



Indian Cuisine at Crossroads



Knowledge Partner

Message



As the world seeks to address the challenges of global food security, India's progress can be a fine example. With its presidency of the G20, the country has a historic opportunity to share its transformational journey from being a food-deficit nation to a food surplus state and also showcase our cultural depth and food diversity.

Food is closely linked to our cultural, religious, and social ethos. Even with all its diversity influenced by climate, topography and culture, food brings our people together. Our customs and religious preferences are ingredients that shape our culinary landscape and food preferences.

Celebrated worldwide, Indian food is increasingly captivating global audiences with its savoury yet healing properties. We must safeguard this rich legacy and culinary diversity.

The report is an honest attempt at bringing out the realities facing the Indian food ecosystem. It is also timely as the world is celebrating 2023 as the International Year of Millets. Millets have been an integral part of our diet for centuries, and the country is at the forefront of popularising consumption of millets which furthers nutrition, food security and the welfare of farmers.

India's G20 presidency is a watershed moment in history. The country seeks to play an important role in finding pragmatic global solutions for the wellbeing of all, and in doing so, manifest the true spirit of 'Vasudhaiva Kutumbakam' or the 'World is One Family'. India's rich culinary heritage is our pride and must be carefully preserved and promoted globally.

Sumant Sinha

President, ASSOCHAM

Message



Food is a fundamental need for every living being, while nutritious food is a privilege and habit which must be consciously cultivated. With India witnessing an increase in internal migration to towns and cities for livelihood, growing disposable incomes and movement from the agricultural sector to manufacturing and services, there is also a significant change in the composition of food eaten by Indians.

India has a rich tradition of food preparation, with ingredients and spices closely and intrinsically linked with the rhythm of weather and agriculture cultivation life cycles of specific geographies. This is why India has distinct regional cuisines that have developed over centuries of distilling local area knowledge, some of which have made a name for themselves globally.

The increased consumption of fast food and packaged products owing to the lack of time or resources to prepare traditional nutritious meals are attributed to the rising incidence of malnutrition and other nutritional deficiencies. Furthermore, several myths about food often result from a lack of knowledge and misinformation. This mandates a focus on providing accurate data about various kinds of food, nutritional information, etc. to make correct choices — both at a policy level and at personal levels — that will support the health and well-being of Indians.

The Indian constitution states that increasing nutrition is a key responsibility of the Government, which has gone a long way to implement policies to enhance self-sufficiency in food production and promotion of foods with high nutrient content. As India holds the G20 presidency this year, it is important to leverage the soft power that cuisine plays in the global integration of culture and culinary arts. The country's varied cuisines are well accepted across the world, and it is time to showcase the traditional foods that have significant nutritional benefits.

With its rising influence, the country was able to push the United Nations to declare 2023 as the International Year of the Millet. The country's efforts to position itself as a global hub for millets is backed by efforts to have Indian states collaborate with G20 countries on millets and traditional cuisine.

I congratulate the team at TARI, whose efforts have ensured that this study will help readers make appropriate choices to tackle nutritional deficiencies problems. This interesting read comes at an opportune time, when India hosts stakeholders from the G20 community, as it will go a long way in promoting India's rich and varied food heritage.

Deepak Sood

Secretary General
ASSOCHAM

Message



India has a rich culinary heritage with its cuisine dating back to over 7000 years. The Indian palate has evolved over centuries and finds its origins in the traditional Ayurvedic way of living, which lays special emphasis on 'Ahara' (diet) and 'Anna' (food) as a means of good life, health and wellness. In Ayurveda, the Sattvic diet is one of the best choices that promotes mental and physical health, thereby, contributing substantially towards longevity.

India's food journey is a story of its diversity and cultural integration. Our cuisine is an integral part of our identity representing our traditions and culture. Over time spanning centuries, the invaders and settlers such as the Mughals, Britishers and Portuguese brought in their own cuisines and specialities, which were either Indianized or were added to the diverse and rich Indian cuisine. Despite external factors casting their influence on Indian food, our cuisine has been resilient and has retained its originality and character. Additionally, elements such as climate, soil, topography along with religious beliefs, traditions and customs are all important factors that have contributed and driven India's food habits.

In the last few decades India has seen a new phase of accelerated and deeply transformative change in its foodscape. With increasing income and growing urbanization, our eating habits have undergone a change with many western influences significantly impacting and altering our taste buds.

The world today is changing rapidly and our eco system is evolving to cater to this change. While we strongly believe in the philosophy of Vasudhaiva Kutumbakam, it is also imperative that we preserve our traditional Indian palate which has been passed on from generations and is a part India's proud heritage.

India's incredible cuisine is unique to the world and should be actively promoted in its true form. In fact, it is indeed heartening to see how the Indian Samosa is gaining popularity and is a preferred tea-time snack in UK. Like this tasty titbit is settling in the hearts of the people, I am sure Indian food will be celebrated worldwide. Having said that, it is critical that we seriously look at what needs to be done to not only preserve and protect our culinary heritage but also to not allow an enabling environment which would unwittingly discredit our indigenous cuisine.

'Indian Cuisine at Crossroads' presents a holistic view on our traditional foods. It lays emphasis on understanding the factors which drive the food choices of Indians. In the backdrop of emerging dynamics in the food ecosystem, it also seeks to identify policy priorities which would allow access to safe and healthy food for all Indians, while safeguarding the country's food heritage. I hope you find it an interesting read.

Mr Anil Rajput

Chairman

ASSOCHAM National CSR Council

About this Report

This report has been prepared by Thought Arbitrage Research Institute (TARI) for ASSOCHAM Foundation for Corporate Social Responsibility (AFCSR).

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India's food diversity is truly unique and is an amalgam of several cuisines loved across far corners of the country. India's geographical diversity, climatic variation, deeply entrenched cultural and religious ethos cast a deep influence on what people eat and why.

It is difficult, if not impossible, to understand people's food choices without having to recognise the underlying factors of culture, habits, customs and physiological and satiety needs behind people's food choices. What is also key to understanding food habits is the diversity in economic conditions of households which have their impact on what food people can afford. The influence of all these factors and more influences how India eats.

Policy decisions affecting food habits must be well calibrated. It must keep in consideration the social, economic, cultural, even psychological needs of people, before it attempts to alter cuisines. The Indian palate is unique from that what exists in most other countries for the sheer diversity related variables which impact food choices.

Food is important not just for the nutrition they offer but also the enjoyment it provides. The present report examines Indian food in the context of its historical evolution, cultural manifestations and the recent influences of modern cuisines.

Debates over which food is good over the other, in terms of nutrition value, is futile in a social setting like India's where diversity is so deeply entrenched and food choices are passed on from one generation to the other.

The food economy in India is dominated by the unorganised sector which in many ways still lacks in terms of the hygiene standards. There is indeed a need for a balanced understanding of what comprise healthy food for Indians. The report brings a balanced understanding of the various factors which influence food choices of people, including the diversity factors which are critical to the social and economic well-being of the population at large.

The report has captured the cultural, social, economic factors which drive food choices of Indians and have also captured voices from the ground in the form of a nationwide survey of over 5000 respondents to understand what driving people's food choices and other related issues.

I thank ASSOCHAM Foundation for Corporate Social Responsibility (AFCSR) for supporting this timely study which comes at a time when India as part of G20 presidency has lent a strong focus on food security for all its citizens. India's G20 presidency summit has a strong focus on sustainable food security while repopularising nutritious and traditional foodgrains such as millets during the year which has been declared the International Year of Millets.

The Indian food economy offers huge economic opportunity and is one of the largest employers in India. It is critical to ensure that the policy measures affecting food choices do not damage the food ecosystem in India.

I thank colleague Mr Souvik Sanyal for his meticulous research and diligence and the survey team at Convergent for their efforts to bring out this report.

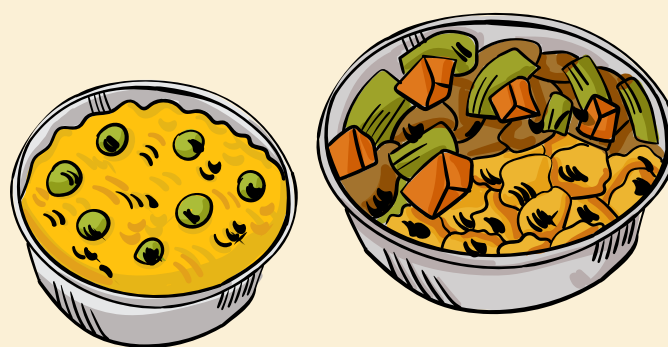
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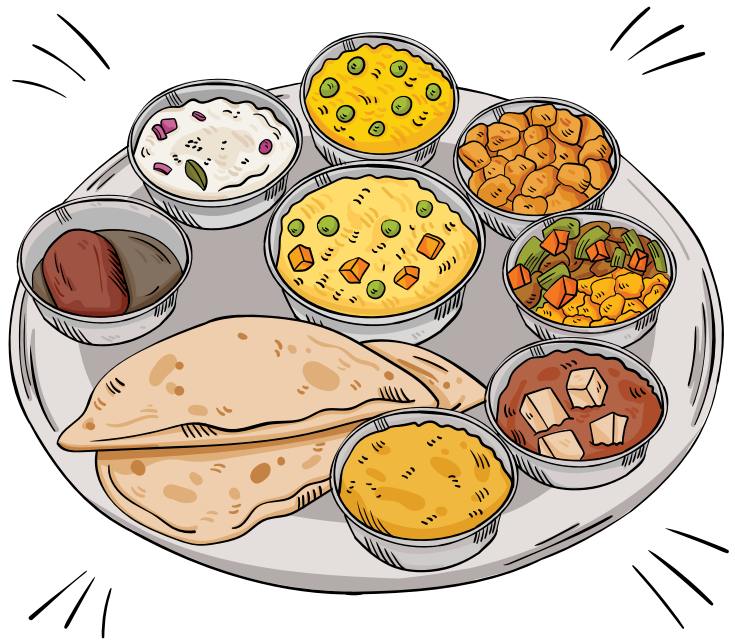
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Executive **Summary**





Executive Summary

Food is an effective and unique medium which unites Indians transcending geography, cultures and demography. Indian cuisine, with its rich cultural lineage behind it, is a colorful story and has been influenced by its history, geography, diverse culture, religious festivals, traditions and customs. All this have given Indian food a distinct character in terms of their flavour profile, use of ingredients, methods of preparation; unlike any other global cuisines.

Indian food is often at the center of debate for the nutrition they offer especially for their richness induced by the interesting use of spice, salt, sugar and fat, as it is the use of these ingredients that gives Indian food their identity. It is no hidden secret that a delightful meal makes every Indian happy and thereby improves the overall quality of life.

The report **"Indian Cuisine at Crossroads"** examines India's food journey, tracing its evolution through history, geographical variations and cultural connotations, to bring out the uniqueness and scientific character of traditional Indian foods and contrasts them against global cuisines, while understanding the factors which drive food choice of Indians.

The report is prepared with the objective to holistically examine the complex factors influencing food choices of Indians in the backdrop of emerging dynamics in the food ecosystem and seeks to identify policy priorities which would allow access to safe and healthy food for all Indians, while safeguarding the country's food heritage.

It is critical to understand that all these conversations will have a deep and long-term impact on not only the way Indians will perceive the food purchased & consumed but also the image of our ethnic food heritage across the world, as well as the future of the food processing industry esp. the small to medium scale manufacturers.

Policy steps with respect to food made hastily can cause irreparable damage to food groups. Cholesterol, is a case in point, which was portrayed as an evil for many decades with consumers completely shunning some food categories (like dairy, eggs) only to realise decades later that neither total fat nor cholesterol is harmful the manner it was projected.

The report is based on a study of industry data, apart from social and economic



studies on various aspects which impact food choices of people. Additionally, in order to understand the mind of the average Indian consumer whilst making their food choices, the report aggregates the findings of a national survey, conducted in early-2022, across India's 15 most populated cities with a sample size of over 5,000 to understand the needs, aspirations and choices of people, with respect to their consumption of food, both across packaged branded and unpackaged food.

The influence of tradition, history, geography and climate on food

Indian food is diverse in the use of ingredients including spices, with flavours and taste made distinct by geography, climate and food preferences of people. What India Eats is the result of our accumulated learnings from the past. The traditional Indian palate has evolved over centuries and finds its origins around the traditional Ayurvedic way of living, an over 6000-years-old healthcare system, which lays special emphasis on 'Ahara' (diet) and 'Anna' (food) as a means of good life, health and wellness.

India's food journey is a story of its diversity and cultural integration. Religious beliefs, traditions and customs are all important factors which drive people's food habits. Regional cuisines integrate the elements of climate, soil, topography in them. Regional cuisines have been developed over generations giving due regard to the needs of the people native to the region, and catering to the physical well-being. Similarly, religious beliefs also affect other dietary restrictions that shape the cuisine: depending on the dominant beliefs of a region, the cuisine may omit certain ingredients to comply with religious law. This may also limit their already restricted food options.

Dietary choices – the influences and motivations driving food choices

Dietary habits are not simply determined by physiological or nutritional needs of people, but also the pleasure that is derived from eating. Even scientifically it is well understood that food which is enjoyed while consumption is better utilised in the body. This is especially true for people with lower income levels as research done by Noble laureates Abhijit Banerjee and Esther Duflo (2007) emphasised that people with lower income levels maximise pleasure in their food choices. They find, people do not just eat nutrients or ingredients; dietary habits are part of a system, which is shaped and driven by culture, context, socio-economic status, food environment, and hedonic motivation.²⁸ Food habits of Indians have traditionally been influenced by local factors including the climatic conditions of the region people live, availability of cereals, traditional food habits. However, in the past two decades, there has been a rapid change in the food choices of Indians with greater access to Western food choices. This is widely considered part of a nutrition transition wherein people are exposed to Western food habits. Modernization, urbanisation economic development, and increased wealth lead to predictable shifts in diet, commonly known as "nutrition transitions."

Easy access to western food coupled with a sedentary lifestyle is coming in way of India's deterioration in nutritional outcomes. India's shift in food habits to a non-traditional diet has been rapid due to the impact of globalisation and urbanisation. India's nutrition tradition has resulted in a steady deterioration in the health outcomes. The rapid shift in food habits have resulted in changes in nutritional outcomes. The





shift towards non-traditional foods have been coupled with people adopting a sedentary lifestyle, which together has adversely affected the quality of life.

