A STUDY ON PERCEPTION OF URBAN YOUTH ON DIETARY SUPPLEMENTS

Dissertation submitted to

THE IIHMR University, Jaipur

for the partial fulfilment of the award of the degree of

Master of Business Administration (MBA)

In

Hospital and Health Management

By

Suvidhi Sharma

Under the Supervision and Guidance of

Dr Varsha Tanu

2023

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DECLARATION

I hereby declare that this dissertation A Study on Perception of Urban Youth on Dietary Supplements is the bonafide record of my original research work. I declare that it has not been submitted to any other university or institution for the award of any degree or diploma. Information derived from the published or unpublished work of others has been duly acknowledged in the text.

Suvidhi Sharma

28th May 2023

CERTIFICATE

This is to certify that the dissertation titled A Study on Perception of Urban Youth on Dietary Supplements is a record of the research work undertaken by Suvidhi Sharma in partial fulfilment of the requirements for the award of the degree of MBA (Hospital and Health Management) from the IIHMR University, Jaipur under my guidance and supervision and her approachto the research study has been sincere, scientific, and analytical.

Faculty Guide	School Dean
IIHMR University, Jaipur	IIHMR University, Jaipur
Date	Date

Acknowledgement

I am truly grateful to everyone who helped me through my dissertation journey. I want to extend my gratitude to everyone who helped me out. With their constant advice and motivation, I was able to complete my dissertation. I value and appreciate them.

I would start to extend my gratitude towards my professor and faculty mentor Dr. Varsha Tanu. I consider as a privilege to work under her guidance. I sincerely thank her for the support, outstanding direction, and suggestions and encouragement that she provided me with during the process.

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Finally, I would like to thank the team at AJAMCO Pharma for letting me be part of them and conduct my study.

My gratitude to everyone who helped me out and guided me with their insight. I sincerely appreciate everything.

INTERNSHIP ORGANISATION - Tenhard

About the organization

Tenhard India Pvt Ltd – Tenhard is an online digital reading platform that provides popular magazines, newspapers, academic books, and novels for users. It is a subscription based model, where by onetime payment users can access all the reading material. There is no freemium or premium collection. “Tenhard brings you a wide collection of hundreds and thousands of magazines and newspapers from leading media houses from across the world”.

Work – Sales

Note – As the internship organization didn’t have healthcare related services nor healthcare related learning, a different study organization was selected for the purpose of dissertation.

STUDY ORGANIZATION – AJAMCO Pharma

“Ajamco is a rapidly growing and expanding pharmaceutical company specializing in clinical nutrition, headquartered in Jaipur. The company focuses on providing the highest quality nutritional products to people in need. The focus of the company is towards filling the nutritional gap”.

Vision

To become an industry leader in clinical nutrition and to make a significant impact on the lives of people by providing high quality, innovative and effective nutritional products.

Mission

To become India’s no.1 clinical nutrition brand.

- Product Classification

1. Clinical Nutrition – Promotes good health, helps in preventing and treating diseases and in managing chronic conditions.
2. Therapeutic Nutrition - Medical nutritional therapy that aims to address specific nutritional deficiencies, imbalances, or needs that result from diseases, medical conditions or treatments.
3. Micronutrient Premixes - Mixture of essential vitamins and minerals that are combined in a specific ratio to meet the daily nutritional requirements of individuals.

ABSTRACT

Background

Nutrition supplements are packed source of all the desired micronutrients that are required by a human body to function properly. It helps to build up the immune system and keep the body fit. India, at present is a developing nation and is becoming at par with technology advancements of the world. With life becoming technology dependent and the rise of hustle culture, there is shift in lifestyle has resulted in a change in the nutrition habits of people. A shift towards more processed food is observed. Amidst this, we aim to understand the perception of urban youth on consumption of nutrition supplements.

Study Objective

The aim of the study is to understand the perception of urban youth on dietary supplements.

Methodology

To a survey was conducted to understand the perspective of individuals belonging to healthcare sector, about use of nutrition supplements to help bridge gap between desired nutritional requirements.

Result

From the study conducted, it was found that, “Poor dietary choices”, “Easy access to processed and fast-food joints”, “Busy Lifestyle”, “Use of prepacked and ready to eat meals” and, “Sedentary lifestyle” are the primary reason to deficiency. 85% of the participants consider themselves nutrient deficient but still only 34% of the participants believe in the use of supplements. This indicates that supplements are used as a remedy or cure that requires prescription or recommendation from doctors. This attitude needs to be changed to “supplements are preventive measure” rather than cure.

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CHAPTER 1

1. INTRODUCTION

India is known to be one of the largest populated countries in the world. Not only population wise, but India also consists of the largest number of faith-based vegetarians in the world (Pramil N Singh). India, at the moment, is witnessing both “Demographic Transition” and “Nutrition Transition”. The change in share of working age population has increased from approximately 58% in 2000 to approximately 65% in 2035 (Neha Jain), is one such example of demographic transition. With the fast-paced development, lifestyle is changing and effecting health. These health-related issues range from heart disorders, increased levels of blood sugar and hypertension. This results in reduced life expectancy, low performance at work and increased healthcare expenditure. This trend is evident in both well developed and developing nations. In many studies, it has been identified that there is a high association between chronic health problems and nutrition status of people.

In this review, we will understand the perspective of youth when it comes to dietary supplements and nutrition.

1.1. NUTRITION

A basic understanding of nutrition among common people could be coined as the amount and quality of food consumption and the food type which is consumed. But nutrition is something more than just food we consume. Nutrition focuses on the nourishment which the human body gets from eating food.

Nutrition is basically a study of how food affects the human body. Nutrition focuses on the nutrients which are necessary to support the functioning of a human body. The WHO define nutrition as, a critical part of health and development [1].

Nutrition can be defined as “the study of Food systems, food and drinks, and their nutrients and other constituents”, in order to identify the level of nutrients available in the food source and its health benefits. The study of nutrition is important as the growth process, maintenance and repair of a living body depends upon the food intake. It helps to understand the correlation between disease, health, and diet.

High-, middle- and low-income (HIC, MIC, LIC, LMIC) countries have their focus on nutrition of its population as nutrition and food consumption is directly related to the growth and development status of the population residing in country. Maternal health, infant health, child health adolescent health, are all related to dietary intake. In India there are many programs run under the National Health Mission (NHM) that focus on the nutritional level of women, girl child and infants.

Indian Council of Medical Research (ICMR) recommends per-person per-day calorie norms of 2400 kcal for rural areas and 2100 kcal for urban areas [2]. These calorie intake parameters are set to identify the level of under-nutrition, over-nutrition, and malnutrition in the country.

Food comprises of both macronutrients and micronutrients. Macronutrients include carbohydrates, protein and fats that are required in large quantities for the body to function properly. On the other hand, micronutrients are basically vitamins and minerals which are required in small quantities for body 2 function.

Macronutrients provide the energy to the body to carry out its function buras micronutrients are needed to have the body in producing various hormones and enzymes and it is also required by the body for various functions like repairing of tissues, maintaining of organ health etcetera. Iron, vitamin A, vitamin D, iodine, vitamin b 12, and, zinc are some of the important micro nutrients required by the body. The deficiency of such nutrients can lead to various problems hence maintaining a proper diet is important.

