurai for adolescent girls, pregnant and lactating women and anganwadi workers (50). The other two camps were conducted

for the students (250) from different faculties, women self help groups (350) from nearby villages in association with FNB, Madurai on 15th and 16th October 2004 at Allagappa University, Karaikudi in association with Department of Women studies of the University.



#### **4.4. Year of Scientific Awareness 2004**

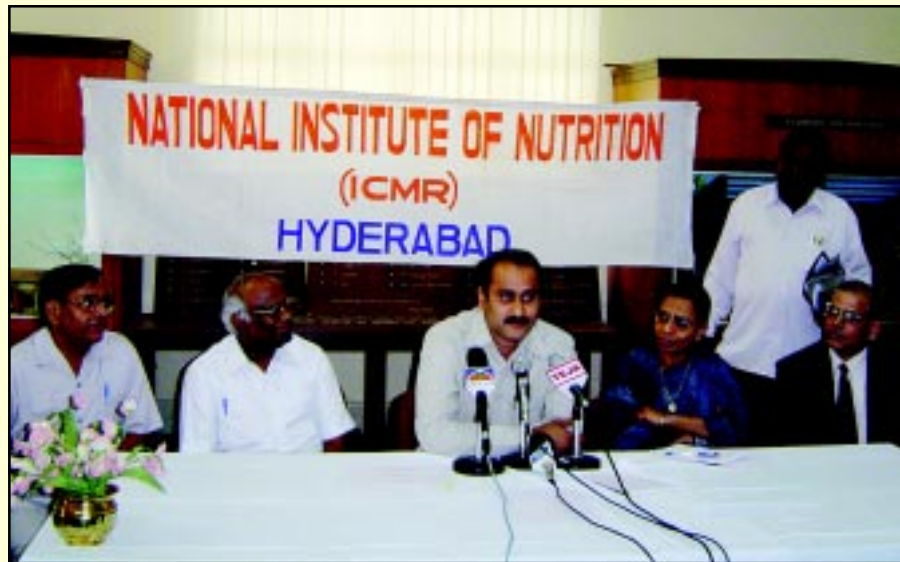
An interactive session on "Nutrition and Health" in association with Confederation of voluntary Associations (COVA) was organized to the girl students (80) of Fatima's Girls High School, Hyderabad on 15th September 2004.

#### **5. Public and Media Relations**

The Nutrition Museum continues to attract students from school and colleges, health workers, nurses and NGO groups from all parts of the country. Lecture-cum-video programmes on various nutrition themes were conducted for these visitors in batches. A total number of 86 groups consisting of 2580 students from ten States (Andhra Pradesh, Gujarat, Maharashtra, Kerala, Tamilnadu, West Bengal, Madhya Pradesh, Uttar Pradesh, New Delhi and Punjab) visited the institute during the year. Technical information was provided to general public on nutrition and health-related aspects and dietary counselling was offered to the needy general public.

Reporters from several newspapers interacted with the scientists of the Institute working on different aspects published research highlights. In addition, articles from the Institute's periodicals were also picked up by various newspapers in different Indian languages. All the extension activities of the institute were covered well by the local media in English, Telugu and Urdu.

The staff of the Extension and Training Division took active part in ensuring media coverage for the entire special events organized by the institute. Curtain raisers, press releases and follow-up reports were coordinated by the staff. Staff was also actively interacting with media and was successful in improving visibility of the institute as well as ICMR. Major events like the visit of Dr. Anbumani Ramadoss, Honourable Union Minister for Health and Family Welfare and Mrs. Panabaka Lakshmi, Honourable Minister of State for Health and Family Welfare were also covered widely in the news.



*Dr. Anbumani Ramadoss, Honourable Union Minister for Health and Family Welfare addressing the media*



*Mrs. Panabaka Lakshmi, Honourable Minister of State for Health and Family Welfare interacting with the media personnel.*

Expertise of NIN's scientists was also used by the Educational Media Research Centre (EMRC), Hyderabad in making educational films on nutrition and food security.