The food market in India shows two different sides to the lives of Indians. While on the one side, a section of India has benefited from economic growth and is aspirational in their food choices, on the other side – the substantial majority lives on food prepared on the road.

A reflection of the wide divergence, in terms of the type of food Indians eat, emerges from the small proportion which is catered to by the packaged food industry. According to a report by Technopak Advisors (2022), the Indian packaged food retail market, estimated at INR 6,00,000 crore in FY 2020 contributes only 15% to the total food and grocery retail market which in same period is estimated at INR 39,45,000 crore. In terms of volume, India is still a country where the unorganised food industry is highly dominant, and is likely to continue to be so because of income disparities, and people's access to basic necessities of life.

Indian food habits and their peculiarities – trends from the snacking market

Led by the healthy demographic mix of the Indian population, there has been an increase in the demand for packaged food in the snack market, across savoury and sweets category.

Despite the dominance of Western savoury snacks, the organised traditional snacks market has grown in maturity in recent years, and is likely to pick up even further as new products gets added to the product range which not only appeal to the Indian taste palette but also showcase many of the superior product (technical) aspects including good quality and nutrition This has resulted also due to improved packaging and sales practices which now allows companies to develop processes to increase the shelf life of traditional foods while retaining the authentic flavour profile of the food.

As per industry estimates, the organised savoury snacks market could surpass the Western snacks segment as the organised Indian ethnic namkeen and



snacks market could grow by CAGR 16% to become INR 204 billion industry by FY 2026 from INR 114 billion in FY 2022. (Frost & Sullivan, 2022).

On the other hand, the sweets market in India is largely led by the unorganized segment with INR 535 billion market value and share of almost 90% (Frost & Sullivan, 2022). Standalone mithai shops are spread across the geography in India which sale regional as well as traditional sweets such as *gulab jamun*, *rasgulla* and *barfi*. Overall, it is seen that there is an increased interest among people to have more traditional snacks in the organised space, which is reflective of people's interest in traditional foods as seen in the industry data. This could also be seen to be a result of companies reaching out to more consumers through online sales, smart packaging and delivery.

It is important to note that these traditional snacks have been part of our food heritage and plate since a very long time and Indians intuitively know "how" and "how much" to consume them as a part of their meal pattern. They do not require any classification based only on limited ingredients like salt, sugar, fat to help them decide from tomorrow on its inclusion or exclusion from their diets.

Indian food – the myths and reality

Indian cuisine can best be described as a "*palimpsest*," containing multiple layers or aspects beneath the surface, with each layer exerting an unalterable impact upon the whole. The uniqueness of flavour with interesting combinations/ pairing makes Indian cuisine truly special. Recent research in food pairing, has shown that no other global cuisine

can match with the unique flavour notes found in Indian food. Scientific research done in the area of food pairing—an idea in culinary science that ingredients having similar flavour composition may taste well in a recipe, has revealed a strong negative food pairing across Indian recipes, unlike global cuisines.¹ Such a study is key to understanding the characteristics of a cuisine in terms of their ingredient usage pattern.

Historically, spices have been used to serve multiple purposes such as, as colouring and flavouring agents, preservatives, and additives. They find mention as medicines in Ayurvedic texts such as Charaka Samhita. Spices also serve as antioxidants, anti-inflammatory, chemopreventive, antimutagenic, and detoxifying agents.

The concept of food pairing has its genesis in ancient texts, and has been intuitively passed on through generations. The underlying principles of gastronomy and health benefits of food, as in other global cuisines, cannot therefore be applied to Indian food. The clever use of spices in Indian food not just enhances its flavour profile, but has health benefits. To preserve this scientific character found in Indian food, it is important that the ingredient profile that goes into Indian cooking is not randomly changed without understanding the underlying reasons for which they were originally introduced in recipes.

Indian traditional foods are also recognized as functional foods because of the presence of functional components such as body-healing chemicals, antioxidants, dietary fibres, and probiotics. These functional molecules help in weight management,

¹Jain A, Rakhi N, Bagler G. Spices form the basis of food pairing in Indian cuisine



and blood sugar level balance and support immunity of the body. The functional properties of foods are further enhanced by processing techniques such as sprouting, malting, and fermentation.² Comparatively, the concept of calories in nutrition came in much later. It may not be fully applicable to traditional food systems. Calorie entered the popular vocabulary across Europe and the United States by the late 19th century.

The use of salt in food

Salt is an essential part of Indian cuisine as the traditional means of cooking calls for moderate use of salt. Ayurveda is salt-friendly since salt is considered one of the basic tastes in human life. According to Ayurveda, salt is required for development, for hydrating the body, to improve digestion, absorption and excretion. Ayurveda mentions different kinds of salts (sendha, kaala etc.), which are all used differently in different proportions in various foods, based on the geographical conditions. Salt is also known to boost digestion, fuel the craving for food, sharpen the alertness to fine food, helps digest natural contaminants and clear subtle channels of the body. Use of salt is known to alleviate Vata and strengthen Pitta and Kapha. Consumption data indicates mean salt intake of 7.8g/day which exceeds the WHO/NIN limits of 5g/day, among urban Indian population. Added salt (during the cooking process or at the table - >80%) is the key contributor to salt intake.³ The use of salt greatly enhances the flavour profile and provides enormous health benefits.

With large parts of India having a hot and humid climate, the use of salt in food

is also important as rehydration with proper electrolyte balance is required to counter the impacts of dehydration and excessive sweating. It also has a calming effect on the nerves and emotions. Any attempt to limit its use in food categories should be based on a scientific understanding of its use. The scientific character of Indian food must be kept in consideration before any reduction in salt use is made compulsory.

The use of sugar in food

Sugar occurs naturally in all foods that contain carbohydrates, such as fruits and vegetables, grains, and dairy. Consuming whole foods that contain natural sugar is okay. Since your body digests these foods slowly, the sugar in them offers a steady supply of energy to your cells. Problems occur because of uncontrolled consumption of products with sugar exceeding the need and consumed in larger portions. *Ayurvedic principles of eating in moderation, as seen in a wide array of traditional cuisines, takes care of the rules of excess sugar, while also ensuring that taste of food is not compromised.*

Excess sugar consumption is a global challenge. Compared to other comparable nations, consumption of sugar is relatively less. However, as per the NNMB surveys, the mean consumption of sugar among rural and urban population in India is 13g/CU/day and 16g/CU/day, which is lower than the recommended levels of Indian Council of Medical Research (ICMR) - 30g/CU/day. Consumption data hence indicates sugar (added) intake is within the WHO/NIN limits and is <10% of total daily dietary energy. It was also noted that the consumption of sugar was primarily

² Preetam Sarkar, Lohith Kumar DH, Chanda Dhumal, Shubham Subrot Panigrahi, Ruplal Choudhary, Traditional and ayurvedic foods of Indian origin, Journal of Ethnic Foods, Volume 2, Issue 3, 2015

³ Laxmaiah A. "Time Trends in sugar, Salt and Fat consumption and chronic disease epidemic in India: Is there a need for Intervention". Seminar on Recent Developments In Food Science and Technology For Better Nutrition: Report: International Life Sciences Institute (ILSI) India



coming via sugar “added externally” and consumed via certain beverages, by the consumers themselves. Data suggests contribution to daily intakes from packaged foods is lesser than other sources.⁴ The traditional Indian food science Ayurveda prescribes moderate consumption of sugar, which when done is not harmful.

In a country where 32.1% of the children under 5 years are underweight, according to National Family Health Survey-5 (NFHS-5), 2019-21,⁵ any unscientific reduction in sugar and salt will lead to foods losing their intrinsic food value. It is well known that sugar and salt are linked to weight gain. Hence, a simplistic presumption that limiting sugar and salt in food shall make food healthy is not correct. While excess sugar, salt and fat is unhealthy, any unscientific reduction in the use of these essential ingredients shall lead to outcomes which are far worse in a country like India where food choices of people depend on factors such as their economic status, culture, preferences and health awareness. One must also be cognizant of the low literacy level of India’s population, and it is erroneous to believe that people would understand the finer nuances why a food is rated the way it is.

Limiting the use of sugar and salt without regard to the reasons why they form part of Indian cuisine, in what portions, in which formats etc., in the first place will not just be unscientific but imprudent.

Determining the relevance of health ratings based on salt, sugar and fats

It is worthwhile to remember here that Indian food, which has its genesis in

Ayurveda, and is still prepared using similar principles, had traditionally always promoted moderation in salt and sugar. One needs to understand that the genesis of the debate on consumption of sugar, salt and fat was in the context of modern foods.

An editorial published in NPJ Science of Food⁶ said

“By the mid-1900s, this trio of salt, sugar, and fat took on a new psychosensory dimension when the processed food industry discovered that these ingredients could be formulated to produce a state of satiety, pleasure, and hedonia in those who consumed them. American market researcher and psychophysicist, Howard Moskowitz, termed this the “bliss point” or the point where the levels of saltiness, sweetness, and richness were perceived by the consumer as just right. When the processed food industry added a crunchy mouth feel to their bliss point formulations, a whole new generation of “craveable” foods was created. A vast array of craveable chips, dry sweetened cereals, candies, cookies, fried foods, and even spaghetti sauces became wildly popular among consumers, particularly children, and profits for processed food companies soared.”

Per capita consumption of packaged food in India, portion size and obesity levels are quite low as compared to America and Europe. As our survey highlights, unbranded foods are the choice for Indians, which often is a compulsive choice for them because of their socio-economic status.

⁴ Laxmaiah A. “Time Trends in sugar, Salt and Fat consumption and chronic disease epidemic in India: Is there a need for Intervention”. Seminar on Recent Developments In Food Science and Technology For Better Nutrition: Report: International Life Sciences Institute (ILSI) India

⁵ National Family Health Survey-5 (2019-21), Ministry of Health and Family Welfare, Government of India

⁶ Rao Pingfan, et al. “Addressing the sugar, salt, and fat issue the science of food way”. Editorial (Open), npj Science of Food (2018) 2:12 ; doi:10.1038/s41538-018-0020-x



Peculiarities of the Indian dietary pattern, method of preparation, portion size and quantity of prepacked consumption are not considered in model selection and hence a replication of any global model will not just be futile but will destroy Indian tradition and food habits.

Regulating food is difficult and needs a scientific analysis, including studying their long-term nation-wide impact and scientific risk. The proposed 'Interpretative FoPL Labelling' will have to be different for categories of food and different communities at large and cannot be generalised by a mathematical equation of Salt, Sugar, Fat. Such an approach would be confusing and may create an impression that certain products are better than the others. This will have a completely different impact in a country like India where people may start completely rejecting certain foods believing that they are unhealthy and then move towards more unsafe, low quality and some options that have been falsely marked as "healthy".

Challenges implementing health star rankings in India

Internationally, based on study and analyses of dietary patterns, FOPNL (*Front of the Pack Nutritional Labelling*) is generated and implemented as voluntary labelling for trial and improvement purposes. Once impact analysis to health and trade is accessed, it will become mandatory labelling. Only around 10 countries in the world have mandatory provisions for Front of Pack Labelling; other countries have had voluntary FOPNL for up to 15 years without mandating it. FSSAI is in the very preliminary stages of FOPNL implementation.

The health star rating system rates the overall nutritional profile of packaged food and assigns it an interpretive rating from 0.5 to 5 stars – the higher the stars, the healthier the product.

Health Star Rating (HSR) has a complex nutritional algorithm which has been formulated in an attempt to weigh up the good, and not so good nutrients a particular food offers. But its failure to isolate specific ingredients such as sugar within this to obtain a better rating, and beating the calculation, has resulted in some foods which are naturally higher in saturated fat (like full cream dairy) having a lower rating than lower fat, yet heavily processed foods including snack food and confectionery often gets a higher rating. The classic example of this can be seen in the case of Greek yoghurt — a natural whole food which scores just one star using the rating system, compared to a bag of lollies which scores two stars.

HSR rates foods on a five-star scale based on factors such as energy, saturated fat, sodium, total sugar, and healthier aspects such as protein, natural ingredients, and the like. The final rating is decided by an algorithm that takes into account all this, with healthier food receiving higher ratings. These would be displayed on the front of the packaging.

India isn't alone in going the HSR route. Australia which adopted HSR as far back as 2014. things haven't quite gone according to plan. It has been observed there that the applicability of HSR there had created a 'health halo' effect, which is the perception that a particular food is good for you even when there is little or no evidence to back this, as on numerous instances unhealthy products received the highest possible health rating.



Applying global HSR ratings framework to select Indian food items

To understand how the concept of rankings works and can be manipulated or gamed, we picked up a random sample of 10 branded food products, such as cheese, snacks (moong dal, bhujia sev, mathri, pista badam cookies), sweets (rasgulla, kaju katli, badam ladoo), dahi and chicken drumstick, and checked their health star ratings using the HSR calculator, made publicly available by the Australian Government.

For the products, we have used the nutritional information as available on the packs for select brands (names omitted), and checked what their ratings would be under the existing health rating system. Except for dahi and chicken drumstick, every other product received two or lower stars, with two of them getting no stars. The results cast doubt on the metrics used for such a calculation. Under the current rating system, most food products would be rated between 0.5 and 2 stars. An important highlight of this analysis is how the rating changes if fibre is added to the list of ingredients, which in the case of the badam ladoo and mathri, changed from 1 star to 2 star in addition to fibre. Another interesting point to note is that this change on the star happened without any reduction of salt, sugar or fat (so called negative nutrients) which means that consumers would never know the complex ways in which the ratings are being managed, all the while believing that certain products are better for them (which in reality may be not).

A mere replication of the algorithm would not suffice for the diverse Indian cuisine. India based impact analysis (Cause & Effect) is necessary to develop the right kind of algorithm. Regional culture and heritage have to be considered in formulation of policies, especially the algorithm.



