

# Protein: Program to Revitalize the Overall health of Tribals' / Teenagers by Ensuring Intake of Nutritious food

1. Urban areas: canteen for teens – a program to address malnutrition in urban teenagers.
2. Rural areas initiatives

A program by



The Energy and Resources Institute

Sponsored by



GKN Sinter Metals Pvt. Ltd.,  
Pune

## Project Highlights

# Acknowledgments

We profusely thank,

- ▶ GKN Sinter Metals for providing all the financial support under their CSR activity.
- ▶ Mr. Hemant Nighojkar and Dr. Ujjal Bhattacharjee for believing in the concept and encouraging TERI for effective project implementation
- ▶ Education officers of Pune, Mumbai and Navi Mumbai Municipal Corporations for helping in identification of the municipal schools.
- School authorities of Delhi Public school, Pune; Yashwantrao Chavan Madhyamik Vidyalaya, Municipal School, Pune; Navi Mumbai Municipal School, Turbhe; Don Bosco High School, Navi Mumbai and Ganpatrao Kadam High School, Lower Parel, Mumbai, for actively participating in the program and providing the logistics support.
- All the students and their parents who have actively participated in the program and helped TERI to make the program a success.
- Ms. Tushima Mashelkar from Chellaram Diabetes Institute, Pune for giving a very informative and interactive lecture on obesity and lifestyle related disorders to the participants.
- ▶ Mr. Ramesh Narayan and Rotary club for helping in organizing an effective and robust outreach program with municipal schools.
- ▶ Mr. Ramesh Shinde, Gram Sevak of Botoshi Gram Panchayat for helping us in identifying malnourished children in rural areas.
- ▶ All the anganwadi workers who helped in data collection and organizing the workshops.
- ▶ MarathiMati.com for allowing us to use healthy recipes from their website.

# Project Activities

## Part A: Urban Initiatives

- Baseline survey

## Know your Food

- Awareness Workshops
- A guest lecture on “Childhood obesity and ways to tackle it”

## Grow your Food

- Mushroom cultivation workshops


## Cook your Food

- Healthy recipe making competition
  - Introduction and Distribution of nutritious food hamper to the winners


## **Part B: Outreach Activities**

- Poster presentation in Bio-processing Conference –2014 organised by ICT (Institute of Chemical Technology) and IIT (Indian Institute of Technology) Bombay.
- Half day event in collaboration with Rotary Club Mumbai
  - Skit performance
  - Distribution of healthy kits

## **Part C: Rural Initiatives**

- Awareness workshops
  - Capacity building through demonstration of nutritious recipes
  - Distribution of nutrition supplements
- 

# Project highlights and outreach

- 1 Skit performance on healthy eating habits
  - 1 Hands on training–Healthy recipe making competition
  - 1 Poster presentation @ Bioprocessing Conference
  - 3 Capacity Building workshops for parents of SAM & MAM children
  - 4 Hands on training – Mushroom cultivation activity
  - 6 schools covering Pune, Mumbai and Navi Mumbai
  - 7 villages in Mokhada Block under Botoshi gram panchayat
  - 12 Awareness workshops
  - 15 varieties of nutrition supplement to promote healthy food options
  - 50 teachers
  - 125 Distribution of Nuti-Kits including healthy recipe booklet, other books and packets of pulses and soyabean
  - 300 parents
  - 300 children in selected villages (Including total of 51 SAM, MAM and SUW)
  - 700 Students from Urban schools
- 

# Part A: Urban Initiatives

# Baseline Survey

- Survey helped in analysing the level of awareness about malnourishment amongst the students.
- It also helped in understanding their preference of food and dietary habits.
- Around 700 students participated from all the selected schools.

Delhi Public school, Pune



30<sup>th</sup> September 2014

Yashwantrao Chavan Madhyamik  
Vidyalyaya, Municipal School, Pune



10<sup>th</sup> November 2014

# Survey



13<sup>th</sup> February 2015

Around 120 students participated from Navi Mumbai Municipal School, Turbe

Around 125 students participated from Ganpatrao Kadam High School, Lower Parel, Mumbai