1.2. MALNUTRITION

Johns Hopkins School of Medicine define malnutrition as “a condition that develops when the human body is deprived of vitamins, minerals and other nutrients that are required to maintain healthy tissues and organ function” [3]. It is the deficiencies, imbalance in the levels of dietary intake in a person. As per WHO, malnutrition can be classified into under-nutrition and over-nutrition [4]. Now, India being a low- medium income country, where there is fast-paced development and urbanization along with people living under poverty. This co-emergence has led to the double burden of malnutrition in the country i.e., the existence of populations affected by both undernutrition and overnutrition.

1.2.1. UNDERNUTRITION

Undernutrition can be further divided into 2 categories. One being categorized as wasting, stunting, and underweight. Other is micronutrient related malnutrition also known as nutrient deficiency. With use of BMI index, it becomes easier to identify the malnutrition status of a person. BMI less than 18.5kg/m2 is consider malnourished.

Micronutrient related malnutrition refers to the inadequacies in intake of micronutrients like minerals and vitamins. As discussed earlier, micronutrients play an important role in the human body. It enables the basic bodily functions like production of hormones and other substances which are required for the human body.

A deficiency in such nutrients can result into poor health, weak immune system, blindness, growth stunting, slow mental learning low work capacity. According to the report issued by Comprehensive National Nutrition Survey 2018, 16 to 37% of the adolescent population of India (aged between 15- 19) have micronutrient deficiencies (including vitamin A, vitamin D, zinc, folate and B12) (Council.). In urban India, 13% of the men and 11% women were energy deficient (Welfare).

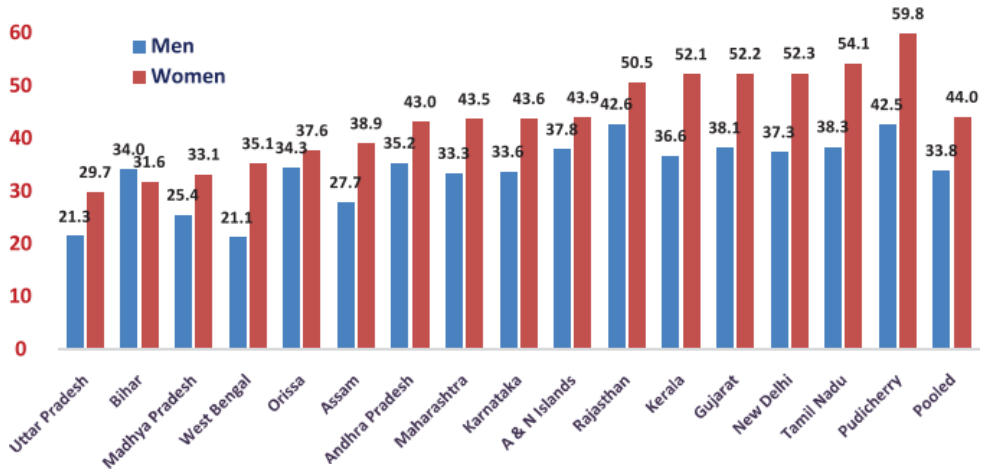
1.2.2. OVERNUTRITION

Overnutrition basically means when a person is overweight or obese. It is an abnormal collection or accumulation of fat in the body of a person.

It can be defined as the weight for body height ratio to be higher than the desired index. This index is called BMI. An adult with a BMI > of 25 kg/m2 will be called overweight. If someone is exceeding the BMI of 30 kg/m2 is obese. As per WHO, overweight and obesity are a result of the imbalance between the energy consumed and the energy expanded by a person [5].

Due to the sedentary lifestyle of people in many HICs and L-MICs and with urbanization, people are consuming more energy dense food while engaging in lesser physical work. In India, 44% of women and 34% of men (aged between 15-49 years) are obese (i.e., having BMI more than 25 kg/m2) (Council.). The prevalence of obesity was highest in Puducherry, Tamil Nadu, New Delhi, Gujrat and Kerela with lowest prevalence in Uttar Pradesh (Council.), Fig 1.

Figure i. prevalence (%) of overweight and obesity in urban adults



Source: NNMB Technical Report No.27 (NNMB Urban Nutrition Report)

The overnutrition in adults and adolescents living in urban areas is associated with the increase in NDCs. The unhealthy diet and poor nutrition in the population are the top risk factors associated with diet related non-communicable diseases (Council.).

1.3. DIET RELATED NON-COMMUNICABLE DISEASES

Typically foods which are high in sugar, saturated fat and salt make up for a unhealthy diet, that can contribute to the development of non-communicable diseases such as hypertension, heart disease, diabetes, obesity and cancer [6], where obesity is considered both chronic and risk factor in developing NCDs.

NDCs are a major burden to the global health as it accounts for 71% of all deaths occurred in 2019 globally [7]. NDCs can be somewhat controlled with a healthy modified diet system. The increase in non-communicable diseases in India has been attributed to an epidemiologic transition due to urbanization, there is an increase in the traditional cardiovascular disease risk factors such as obesity (Pramil N Singh)

Non-Communicable Disease	Proportion of changes in DALYs number	
	1990	2016
cardiovascular diseases	2.9%	6.6%
chronic respiratory diseases	2.7%	4.4%
diabetes	0.7%	2.2%

Table 1: changes in disability adjusted life years (DALYs)

As per the NNNB report, there was a higher association between people with obesity and hypertension and diabetes when compared to people who had hypertension and diabetes but are not obese. 45.3% and 36.5% more men and women with obesity were affected by hypertension than 27.4% and 17.1% men and women respectively without it (Council.).

Noncommunicable diseases comparison of both modifiable and non-modifiable risk factors. The modifiable risk factors consist of unhealthy diet, less or no physical activity, consumption of tobacco and alcohol and environmental factors. The immediate risks which these modifiable factors cause is obesity, hypertension, overweight and impaired blood sugar le

Source: Ministry of Health and Family Welfare, status of NDCs in India (women)

the shift in work life and living conditions in urban India [8].

1.4. NUTRITION TRANSITION IN INDIA

The concept of nutrition transition refers to the shift in dietary preferences. It describes the changes occurring in human dietary habits and physical activity status. In India, as the spending capacity of individuals has improved, consumption has shifted towards energy-dense processed foods. These foods are called Ultra Processed Foods (UFPs), high in salt, sugar, and saturated fat contents. This shift in food preference is also known as "Western Diet" as it is commonly present in Western countries like the US, UK and Europe (Barry M. Popkins). The current nutritional transition stage is characterized by increased consumption of Unhealthy food accompanied by increasing sedentary lifestyle, hence resulting in increase in NRNCD.

Figure ii Modern technology and the evolution of preferences.

Source: The nutrition transition to a stage of high obesity and non-communicable disease prevalence dominated by ultra processed foods is not inevitable, Journal: Obesity reviews

Urbanization, increase in per capita income, development of organized work sector, change in workforce, technological advances, mass media communication and change in food processing techniques in FnB industry, are some factors that has influenced nutrition transformation (Barry M. Popkins).