Replicating a global model of food ratings could adversely impact local food types, which are still prepared using traditional spices and flavours. As any adverse health ratings could dampen the consumer sentiment with respect to the quality of a particular food item, there could well be a shift in consumer willingness to eat more of Western food products. This in effect could damage the traditional Indian cuisine, leading to significant loss of traditional knowledge systems and livelihoods of people associated across the food chain. *Overall, the cost of such a move could be severe as it could affect our food industry including food processing while altering people's food preferences from traditional Indian food to modern international food habits.*

India lacks an evidence-based study into the implementation of health star ratings across different food categories.

- ♦ The study by Indian Institute of Management (IIM) Ahmedabad, which has formed the basis for the proposal, has not gone into the issues that have made implementation difficult in the country of origin of HSR, nor has there been any suggestion on how to categorise the diverse food legacy of India – both formal, informal. Much more research is needed to make relative judgements for nutrients and assign proper weights in the algorithm.
- ♦ The HSR system in Australia captures one of the challenges the concept poses: *“A high star rating doesn't necessarily mean the product provides for a complete, balanced diet and should replace items from other core food groups or be eaten to excess. In addition, many healthy foods, like fresh fruit and vegetables and lean meats, are not generally packaged and may not display or have a Health Star Rating.”* Hence even countries who pioneered the



rating system have kept it voluntary after 10 years of its introduction.

- ♦ Implementing a star rating system across Indian food categories, with their diversity and uniqueness, will not just be difficult but unfair unless a scientific basis is established. The first component relates to incentivising manufacturing of four major food product segments viz. ready to cook/ ready to eat (RTC/ RTE) foods including millets-based products, processed fruits & vegetables, marine products, mozzarella cheese.
- ♦ With limited scientific understanding of the nature of Indian food and how food ratings can be built taking on board an understanding of people's food habits, preferences and needs driven by India's rich diversity, India appears to be far from implementing a ratings model.
- ♦ *The food processing sector, which currently is small, holds a lot of potential. Already the PLI scheme has drawn significant traction and is expected to serve as an economic enabler. Proposed reforms such as*



Comparing some common traditional and non-traditional food

Despite a wide variety of traditional delicacies available easily, people have increasingly gravitated towards non-traditional foods. In the table below, we compare some traditional Indian food and contrast them against similar food from non-traditional/modern cuisines.

Calorie content across traditional and non-traditional food items

Traditional Indian Food / portion	Calories	Non-traditional food / portion	Calories
Gulab jamun (1 serving)	291	Chocolate Cake without icing (1 piece)	340
Kulfi (1 serving)	136	Chocolate Ice Creams (1/2 cup)	143
Rasmalai (1 serving)	188	Cheesecake (1 piece)	257
Bhelpuri (1 serving)	349		
Dhokla (1 piece)	60	Cheese Pizza (1 piece)	237
Idli (1 serving)	121	Potato French Fries (100 g)	274
Ragi mudde (1 serving)	246		
Masala Dosa (1 serving)	160		
Aloo Paratha (1 serving)	330		
Chutney (1 serving)	51	Mayonnaise (1 tbsp)	57
Jalebi (1 serving)	150	Chocolate coated or Frosted Doughnuts (1 large)	270
Poha (100 gram)	110	Veg burger (100 gram)	177
Sandesh (1 serving)	270	Apple Pie (1/8 23 cm dial)	411
Pav Bhaji (1 serving, 150 g)	160	Cheeseburger (Single Patty with Condiments) , 1 sandwich	295
Vada Pav (1 serving)	304		
Indian Flatbread Naan- 1 piece (1/4 25.5 cm dial)	137	Italian Flatbread Focaccia (1 slice)	182
Lemonade (1 cup – 240 ml)	99	Cola Soft Drink (1 can – 350 ml)	137
Coconut water (1 cup)	46		

Source: <https://www.fatsecret.co.in/calories-nutrition/>



A comparative analysis of food groups highlight towards two important pointers:

- ♦ Contrary to the popular understanding that Indian food is not healthy compared to their non-traditional comparative food item, our analysis shows that Indian food across snacks, drinks, accompaniments and sweets are less in calories than their non-traditional food comparatives.
- ♦ Even for higher calorie dish such as dosa and aloo paratha, the satiety quotient is better than small calorie dense foods such as pizza as they are rich in protein, fibre, etc.
- ♦ Unlike traditional Indian foods which are prepared generally fresh, non-traditional foods listed use preservatives and additives, making them greatly unhealthy—way more than their calorie content.
- ♦ Consumption of non-traditional savoury snacks (such as pizza, burger) get far more calorie heavy for the reason that that what they contain because of a consumer's propensity to consume a carbonated beverage along with them.
- ♦ Simply by the manner traditional food is generally served (portion size as in our traditional Indian Thalis allow consumers to not over eat, compared to a Western food such as pizza which by its nature can be quite more.
- ♦ Overall, our analysis highlights that traditional Indian foods are comparatively lower in calories as compared to their comparative non-traditional food by virtue of their less portion size. Importantly, they are less harmful for the reason that they use less preservatives and tasting agents and are often freshly prepared and served. This counteracts the theory

often raised that traditional Indian food is more on calories and are more harmful.

Indian food prepared the traditional way is healthier than their non-traditional peers. The traditional cooking methods used in Indian cuisine, such as grilling, pan frying, poaching, boiling or steaming and the fact that most of Indian food are mostly freshly prepared, make them a healthy source of nutrition and in the case of snack and sweets, the tasty indulgence.

Compared to non-traditional foods easily available in the market, traditional Indian food is typically built around fresh vegetables, grains, and other produce, very little of which is processed. The clever mix of ingredients and use of spices makes Indian food healthy, and is suited to Indian climatic conditions and nutrition requirements of people living in a region. Indian food is characterised by its essence of eating in moderation and hence will always take care of both taste and health.



Voices from the ground

(Survey conducted across 15 cities across India between January-February 2022)

At the center of any policy discourse on food is the consumer. The questions of what food consumers eat and why is important to understand people's perception about food. Similarly, what drives their decisions to buy a particular food is key to understanding the motivation of the consumers about their food choices.

According to the survey,

- ♦ *nearly all respondents said they consumed branded or unbranded packaged food, at least once every month*
- ♦ *for branded food categories, quality matters at 62%, which becomes less important as people fall below in the socio-economic classification; taste matters at 53%, brand at 49% and price at 33% of the respondents at a pan-India level. The importance of price increases as consumers fall below in the socio-economic classification.*
- ♦ *for unbranded food categories, quality matters at 69%, which becomes less important as people fall below in the socio-economic classification; taste matters at 58%, price at 44%, known shops at 29%, of the respondents at a pan-India level. The importance of price increases as consumers fall below in the socio-economic classification.*

The following aspects also emerge with respect to people's food habits

- ♦ *while the average Indian consumer is increasingly becoming*

aspirational and consume branded food products frequently, the socio-economic realities of people have made unbranded food products a preferred choice among the majority of the population,

- ♦ *consumption of branded to unbranded food in India is roughly 1:3 in terms of value, making consumption of unbranded food pervasive in terms of value and more so in terms of quantity,*
- ♦ *with income inequality among the population a stark reality in India, this trend is unlikely to see a change in the near future.*

Consumption of unbranded food

- ♦ According to the survey, the consumption of unbranded goods increases with declining socio-economic status of people. City wise consumption figures highlight the popularity of unbranded food products across all cities. Increased consumption of unbranded goods is understandably the result of factors such as affordability, availability/ access, awareness, preferences, and habits. Culture also plays a role in people's food choices.

Consumer awareness about the health aspects of food

- ♦ The survey asked, "Are you aware that high sugar, high salt/ sodium, and high fat may adversely affect your health? 91% of respondents said they were aware of the consequences of salt, sugar and fat on their diet.
- ♦ While the average Indian consumer understands the implications of



sugar, salt and oil in food, their understanding varies based on their level of health awareness.

- ◆ Despite understanding the health aspects of food, nearly half i.e., 46% of the respondents, said that they would not shift to a healthier alternative if the food of their choice was given a low health rating. This finding seems to suggest that a large number of Indian consumers are significantly influenced by food choices even though they consider themselves aware of the health aspect of food.
- ◆ City wise proportion of respondents shows that when compared to Tier 1 cities, respondents across Tier 2 cities have greater awareness of the health effects of sugar, salt and fat. Overall, the survey seems to indicate that the level of awareness is reasonable across all groups of people, even as those with elevated levels of health consciousness are more aware.
- ◆ Consumer awareness about sugar, salt and fat is linked to their health awareness. The survey shows while 97% of the high health-conscious people said they were aware; it fell to 90% for those who consider themselves less health conscious.
- ◆ *Overall, the survey shows that consumers understand the health effects of sugar, salt and fat in food. The survey suggests that choice of foods is important for the Indian consumer which is determined chiefly by taste, price, availability/ access, health consciousness, habits and preferences and the average Indian consumer is aware of the health effects of sugar, salt and fat in food items.*

Do consumers care to look for ingredient information at the back of the pack, for packaged branded goods?

- ◆ The survey asked: “When you buy packaged branded food items, do you generally check the back of the pack before buying?” 92% said yes.
- ◆ To the question as to how easy or difficult it was for them to read the information provided at the back of the packaged food product, 81 % of the respondents said it was easy for them to understand, with 40% saying it “very easy” to read.
- ◆ Nearly 70% felt the ingredient details provided at the back of the pack was helpful in their purchase decisions, while 63% of the respondents felt it helped them in understanding the health benefits. Also, half the respondents were of the view that the ingredient details helped understand if there were any allergens in the food.

What information do most consumers look for?

- ◆ 62% of the respondents said they looked for “best before or expiry date”.
- ◆ Other things also looked at include date of manufacturing (53%) and ingredient details (42%). Overall, references to any of this information points to the fact that, the average Indian consumer is conscious about the quality of the food they consume, which according to most means that the food being sold has not expired, and is not stale. Expiry date to most respondents seems to be the proxy for quality.





The survey highlights that the Indian consumer is concerned about the quality of the food product they purchase and satisfies her/himself by looking at information provided at the back of the pack of packaged products. At the same time, most people appear satisfied with the manner and the detail of the existing current format, and found it useful. The message that emerges is that an information overload is not always required, as health-conscious individuals/ families are careful about the food they eat.

Does the lack of information on unbranded food products concern consumers?

- ◆ The survey asked: “How concerned are you that unbranded packaged food products do not carry information like details of ingredients, expiry date etc.?”
- ◆ An overwhelming 94% of the respondents said they were concerned. The response does not significantly change based on the health awareness of individuals. 99% of the highly health conscious said yes, either very concerned or somewhat concerned, while in the case of moderate to less health-conscious respondents, it was 95% and 94% respectively.
- ◆ The survey asked: “How helpful would it be for you if unbranded packaged food products carried

similar information like, details of ingredients, expiry date etc.?” 97% of the respondents felt it would be helpful if ingredient details would be made available for unbranded food items, with 62% of them thinking it would be “very helpful” if such information was provided.

- ◆ The overwhelming message is that the lack of product information with respect to unbranded goods is a matter of concern for consumers and availability of ingredient details would benefit them greatly towards understanding the quality of the food they eat.

In summary, it appears that the average Indian consumer while purchasing a food item is driven by quality, taste and price with each factor impacting different sections of people differently. While the consumer who purchases a packaged branded food understands health benefits of food based on product information, it is the person who cannot afford to always buy branded food and commonly buys unbranded unpackaged food suffers with fears of hygiene most on their mind. The message for regulators is that food regulation should target to improve the lives of the masses and not the classes, by which we mean the 10-15% of the educated urban class who is aware, understands health but is driven by habits.



The regulatory prerogatives and priorities

In 2006, the Indian parliament passed the Food Safety and Standards Act, 2006. The preamble to this law reads--

*"it is an act to consolidate the laws relating to food and to establish the Food Safety and Standards Authority of India for laying down science-based standards for articles of food and to regulate their manufacture, storage, distribution, sale and import, to ensure availability of safe and wholesome food for human consumption and for matters connected therewith or incidental thereto."*⁸

Twelve years since the passage of the Act, Rajya Sabha Parliamentary Standing Committee on Health and Family Welfare, in its report⁹ on Functioning of Food Safety and Standards Authority of India (FSSAI), in August 2018, highlighted India's institutional failure to provide "safe and wholesome food" to a large part of the populace, and cited the Supreme Court of India's judgement in Centre for Public Interest Litigation vs. Union of India¹⁰ which emphasised that the Constitutional right to life also includes the right to pure food and beverages.

As the Standing Committee said, *"for a country that has to feed nearly 1.3 billion people, strict monitoring of the food supply chain can be an uphill task but not impossible. Sadly, the present food safety scenario in India speaks volumes of how we have failed as a State in providing safe and wholesome food to its population."*

Listed below are some of the pertinent challenges the country faces when it comes to dealing with issue of malnutrition, food safety and health of the population at large.

Fighting food adulteration –an unmet challenge

Food adulteration has been reported widely in the country. *The cost of food borne diseases will reach between 7-8.4 billion dollars in 2030 which represents a significant increase from 3 billion dollars estimated in 2011. To reduce the economic burden, India needs to invest in ensuring food safety for the masses.*¹¹ Poor enforcement of the law has resulted in rampant food adulteration and various food scandals with substandard quality food has been reaching the market and causing irreparable damage to public health.

Street foods can represent a large part of a consumer's daily energy and nutrient intake; for example, a global review found them to provide as much as 50% of the recommended allowance for protein. Food safety risks related to the consumption of street foods are associated with vendors' poor personal hygiene, prolonged food storage, repeated handling, inadequate reheating, unclear environments, and the use of substandard water and unclear utensils.¹² The failure to deal with the challenge of food adulteration becomes difficult because of the lack of infrastructure in terms of food testing and quality control. Shortage of qualified manpower and functional food testing equipment in state food laboratories and

8 'Evolution of Indian Gastronomy: A Tale of Fusion', Indian Culture, Ministry of Culture, Government of India.

9 Parliamentary Standing Committee on Health and Family Welfare: 'One Hundred Tenth Report on 'Functioning of Food Safety and Standards Authority of India' (presented to the Rajya Sabha on August 9, 2018)

10 Centre for Public Interest Litigation v. Union of India, W.P (Civil) No. 681 of 2004, The Supreme Court of India (dt. October 22, 2013).