The staff of ET Division assisted in the designing, development and editing of brochures for National Workshop on Pesticide Residues organized by the Institute in January 2005. The staff of the Division also involved in designing, editing and printing of a Report on Prevalence of Fluorosis in the North-western Districts of Tamilnadu.

An educational film using the folk media was developed by the staff of the division covering various aspects of nutrition for educating the NSS volunteers was developed as part of "Development of communication strategies to improve nutrition and health related knowledge of NSS volunteers" project.



## 6. NIN's Website

The institute's website, [www.ninindia.org](http://www.ninindia.org), recorded more than 22,400 hits since its launch in March 2004. The division has been updating the website. Employment opportunities are being regularly put up on the website.



**NATIONAL INSTITUTE OF NUTRITION** Hyderabad, INDIA  
 राष्ट्रीय पोषण संस्थान, हैदराबाद, भारत

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**India's premier nutrition research institute working under the aegis of Indian Council of Medical Research (ICMR), Ministry of Health and Family Welfare, Government of India.**

**Vision**  
 To achieve optimal nutrition of vulnerable segments of population such as women of reproductive age, children, adolescent girls and elderly by 2020.

**Mission**  
 To enable food and nutrition security conducive to good health, growth & development and increase productivity through dedicated research, so as to achieve the national nutrition goals set by the government of India in the national nutrition policy.

**Nutrition Society of India (NSI)**

**EMSI Annual Conference 2006**

- ↳ National Institute of Nutrition (NIN)
- ↳ Food and Drug Toxicology Research Centre (FDTRC)
- ↳ National Centre of Laboratory Animal Sciences (NCLAS)
- ↳ National Nutrition Monitoring Bureau (NNMB)

**DIETARY GUIDELINES FOR INDIA**

Water should be taken in adequate amounts and beverages should be consumed in moderation.

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**Employment Opportunities**

**No of Hits**  
22,400

**National Institute of Nutrition**  
 Jamsil-Chintamani PO  
 Hyderabad-500 007,  
 India

## B. RESEARCH ACTIVITIES

### IMPLEMENTATION OF FAO'S FEEDING MINDS, FIGHTING HUNGER (FMFH) PROGRAMME - AN EXPLORATORY STUDY

Despite the Green Revolution and great economic and scientific strides, nearly 800 million people are chronically undernourished and over 200 million children under the age of five suffer from acute malnutrition. In this respect, Governmental, Non-governmental and international organisations have launched various programmes. The FAO is one of them. Besides promoting food production and food security, one of the aims of FAO is to create a world, in which all children can grow, learn and flourish, developing into healthy, active and caring members of society. In tandem with this objective, FAO, along with some like-minded organisations, has launched the Feeding Minds, Fighting Hunger (FMFH) Programme.

The FMFH Programme, through a set of lesson plans, aims to introduce the topics of 'hunger and malnutrition in the world' to the schoolchildren through their teachers. Three lesson plans have been provided for each of the three broad school levels - Primary, Intermediate and Secondary. Each lesson contains background information for the teacher and outlines the main objectives, concepts and content areas to be covered. Guidelines for a variety of classroom activities, teaching aids and discussion points are provided. Given the wide variety of problems, cultures and environments around the world, the lessons have been prepared as a framework for teachers. The programme envisages that the teachers, after understanding the lesson plans should educate the children in their respective classrooms. The scope, language, discussions and activities provided for each lesson, have to be tailored to fit the students and local conditions.

In order to popularise this initiative in the South-east Asian region, FAO and UNESCO organized an inter-country workshop from 27th to 29th August, 2002, at the National Institute of Nutrition (NIN), Hyderabad. As many as 52 delegates from Southeast Asian countries viz., Bangladesh, India, Indonesia, Nepal, Philippines and Sri Lanka along with representatives of FAO and UNESCO participated in the workshop. The delegates deliberated over the ways to effectively implement the FMFH lesson plans and unanimously felt that the success of FMFH programme is dependent on the involvement of school students and teachers to fight against hunger and malnutrition (FMFH Workshop Report, 2002).

