

CHAPTER 3

SCOPE OF INVESTIGATION

Extensive literature review is available on possible molecular mechanisms being regulated through gut health and neuronal pathways of appetite and satiety. These deranged automated mechanisms could be further modulated by SCFA produced by gut bacteria feeding on fermentable prebiotic dietary fibers. Increased consumption of westernized diets and reduction in intake of fiber could probably be the prime reason of the uncontrolled pandemic of obesity. Hence, working hypothesis were formulated for the present study entitled,

“Acceptability Trials of Fructooligosaccharide (FOS) Added Popular Indian Recipes and Impact Evaluation of FOS Intervention in Modulating Gut Microflora, Gut Satiogenic Hormones and Anthropometric Indices of Young Obese Bank Employees of Urban Vadodara: A FAT – FIT Study”

Study Hypothesis

- ✚ Non-obese and Obese grade-I bank employees will have no difference when compared with regards to their data on anthropometric measurements, biophysical parameters, family medical history, personal medical history, defecation profile, personal habits, habituation profile, physical activity pattern, hunger and satiety scale, depression scores, dietary intakes, gut hormones (GLP-1, GIP, PYY, Leptin, Ghrelin and Insulin) and gut microflora (*Lactobacillus*, *Bifidobacterium*, *Clostridium* and *Bacteroides*).

- ✚ Intervention of 20 gram Fructooligosaccharide (FOS) in Obese grade-I bank employees will induce no effect on all of the studied parameters.
- ✚ Acceptability trials of FOS added food products will produce no difference in organoleptic attributes of test products and will be similar to the standard product.

Alternate Hypothesis

- ✚ Non-obese and Obese grade-I bank employees will have differences when compared with regards to their data on anthropometric measurements, biophysical parameters, family medical history, personal medical history, defecation profile, personal habits, habituation profile, physical activity pattern, hunger and satiety scale, depression scores, dietary intakes, gut hormones (GLP-1, GIP, PYY, Leptin, Ghrelin and Insulin) and gut microflora (*Lactobacillus*, *Bifidobacterium*, *Clostridium* and *Bacteroides*).
- ✚ Intervention of 20 gram Fructooligosaccharide (FOS) in Obese grade-I bank employees will induce changes on all of the studied parameters.
- ✚ Acceptability trials of FOS added food products will produce difference in organoleptic attributes of test products and will be similar to the standard product.

To validate above mentioned hypothesis, present study was carried out in four phases keeping below mentioned specific objectives in mind:-

PHASE I – SNAP-SHOTING THE PRESENCE OF OBESITY IN YOUNG BANKS EMPLOYEES OF URBAN VADODARA

- ✚ Screening the subjects from various banks of Vadodara city for their anthropometric measurements, body composition analysis, random blood sugar and blood pressure.
- ✚ To classify screened bank employees in various categories of BMI.

- ✚ Determining presence of obesity according to WC, WSR, WHR and Body- fat percentage in screened bank employees.
- ✚ Determining the presence of hypertension in screened bank employees.
- ✚ Associations and correlation amongst anthropometric and biophysical parameters of screened bank employees.

PHASE II-COMPARISON BETWEEN BASELINE PARAMETERS OF NON- OBESE AND OBESE BANK EMPLOYEES WITH REGARDS TO:

- ✚ Socio economic status (SES), anthropometric measurements, family medical history, personal medical history, defecation profile, personal habits, habituation profile, physical activity pattern, hunger and satiety scale, depression scores and dietary intakes of non obese and obese subjects.
- ✚ To study Gut-microflora of non-obese and obese subjects with regards to
 - ✚ *Bifidobacterium*, *Lactobacillus*, *Clostridium* and *Bacteriodes*
- ✚ To determine the baseline levels of six Gut-hormones

✚ Glucagon-like Peptide -1 (GLP-1)	- Gut Incretin
✚ Gastric Inhibitor Polypeptide (GIP)	- Gut Incretin
✚ Peptide YY (PYY)	- Anorexigenic hormone
✚ Ghrelin (Hunger hormone)	- Orexogenic hormone
✚ Leptin (Energy Expenditure hormone)	- Anorexigenic hormone
✚ Insulin	- Anorexigenic hormone
- ✚ Correlation of weight with various parameters of non-obese and obese bank employees and regression analysis to identify strongest predictor of obesity.

PHASE III – TO STUDY IMPACT OF FOS INTERVENTION FOR 90 DAYS IN OBESE SUBJECTS: A RANDOMIZED CONTROL TRIAL

To Study how efficiently FOS supplementation in obese subjects for period of 90 days can change or modulate parameters in terms of:

- ✚ Anthropometric and biophysical measurements.
- ✚ Dietary parameters, hunger and satiety scores.
- ✚ Depression and Defecation profile.
- ✚ Fasting plasma levels of gut-hormones: GLP-1, GIP, PYY, Ghrelin, Leptin and Insulin post intervention.
- ✚ Gut-microflora: *Bifidobacteria*, *Lactobacillus*, *Clostridium*, *Bacteriodes* post intervention.
- ✚ Correlation of gut-hormones and gut-microflora with various parameters.
- ✚ Regression analysis for identifying strongest predictor of obesity in obese bank employees.
- ✚ Follow up data for time-point interval analysis.

PHASE IV– ACCEPTABILITY TRIALS OF FOS ADDED POPULAR INDIAN RECIPES

- ✚ Analyzing physical properties of FOS addition at varying levels in four popular Indian snacks having different cooking methods and comparing with their standard products namely:
 - *Dudhi Muthiya* - Steamed
 - *Vegetable Chilla* - Shallow fried
 - *Handwa* - Baked
 - *Veg. Mini Samosas* - Deep Fried
- ✚ Conducting the organoleptic evaluation of the developed products using 9 point Hedonic scale.