11 Cited in Parliamentary Standing Committee on Health and Family Welfare: '110th Report" (presented to the Rajya Sabha on August 9, 2018)

12 Andrea Durkin, "Investing to Nourish India's Cities", The Chicago Council on Global Affairs (June 2016)



referral laboratories resulted in deficient testing of food samples. A country where a majority of the population lives on food prepared and served on the street side, it must direct all its focus on controlling food adulteration.

This brings us to the question- if we are lost in terms of our focus on how to achieve the national goals of ensuring safe food to all. The regulatory focus on salt, sugar, and fat may be true for the world, but surely fails in terms of prioritising public health goals if we see India from a true perspective of the social and economic challenges facing the country.

While FSSAI has launched the Clean Street Food Hub project, and has taken certain steps, the regulatory focus seems limited if we look at the scale of the

challenge. In India, the regulatory focus should prioritise clean street project as the project would have multifold gains—improving the livelihood conditions of street vendors, help promote Indian food culture and help in safeguarding the health of people who rely on street food.

Recommendations

Debates around nutrition in India have often taken a view that food consumed by Indians is generally unhealthy. This argument ignores the social, cultural and economic factors which influence food choices. In order to ensure access to safe and healthy food for all its citizens, which the Constitution of India safeguards as a fundamental right, the report makes the following recommendations, while safeguarding the country's food heritage.

Recommendations

Ensuring food safety for all

The study recommends that highest priority be placed on ensuring that the unorganised food industry is made compliant to food safety standards. The Clean Street Food Hub project should be expanded in earnest to cover a wide cross section of the industry and can be linked to the tourism goals, similar to the Thailand's clean street food project.

- ♦ *The Government of India's focus on improving the livelihood of street food vendors should be integrated into FSSAI's Clean Street Food Hub initiative and further be integrated to promote Indian food culture tourism to bring enhanced focus and delivery on the ground.*
- ♦ *India's policy focus should integrate consumers as part of its overall policy framework nutrition goals and food safety systems. A holistic approach calls for mobilising consumers as part of the overall process, as they are the most important stakeholders.*
- ♦ *Food safety has by far the biggest impact on the health of a common Indian and thereby should take the highest priority*



India's food heritage must be well and truly preserved

The traditional Indian palate is deeply entrenched in the Indian psyche. Indian food habits, as our ancient texts had propagated and passed on in the kitchens of every Indian for generations together, must be safeguarded as it not only is a rich mine of health benefits but is a torch bearer of India's proud heritage, esp., in today's times when India is proudly leading across many key domains, globally.

- ♦ *Irrespective of their socio-economic standings, food plays an important part in everyone's life as it connects family, is part of our traditions and makes us happy and fulfilled. It is therefore inappropriate to define food by ratings and categories simply based on their contents of salt, sugar and fat. A typical Indian food is rich in spices and, hence, the majority of them would probably be clubbed unhealthy if one was to grade food by interpretive health star ratings.*
- ♦ *In a country where food has since centuries been considered as an extension of health, food and health are not conflicting objectives. India's food goals should integrate the objectives of food safety and care for India's heritage intertwined.*
- ♦ *It is critical to remember that while the scientific understanding of the profiling system is still emerging- it will be damaging to India's heritage, if it gets labelled as "unsafe & unhealthy" for consumption. While the scientific rationale may change tomorrow but the damage to the Indian food reputation will be irreparable.*



Develop a scientific reasoning about food quality

India's efforts against malnutrition requires an integrated approach which is built around the relationship between food environments (covering both organised and unorganised food economy), While on one hand, India has to deal with the challenge of malnutrition, it must contend with the effect of the nutrition transition which is rapidly degenerating into a crisis where the younger population adopt western food habits coupled with a sedentary lifestyle.

- ♦ *Any artificial measure to help people make healthy choices, needs to be holistic and well researched across critical domains of overall quality of life. Indian food, for its scientific character, needs a comprehensive-research into the use of ingredients, flavour profile and combinations, in recognition of the centuries old practices of Ayurveda.*
- ♦ *Until a holistic understanding of Indian food is achieved, it would not be appropriate to import global concepts of rating food products. Traditional Indian food recipes must be understood in its entirety before any changes can be made to their making.*
- ♦ *Regulators should ensure that a thorough and scientific understanding of Indian recipes is conducted to highlight the uniqueness of the regional cuisines we eat.*





Promoting the food processing industry and livelihood

Policy goals, which can have a disruptive impact, cannot be selective. Processed foods are sometimes unfairly targeted for all the healthcare woes, which for a country like India is not true. India, among the major global economies, is still very low in food processing, accounting for less than 10% of its total food. The food processing sector, which currently is small, holds a lot of potential. Already the PLI scheme has drawn significant traction and is expected to serve as an economic enabler. Proposed reforms such as FSSAI's proposal to introduce Front of Pack Labelling (FOPL) could act as a disruptor to the growth of an industry which is still in its development stage.

- ♦ *Disruptive proposals, such as proposed new interpretive product information, could serve as a detriment, particularly when the packaged industry is already taking significant steps to improve the health standards of the food. Further, if influencing consumer behaviour is the public objective, one must not ignore the point that over 65% of its food business in India is done by unorganised industry where packaging is not the standard practice.*
- ♦ *People must be at the centre of any regulatory discourse on food. Food choices should evolve organically and must not be forced on people, as doing so will lead to shifts in food choices which could have even worse impacts on health outcomes. Indian food choices are the result of a conscious choice and cannot be influenced artificially.*
- ♦ *As our survey shows, food choices correspond to people's health consciousness. Therefore, what is more important is to create a culture of health consciousness among people, which naturally would make them shift to healthier food choices.*
- ♦ *India should actively promote more startup ventures promoting Indian traditional food. There has already been some significant efforts that have gone into the promotion of traditional Indian food recipes. More such efforts are needed.*



Meeting the nutritional needs of people

India's efforts against malnutrition requires an integrated approach which is built around food security. Millets have traditionally been an important staple cereal crop in India, the production declined since the eighties. Millets have larger stake in household food security, especially nutritional, both for human food, feed and fodder for livestock. The National Year of Millets was celebrated in 2018. To create domestic and global demand and to provide nutritional food to the people, Government of India had proposed to United Nations for declaring 2023 as International Year of Millets (IYoM).

- ♦ *Considering the wide spread prevalence of nutritional deficiency such as protein, vitamin A, iron and iodine, especially among children and women, millets can act as a shield against nutritional deficiency disorders and provide for nutritional security.*
- ♦ *While the Government of India's efforts undertaken with regard to promotion of millet-based products are laudable, greater efforts may be made to promote millet-based products among consumers through celebrity promotions and other promotional efforts which overall will widely support India's nutritional goals.*

Celebrating Indian food

Cuisines have been an essential part of traditional diplomacy since ancient times, when imperial courts provided lavish feasts for diplomats (De Vooght, 2011). In contrast to the use of cuisine for improving formal state relations, the recent frenzy for gastrodiploamacy has broader dimensions. The term gastrodiploamacy was first used in an Economist article on Thailand's public diplomacy campaign to promote its food and culinary art to the world ("Food as Ambassador", 2022). Since then, gastrodiploamacy's popularity has spread rapidly.

Food diplomacy was at play in 2020 ahead of the meeting of Prime Ministers of India and Australia. Ahead of his video meet with Prime Minister Narendra Modi, the then Prime Minister of Australia Scott Morrison shared pictures of samosas on twitter, saying he would have liked to share the popular snack with the Indian leader.

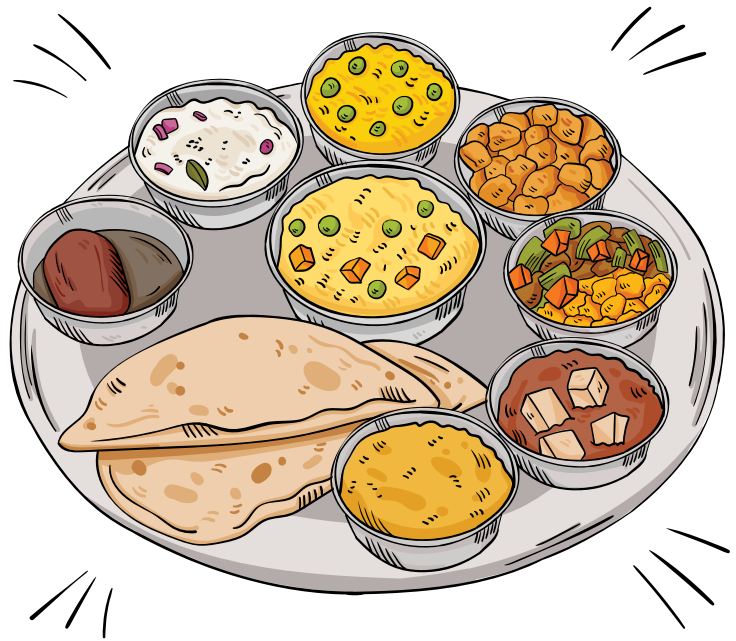
India should more actively promote the traditional Indian food in its truest version. Indian food is celebrated worldwide and is one of the most popular cuisines. We must celebrate Indian food, and not castigate it at the global forums through efforts such as gastrodiploamacy and outreach activities.





CHAPTER 1

Food diversity in India:
a look through India's culinary
traditions back in time



CHAPTER 1

Food diversity in India: a look through India's culinary traditions back in time

The evolution of the Indian palate has been influenced by the country's rich history, varied geography and cultural ethnicity. The chapter tracks this evolutionary journey of Indian food. It examines the nutritional and health benefits of traditional Indian recipes, which is built around Ayurvedic way of living, to bring out the value of traditional foods.

Renowned food scientist and food historian, KT Acharya, in his book *'The Story of our Food'*, said, *"behind many of the foods that we eat every day, lies history and geography, botany and genetics, processing technology and high romance."*¹³

According to Harvard anthropologist Theodore Bestor, the culinary imagination is a way a culture conceptualises and imagines food. There is however, no one defining characteristic which defines food that is eaten across India. Food in India represents an enormous number of local, regional,

caste-based ingredients and methods of preparation.¹⁴ Indian cuisine is best be described as a "palimpsest," containing multiple layers or aspects beneath the surface, with each layer exerting an unalterable impact upon the whole.¹⁵

Food in India is highly diverse and vary across regions. The country's diverse topography, climatic variations, cultural sensibilities and religiosity—together, have contributed to giving Indian food a distinct character in terms of their flavour profile, use of ingredients, methods of preparation; unlike any other global cuisines.

¹³ KT Acharya, Preface to "The Story of our Food", Universities Press

¹⁴ Tulasi Srinivas, 'Exploring Indian Culture through Food,' Education About Asia, Volume 16, Number 3 (Winter 2011).

¹⁵ 'Evolution of Indian Gastronomy: A Tale of Fusion', Indian Culture, Ministry of Culture, Government of India



Food constitutes a *mélange* of flavours from different parts of the country and has been influenced by centuries of cultural exchanges, adventures, invasions and rule by colonies such as British and Portuguese. Despite external influences in the form of invasions, conquests and migrations over centuries casting their influence on Indian food choices, Indian food has steadfastly safeguarded the originality and character.

History of Indian food – the origins¹⁶

India's rich history has shaped its culinary choices over time, and has been witness to several influences which came from outside the subcontinent and made it their own.

The early inhabitants of India are considered to have come in from outside the Indian subcontinent, and were hunter-gatherers, ate fruit, nuts, tubers and the meat of various animals. From about 10000 BCE, they began to settle in or near rock shelters and to domesticate dogs, cattle, sheep and goats. They cultivated wheat, barley and millet as well as peas, chickpeas, green gram and mustard. The people spoke Dravidian languages. By 20000 BCE, they had spread over a very wide area, including present day Maharashtra, Andhra Pradesh, Kerala and Tamil Nadu. In the Neolithic period (2800-1200 BCE), their dietary staples were two pulses and two millets. Cereals were ground into flour and mixed with pulse flour to make what may have been the ancestors of such typical South Indian foods as *idli*, *vadai* and *dosa*.

Subsequently, with the Harappan or Indus Valley Civilisation (3000 - 1500 BCE), the food choices became more refined. The Indus Valley civilisation was

an affluent commercial society, with merchants engaged in trade by land and sea with Central Asia, Mesopotamia and the Arabian peninsula. Agricultural operations included ploughing, furrowing, building channels and dams, and irrigating. The main crops were wheat and barley, planted in autumn and harvested in spring or early summer. Bread was a staple of the Indus Valley diet.

The second millennium BCE saw the appearance of the Indo-Aryans, who planted the seeds of what were to become some of the most unique features of Indian society: the caste system, the veneration of the cow, and the central role of milk and dairy products in food customs and rituals.

An understanding about the food habits and lifestyles of Indo-Aryans can be gathered from an extensive body of written texts, the Vedas. Although wheat was grown and consumed in the Indus Valley, there are no references to wheat in the Rig Veda. Barley was the main grain. Several texts mention *apupa*, a kind of cake made of barley or sweetened with honey and fried in ghee over a slow fire, which is understood to be a precursor of the modern *appam*, a South Indian bread made of fermented rice flour, and the Bengali *malpoa* or *malpua*, a fried pancake soaked in sugar syrup. Barley seeds were pulverized into a powder called *saktu*, the forerunner of *sattu* or *chhattu*, a dish still widely eaten by poor people in eastern India.

Milk from cows and buffaloes, and its products, played an important role in the Vedic Indians' diet and, indeed, in the Indian diet generally from this time onwards. Milk, raw or boiled, was drunk, or cooked with parched barley meal to make a porridge called *odana*. Since milk

¹⁶ This section is based on Collen Taylor Sen's book, 'Feasts and Fasts : A History of food in India' Speaking Tiger



left out in a hot climate quickly ferments and coagulates, it was converted into yoghurt. Yoghurt was eaten by itself, flavoured with honey, mixed with barley (a dish called *karambha*, similar to modern curd rice).

The widespread consumption of milk distinguishes South Asia from Southeast Asia and China, where milk and its products are rarely consumed. This reflects not just differences in regional agricultural economies, but also the prevalence of lactose intolerance (the inability by adults to digest lactose, a sugar, in milk). An estimated 90-100% of east Asians and 70% of South Indians are lactose intolerant, but this fails to just 30% of north Indians and 5-15% of people of northern European ancestry. However, yoghurt made with active and live bacterial cultures can be consumed by lactose-intolerant people, and this is the way that most Indians consume milk today, especially in the south and west of the country.