The food production is largely growing towards the catering of customers' choice. The food industry and growing supply chain mediums have created affordable UPFs which are ready to eat, available at the doorstep of households with the help of departmental stores and door- step delivery. Many L-MICs are part of this transition and with the current pace of UPFs consumption level, they would reach the HICs levels.

1.5. URBANISATION

Urbanisation can be characterised by the better socio-economic opportunities, better transportation, improved supply chains, more technological advances, better accessibility, and availability of commodities. The rapid urbanization and lifestyle upgradation in the past 2 decades has increased the prevalence and premature occurrence of CHD and other NRNCDs like diabetes, hypertension, and obesity (Puneet Kulshrestha), (Anoop Misra).

The transformation in the dietary patterns and increasing physical inactivity in urban areas increase the risk of NRNCDS.

One difference between urban and rural areas nutrition consumption is that consumption in urban areas is mostly attributed to higher income levels. Urban areas have more expenditure on processed food and consume higher level of food from away from home sources (C. Bren d'Amour). Consumption levels differ in urban areas as a result of better socioeconomic opportunities and the smaller household sizes.

Urbanization brings about various implications that encompass multiple aspect. Firstly, it influences a shift in lifestyle of the population by altering the diet patterns, reducing of physical activity by improving technology and increasing accessibility and resulted in increase in consumerism. Secondly, it influences it buying capacity of the population as with urbanisation comes better jobs and socioeconomic status. Lastly, urbanisation has resulted in double burden of diseases.

1.6. DIETARY SUPPLEMENT MARKET IN INDIA

“Dietary supplements are external food products that fulfil the essential nutritional requirements in the human body. They contain minerals, vitamins, enzymes, amino acids and herbs and are available in the form of tablets, capsules, soft gels, powders, drinks, and energy bars. Dietary supplements are consumed to boost the immune system against diseases, as well as detoxify the body. (Crown)”. These supplements can be divided into two: -

1. Over-the-counter (OTC) supplements – Dietary supplement (DS) products that could be consumed by children and adults, without prescription, to support diet and nutrition. These are meant for general health and wellness of a person. Commonly used to meet daily nutritional levels, weight management, strengthening immune system, supplements to improve skin and hair.
2. Clinical and Therapeutic supplements – These supplements are doctor prescribed by doctors to support people with chronical health problems, specific nutrient deficiency or imbalance.

Use of dietary supplements is driven by the need of self-directed care [9]. The use of supplements is considered as a precautionary practice or a preventive measure. The results are bound to be slow and gradual. The use of DS is not considered as a common practice in young adults as the results of it is not so immediate. It is an important factor influencing young adults.

In 2022, the global dietary supplements market size was reported to be at 163,986.0 million USD and the CAGR is expected to be of 9.0%. “The size of the global vitamins and minerals market is forecasted to reach USD 20.7 billion in 2025, with India’s market size reaching USD 178 million. The Indian vitamins, minerals and supplements market is set to grow 4.48% annually between 2021 and 2025 [10]”. In India, the supplement’s market in 2021 reached UDS 5.07 billion.

The primary drivers of Indian dietary supplement market could be narrowed down to the following: -

1. Increasing per capita income of individuals has facilitated them to take heath as a priority topic and therefore shifting to supplements as a preventive care.
2. Rapid urbanisation, hectic work schedule and sedentary lifestyle has increased dependency and preference on supplements to keep health in check.
3. The high prevalence of NCDs like diabetes, obesity, blood pressure and CHD in urban areas has increased demand for supplementation to help out with reducing cholesterol levels, weight management and blood sugar levels.
4. Gut health issues like acid reflux, Constipation, and indigestion (IBS) have resulted in increased the demand of dietary supplements rich in fibre.
5. Individuals preferring dietary supplements for managing the nutritional gap present in their daily meal.

Majority of the revenue is generated through over-the-counter segment, which is influenced by self-directed healthcare needs in individual. These dietary supplements can be categorized into the following: -

1. Single Vitamins – Vitamin B, Vitamin E, Vitamin D, Vitamin C, Vitamin A and Vitamin K.
2. Minerals - calcium, zinc, iron.
3. Omega Fatty Acids
4. Need-Based Supplements – appetite stimulators, digestives, probiotics, immunity boosters, general nutrition and health, sport, and wellness.

CHAPTER 2

2. LITERATURE REVIEW

Study title	Author	Methodology	Key learnings	Journal
Knowledge, Attitude and Practices Related to Dietary Supplements and Micronutrients in Health Science Students	Ajitha Sharma, Shalini Adiga and Ashok M	Cross-sectional study, Questionnaire based study to collect data.	The study focuses on the Dietary habits in Health Science Students of Manipal University. Reason to consume dietary supplements among university students was to maintain good health and ensure adequate nutrition. Dietary supplements containing micronutrients when used alongside meals has proven help with micronutrient deficiencies. Increasing awareness about the role of micronutrients through the help of healthcare practitioners can help in preventing chronic diseases. Healthcare professionals can be used to mould public opinions and beliefs on health-related issues and products. Hence a critical role to play in promoting positive impact on public health.	National Library of Medicine, Journal of Clinical and Diagnostic Research

Dietary Supplements market in India is rapidly growing – An Overview	Swapan Banerjee	Descriptive	Dietary supplements consumption over past decades through competitive sports for helping build muscle and body, used for therapeutic needs like diabetes/ anaemia/ underweight or as meal replacement for critically ill patients, lifestyle disorders. The use of dietary supplements has increased in major cities of India because of sedentary lifestyles. Retail channel marketing made accessibility and availability easy for customers. Children, pregnant women, lactating mothers, senior citizens and people with lifestyle or chronic health disorders are major customer segments. Antioxidants supplements, functional beverages, probiotics, vitamins & minerals, dietary fibers and herbal extracts are some identified branches of dietary supplements.	IMS Management Journal

Purchase trends of processed foods and beverages in urban India	Cherry Law, Rosemary Green, Suneetha Kadiyala, Bhavani Shankar, Cecile Knai, Kerry A Brown, Alan D Dangour, Laura Cornelsen	Longitudinal Study. Dataset covers product level purchases of all packed foods and beverages for consumption at home by the urban households on the panel between January 2013 to December 2017	Concerns over processed foods' effects on health have brought them into the public health policy spotlight, and their use has been linked to an increased risk of obesity and a number of non-communicable diseases. The nutrition transition literature suggests that trade liberalization, food industry marketing, expansion of global mass media, increasing female economic participation, and changes in activity patterns could also contribute to the rise in processed food consumption. It was observed that level of sweet snacks purchased in Delhi was highest, whereas Kerela saw a decreasing trend in purchases of both salty and sweet snacks. Also the take-home purchase level of salty snacks didn't differ across states by level of poverty, although the middle-income states showed most consistent rise in the purchase levels.	Global Food Security, Volume 23, 2019