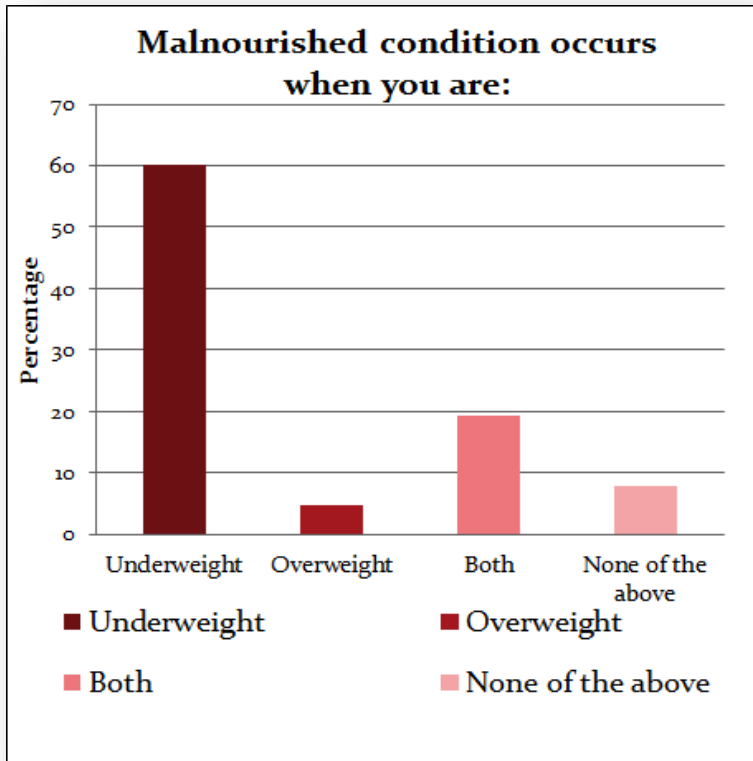
11<sup>th</sup> February 2015



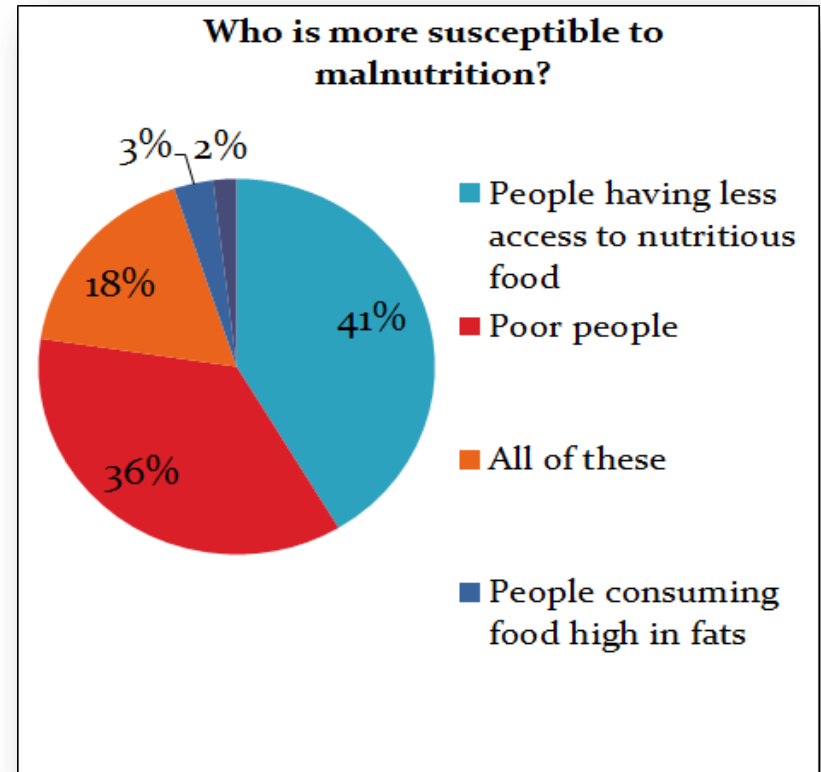
# Students survey analysis



As seen in Figure No.1, around 60% students are of opinion that a person is called malnourished only when he is underweight. Similarly, it is observed in Figure No. 2 that majority of students think that people having less access to nutritious food and the poor are more susceptible to malnutrition.