Yoghurt was and is churned to make butter (unlike in Europe, where butter is made from cream), and the leftover liquid became buttermilk – a favourite drink in rural India, sometimes flavoured in cumin or pepper. If butter is boiled to evaporate the water so that the milk solids fall to the bottom, the melted butter becomes translucent ghee (clarified butter), the most valued of all Indian condiments. When the impurities are filtered out, ghee can be stored for six months or more, an important quality in a hot climate.

Flavourings used in Vedic times included mustard seeds, turmeric, black and long pepper, bitter orange and sesame seeds. The Atharvaveda, a collection of

spells and remedies against diseases, mentions black pepper as a cure for infections caused by wounds.

The period that followed saw the rise of renunciant tradition and vegetarianism, and saw the rise of Buddhism and Jainism, which flourished during the Maurya period, a period which also saw Western influences trickling in the form of Alexander's presence in the region. From this discussion it is clear that many of the food habits of Indians have their roots in the past, and have been developed keeping in mind the climatic variations across different regions.

The influences which shaped India's culinary story – a journey through trade, invasion and migration

The Vedic period saw the development of sustainable food habits. Food during Vedic times were driven by the attributive property of Guna, a Hindu philosophical concept referring to quality or peculiarity. Sattva, rajas, and tamas, the three Gunas, were believed to have manifestations in the form of 'vegetarian, spicy and carnivorous.'¹⁷ The Chandogya Upanishad (VII.26.2) from the 8th century B.C, speaks of the close link between '*dietary purity and purity of being*'.

Many important texts on medicine, yoga, literature, religion, etc., from the Vedic era, such as Patanjali's *Yoga Sutras*, Charaka's *Charaka-Saṃhitā*, and the Upanishads, have discussed foods and their impact on the human body. The Vedas have emphasised connection between spirituality and choice of food, without relinquishing the need for taste and health.¹⁸

¹⁷ Antani, V. et al., "Evolution of Indian Cuisine: a socio-historical review" Journal of Ethnic Foods (2022)

¹⁸ Mehta JM. Vedic wisdom. New Delhi: V & S Publishers; 2013





The Aryans considered food to be a gift from God and a source of strength. In the four Vedas, *Rigveda*, *Samaveda*, *Yajurveda*, and *Atharvaveda*, there are various mentions of the grains used during those times.¹⁹ Initially, barley was a staple food of most Aryans. Cultivation of other crops such as wheat, sugarcane, and millets followed. Many traditional Indian recipes emerged during the Vedic period, when India was still heavily forested.

Even the philosophy of ahimsa shaped the food choices of people in ancient Hindu civilizations.²⁰ This tradition underwent a series of transformations, challenged by the geopolitical and socio-cultural changes that came with invasions from Central Asia and later during European colonisation, leaving a deep influence on Indian cooking.

Central Asian and Mughal conquerors, who ruled India between the 1100s and late 1700s, infused India's culinary tradition with Persian and Central Asian

flavours and practices. The effect was notable in the use of cream and butter in sauces, the presence of meat and nuts in dishes, and specifically in dishes like biryanis, samosas, and pulaos, which drew heavily on Persian cuisine. With Mughals came culinary inspirations and innovations that remain till date highly influential in the cooking practices of India. The predecessors of the Mughals, the Afghans, brought with them culinary wealth in the form of flatbreads, called naan, which are now common in most Indian households and restaurants.

The Oxford Companion to Food describes Mughal food as '*a blend of Persian and Hindu kitchen practices*' featuring such dishes such as pilaf (pulao), biryani, kebabs, kormas, koftas, tandoor dishes and samosas, and cream, almonds and rose-water as ingredients. Many of the dishes attributed to Mughals existed earlier at the court of the Delhi sultans, and some (such as kebabs) had antecedents in indigenous cuisine.²¹

¹⁹ Sarkar P, Dh LK, Dhumal C, Panigrahi SS, Choudhary R. Traditional and ayurvedic foods of Indian origin. *J Ethnic Foods*. 2015;2:97-109

²⁰ Sengupta J. Nation on a platter: the culture and politics of food and cuisine in colonial Bengal. *Mod Asian Stud*. 2010;44:81-98, cited in Antani, V. et al., "Evolution of Indian Cuisine: a socio-historical review" *Journal of Ethnic Foods* (2022)

²¹ Colleen Taylor Sen, 'Feasts and Fasts: A History of food in India'



During the Mughal reign of most of India, the Portuguese slowly started building their colonial empire. The Portuguese introduced their food habits into India to, for instance, cheese. A notable effect of the British on Indian cuisine is found in brewing. Taverns opened by the British served wine, beer, rum, and other British spirits. Indian cuisine has also shaped the history of international relations; the spice trade between India and Europe is often cited by historians as the primary catalyst for Europe's Age of Discovery. It also influenced cuisines across the world, especially in Southeast Asia, the British Isles and the Caribbean.²²

The cultural impact of trade is evident in India's cuisine, with specific regions and dishes bearing the mark of foreign influence. India's spices were highly coveted by Arab and European traders. In exchange, India received many goods that also influenced its culinary tradition. Peaches, pears, cinnamon, blackberries, lychees and the ubiquitous tea came from China. Portuguese traders brought

New World imports like tomatoes, potatoes, and chilies, which have deeply integrated into Indian dishes. Arab traders brought coffee and asafoetida powder. Onions came from West and Central Asia. Although British control of India introduced soup and tea to the country, it had little impact on the cuisine.

The absorption of Indian cuisine into British culture, however, has deeply affected the translation of Indian food abroad. *Chicken Tikka Masala*, a popular dish on many Indian menus, is in fact an Anglo-Indian creation, commonly known as "Britain's true national dish." Even Western concepts of Indian "curry"-the term is applied to a multitude of gravy and stew-like dishes-are derived from British interpretation of Indian cuisine. The story of the evolution of Indian food has therefore been one of cultural integration over time. It is deeply entrenched in the traditions and ethos of the country.



²² Cuisine and Diplomacy, by Vikas Khanna, Cuisine and Diplomacy (mea.gov.in)





Geography of Indian cuisine: location, climate and diversity

India's diversity has developed her varied cuisines. It can be divided into six climatic regions²³: tropical wet (humid): covering the Western Ghats, the Malabar coast, southern Assam, Lakshadweep and Andaman and Nicobar Islands; tropical dry, sub-divided into tropical semi-arid (steppe) climate, sub-tropical arid (desert) climate, sub-tropical semi-arid (steppe) climate: covering Karnataka, central Maharashtra, parts of Tamil Nadu and Andhra Pradesh; subtropical humid climate, covering North and North East India; and mountain climate, covering the trans-Himalayan belt.

Climatic variations determine the vegetation of a region, which in turn, influence food preferences of the people traditionally living in such places. Food preferences correspond to the nutritional needs of the people, hence, what would be appropriate for people living in the mountains would not be the same as the people living by the sea with high humidity. Regional food habits have evolved as a result of various factors, including cultural influences and

resource availability.

For instance, rice which is abundantly available in the Kashmir valley is a staple to the area. The influence of Mughlai food is seen in states like Punjab, Haryana and Uttar Pradesh. Rajasthan and Haryana see a variety of dals and achar (pickles) which compensate for the relative lack of fresh vegetables in many parts of these states. Around the coastline sea produce is relished. Similarly, in Bengal and Assam, the staple is rice and fish, which are available in abundance there. Southern Indian cuisines make great use of spices, fishes and coconuts which are available there aplenty.²⁴

The use of salt, sugar, and fat is essential to Indian cuisine, not just for taste, but for the beneficial value they bring to food, staying true to the original taste of the cuisine. Regional cuisines have been developed over generations giving due regard to the needs of the people native to the region, and catering to the physical well-being.

²³ Maps of India, <https://www.mapsofindia.com/maps/india/climaticregions.htm>

²⁴ This para is referenced to a write on 'Indian Food Culture' (<https://www.nhcgroup.com/indian-food-culture/>)



Climate, topography and seasonal variations influence food habits. For instance, the innovative pairing of food, in the South parts of India, takes account of the need to balance 'hot' and 'cold' food, as higher intake of chillies is often

accompanied with intake of curd as an accompaniment. Similar combinations exist in cuisine of other parts of the country, where ingredients are paired together for maintaining balance.

Culinary styles of India

Northern India

North Indian cuisine is characterised by meats and vegetables cooked in the tandoor, use of cream in dals and yoghurt in marinades. Wheat is produced in the north and therefore a range of breads - *naan*, *tandoori roti*, *chapatis* or *parathas* are traditionally eaten with foods of this region. North Indian cuisines carry imprints of foreign influences in them, for example, traditional Kashmiri cooking is almost like an art called Wazwan reflecting strong Central Asian influences. Punjabi cuisine is inspired by the Central Asian and Mughlai cuisines.



Southern India

South India is characterised by dishes cooked on the griddle such as *dosas*, thin broth like dals called *sambar* and an array of seafood. The region is also known for its heavy use of '*kari*' leaves, tamarind and coconut. Andhra Pradesh is known for its Hyderabad cuisine which is greatly inspired by the Mughlai cuisine. Chettinad cuisine is hot and pungent with fresh ground masalas.



Eastern India

Bengali cuisine has a high emphasis on chilli pepper along with mustard oil and tends to use high amounts of spices. The cuisine is known for subtle flavours with emphasis on fish, vegetables, lentils, and rice. The flavours of Oriya cuisine are usually subtle and delicately spiced and fish and other seafood such as crab and shrimp are very popular. The food across North Eastern states vary quite dramatically due to their geographical location. These areas are heavily influenced by *Tibetan*, *Chinese*, and even *Western Cuisine*.



Western India

Maharashtrian cuisine includes mild and spicy dishes with *wheat, rice, jowar, bajra*, vegetables, lentils being the dietary staples. Rajasthani cuisine is quite diverse. While the love for *shikaar* (a good hunt) among the erstwhile royalty has created a typical culinary art form that is inspired by royalty, there is equally grand vegetarian food of Marwar or Jodhpur with popular dishes such as *churma ladoo* and *daal baati*. Gujarat has a large population that has been mainly vegetarian for religious reasons and therefore Gujarati cuisine is strictly vegetarian, the popular dishes being *oondhiya, patra, khandvi* and *thepla*. Goan cuisine has a strong Portuguese influence. Konkani cuisine, while predominantly non-vegetarian, has many vegetarian delicacies.



Indian cuisines have evolved based on the nutrition requirements of the people and in recognition of climatic variations, food availability and access to raw produce. In a society where social values, culture and religious preferences are deeply entrenched, traditional regional cuisines will always remain critical to the Indian food story.



Diverse Faith, Diverse Population, Diverse Gastronomy

India's culturally diverse population is heavily influenced by religious and regional particularities. Approximately one-third of the population is vegetarian, dictated by their Hindu, Jain, or Buddhist faiths. Consequently, a significant portion of dishes throughout the country are without meat. Religious beliefs also affect other dietary restrictions that shape the cuisine: Hindu followers abstain from beef, because cattle are considered sacred in this faith, while Muslims do not eat pork as they believe it unclean. Depending on the dominant religious beliefs of a region, the cuisine may omit certain ingredients to comply with religious law.

The varieties of mithais/ desserts as one moves across the length and breadth of the country are so distinct and different within ethnic groups that one gets overwhelmed. While *rasgulla*, *cham cham*, *sandesh* and *laddoo*, *gulab jamun*, *kaju katli* are popular in West Bengal and North India, *messu*, *monthar* and *ghevar* are the order of the day in Gujarat and Rajasthan.

A defining characteristic of Indian cuisine is its festive calendar, which varies across regions. No festival is complete without food, especially sweets and savoury snacks. Due to this geographical and religious diversity, festivals, small or big, are celebrated throughout the year in India. These festivals offer a great opportunity for people to enjoy associated traditional delicacies. Food has been associated with God as per traditional Hindu beliefs. Milk pudding, butter, and curd preparations signify cowherd Shri Krishna's birthday, *Janmashtami*, while modaks made from fresh coconut, regional varieties of *murukku*, *laddu* and

kajjaya are thought to be favourites of Lord Ganesh and are offered on Ganesh Chaturthi.

In every religion, food has a special place. The festival of Eid, celebrated by Muslims, for instance, is popular for traditional recipes such as sheer khurma, shahi tukda, nalli bhuna, kebabs, biryanis. Similarly, food has a special place during Christmas. Christmas confectionary of Goan Christians which forms a part of 'consuada' (confectionaries sent to relatives and neighbours) draws on many cultures – Portuguese, Hindu, Arabic, Malaysian and Brazilian.

From a sociological vantage point, food defines the very contours and the context of social interactions between the various sections of society. This can very well be observed during the rites and rituals, fairs, festivals, feasts, and even fastings or other social occasions that are closely linked to the life courses and life styles of people, sometimes irrespective of the cultural background and socio-economic status of people.²⁵

India's culinary repertoire

India is a land of celebration and food forms part of every celebration and appeals to regional produce, ethnic choices of the locals, climatic variations. Despite many food typical of certain regions, they are liked by one and all. A list of some such dishes, which have stood the test of time, needs emphasis. Despite their regional choices, languages, customs, food unites the country.

Listed are some popular foods, which despite their regional origins, have gained wide popularity across the country.²⁶

25 Ramanujan A.K. 1968, "The Structure of Variation: A Study in Caste Dialects", (cited in Kundargi, R, "Traditional food habits & the discourse on development in Indian society: An anthropological perspective", 2014)

26 The foods listed in the box are only a few of the many popular foods that are and are randomly mentioned in no particular order.



Diversity of food in India

Appam

Appam is a popular Indian pancake made from a batter of rice flour and coconut milk, popular in Tamil Nadu and Kerala. It is traditionally served with spicy condiments such as coconut milk curry. It is a popular street food item that is mostly consumed as a snack. *Appam* is nutrient-dense, rich in carbohydrates and proteins. Being a fermented product, it offers useful probiotics for balancing gut flora and promoting digestion.