Nutrition Transition in India: Secular trends in dietary intake and their relationship to diet-related non-communication disease	Anoop Misra, Neha Singhal, Bhattiprolu Sivakumar, Namita Bhagat, Abhishek Jaiswal and Lokesh Khurana	Descriptive study and literature search with an aim to review trends food groups and nutrition intake and implication for DR-NCDs in India.	The nutrition transition in India is a result of rapid organization and declining levels of physical activity. With more mechanization and technology, the population has shifted towards a sedentary lifestyle. The nutrition transition takes a shift from the traditional staple foods to "westernized diet". The impact of globalization has resulted in why variety of convenient and processed foods consisting of ready to eat, deep-fried and preservative-laden foods. Carbohydrates are the primary source for energy intake in India. As per the study, cereal consumption in both urban and rural area has seen a decline. This suggests a shift towards energy-dense "fast" food in diet. Cereal fiber intake has been found to be inversely associated with risk of T2DM.	Journal of Diabetes

The nutrition transition to a stage of high obesity and non-communicable disease prevalence dominated by ultra-processed foods is not inevitable	Barry M. Popkin, Shu Wen Ng	Descriptive	Currently, all high-income countries and many low-and middle- income countries are witnessing a transition where diseases like obesity, type 2 diabetes, hypertension as nutrition related NDCs. These are very high or growing rapidly in prevalence. Many low and middle income countries are witnessing double burden of malnutrition that is witnessing both obesity and under nutrition in its population. These countries are rapidly growing in the consumption of ultra- processed foods (UPFs) and beverages. UPFs and food processing itself are key components to the nutrition transition. UPFs Are characterised by high levels of sodium, sugar, saturated fats And consists of highly refined grains. This type of diet is known as western diet. United States, united kingdom and Europe are key examples of such diet. The article identifies various factors resulting in the nutrition transition in low- and middle-income	Obesity Review

			countries like Urbanisation, increased formal labour, technological change and the change in food production cycles. Consumption of food from away-from-home sources is higher in urban cities, resulting in about 30 to 40% consumption. When considering the Ready-to-eat and ready-to-heat- aspects of UPFs, cheap cost with easy availability and time saving aspect become a good option for urban workforce. Another point to notice is the women's opportunity cost to cooking as they now play a part in the economic activities.	
Urbanization and food consumption in India	Bhartendu Pandey, Meredith Reba, P.K, Joshi, Karen C. Seto	Descriptive research focusing on food quantities, food diversity and multi-dimensional factors of urbanisation. Use of Correlation analysis, DLS Regression analysis and multi-level modelling to identify relationship.	The study shows food consumption quantity varies due to the difference in income levels. The consumption level is higher in urban households than rural households. Edible oil, spices, fruits and vegetables, dairy products, animal products (meat, chicken, eggs) and processed foods.	Scientific Reports

			Urbanisation has resulted in shift of consumer preference from traditional staples towards consumption of food prepared away from home, also known as processed/packed foods. The food consumption diversity is higher in urban areas due to variables like market access, infrastructure, better supply chain and working women. These variables were identified after keeping income levels in control. Living in urban areas have a positive influence on consumption diversity. The study concludes that income as economic factor, House and family size as demographic factors, and infrastructure/ accessibility as spatial factors of urbanisation have influenced the consumption diversity in India.	
A double-edged sword? Improvements in economic conditions over a decade in India led to declines in undernutrition	Melissa F Young, Phuong Nguyen, Lan Mai Tran, Rasmi Avula,	Comprehensive analysis of determinants of underweight and overweight/obesity among adolescent girls and	As per the analysis in the study, the association between underweight and higher dietary diversity was negatively associated while there was a positive	The Journal of nutrition, Nutritional Epidemiology

as well as increases in overweight among adolescents and women.	Purnima Menon	women in India NFHS data was used along with multiple regression and decomposition analysis to assess determinants of underweight and overweight/obesity	association between higher dietary diversity with overweight and obesity. The type of carbohydrates consumed has seen a shift from coarse grains like johar, bajra, whole- wheat flour to consumption of more refined grains like white rise, white flour etc. The socioeconomic status of households is one of the primary factors to influence BMI (29% reduction in undernutrition and 46% of increase in overweight/obesity) The study shows a positive relation between women's SES and BMI. The study shows that there is a higher association between people living in urban areas and risk of being overweight/obesity. Women and adolescents with education and living in urban areas show a possible reduced risk of being affected due to power of making better choices, media education and exposure to frequent healthcare providers.	

CHAPTER 3

3. METHODOLOGY

3.1. STUDY DESIGN

A descriptive study methodology was followed to observe and understand the perception of urban youth on dietary supplements and describe the factors and behaviour of people to regarding dietary supplements and nutrition habits. The study design helps to understand the shift in dietary preferences and how it is being influenced in people living in urban India. It is done to understand and identify factors that will influence demand for dietary supplement premixes. This will provide a gist of the current trends and factors influencing the change.

In this study, review of various published articles and journals to analyse and understand about nutrition and its effect on health. A questionnaire was put forward for participants to record their responses.

3.2. AIM

The aim of the study is to understand the perception of urban youth on dietary and identify the factors that influence the nutrition supplements markets. Also, to understand the current dietary trend in the population.

3.3. RESEARCH QUESTION

Is there a scope of expanding dietary supplement market in the current changing scenario of nutrition trends after understanding the perception of youth on diet supplements.

3.4. OBJECTIVES

1. To understand the possible contributing factors of nutrition deficiencies in the urban population.
2. To understand the perspective of urban youth on nutrition supplements.
3. The effect of nutrition transition on dietary supplements market.

3.5. MATERIALS AND METHODOLOGY

3.5.1. REVIEWING PUBLISHED MATERIALS

Published articles and journals were searched through the google scholar search engine. Articles focusing on nutrition, nutrition transition, nutrition related NDCs, and dietary supplements were searched and reviewed.

Articles, Books and Journals which were published before the year 2014 and studies based on geographical area other than India were not taken under consideration for review purposes. Most of the data and statistical numbers are taken from reports issued by GoI.

3.5.2. QUESTIONNAIRE

A questionnaire was developed to access the knowledge and awareness of the participants to understand their dietary habits and their views on dietary supplements. The questionnaire was handed over to students of IIHMR University, to get a perspective of future healthcare mangers, about their understanding of dietary supplements and awareness about increasing nutrition related NCDs.

The questionnaire has enabled us to gain an understanding about the awareness of people regarding what could be the reasons contributing to unhealthy dietary choices.

3.5.3. INTERVIEW

A small interview was conducted for about 10 registered and partitioning dieticians/ nutritionists, where a set of questions were asked from them to get their views on nutrition deficiency among the urban population. The interview was conducted to get insights on what are the visible side effects of undernutrition and overnutrition in people. Personal opinions of the dietitians regarding healthy eating and nutrition supplementation were collected.

3.5.4. SAMPLE SIZE

The sample size consisted of 150 participants from IIHMR University, out of which 112 people participated in the study. The participants to the study belong to medical sector with good knowledge about healthy nutrition practices.

CHAPTER 4

4. RESULTS

112 people participated by filling up a questionnaire. Following are the results of the same.