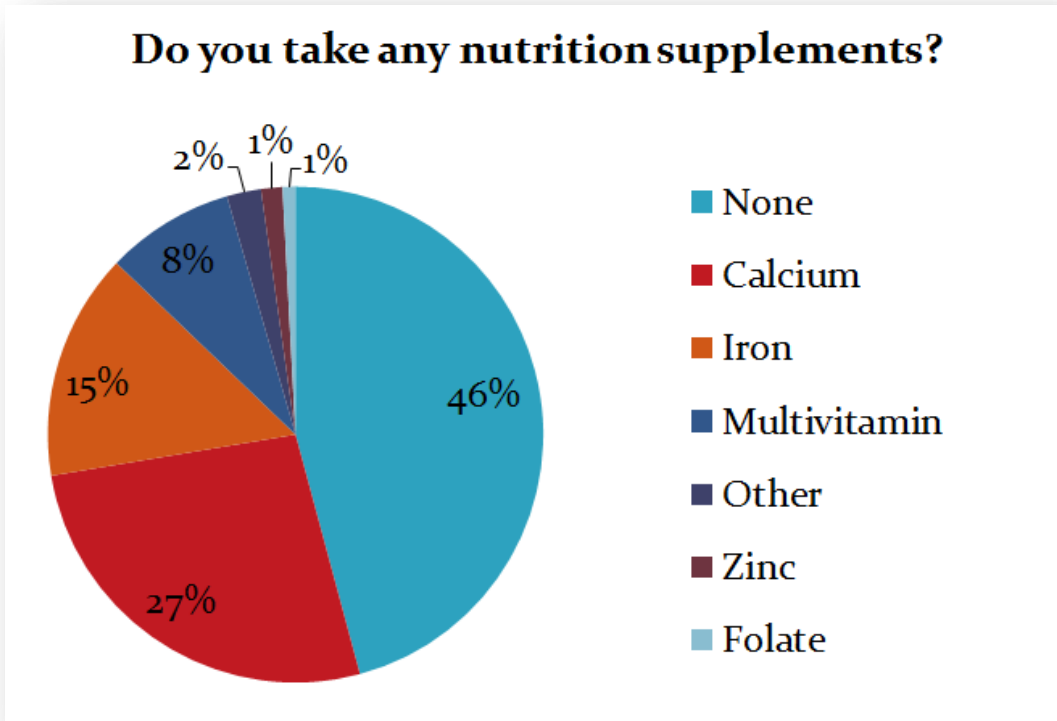


**Figure No. 1: Assessing the level of awareness**



**Figure No. 2: Opinion of students on the occurrence of malnourishment**

More than 50% students take nutrition supplements recommended by the doctor. This indicates that they are aware about requirement of essential nutrients like calcium and iron.



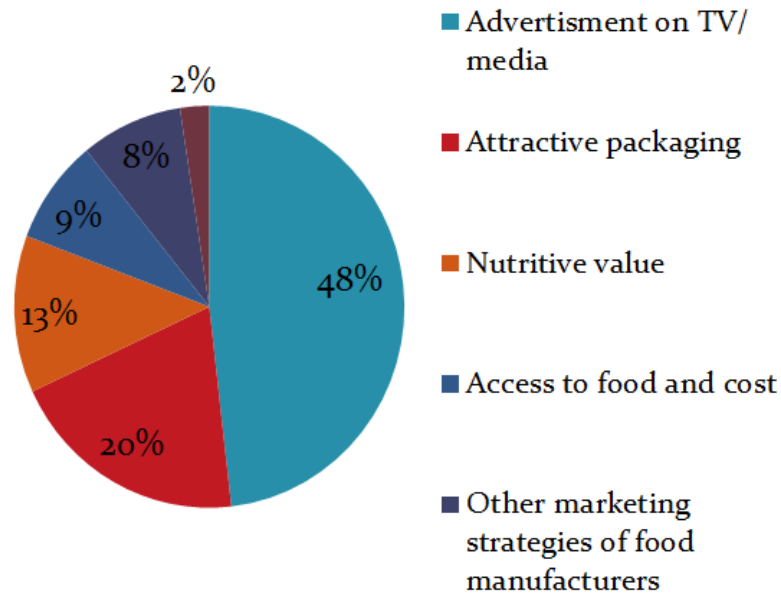
This explains the need of introducing the teenagers to better and natural way of consuming the essential nutrient like Iron and calcium. The easiest way is to introduce innovative ways of consumption of rich natural sources like Spinach, Nachni (Ragi), broccoli, soybeans, pulses, nut and so on.

# Parent survey analysis



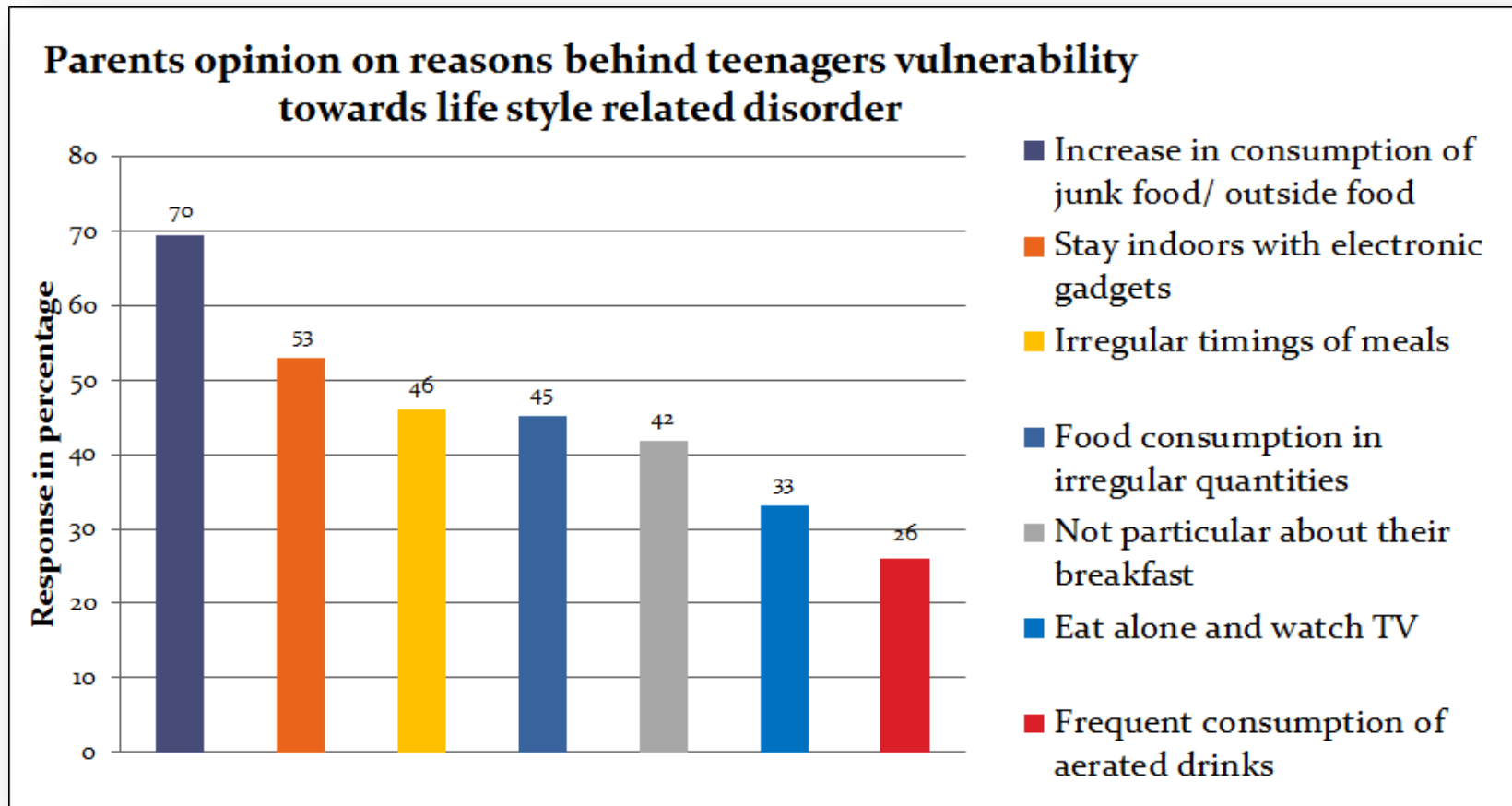
Majority of parents think that Television and advertisements have a great impact on the food choices of their children.