Following this workshop an exploratory study was carried out to assess the efficacy FMFH lesson plans in improving the knowledge levels of the school children. The study was conducted with the following objectives:

1. To assess the current knowledge levels of the middle-level school children and their science teachers on topics related to FMFH lessons
2. To educate the teachers about the concepts of FMFH, by adapting intermediate-level lesson plans and to educate middle-level school children through them
3. To evaluate the impact of school-based teaching of FMFH lessons on the improvement of knowledge levels of school children on these topics.

#### Materials and Methods

##### *Study setting*

The study was conducted in the schools of old-city of Hyderabad in association with a Non-Governmental Organisation i.e., Confederation of Voluntary Associations (COVA). A total number of 49

member schools of COVA were considered for the study. Informed consent was obtained from the heads of the participating schools and pupils.

### ***Sample size***

In the pilot study, a pre-tested questionnaire consisting of 20 multiple-choice questions was administered to 75 school children selected randomly from five schools. The 20 questions were related to hunger, food insecurity, nutrition, nutrition deficiency disorders, FAO and two additional questions related to their preferences in methods of learning were also included. For the main study, cluster randomisation procedure was used to determine the number of schools.

The sample size was worked out with an expected improvement of 4 points (on a scale of 20) in the mean scores after intervention, at 95% level of significance and 80% power. From the total number of schools available, 10 schools were selected randomly and each school was again randomly allocated to either control or experimental group. Thus, five schools were treated as control group and the remaining five as experimental group. All the children from VIII and IX grades and their biological science teachers of these classes were included in the study.

### ***FMFH lesson plans***

Three different lesson plans of FMFH are suggested for Primary, Intermediate and Secondary school levels. Each lesson contains background information for the teacher, objectives, concepts and contents to be covered in the classroom during implementation. The three common lesson plans for all school levels deal with three different topics namely 1. What are hunger and malnutrition and who are hungry? 2. Why are people hungry and malnourished? 3. What can we do to help end hunger?

Apart from these guidelines, a variety of classroom activities including teaching aids and discussion points are also provided. For the study purpose, only the intermediate level lesson plan was used to educate the students in the experimental schools.

### ***Assessment of knowledge levels of school children***

Baseline data of schoolchildren and teachers of control group (n=358) and experimental group (n=312) were collected by administering a pre-tested knowledge assessment questionnaire (KAQ).

### ***Statistical analyses***

Data from KAQ were analysed using SPSS package (version 11.5).

Significant improvement in the knowledge-levels of schoolchildren was observed even in the control group in an earlier study conducted in schools of Hyderabad by Vijaya Pushpam et al. Therefore, in this study effect size was used to assess extent of effect of intervention in improving the knowledge levels in the experimental schools as compared to control group schools.

## **Intervention**

### ***Teachers Training Workshops***

A Teachers' Training Workshop was organized in March 2003 for the biological science teachers of VIII and IX grades of the experimental schools. The teachers were trained in the concepts of FMFH and different strategies of communication in order to modify the FMFH lesson plans to suit the local needs of their school children. A follow-up workshop was conducted in July 2003 to reinforce the

knowledge acquired in the previous workshop before they implemented FMFH lesson plans in their respective schools.

### ***Development of Communication Material***

The following communication materials were developed based on the preferences indicated by the students in the pilot study, in consultation with the teachers during the Teachers Training Workshop. Posters - One poster on functions of foods and three posters on micronutrient deficiency disorders viz., Anaemia, Vitamin A and Iodine Deficiency Disorders (IDD) were identified from the existing posters of NIN and modified. In addition, posters related to Hunger Map of Asia, Hunger Map of world, vulnerable groups, food systems chart and what can children do to help end hunger and malnutrition were adapted from the FMFH lesson plans. These topics were identified with the help of teachers during the first Teachers Training Workshop. Each school was given a complete set of 10 posters.