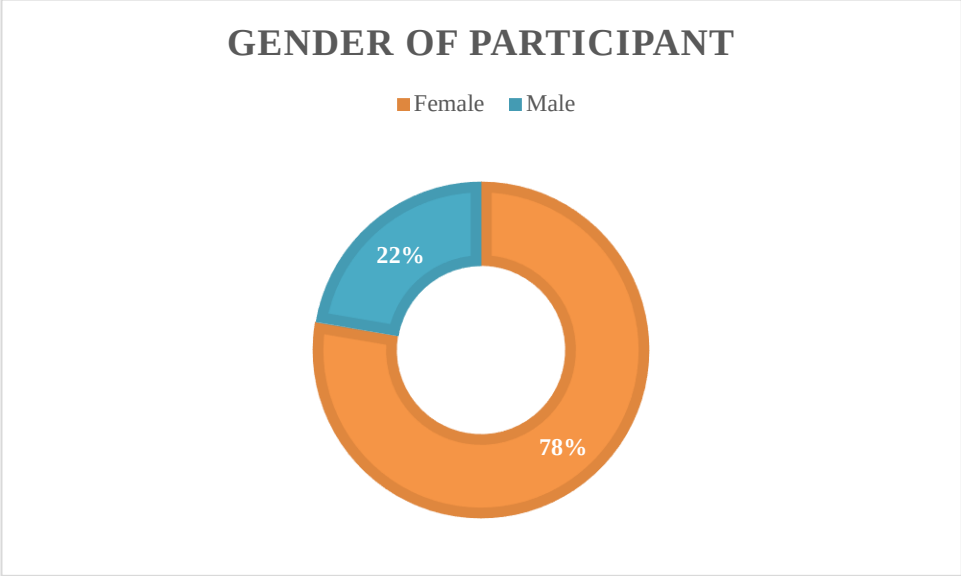


Figure iii gender distribution of participants

Most of participants in the study contributing are females, making up to 78% of the pool. The male gender count is about 25 persons. Participants in the study can be described as people with age bracket between 22-45 years, pursuing post-graduation degree in healthcare sector.

Questions were divided into three sections to understand the participants knowledge about good nutrition practices, awareness about nutrition deficiency and VMS products.

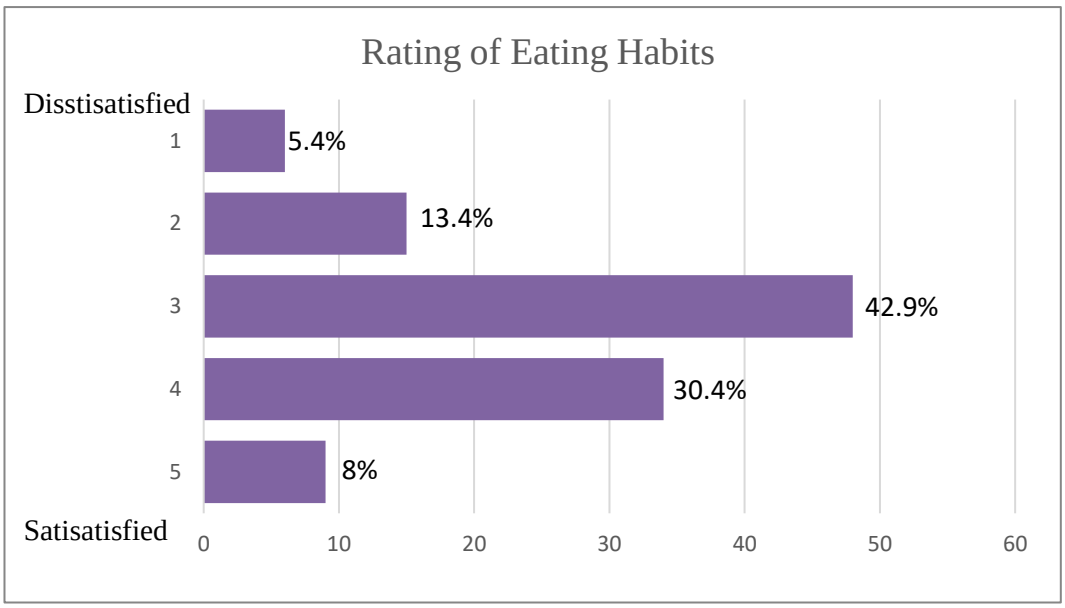


Figure iv self-evaluation of eating habits

As part of the self-awareness questions, participants were asked to evaluate their satisfaction levels with the food they consume daily. On a scale of one to five, where one represents the most dissatisfied and five represents highly satisfied. Most of the respondents placed their eating habits on mid-point of the scale. 42.9% and 30.4% participants placed themselves on point 3 and 4 respectively, which is considered as average. 21 people (18.8%) rated their eating habits as below average.

The next question was about the number of times in a week, meals from "away from home" sources were consumed. The purpose was to understand the frequency of meals consumed by a person in a week from outside (food not prepared in traditional way or not cooked at home). The frequency was measured assuming a person consumes 21 meals (eats three times a day in a week) in a week.

	Frequency of consumption of food cooked away from home sources			**Total**
Gender	Less than three meals a week	Four to Six meals a week	One meal per day	
Female	72	13	2	87
Male	9	8	8	25
Grand Total	81	21	10	112

Table 2 frequency of consuming food from away from home (AFH) sources

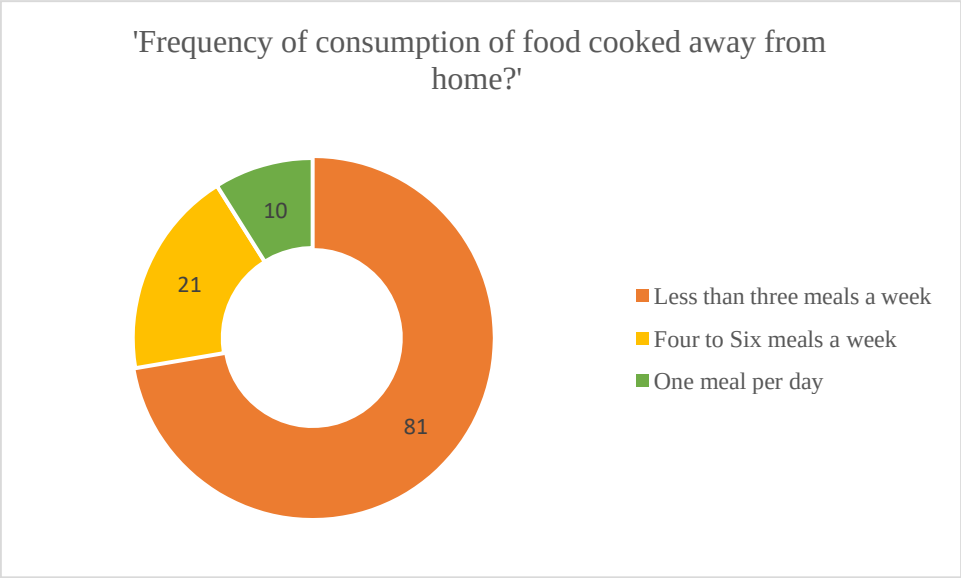


Figure v frequency of food consumed from AFH sources.