Bajre ki khichdi

Bajre ki khichdi is one of the foremost popular food items in Western India, especially the states of Rajasthan and Gujarat. Traditionally in Rajasthani households, *Bajre ki Khichdi* is served with a dollop of ghee and *kadhi*, but one can have it on its own with pickles, *chhaas* (yogurt-based drink popular across the Indian subcontinent), cow ghee and gur (jaggery). It has many antioxidant properties because bajra contains flavonoids, which helps fight infection, and has anti-ageing properties and promotes good skin and eye health, improves metabolism and promotes healthy bones. It's a natural detoxifier.



Chapati

Chapati, the unleavened flatbread from the Indian subcontinent, is considered to have originated from Indus valley civilization. In fact, stories suggest that roti existed in Harappan culture as well. *Chapaties* are a staple food in Indian meals and is consumed with dal, sabzi and achar. *Chapaties* are low on calories and is rich in protein, fiber micronutrients and sodium.



Avial

As the story goes, avial was developed on the orders of the Maharaja of Travancore, after he found that various parts of vegetables were wasted while chopping and asked the cook to find a way to use them. It is a creamy vegetarian curry that is originally made with curd and coconut milk, along with a variety of seasonal vegetables. *Avial* is a highly nutritious dish and is rich in vitamins, iron, zinc, phosphorous, magnesium and calcium.



Amritsari kulcha

Amritsari kulcha is a flatbread stuffed with potatoes, onions, cottage cheese, and spices. The flatbread is commonly garnished with coriander seeds, cilantro, and red chili powder. Thin, crispy, and smeared with *desi ghee* or butter, it is a staple food in Amritsar. Potatoes used as filling are a great source of potassium and whole wheat flour is a source of fibre.



Chaat

The term '*chaat*' is derived from a Hindi verb chaatna, meaning 'to lick', possibly referring to the finger-licking good quality of the dishes. In India, a chaat stand is usually specialized for one or two dishes which are always made fresh. Chaats have a wide variety: from *bhel puri*, crispy fried potatoes, *sevpuri*, and *pakora*, to chila pancakes with chutney and *pav bhaji*. For its delectable taste, chaats are prepared using fresh ingredients and is served fresh.



Dosa

Dosa is an ancient dish, whose origins are traced back to the 1st century AD, when it was first mentioned in Tamil literature. It is made with soaked rice and black gram beans, which are ground into a paste and mixed to create a thick batter, usually left to ferment overnight. It is then baked on a hot oiled griddle, pertaining a delicate, thin texture and round shape. *Dosa* contains healthy carbs, is a good source of protein, while being low on calories.



Kathi roll

Kathi roll is a street food dish hailing from Kolkata. In the 1960s, the cooks at Nizam's replaced the metal skewers with bamboo skewers, giving the dish its name, *kathi roll*, as *kathi* means *stick* in Bengali. It consists of skewered and roasted kebab meat that is wrapped in paratha flatbread. *Kathi roll* is prepared using whole wheat flour, which is rich in vitamins, zinc, iron, magnesium and calcium.



Khakhra

Khakhra, is a popular, crispy flatbread originating from Gujarat. Made with wheat flour, mat bean, and oil, the crackers are typically consumed for breakfast, providing a healthy snack that is best enjoyed when accompanied by chutneys or curries. *Khakhra* can also be transformed into a sweet snack by spreading some ghee and sugar on top of it. *Khakhra* has the goodness of whole wheat and fenugreek leaves and some pulses added to it gives it a delicious taste while making it a healthy snack.



Kutchi dabeli (Kachcchi dabeli)

Kutchi Dabeli, which originated from Kutch in Gujarat, combines toasted *ladi pav* buns and a filling that is made with mashed potatoes and a spice mix usually consisting of coriander, turmeric, cardamom, fennel seeds, coriander, chili peppers. The term *dabeli*, which translates as *pressed*, is mainly sold and enjoyed as street food, and is a popular evening snack in Gujarat.



Mysore Pak

Mysore Pak, known as *the king of sweets* in the South, was invented in 1935 at the Mysore Palace by the royal chef Madappa. As the King was ready to have his lunch, the chef began experimenting with a sweet dish, combining gram flour, ghee butter, and sugar into a syrup. When the King finished his lunch, the sweet cooled down and was served to the King, who loved it. The chef told him it was *Mysore paka*, the word *paka* denoting a sweet concoction, soon to be proclaimed as a royal sweet. *Mysore pak* is prepared using gram flour which is abundant in protein and fibre. The use of ghee in the sweet aids in nutrient absorption and is high on antioxidants.



Ragi mudde (Ragi balls)

Ragi mudde is a simple but wholesome healthy food of soft balls made with two basic ingredients—finger millet and water. They are a delicacy and staple food in Karnataka and parts of Tamil Nadu and Andhra Pradesh. Finger millet is called as Ragi in Kannada, Mandua in Hindi, *Nachni* in Marathi and Ragulu in Telegu. The word “*mudde*” simply means lump in Kannada. These delicious and nutritious balls is also considered the original “protein bites”, intended to keep farmers and working folks full during the day. Packed with nutrients, *ragi mudde* provides health benefits such as enhanced digestion, is good for bone health. The amino acids present in ragi helps reduce cholesterol levels.



Ros Omlette

Ros Omlette is a street food dish consisting of an omelet that is drizzled over with a gravy that is based on chicken, chickpeas, or coconut milk. The dish is a staple of Goan cuisine and is best consumed fresh from the street carts that are dispersed along the streets of Goa, which typically come alive in the evenings. Traditionally, *ros omlette* is made in xacuti (a special Goan chicken curry, made with poppy seeds, coconut and a pool of spices). The use of spices and fresh ingredients gives it its unique flavour profile and makes it a healthy snack.



Tikka

Tikka consists of boneless meat, usually chicken, that is cut into smaller pieces and marinated in yogurt and traditional Indian spices such as turmeric, cumin, coriander, cayenne pepper, chili, garlic, and ginger. Indian *tikka* has an unknown origin, but it is believed to be an ancient dish that has existed since the discovery of the tandoor oven, which has been used in India for more than 5000 years. Chicken *tikka* is rich in protein.



Vada Pav

Vada Pav is one of Mumbai's favourite sandwiches, its name referring to the key ingredients: *vada*, or spicy mashed potatoes that are deep-fried in chickpea batter, and *pav*, or white bread rolls. This iconic street food is said to have originated from a street vendor to satiate the hungry workers, and concluded that the ideal dish should be portable, affordable, and easy to prepare, considered an ideal working-class snack. While *vada pav* is calorie dense food, it is a great alternative to healthier alternatives such as burger.



Pav bhaji

Pav Bhaji is a popular street snack originating from the Indian state of Maharashtra. It consists of a vegetable curry that is typically served with a soft bread roll known as *pav*. The dish was invented in the 1850s as a midnight meal by street vendors who prepared it with all the leftover vegetables from the day, which were then mashed and combined with spices and ghee butter. The use of fresh vegetables and spices in *pav bhaji* offers a lot of health benefits, making it a healthy snack option.



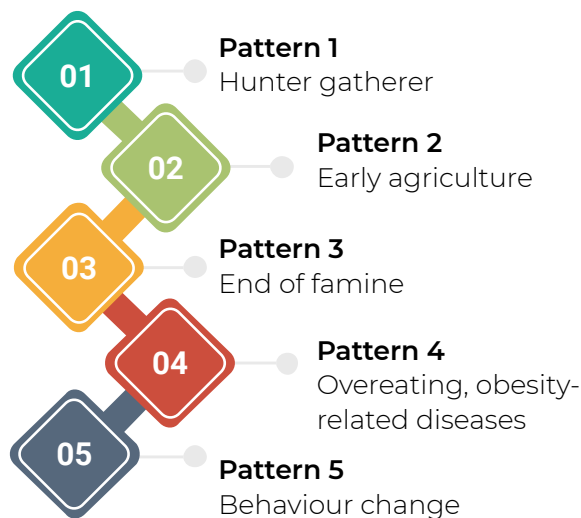
Dietary choices of Indians—the influences and motivations

Dietary habits are not simply determined by physiological or nutritional needs of people, but also the pleasure that is derived from eating. This is especially true for people with lower income levels as research done by Noble laureates Abhijit Banerjee and Esther Duflo (2007) emphasised that people with lower income levels maximise pleasure in their food choices.²⁷

People do not just eat nutrients or ingredients; instead, dietary habits are part of a system, which is shaped and driven by culture, context, socio-economic status, food environment, and hedonic motivation. Food habits of Indians have traditionally been influenced by local factors including the climatic conditions of the region people live, availability of cereals, traditional food habits. However, in the past two decades, there has been a rapid change in the food choices of Indians with greater access to Western food choices.

This is widely considered part of a nutrition transition wherein people are exposed to Western food habits. Modernization, urbanisation economic development, and increased wealth lead to predictable shifts in diet, referred to as “nutrition transitions.”

Researchers divide the nutrition transition into five patterns, highlighted in the diagram below, each phase associated with the economic well-being of people and associated behavioral choices.



India currently is passing through **pattern 4**, a phase associated with rise in people's income and access to abundant high-calorie foods. Countries going through this phase finds its people becoming less active, which results in increase in obesity and obesity-related chronic diseases such as diabetes and heart diseases. Economic progress also leads to better markets and a ‘westernization’ of dietary habits towards more processed and sugary products (Popkin 1997, Pingali 2007). Rising wages further increase the opportunity cost of time spent cooking at home, leading to higher consumption of energy-dense convenience-based food items. The post-liberalisation phase witnessed a rise in the living standards of people especially of urban Indians, many of whom would were now engaged in work which requires little to no physical

27 Banerjee, A.V., Duflo, E., 2007. The economic lives of the poor. J. Econ. Perspect. 21, 141–168. (cited in Samaddar, A. et. al, “Capturing diversity and cultural drivers of food choice in eastern India”, 2020)

28 Banerjee, A.V., Duflo, E., 2007. The economic lives of the poor. J. Econ. Perspect. 21, 141–168. (cited in Samaddar, A. et. al, “Capturing diversity and cultural drivers of food choice in eastern India”, 2020)





activity, unlike their ancestors who were dependent on agrarian activity and were exposed to physical exertion. Overall, this shift in dietary habits together with a sedentary lifestyle has rapidly resulted in the creation of a food culture which is driven by pleasure food, rather than the traditional food which have prospered in India.

There exists a rural-urban divide when it comes to consumption of food, induced by economic considerations. The culture in which individuals are brought up has a very strong influence on the type of choices they make, and social interactions will have a profound effect on our views of foods and eating behaviour.²⁹ In India, this characteristic can be witnessed in the diverse food choices of people. Food is central to individual identity, in that any given human individual is constructed, biologically, psychologically and socially by the foods she/ he eats.

India's food choices, therefore, is driven by many independent factors such as people's socio-economic realities, which

is evident from data that a large section of the population depends on unpackaged food including food prepared on the roadside.

The food market: size and influences

Rapid urbanisation, increase in disposable income levels and the rise of the aspirational Indian, especially in urban pockets, has led to sedentary lifestyle among a section of Indians, and the processed food industry has been a beneficiary of this. Yet, however, the industry is small. One of the stories of aspirational India has been the rise in the market size of the restaurants and food services industry. Factors such as favourable demographics, increase in disposable incomes, busy lifestyles and heightened aspirations of the middle class are reasons cited for its robust growth.³⁰

The market size of the Indian restaurants and food services industry stands at INR 4.1 trillion as of FY2019 registering a Year-on-Year (YoY) growth of about 10.5% and a CAGR growth of 9 % between FY2014 and FY 2019. *The industry comprises two distinct segments: organised and unorganised. The organised segment accounts for about 30-35 % of the industry, while the unorganised segment accounts for the remaining 65-70 %. The unorganised segment consists of individuals or families selling ready to eat food through roadside vendors, dhabas, food carts, street stalls, etc.*³¹

A reflection of the wide divergence, in terms of the type of food Indians eat, emerges from the small proportion which is catered to by the packaged food industry. According to a report by

29 Richard Shepherd, "Social determinants of food choice", Proceedings of the Nutrition Society, (1999), 58, 807-812

30 "Indian Restaurant & Food Service Industry Update": CARE Ratings (March 20, 2020)

31 "Indian Restaurant & Food Service Industry Update": CARE Ratings (March 20, 2020)



Technopak Advisors (2022), the Indian packaged food retail market, estimated at INR 6,00,000 crore in FY 2020 contributes only 15% to the total food and grocery retail market which in same period is estimated at INR 39,45,000 crore. In terms of volume, India is still a country where the unorganised food industry is highly dominant, and is likely to continue to be so because of income disparities, and people's access to basic necessities of life.

The large variety of food choices that exist in India is the result of various independent factors such as cultural preferences of people, climatic peculiarities of regions, and the socio-economic classification of people; hence, not easy to categorise into a common food framework. India's food choices stems from its diversity. While India's traditional food habits have been healthy, taking into account the nutrition, taste and method of cooking , the transition

to modern food habits along with a sedentary lifestyle has impacted the health outcomes. A way to deal with the adverse impact of the nutrition transition, which has greatly impacted the urban population, is essential for the country to stay ahead of its health goals. At the same time, it is critical that the health of the large cross-section of the population which lives on unpackaged food, including food prepared by the road side vendors, are provided access to safe and hygienic food.

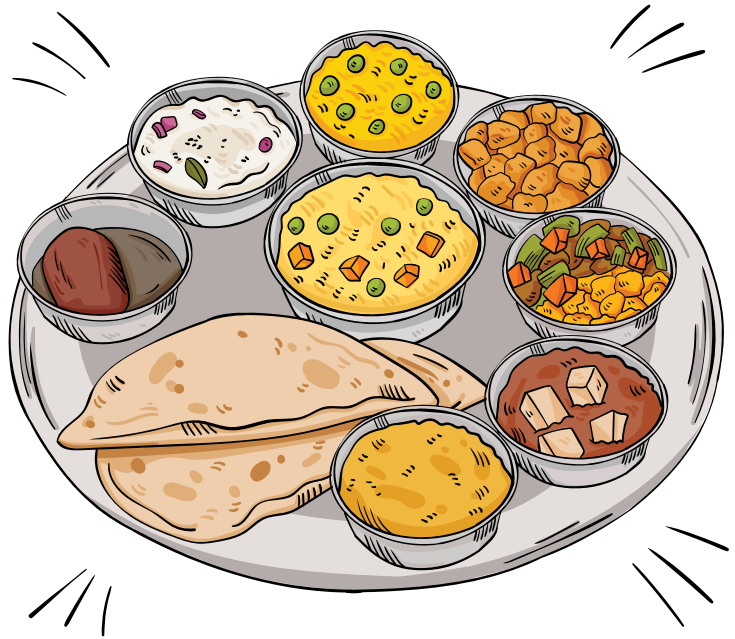
Indian food celebrates the diversity of India, is unique and must be preserved in their original form. Despite the socio-economic inequalities which influences food habits of people, Indian food is truly unique in its character, regional variations, and the cultural influences they reflect. Regulatory focus should be to safeguard India's food heritage, while making food safe and hygienic for all.