Skit - A skit covering all the concepts mentioned in FMFH lesson plans was developed and performed using children's theatre group of COVA to reinforce classroom education.

### ***Implementation of FMFH Lesson plans***

In the experimental schools, teachers implemented FMFH lesson plans between August and October 2003 using the communication material along with various classroom activities.

### ***Post-intervention Knowledge assessment***

The questionnaire that was administered at baseline was used on 254 students in the control and 216 students in the experimental schools after intervention and the children were instructed not to discuss among themselves while answering the questionnaire. One school opted out of the study and some children were not present at the time of administration of post-intervention questionnaire(s). However, the drop out did not affect the over all outcome of the study. Further, retention of the concepts of FMFH lesson plans was also studied by administering the same questionnaire after a gap of two months for the experimental group. For the purpose of analysis, each right answer was assigned one mark and the wrong answer was given a zero.

## **Results**

### ***Pilot Study***

The mean of scores of 75 children of all five schools was  $8.36 + 3.13$  (SD). About 80% of the schoolchildren preferred to learn through classroom lectures, followed by teaching aids (like charts and posters) and the play way etc.

### ***Main Study***

The baseline data on the concepts of FMFH lesson plans of biological science teachers in the control schools were  $14.20 + 1.48$  (SD) and in the experimental group the mean score was  $13.00 + 2.58$ . However, after intervention there was drop in the mean scores of control schools i.e.,  $13.60 + 1.82$  as compared to a significant increase in the knowledge levels among the biological teachers of the experimental schools ( $17.50 + 1.29$ ). Baseline data of schoolchildren in control and experimental schools showed that there was no significant difference ( $p > 0.05$ ) between the groups, indicating homogeneity in the groups (Table 25).

Table 21. Knowledge levels of the school children before and after intervention

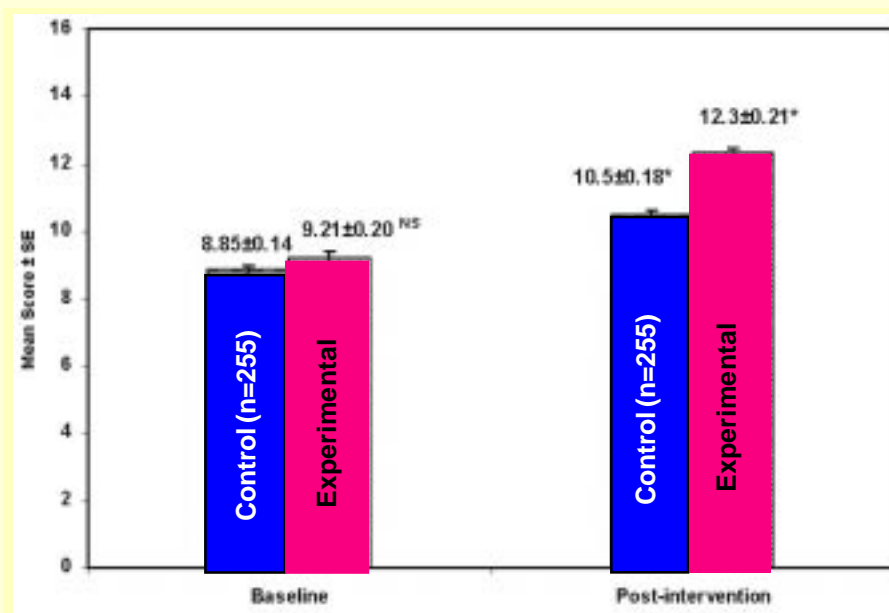
Group	n	Mean $\pm$ SD	Significance
<b>BASELINE</b>			
Control	358	8.66 $\pm$ 2.28	p>0.05 NS
Experimental	312	8.95 $\pm$ 2.96	
<b>INTERVENTION</b>			
Experimental Group			p>0.05 NS
Post-intervention -1	213	12.31 $\pm$ 3.14	
Post-intervention -2	213	12.54 $\pm$ 2.89	