Out of the 81 people who consume less than 3 meals a week, 72(64.29%) were female and 9(8.04%) were men. Out of 25 males, most of them consumed food cooked from AFH sources between four to six meals a week. 7.14% of the men responded to consuming one meal per day from outside sources.

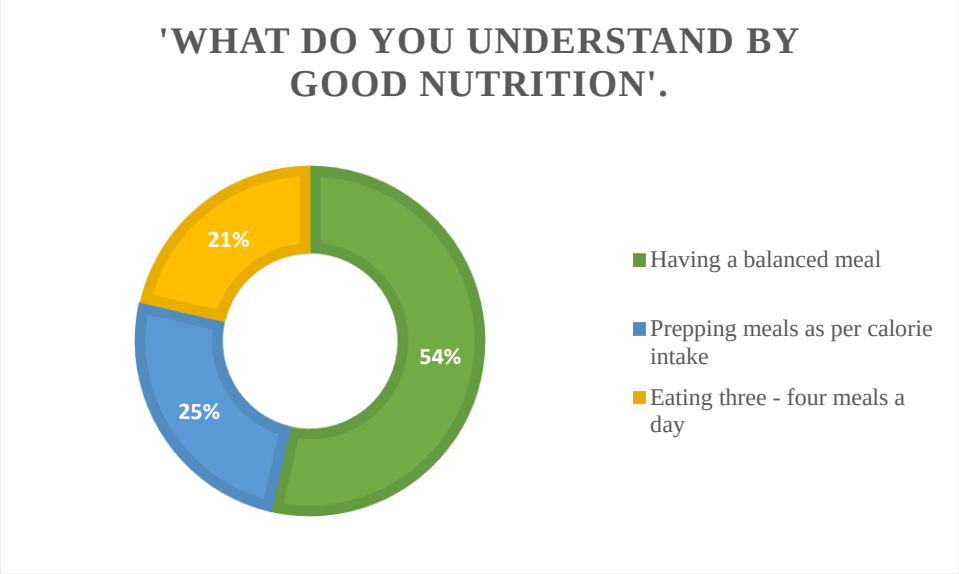


Figure vi understanding of good nutrition

Participants were questioned to choose what is considered as good nutrition, 53.6% of the participants considered having balanced meal is a sign of good nutrition. 21.4% believed having meals 3 to 4 times a day is considered as good nutrition while, 25% of the participants believed prepping of meals as per in calorie intake is called good nutrition.

In continuation to this question, participants were asked if they considered their everyday meals are healthy and balanced. To this, only 36.6% of participants responded yes, while the rest 63.4% of the participants were unsure or responded “no”.

The respondents were asked about their understanding of balanced diet. To this question, 78.6% of participants responded to “Diet consisting of different types of food that provides adequate amounts of the nutrients necessary for body”, 17% responded to “Diet that maintains or improves overall body structure” and the rest 4.5% of the participants responded to “Eating quality food”.

The next segment of the questionnaire was focused on getting an overview of understanding and awareness among participants on nutrition deficiency and its prevalence in urban population.

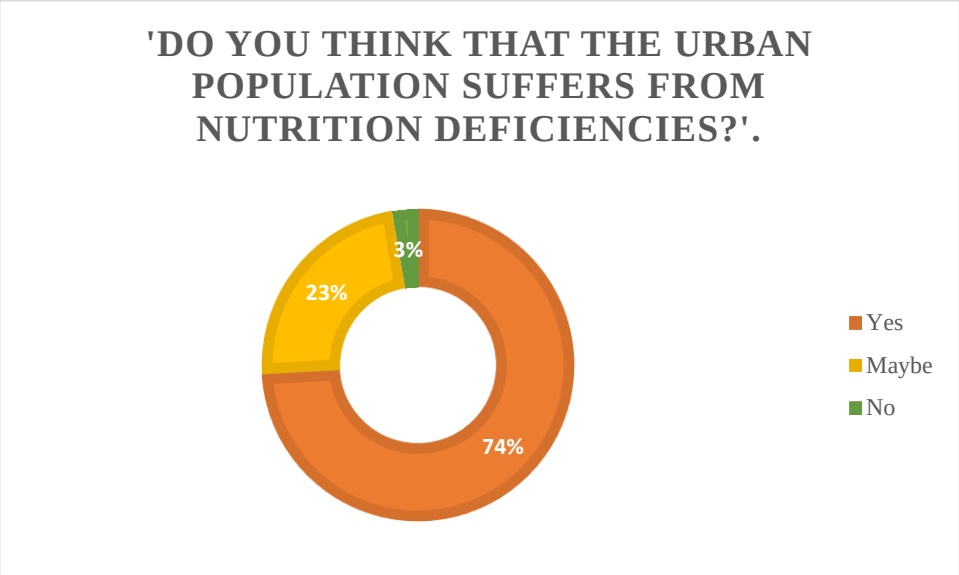


Figure vii prevalence of nutrition deficiencies in Urban India

On asking about prevalence of undernutrition and nutrition deficiencies in urban population, 74.1% responded “yes” and 23.2% responded “maybe”.

In continuation to the nutrition deficiency prevalence in urban population, the participants were provided a list of possible reasons promoting deficiencies to choose from. The respondents could choose a maximum of 5 reasons they think could promote nutrition deficiency.

Reasons	No. of times selected	Percentage
Poor dietary choices	85	15.2
Easy access to processed food and fast-food joints	97	17.3
Healthy food costs more than fast food	32	5.7
Lack of knowledge about the importance of heathy diet	52	9.3
Busy lifestyle	68	12.1
Taking aid of pre-packed meals or 5 min ready to cook food	60	10.7
Adulterated food	28	5.0
Sedentary lifestyle	55	9.8
Time constrains	45	8.0
Stress and other mental health issues	39	7.0

Table 3 possible reasons promoting nutrition deficiency in Urban population.