According to you which factors influence the food choices of teenagers?



Thus there is a need to increase the awareness about the health disorders of consuming fatty/ junk food. Along with this it is also important to sensitize parents and students about the informative programs about food and nutrition that get broadcast through mass media.

Parents strongly believe that increased consumption of junk food along with inadequate physical activity has increased the risk of life style related health disorders at a young age.



# Know your Food



# Awareness workshop

- The aim was to explain severity of malnutrition in India along with the importance of consuming simple and nutritious vegetables like sweet potato, spinach, beet green and salad.
- This was effectively presented through detailed and interactive presentation.

Delhi Public school, Pune



Don Bosco School, Nerul Navi Mumbai



Dr. Parasnis explaining the motto of the program- “Know your Food, Grow your Food and Make your Food”



# Awareness workshop

- Workshop and survey at Municipal School was conducted in Marathi language.



10<sup>th</sup> December 2014

Around 120 students participated from Navi Mumbai Municipal School, Turbe

Around 80 students participated from Yashwantrao Chavan Madhyamik Vidyalaya, Municipal School, Pune



11<sup>th</sup> February 2015

# Nutrition assistance workshop held at DPS, Pune



14<sup>h</sup> November 2014

Students during the session, a small quiz on childhood obesity was undertaken. The lecture was interactive and based on the use of "NEW AUDIENCE RESPONSE SYSTEM", a tool that makes learning easy and exciting. Using the same students were answering the questions.

# Nutrition assistance workshop held at DPS, Pune

- A guest lecture on “Childhood Obesity and Ways to tackle it” was arranged.
- *Ms. Tushima Mashelkar, Chellaram Diabetes Institute, Pune* was invited to conduct the session
- The *lecture* was focused on:
  - *Obesity and facts about obesity,*
  - *Its causes, effects and contributory factors,*
  - *Nutritional management related to obesity and*
  - *Interventions to prevent and treat obesity.*
- Students participated with great zeal and were excited by the educational talk.
- The consciousness about their daily eating habit was stimulated through this activity.

# Highlights of the nutrition assistance workshop

- ▶ The answers were recorded to assess the awareness of obesity amongst the students.
- ▶ A detailed discussion of the facts and causes of obesity was rightly explained to the students with the help of examples and attractive slides.
- ▶ Later on same questions were asked and the change in the pattern of responses were evaluated.

**The results showed 25% increase in the understanding level of students about childhood obesity and ways to tackle it.**

# Grow your Food



# Hands-on training of preparing and displaying of mushroom bags

14<sup>th</sup> October 2014

- Nutritional value and benefits of adding mushrooms to the diet was explained to the students
- Different recipes of mushrooms were showcased during the workshop.
- Around **280** students participated in the demonstration workshop and around **50** mushroom bags were prepared.



Delhi Public school, Pune

# Hands-on training of preparing and displaying of mushroom bags

- These bags were kept in a safe, clean and dark compartment in the school laboratory.
- The area of incubation was maintained clean by the school authority.
- The incubated Mushroom bags showed growth of mushrooms in 25 days.

14<sup>th</sup> October 2014



Mushroom corner : Day 1

Mushroom Bag: Day 30



14<sup>th</sup> November 2014

*Students showed great interest in cultivation of mushroom at their home/ school backyard. Schools have also requested to carry out demonstration of other nutritious fruits and vegetables which are easy to grow in the school backyard and at home.*

# Don Bosco School, Nerul Navi Mumbai



Students took the mushroom bags to their respective home

5<sup>th</sup> February 2015

They have also requested TERI to provide them with spawn of mushroom to cultivate Oyster mushrooms at home.