CHAPTER 2

Indian food habits and their peculiarities



CHAPTER 2

Indian Food Habits and Their Peculiarities

Food choices of people is influenced by factors such as demography, economic status, lifestyle, occupation, among others. The chapter examines the popularity of Indian food, especially, the snacks industry, across sweet and savoury. The chapter looks into the concept of balanced diet and the importance of healthy snacking.

Indian food choices are diverse and have evolved over time and the choice of food for Indians is shaped by many factors ranging from history, culture, ethnicity, location, migration, occupation and socio-economic status.

India enjoys a favorable demographic profile, as evidenced by the increasing share of its overall working-age and young working-age population, who are inclined to experiment with various food palate and cuisines. According to the United Nations Population Prospect, the young working-age population (20-34 years) share in the country's total population has steadily risen from 24.2% in 1990 to 25.6% in 2021 and the share of the working-age population (15-64 years

of age) is also on the rise, expecting to near 70% towards 2030.

This demographic profile of its population, coupled with rising disposable income levels and a growing middle-class will enhance consumer demand potential for packaged foods, which has been increasingly become a go-to-option for people due to rise in e-commerce sales, which have sharply proliferated in recent years. Social trends such as growing nuclearisation of Indian families as well as increasing female workforce participation drive lifestyle pattern changes and lead to demand for more convenient consumption.

This has translated into the maturing of



the food market, which has been shaped by change in food preferences. The following section examines the snacking industry in India including the changing preferences of people which has cast an influence on the overall market.

The snack industry in India

Snacks, typically would mean any food eaten between main meals. While there has been research which has attempted to understand the impact of snacking on the nutrition and health outcomes of people, there is no clear evidence to suggest either of the outcomes. This may be because of a lack of a common scientific definition of what is a snack, and the health and lifestyle of the person having it. However, dietary guidelines, globally and in India, have highlighted the importance of snacking in terms of their health benefits, such as maintaining adequate nutrition level, curbing appetite to prevent overeating at next meal, providing a boost of energy if several hours pass between meals, managing the formation of acid reflux, amongst others. Yet, there are pitfalls to over snacking, such as unwanted weight gain, increased propensity to eat hyperpalatable snacks associated with decreased intake of healthy food. Hence, the concept of “Portion Size” is extremely critical in management of healthy snacking.

And there lies the need for healthier snacking options. The organised Indian snacking industry is divided into traditional and western, with the latter dominating the savoury snacks segment. The sweets segment is dominated by traditional and mostly local players.

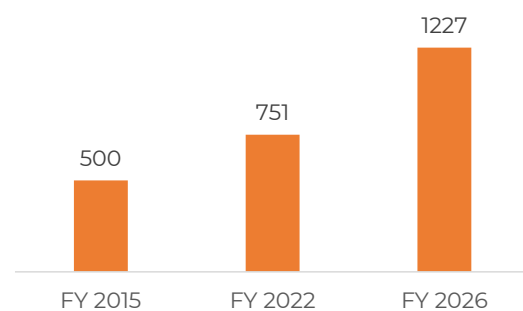
Snacking in between the meals has always been traditional in Indian culture and COVID-19 forced lockdown has

increased this habit of snacking multi-fold and is driving the growth of this industry.

The savoury snacks market

Indian Savoury Snacks market is valued at INR 751 billion in 2022 and is expected to reach INR 1,227 billion by 2026 at CAGR 13%.³²

Figure: Indian savoury snacks market, INR Billion, 2015-2026



Source: Frost & Sullivan Analysis, 2022

Traditional snacks market which is valued at INR 366 billion, contributes around 48% to the total savoury snacks market. Traditional snacks market comprises of namkeens, bhujia and ethnic snacks such as dry samosa, kachori, chakli, etc. Western snacks market is valued at INR 385 billion in 2022 and consists of chips, extruders and a new variety of snacks called as “bridges” which has local taste but western look.

Western snacks still dominate the organized market with 57.2% of market share in the Indian savoury snacks segment. Ethnic namkeen and snacks contribute to 26.9% of the organized savoury market followed by ethnic bhujia which is at 15.9% in overall savoury snacks market in 2022.³³

Despite dominance by the Western savoury snacks, the organised traditional

³² Frost & Sullivan Analysis, 2022

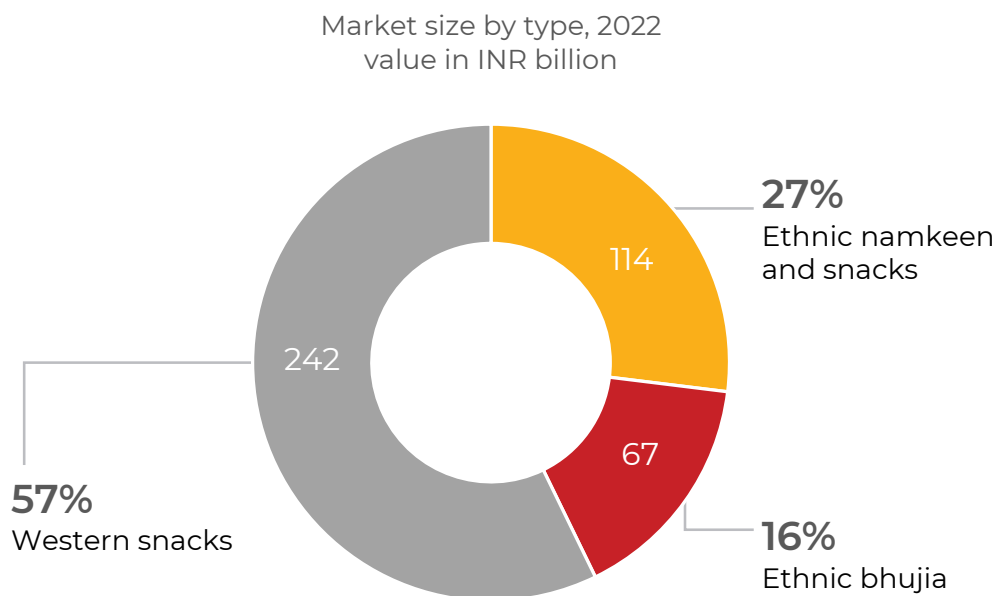
³³ Frost & Sullivan Analysis, 2022



snacks market has grown in maturity in recent years, and is likely to pick up even further as new products are getting added to the product range which not only appeal to the Indian taste palette but also showcase many of the superior product (technical) aspects including good quality & nutrition. This has resulted also due to improved packaging and sales practices which now allows companies to develop processes to increase the shelf life of traditional foods

while retaining the authentic flavour profile of the food. Typical examples are Bhakarwadi, samosas, Bhel Puri by Haldiram's, Aam Panna by Paperboat, packaged coconut water, etc. This trend is expected to continue as companies discover processes to increase the shelf life while retaining the authentic taste of traditional foods. Companies are also leveraging product innovation to compete within as well as outside the category.

Figure: Organised Indian Savoury Snacks Market



Source: Frost & Sullivan Analysis, 2022

The organised savoury snacks market could see a reversal in this trend as industry estimates the organised Indian ethnic namkeen and snacks market could grow by CAGR 16% to become INR 204 billion industry by FY 2026 from INR 114 billion in FY 2022.³⁴

While the overall snacks market is witnessing healthy growth, the ethnic namkeen and snacks market stands out. The growth in this segment is the highest

across the segments, offering higher margins resulting in more competitors. As companies compete for share of market, new tastes, new products, and new variations of traditional products, attractive packaging and flexible price points are fueling the high growth in the namkeen market. This particular category is a unique example of amalgamating traditional wisdom, ethnic ingredients and preferred Indian taste. A high growth of nearly 16% over

³⁴ Frost & Sullivan Analysis, 2022





the next four to five years is forecast. The growth is also supported by the large presence of the unorganized segment, catering to unique taste-requirement in each region and ensuring reach to even the most rural markets. In the long run, consolidation of the unorganized sector is expected.

The INR 751 billion Indian savoury and snacks market is characterized by a large number of unorganized players across the product segments. Traditionally each type of snack is very specific to each region; hence, many small companies cater to this market. These players have a slim portfolio of products, usually of a single category and in many cases only provide traditional snacks items. They also operate in a small geographic range confined to a single state or city and primarily ride on the lower price and the traditional taste.

The sweets market

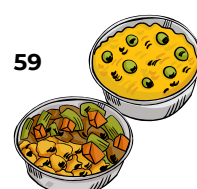
Sweets have been very traditional and popular cultural aspect in Indian households. The Indian sweet market is valued at INR 593 billion with major share coming from unorganized players. The market is predicted to reach INR 846 billion by 2026.³⁵

Indian sweets market is largely unorganized with INR 535 billion market value and share of almost 90%.³⁶ Standalone mithai shops are spread across the geography in India which sale regional as well as traditional sweets such as Gulab Jamun, Rasgulla and plethora of Barfis. Organized players in sweet market have product offerings such as tinned Gulab Jamun, Rasgulla, Bengali mithai etc.

Overall, it is seen that there is an increased interest among people to have more traditional snacks in the organised space, which is reflective of people's interest in traditional foods as seen in the industry data. This could also be seen to be a result of companies reaching out to more consumers through online sales, smart packaging and delivery.

³⁵ Frost & Sullivan Analysis, 2022

³⁶ Frost & Sullivan Analysis, 2022



The concept of balanced diet and Indian food

Dietary data analysis of adults in urban and rural India on macronutrient intakes based on household 24-hour dietary recall showed that an average adult from urban India consumed 1943 kcal/ day,

289 g carbohydrates, 51.6 g fat and 55.4 g protein. In rural region, an average adult consumed 2081 kcal/ day, 368 gram of carbohydrates, 36 gram of fat and 69 gram of protein.³⁷

Table: Region wise energy intakes from various food groups among adults in urban and rural India

Region	Intake of total calories (kcal)
North (Urban)	1723
Central (Urban & Rural)	1825
East (Urban & Rural)	2013
North East (Urban)	2908
West (Urban & Rural)	1738
South (Urban & Rural)	2005

Source: Energy intakes by regions ("What India Eats – ICMR – National Institute of Nutrition, 2020)

An analysis of the calorie intake highlights the diversity in terms of nutrition intake amongst people across region. It is not difficult to understand that people living in different regions across the country follow distinct food habits. These habits are also influenced by the socio-economic status of individuals, their access to food types, cultures and habits.

Data on estimated energy requirement, as captured in ICMR-NIN, Report of

the Expert Group, 2020, "Short Report of Nutrient Requirements for Indians" Estimated Average Requirements (EAR) shows that the energy needs are typically dependent on the lifestyle and the health profile of people.

The table below highlights the EAR for adult men and women, as highlighted in the ICMR-NIN 2020 report.

Age group	Category of work	Recommended energy requirement (Kcal/d)
Adult Men	Sedentary work	2110
	Moderate work	2710
	Heavy work	3470
Adult Women	Sedentary work	1660
	Moderate work	2130
	Heavy work	2720

Source: ICMR-NIN, Report of the Expert Group, 2020, "Short Report of Nutrient Requirements for Indians"³⁸

³⁷ What India Eats – ICMR – National Institute of Nutrition (2020)

³⁸ A Brief Note on Nutrient Requirements for Indians, the Recommended Dietary Allowances (RDA) and the Estimated Average Requirements (EAR), ICMR-NIN, 2020. Available at https://nin.res.in/rdabook/brief_note.pdf



It is clear that the concept of a balanced diet in India is not easily understood by all and requires great technical understanding. It varies on multitude of factors such as person's age, gender, health status, work done et al. It is even more difficult to measure in the Indian context where socio-economic status of a person, their location, financial status, educational background, culture, faith, amongst others contribute to shaping an individual's food choices.

There is no debate on accepting that nutrition is a basic human need and a prerequisite to a healthy life. A proper diet is essential from the very early stages of life for proper growth, development and to remain active. To even understand the concept of recommended dietary allowances (RDAs), one has to be scientifically sound and have the ability to translate these into actual foods in their right amounts. The RDAs are nutrient-centered and technical in nature. Apart from supplying nutrients, foods provide a host of other components (non-nutrient phytochemicals) which have a positive impact on health. Since people consume food, it is essential to advocate nutrition

in terms of foods, rather than nutrients. Additionally, food group-based diets for daily meal planning is not only easier to understand but also inherently includes the RDAs. Emphasis has, therefore, been shifted from a nutrient orientation to the food-based approach for attaining optimal nutritional status. Dietary guidelines are a translation of scientific knowledge on nutrients into specific dietary advice.

Calorific intake of Indian dietary habits on an average is below the recommended standards of WHO/ ICMR and is mainly derived from cereals. The diet has less intake of proteins, vegetables, fruits and vitamins. Indian traditional snacks has high oil, fats and even proteins with less trans fats and preservatives, this creates a healthier option than its western counterparts.

Food is intrinsically related to a person's individuality. And changing food habits without a scientific basis can affect a person's individuality and may be counterproductive in a situation where malnutrition is a challenge.



Healthy snacking – a case for millet-based products

As national survey on nutrition reveal, many Indians suffer due to malnutrition and have a deficiency of micronutrients. It is also true that a vast majority of Indians cannot afford a healthy nutritious meal. Millet based products offers a solution to these dual concerns,

Millets, popularly known as Nutri-cereals, are the perfect examples of rediscovered treasures from past. These grains are being discussed at different levels & platforms of importance by Government, Industry including Research & Academia, for their tremendous benefits, right from environment sustainability to nutrition to health. Traditionally, these superfoods were part of Indian households and commonly eaten as “bajre ki roti” in northern winters, while ragi balls (“mudde”) has been something very common in southern cuisines. As we wake up to a world where there are rising concerns related to health & nutrition, people have started going back to indigenous recipes and look for more closer to nature, seasonal & nutritional foods. Millet based products are definitely one of the credible answers to these consumer demands & will provide for healthful food choices for the next generations.