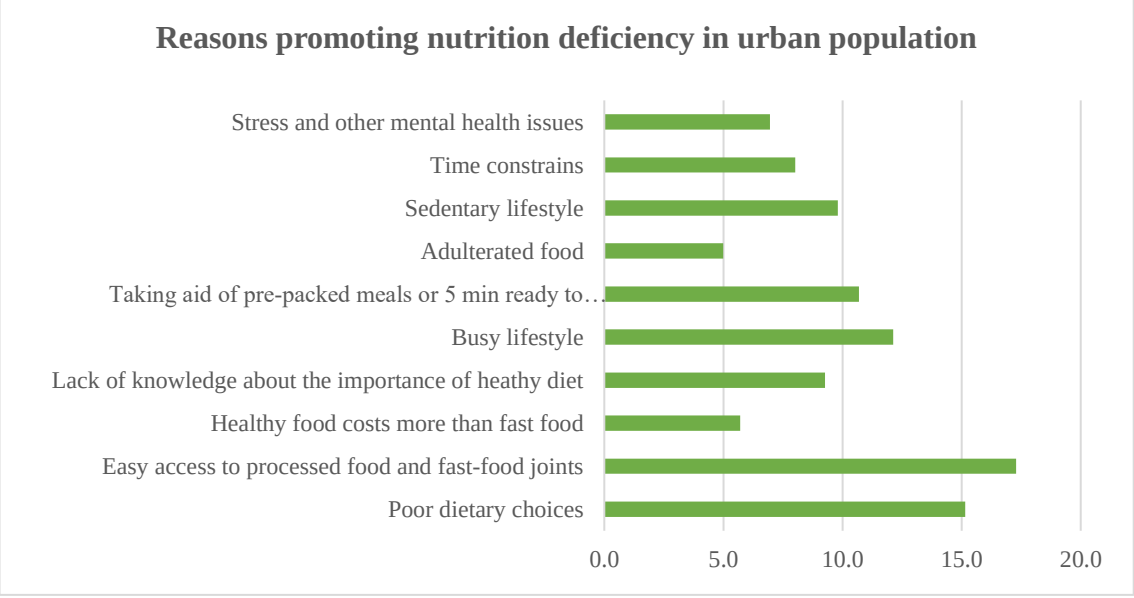


Figure viii Possible reasons promoting nutrition deficiency.

A total of 561 responses were recorded by 112 participants. From the reasons provided, “Poor dietary choices”, “Easy access to processed and fast-food joints”, “Busy Lifestyle”, “Use of prepacked and ready to eat meals” and, “Sedentary lifestyle” were the top five responses.

The participants were then asked what the ways could be to cope with the identified reasons.

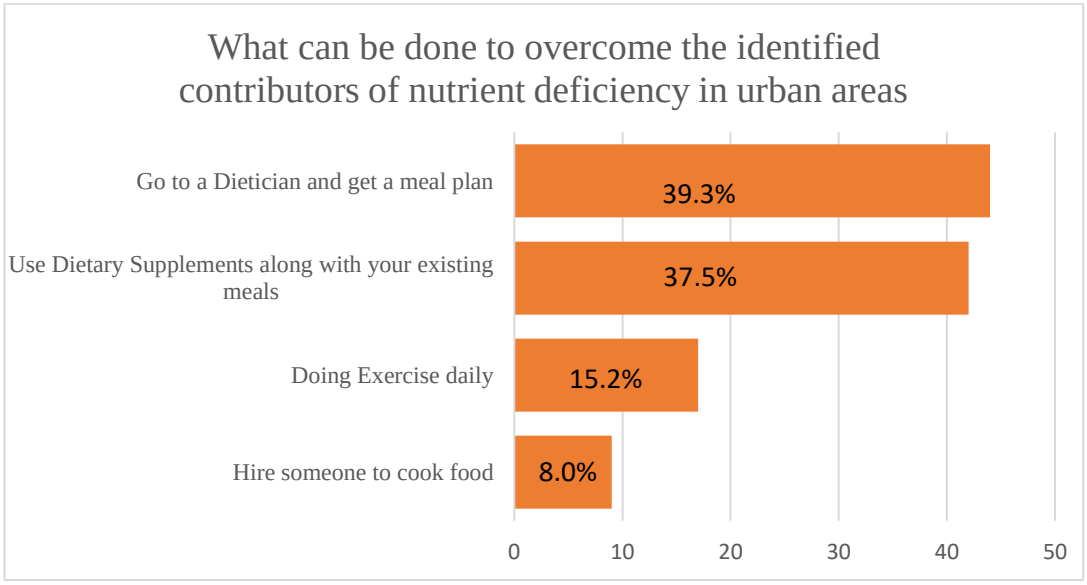


Figure ix possible ways to cope with nutrition deficiency.

From the choices provided, 39.3% and 37.5% of participants supported the use of consulting dieticians for meal plans and adopting the use of dietary supplements with meals to cope with the nutritional related deficiencies.

Further questions were asked about the knowledge and understanding of dietary supplements.

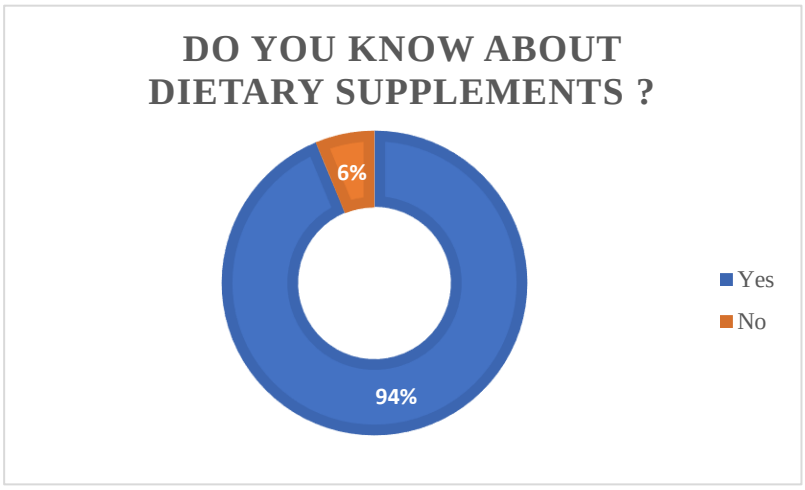


Figure x awareness about dietary supplements.

Of the total of 112 participants, 94% of them were aware of dietary supplements.

The participants were asked to choose a suitable option that supported their understanding of nutritional supplements. 77.7% of the respondents supported the definition of dietary supplements as “Supplements can be used by people to meet their daily nutrition requirements”. While the remaining 13.4% and 8.9% participants selected “Supplements are only for people diagnosed with a deficiency”, and “Supplements are only for people who cannot eat solids” respectively.

On asking about their opinion on, “Do you feel affected by nutrition deficiency”, only 16 respondents (14.9%) responded to “No”. The majority responses recorded supported the fact that participants somewhat feel affected by nutrition related deficiencies.

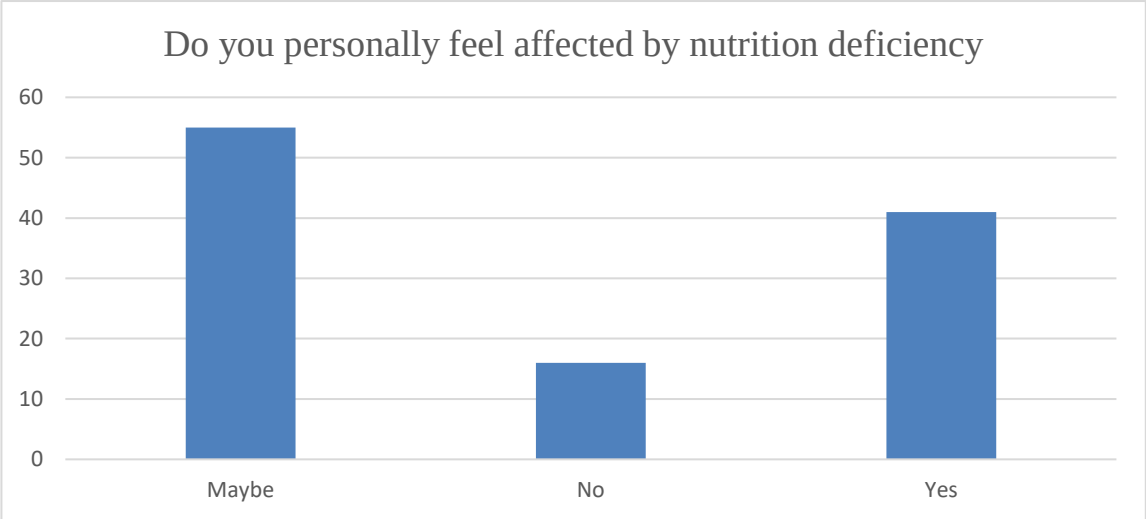


Figure xi perception of nutrition related deficiencies among participants

At last, participants were asked about their preference on use of dietary supplements to meet their daily nutritional requirements, to which 34% of the participants responded "Yes", 41% responded "Maybe" and the rest choose "No".