5<sup>th</sup> February 2015



# Yashwantrao Chavan Madhyamik Vidyalaya, Municipal School, Pune

- Along with the live demonstration of mushroom cultivation, samples of dry Osyster mushroom were also distributed. Various healthy recipes were demonstrated to promote and encourage them to adopt healthy eating habits.



11<sup>th</sup> December 2014

Demonstration workshop and distribution of mushrooms in the municipal school, Pune

# Cook your own Food



# Student- Parent Healthy recipe making competition through display of posters

- Parents along with their ward were invited to participate in “Recipe Making Competition”.
- Students displayed their recipes through posters by presenting the nutritional value of the recipe.



14<sup>h</sup> November 2014

Student- Parent displaying their “Easy to make” nutritious recipes.

# Student- Parent Healthy recipe making competition through display of posters

- Students were well read and aware about the nutritional status and food ingredients used during preparation of the food items.
- Judges were delighted to see the performance of the students



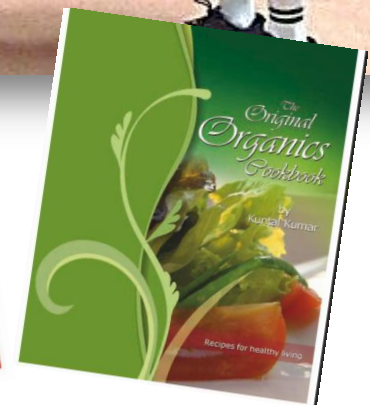
14<sup>th</sup> November 2014

Student- Parent displaying their “Easy to make” nutritious recipes.

# Nutritious food hamper – An apt prize to the winners

- ▶ TERI gifted nutritious food hamper to the winners of the recipe making competition
- ▶ The hamper included Jowar based food items like Jowar flakes, vermicelli and Idli mix
- ▶ A book titled “The Original Organics Cookbook: TERI Recipes for Health and Happiness” on nutritious organic recipes published by TERI was also given to the winners of the competition

14<sup>th</sup> November 2014



# Rationale of : Nutritious food Hamper

- Through parent survey it has been observed, that the consumption of millets like ragi, jowar is considerably less and children generally prefer having 'wheat' or 'all-purpose flour (Maida)' roti and other related products.
- Through this hamper TERI wanted to create the awareness that nutritious food products are not always costly and tasteless. It is easy to integrate them through some innovative ways and methods.

# Part B: Outreach



# Poster presentation in Bio-processing Conference -2014 organised by ICT (Institute of Chemical Technology) and IIT (Indian Institute of Technology ) Bombay.



## Canteen for Teens



### A program to address malnutrition in urban teenagers

Bhargavi Thorve, Swati Tomar, Anjali Parasnis

The Energy and Resources Institute, Western Regional Centre (TERI-WRC)

**Point to ponder** By 2030, India will have 101.2 million diabetic persons including youth, which will be highest in the world. While today's teenagers will be the youth of tomorrow it is imperative to engage the teenagers to follow healthy life style to keep in check the future diabetic population.

**World Scenario** Globally, **10%** of school children (between 5 -17 years) are overweight /obese

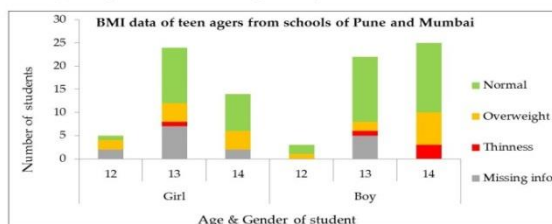
- **77%** of people with diabetes live in low and middle income countries
- More than **79,000 children** developed type 1 diabetes in 2013

**Indian Scenario** **30 million** people in India are obese

- **15 to 20%** of children are overweight and 30% are at risk of falling in this category
- **50 million** people are presently diabetic

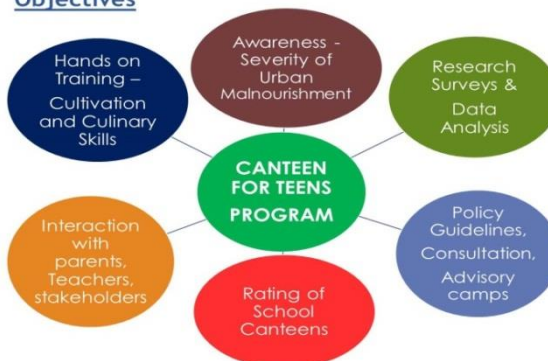
#### Survey of local schools by TERI

- According to the BMI data almost **20%** students (12-14 years) were overweight as per WHO standards



- **68%** students were not aware of the urban malnourishment
- **74%** ate burger and fries more than once a week
- **79%** teenagers' got influenced by the marketing strategies while making food choices
- **46%** thought healthy food lacks in taste and appearance

#### Objectives



#### Activities conducted by TERI to promote healthy food options

##### Know your food

To educate about malnourishment, healthy food options and desired daily nutrition intake