Post intervention results indicated a significant improvement in the knowledge levels in the experimental group (Figure 36). Significant improvement was also observed in the knowledge levels of the control group (Figure 36). However, when comparisons were made between the mean improvement in the knowledge-levels of control (1.65 + 0.21 (SE)) and experimental groups (3.09 + 0.19 (SE)), it was found that there was a significant increment in the experimental group as compared to the control group indicating the efficacy of the intervention (Figure 37). As regards the retention of knowledge gained during intervention, post-intervention-1 and post-intervention-2 mean scores of school children in the experimental group were compared and no significant difference was observed (Table 21), indicating that there was retention of knowledge.

### Effect size

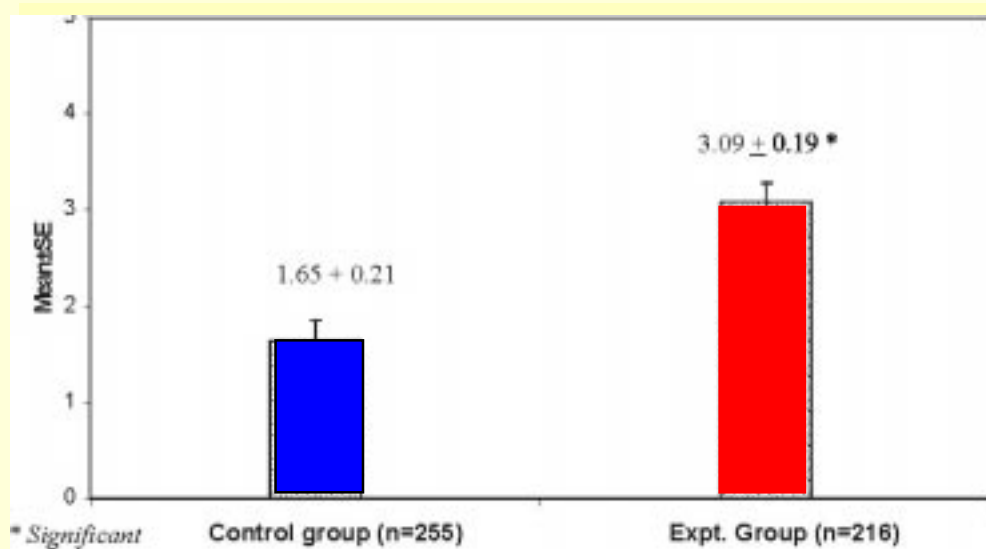
The effect size of the difference in improvement in the nutrition knowledge after intervention between experimental and control groups was  $d = 0.40$ , indicating that the effect of intervention was medium as per Cohen's standard.

Fig 36. Comparison of mean scores of control and experimental groups at baseline and after intervention



NS- Not significant      \* Significant

Fig 37. Improvement in the mean scores of the school children after intervention



### Conclusions and scope for further study

The significant improvement in nutrition knowledge of experimental group through classroom education using FMFH lesson plans over control group was medium as shown by effect size (Cohen's  $d$ ). According to Slavin (2003), the impact of the educational programmes can be successful where the effect size is 0.2 or greater. In the present study, the effect size was medium ( $d = 0.40$ ) indicating that the FMFH programme is effective, efficacious and can be implemented in classroom setting. It is clear that school-based FMFH lesson plans, adapted to local circumstances have significantly improved the knowledge levels of the pupils. However, their efficacy in making the children as the change-agents can be explored through a follow-up study. Similar studies can be initiated to assess the efficacy of the programme in other schools in different set-ups.