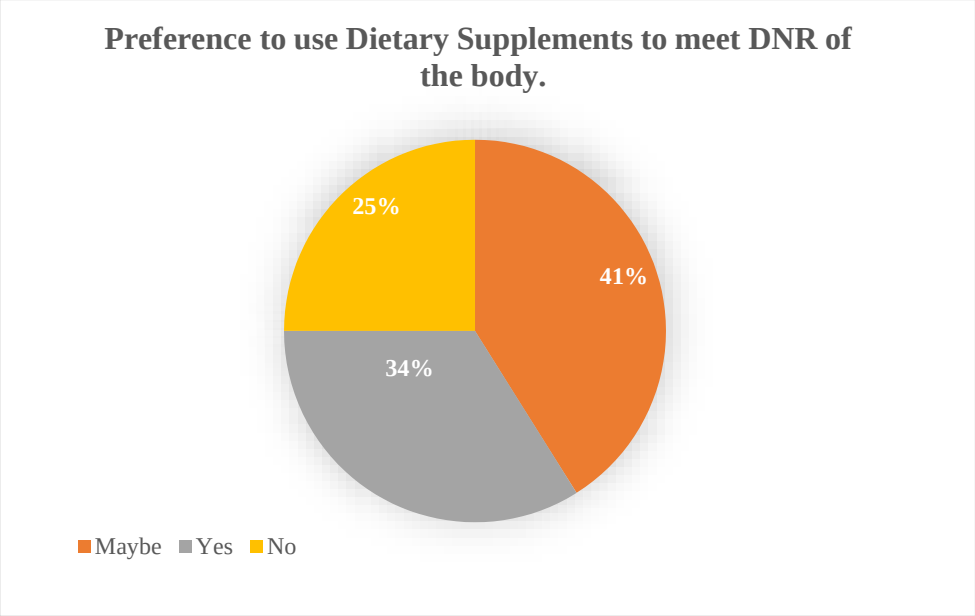


Figure xii Preference on use of dietary supplements

On interviewing nutritionist and dietitians about nutrition deficiency in urban population, it was found that age groups between 15 to 45 years are the most affected age group amongst the population. On asking about the suggestions to coping with these deficiencies, 7 out of 10 dietitians recommended micronutrient premixes as a solution to fill the nutrition gap.

As per dietitians, high intake of processed food and carbonated drinks, ignorance towards importance of nutrition, irregular meal timings, use of alcohol and tobacco as common reasons to nutrition deficiency.

Some common effects of nutrition deficiency discussed by nutritionists are lethargy, low immunity, obesity, hair fall, weakness, decreased cognitive function, fatigue, headaches, and hormones related issues.

CHAPTER 5

5. DISCUSSION

The increase in nutrition related NCDs are challenge to public health in India as well as globally. Diabetes, hypertension, increased blood sugar levels, obesity are high in prevalence for both HICs and L-MICs. The shift to fast paced lifestyle, falling into the hustle culture is coming at the cost of health. Increased availability, accessibility and affordability of processed foods along with intense publicity of these foods are resulting in a shift of eating habits. Adding to this, with urbanization and infrastructure development, the requirement of physical activity has reduced. The reduced physical activities along with consumption of high energy-dense food is causing health issues in the population. The young working age group of the population is falling into this category.

To understand the views of participants on supplements and how they would define their use, 77.7% of the respondents supported the statement “Supplements can be used by people to meet their daily nutrition requirements”. While the remaining 13.4% and 8.9% participants selected “Supplements are only for people diagnosed with a deficiency”, and “Supplements are only for people who cannot eat solids” respectively. This indicates that the majority (77.7%) participants view supplements as support to daily food while the rest viewed it more in terms of clinical nutrition support.

74% of the participants agreed to the prevalence of nutrition deficiency among urban population. Some of the visible effects of nutrition deficiency discussed by nutritionists are lethargy, low immunity, obesity, hair fall, weakness, decreased cognitive function, fatigue, headaches, and hormone related issues. The most effected age group is between 15 to 45 years.

Of the participants, only 14% people believed that “they don’t feel to be affected by nutrition deficiency”. “Poor dietary choices”, “Easy access to processed and fast-food joints”, “Busy Lifestyle”, “Use of prepacked and ready to eat meals” and, “Sedentary lifestyle” were the most supported reasons for nutrition deficiency.

72% of the respondents consumed at least three meals in a week from outside sources. Around 9% of the participants consumed one meal per day from outside sources. This shows that the participants of the study are somewhat dependent on food from away from home sources. The shift from the traditional way of cooking is observed here that raises a concern on the reasons for shifting to such food sources.

The gap between the desired nutritional goals and current conditions could be reached with the help of dietary supplements. These health enhancing products help in providing the body with the required amount of nutrients. In our study, we saw 94% of the participants being aware about dietary supplements But, only 34% of them feel the need to consume dietary supplements for meeting their daily nutrition needs. In India, at present only 37% of the population is consuming supplementary products.

This shows that even with knowledge of the benefits of dietary supplements, these supplements are considered as a cure rather than a preventive measure. This represents a low confidence of people in using diet supplements.

CHAPTER 6

CONCLUSION

At present, supplements in India are used as a remedy or cure that requires prescription or recommendation from doctors. This attitude needs to be changed to “supplements are preventive measure” rather than cure. Educating and promoting use of over-the-counter supplements for general health and wellbeing in early stages of life can be beneficial for people. Peer to peer interaction and making conscious positive choices towards good nutrition practices.

For capitalizing the market, better advertisement, more informative commercials, and increased presence on social platforms is required. The intensity of spreading awareness should be high, so that the youth become aware of the importance of nutritional values. Efforts should be made to change the laid-back behaviour in youth. As the customer segment increases and people become more educated about the benefits of using supplements, better health objectives can be achieved.

The increasing burden of NCDs is linked to technological advancements and changing dietary habits. Well, one cannot turn back technology, what should be focused on encouraging people to prioritize nutrition. While cooking food, time constraints, busy and sedentary lifestyle is an issue, using supplements can be promoted as positive lifestyle change to influence positive nutrition value.

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