##### Grow your food

To train teenagers on how to grow nutritious food crops & adopt it in their daily diet

##### Cook your food

To make teenagers self-efficient to prepare their own nutritious food



#### Out put of the Project



#### Way forward

- Dialogue on necessary policy interventions with concerned authorities
- Development of innovative, ready to make healthy products using local vegetables and crop varieties like Jowar, Bajra and Nachani
- Emphasis on climate resilient food varieties and locally grown organic food
- Strengthen the network of stakeholders including research, academia and industry
- Create nutri food based livelihood opportunities in peri-urban and rural areas

#### References

- <http://www.idf.org/diabetesatlas/update-2014>
- <http://www.who.int/mediacentre/factsheets/fs312/en/>
- <http://www.thehealthsite.com/diseases-conditions/world-obesity-day-why-childhood-obesity-is-on-the-rise/>

Survey output of the questionnaire formed by TERI-WRC as a part of this project.



# Poster presentation at Bio-processing Conference –2014

- The conference focussed on issues related to energy, nutrition and healthcare
- TERI participated through poster presentation and a talk in technical session
- The poster highlighted the salient findings of the study and attracted attention of research professionals from diverse fields.
- While in the technical session, Dr. Anjali Parasnis, further elaborated on the objectives of the program and the way forward.

The participation received a very positive response. Everyone agreed to the fact that health status of the teenagers is an important issue which needs immediate action.



17<sup>th</sup> December 2014

## 2. Half day event at Ganpatrao Kadam High School, Lower Parel

In collaboration with Rotary Club of Mumbai, TERI organized a zealous event under this project on 14th February 2015 for the involvement of BMC school children for “Canteen for Teen” program



14<sup>th</sup> February 2015

# Half day event at Ganpatrao Kadam High School, Lower Parel



14<sup>th</sup> February 2015

**Around 125 students of 6<sup>th</sup> to 9<sup>th</sup> standard from 2 municipal schools participated.**

# Invited dignitaries



From left: Sr. Sous Chef. Raghu Deora, The Taj Palace, Shri Vinod Shelar, Chairman of Education Committee, BMC (Bombay Municipal Corporation); Dr. Anjali Parasnis, Associate Director, TERI-WRC; Mr. Ramesh Narayan, Rotary Club

# Inauguration ceremony



A theme related token of appreciation was presented to the dignitaries and the head mistress, of Ganpatrao Kadam High School by Dr. Anjali Parasnis



14<sup>th</sup> February 2015

**Bhavishya yaan– Students presented an overview of different activities conducted in the school under the project**



**14<sup>th</sup> February 2015**

While congratulating TERI and Rotary Club for their initiatives, Mr. Shelar, through citing several examples of highly successful professionals, emphasized upon inculcating good values and food habits for a life time. His speech was highly motivating and convincing for the students.



14<sup>th</sup> February 2015



14<sup>th</sup> February 2015

Senior Chef Raghu Deora was also delighted to be on board and especially encouraged the students adopt healthy and balance dietary habits. He stressed upon the point that even teenagers should indulge into simple cooking as the food could be made healthy and attractive using simple ingredients in their own kitchens



# Skit performance @ Ganpatrao Kadam High School, Lower Parel, Mumbai



# *Chintu ne jana khana hai khazana*

## A skit performed by TERI

- In order to develop a strong connection the characters were woven around real life situation which included,
  - A typical teenager fussy about his food,
  - His mother worried about his dietary habits and his preference for junk food,
  - Their neighbour who provides expert advice about balanced diet,
  - A television set, personified, which relayed the advertisements influencing the food choices as well as provide details about programs emphasizing upon the use of nutritive food. It also highlighted the global status of malnourishment through a film made by TERI,
  - An organization: TERI, as an important link between the concerned stakeholders.

# The objectives of the skit

- Educate about different food groups
- Discuss health disorders related to unhealthy eating food habit.
- To reach out to maximum number of students and talk about malnutrition and its types



14<sup>th</sup> February 2015

- Inform about nutrient rich vegetables which are of low-cost and easily available

- Encourage teenagers to recognize nutritious food and involve them in buying fresh fruits and vegetables and other food items



14<sup>th</sup> February 2015

# Make your healthy snack basket



14<sup>th</sup> February 2015

# Demonstration on how to make sprouts



14<sup>th</sup> February 2015

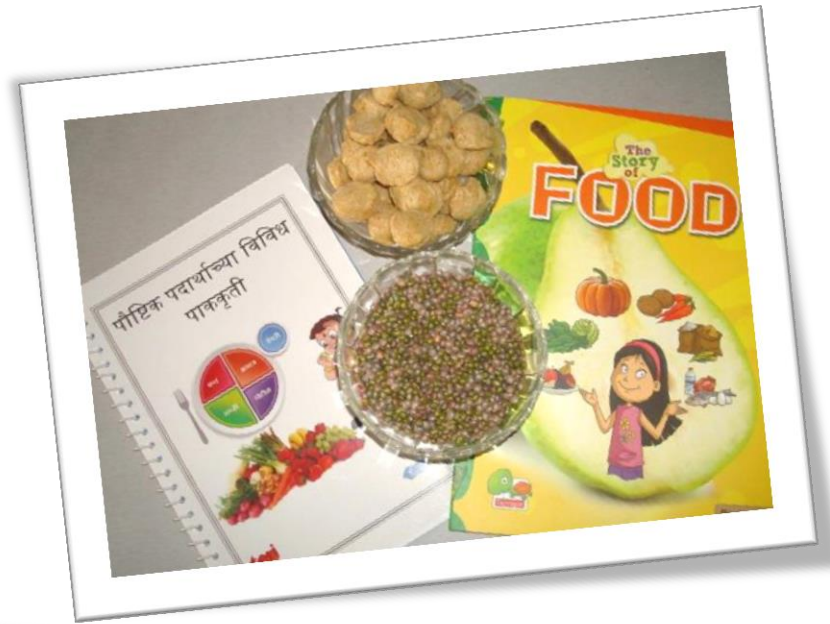
# Explaining the importance of healthy dietary habits



14<sup>th</sup> February 2015

# Distribution of health kit

- Small packets of green moong and masoor to make sprouts
- Protein rich supplements – Soya meal
- A booklet in Marathi based on the recipes collated by TERI through various sources.
- TERI's publications–titled “The story of food”, “Get well soon: Stomach Problems”, Water (Hindi), and books on Wind Power, Solar Power and Hydropower.





# Book stall organized by TERI- Press at the event



14<sup>th</sup> February 2015

# Part C: Rural Initiatives

## Approach and Strategies

- TERI targeted the villages for nutrition interventions where already LaBL (Lighting a Billion Lives) was implemented with the support from GKN Sinter Metals Pvt. Ltd. selected
- More than 300 children with their parents and anganwadi sevikas were being targeted for spreading the awareness.
- Out of the 300, total 51 SAM (Severely Acute Malnourished), SUW (Severely Underweight) and MAM (Moderately Acute Malnourished) children were being selected for further immediate interventions.



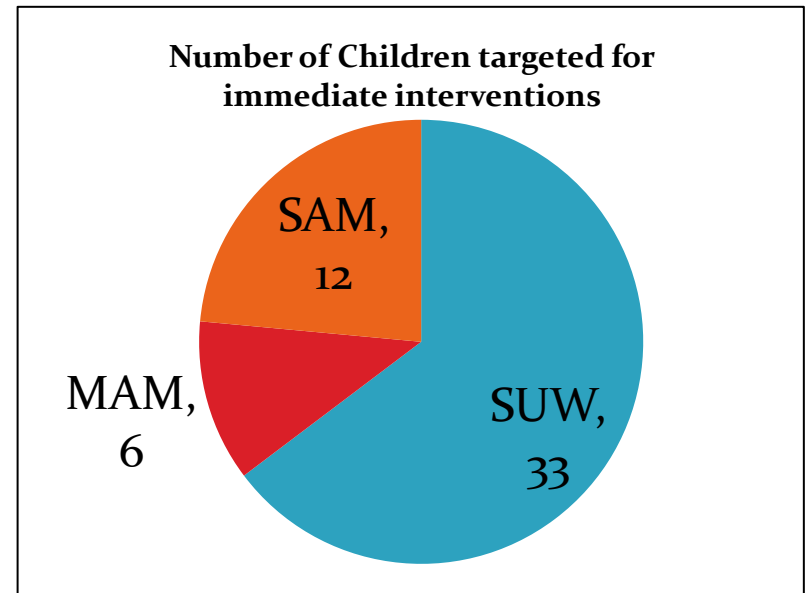
23<sup>rd</sup> January 2015

# Part C: Rural Initiatives

## Primary Focus– SAM and MAM Children

### Approach and Strategies

- Strategic interventions for the improvement of health which include:
  - Awareness workshops for their parents and anganwadi sevikas.
  - Providing them with the health supplements as immediate interventions based on their condition (As shown in figure)



# Awareness and Healthy Recipes making Workshop at Belpada, Bhospada and Botoshi villages

- ▶ The importance of simple and healthy food items was explained to the parents of SAM, SUW and MAM children from the selected villages.
- ▶ The nutrition booklets were provided to the anganwadi workers.
- ▶ The booklets comprised of easy to make healthy recipes from locally available ingredients like spinach, sweet potato and papaya.



23<sup>rd</sup> January 2015

Providing supplements like protein powder as an immediate aid to the malnourished children at the hands of Mr. Hemant Nighojkar, MD and CEO (Fig. 1) and Dr. Ujjal Bhattacharjee, Human Resources Director, (Fig. 2) of GKN Sinter Metals Private Limited



23<sup>rd</sup> January 2015

Apart from the selected children, a nutri kit including an apple, an orange and Rajgira Chikki was also distributed to other children present on the occasion.

# Effective consumption of Nutri Supplements– Demonstration workshops at anganwadis

- After the first visit and data analysis it was noticed that maximum children are in underweight categories.
- To address the same, Sago\* was selected as immediate carbohydrate rich supplement which will help in weight gain.
- Easy to make healthy recipes made from Sago and other local items were explained and demonstrated.
- PROTINE–X, a protein supplement is usually consumed with milk. As milk is not affordable, alternative options which could be used as base for easy consumption such as sago, rice and daliya (porridge) were introduced through demonstrations.



27<sup>th</sup> February 2015

*\*Sago is cheap and easily available material in those areas. However as a general practice they only consume it during fast.*

# TERI representatives demonstrating and explaining the recipes using Sago to Anganwadi sevikas and parents of SAM & MAM children at Botoshi village

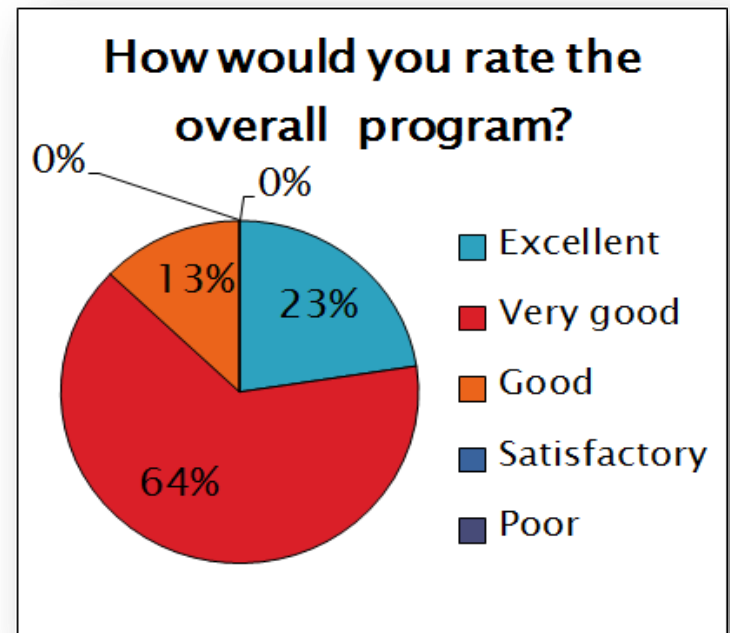


27<sup>th</sup> February 2015

# Feedback

- ▶ Feedback from schools and students helped in assessing the impact of the program.
- ▶ The results showed positive response of students towards the program. Few of the responses are as follows:
  - More than 80% expressed that they would further inform their friends and family about the importance of having a healthy diet.
  - More than 50% said that the workshops helped in understanding the severity of malnourishment in a better way

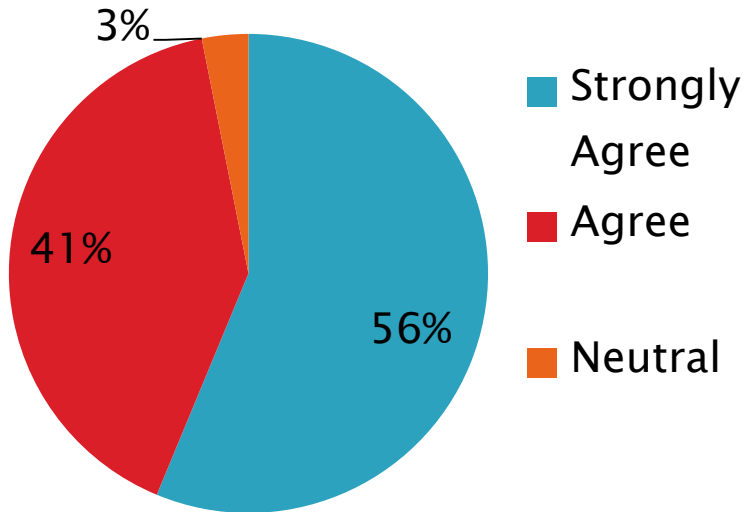
After the program as follow up study, we did two activities 1. sprouts formation and beetroot plantation in the school premises and 2. students tried some of the recipes from the booklet. The session was very informative for all the students. – A Municipal School Teacher...





- About 80% students agreed that knowing the nutrition value of food is important and they have now started taking interest in the same.
- Most of them agreed upon the fact that it is important to make changes in their snacking pattern.

**Presentations helped them to understand the severity of malnourishment in India**



Compliment from a Private school teacher:  
It was a good program to attend. It fascinated students to take part and know more about mal nourishment. There was interaction with students in many ways which allowed the students to be active in the program. Overall, it was a nice experience !! =)

# Way Forward...

- ▶ Conducting the second phase of the program in 4 selected schools.
  - ▶ Creating an online questionnaire – to create optimal automated results.
  - ▶ Creating a year long live display of mushroom cultivation in the school and provide training to the students.
  - ▶ Setting up of a nutri-garden and give training to the students to cultivate nutritious vegetables like beetroot, sweet potato, spinach and so on.
  - ▶ Making a Diet Chart in few selected schools– A diet chart will be displayed in the class room which will introduce them to different food groups and daily requirements of the essential nutrients
  - ▶ Planning an Event where in students can display their “Nutri-Canteen” showcasing various simple recipes.
  - ▶ Conducting a competition on “My healthy snack basket” along with the various competitions such as essay writing, drawing, quizzes and so on.
- 