Millets are small seeded grasses and can be classified into major and minor millets. Major millets comprise of, sorghum, pearl millet (Bajra) and finger millet (ragi) while foxtail, little, kodo, proso and barnyard millet fall into the category of minor millets. Millets are very high in their nutrition content. Millets are rich in B vitamins, calcium, iron, potassium, magnesium, zinc. These are also naturally gluten-free and have low-GI (Glycemic index). Being gluten free, makes the millets suitable for people with gluten intolerances. Millets are also source of non-starch polysaccharides (fibres) which act as prebiotics in the gut. Millets

are a group of highly variable small-seeded grasses, widely grown around the world as cereal crops/grains. Millets are very high in their nutrition content. These grains are high in carbohydrates, with protein content varying from 6-11% and fat varying from 1.5 to 5%.

Being the largest producer in the world, millets are of significant importance to India. India produces approximately 17.3 million tonnes of millets. The world production of millets is 86.3 million metric tonnes. The major millets grown are Pearl and Sorghum millet accounting for more than 90% of the world millet production. Up to 1965-70, millets contributed to nearly one fifth of the Indian food basket. However, wheat and rice have dominated thereafter with millet contribution decreasing to around 6%. The area under production for millets also decreased by more than half over the same time period.

Millets based products such as flour, flakes, cookies, etc. are more than ever increasingly visible in consumer market. The high protein content of these grains makes them ideal for vegetarian and vegan population, largely based in the U.S., Europe and Asia Pacific.

While Industry is making efforts to bring back the lost glory of these grains, the importance of nutrient rich millets is also being recognized by the Government. The year 2018 was celebrated as the National year of Millets to boost production and consumption of millets. Millets have been included under POSHAN Abhiyan by Ministry of Women & Child Development. Government of India had proposed to United Nations for declaring 2023 as International Year of Millets (IYOM). The proposal of India was supported by 72 countries and United Nation's General Assembly (UNGA) declared 2023 as International



Year of Millets on 5th March, 2021. Now, Government of India has decided to celebrate IYOM, 2023 to make it a peoples' movement so that the Indian millets, recipes, value added products are exported worldwide.

The Government of India through the Ministry of Food Processing Industries (MoFPI) is implementing Production Linked Incentive Scheme for Food Processing Industry for Millet-based products (PLISMBP), with the objective to increase usage of millets in food products and promote its value addition by supporting manufacture of selected millet-based products and their sale in domestic and export markets. Such schemes eventually help in development of global leaders in food manufacturing, increase opportunities for off-farm employment, strengthen select Indian food brands for greater visibility and acceptance abroad, ensure fair prices for farm products and higher farmer incomes in line with India's natural resource endowment, and promote Indian food brands abroad. All these initiatives are also being actively supported by food industry.

Millets which have been called Poor man's food, are now taking the centre stage as healthy & nutritious alternative to other food products. The time is ripe for people from different sectors to step in and take this mission forward. Strategic efforts from different sectors from governmental to institutes to industry will definitely lead to better technologies, processing machinery & prodigious research, to bring to the plates of Indians as well as inclusion in various international cuisines the taste of nutritious millets and make them part of daily diet for sustainable way of living.

Food promotes health and wellness in people. Moderation in eating is

important to ensure that the food we eat helps in terms of keeping us energized and healthy. In this regard, it is important that people take care of their health profile through regular physical activity. Among other factors which often acts counter to the concept of healthy snacking is the lack of portion control. Nutritionist and author Kavita Devgan agrees — portion control is essential. "Be very mindful of portions, and keep your snacks' calories between 150 to 200. Whatever you choose to snack on, ask yourself if it's doing anything good for you. A snack should fill in the gap in your diet — in today's time, immunity is the buzzword. So, look at snacks that will help your immunity," she advises.³⁹

In summary,

Health and wellness has always been associated with our traditional and daily food habits. Indian traditional food choices were built around local availability, climatic conditions, geography, among other factors. This is true for all food categories including for snacks, where the focus has been to ensure that the food that we eat is tasty, yet healthy. A shift to healthier alternatives such as millet-based products would help mitigate the scourge of malnutrition in a country as diverse as ours where socio-economic inequality is a reality. While the traditional food industry is making efforts to bring traditional food, with all its nutritional benefits and taste, to households, it is important that the India develops a scientific basis to understanding Indian food, not through the prism of global food categorization but through deeper understanding of the physiological needs of people and also keeping in mind the socio-economic dynamics of factors which influence the food industry, in order to not suffocate the "just-starting" farmer-based, product-led millet revolution.

39 Samreen Tunekar, "The Boom of India's Healthy Snacking Industry", MansWorld India



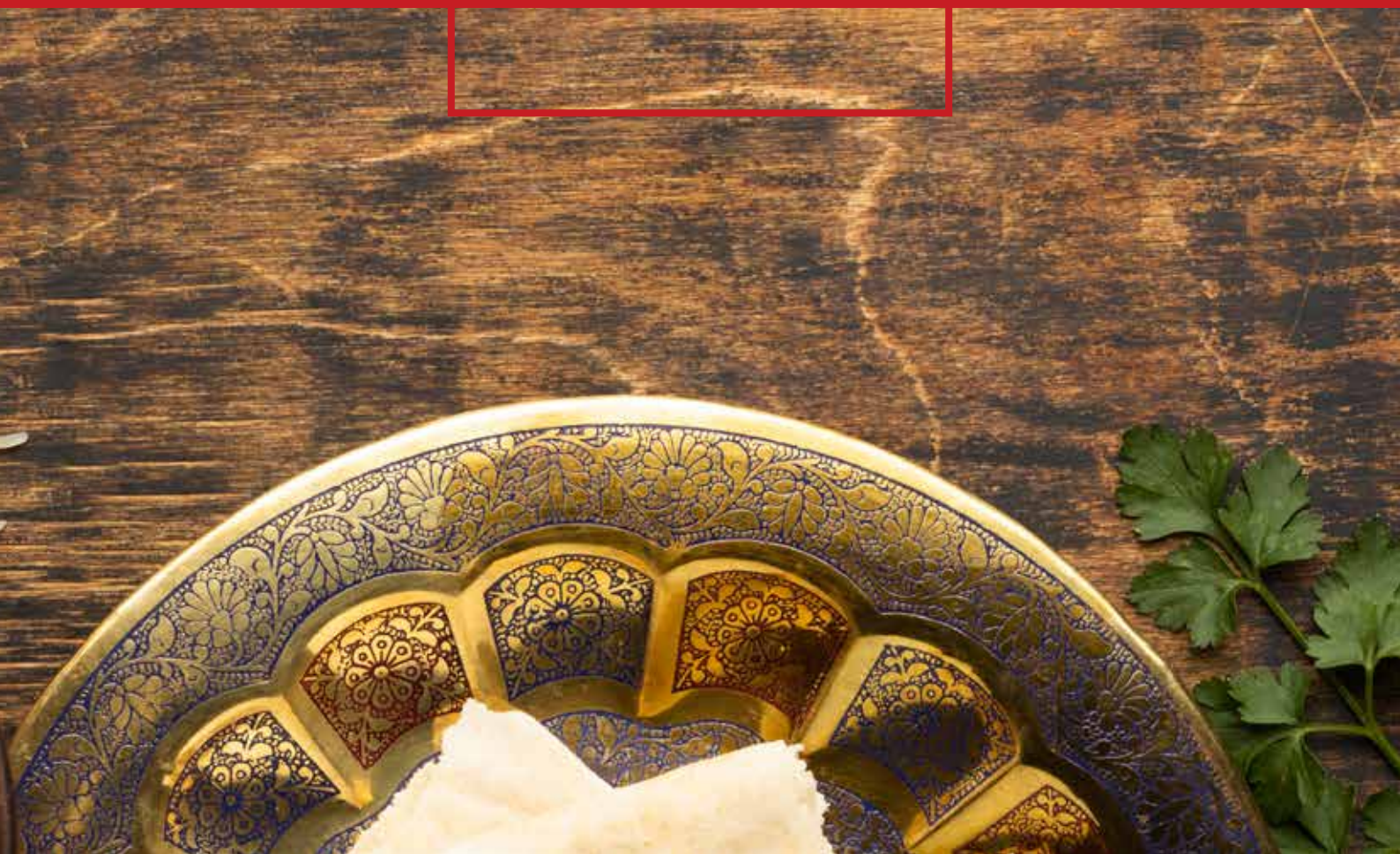


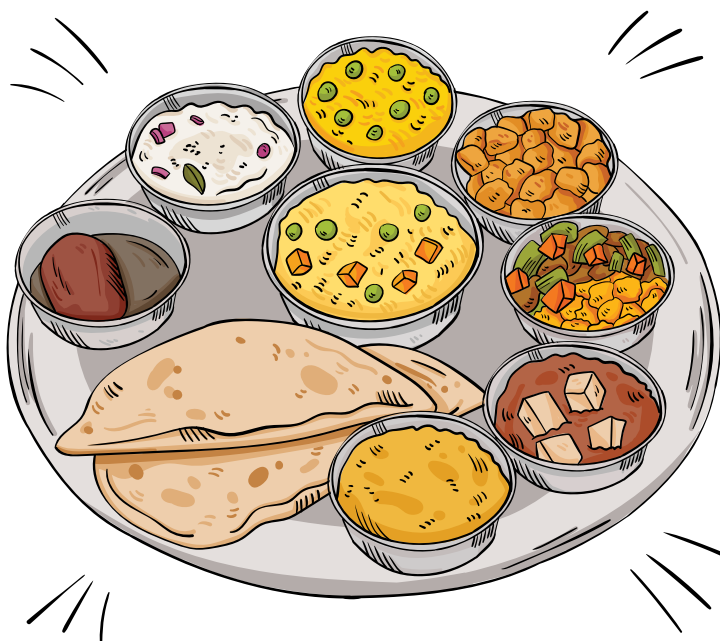


CHAPTER 3

Changing food habits in India:

The influences of modern cuisine on
Indian's food choices





CHAPTER 3

Changing Food Habits in India:

The influences of modern cuisine on Indian's food choices

There has been a rapid shift in people's food choices in India with traditional diets fast getting replaced by global cuisines. The chapter looks through reasons behind this change, the scale of it; and examines the impact it has had on the health and wellness of people.

A significant shift is underway when it comes to food choices of people across India, as a significant proportion of the population is gravitating from traditional food to modern food habits.

The High-Level Panel of Experts on Food Security and Nutrition, a UN body for assessing the science related to world food security and nutrition, in its report, *"Nutrition and Food Systems"* (2017), said that the food environment in urban centres in India is characterized by increased choices and availability of processed, packaged and ready to eat energy-dense foods. Between 2006 and

2011, there was a 20% increase in volume growth of chained fast-food restaurants as compared with a 7.2% increase in independent restaurants. Over the same period of time, there was a 54% increase in supermarket growth in the country whereas there was a 4 % decline in independent grocers.⁴⁰ Although the informal food sector in India was still dominant, a shift towards modern retail was underway. In recent years, this change has been more profound.

The change is not limited to urban India alone, but has influenced the food habits of those living in rural locations

40 The High-Level Panel of Experts on Food Security and Nutrition Report, *"Nutrition and Food Systems"* (September 2017)



due to rapid urbanisation. With large scale industrialization, mechanisation of indigenous food production and preparation, the delicate balance that people were able to achieve between traditional food habits and their well-being, through the ages, has been severely altered.⁴¹

The factors behind food habits – the preference for modern international food

Food habits of Indians have undergone massive transformation in the recent past, since the economic liberalisation. India's changing demographic character, rising levels of urbanisation and the coming of age of the aspirational Indian, has paved the way for globalisation of food choices for a large proportion of the population. Globalisation in India, kickstarted in early nineties, led to a world of opportunities for Indians, driven by rise of private enterprise, the emergence of creation of a thriving middle class enjoying higher salaries, all the while making them more aspirational.

With increase in urban working culture and fast-paced lifestyles, there is limited time available for cooking and meal preparation. Ready-to-eat products and snacks have become quite popular, especially in urban areas.⁴²

A survey conducted by market research firm Ipsos, titled, "The Evolving Indian Palate", conducted across 1,000 households across 14 Indian cities in

2019 found 70% of the respondents felt that rather than being limited to occasions, western food is more likely to be a meal replacement owing to its ease of preparation.⁴³ "Despite the entrenched traditional food habits, urban Indians are increasingly becoming open to western cuisine with more people taking to western food as a part of their regular consumption regime. Wide access to information, time-pressed and evolving lifestyles, are the key factors to this change. Interestingly, kitchens in the western food consuming Indian households have on an average three western sauces (apart from ketchup), of which mayonnaise and pasta pizza sauce top the charts.⁴³

The change in the lifestyle choices of people is quickly changing the manner in which people eat, as seen in the form of an increase in their snacking habits. According to a 2020 Global Consumer Trends Study by Mondelez International, Indian people are ramping up afternoon snacking (77% in 2020, 63% in 2019, a 14% rise).⁴⁴

There has been a drastic change in food consumption patterns of urban Indians⁴⁵ characterised by increased consumption of processed foods. The purchase of sweet and salty snacks in India has seen an increase from 2013 to 2017.⁴⁶ For example, the per capita annual purchase of sweet snacks was 1.64 kg in 2013 which rose to 1.93 kg (17%) in 2017.⁴⁷

41 Kundargi, R, "Traditional food habits & the discourse on development in Indian society: An anthropological perspective": Research Revolution, Vol-II, Iss-12, September 2014

42 "Indian food processing sector: The untapped growth opportunity", Invest India (June 2020).

43 "79% Indians are cooking western food in their kitchens, reveals survey", NDTV Food, Nov 13, 2019:

44 "The Second Annual State of Snacking: 2020 Global Consumer Trends study by Mondelez International and The Harris Poll"

45 Kumar GS, Kulkarni M and Rathi N (2022) Evolving Food Choices Among the Urban Indian Middle-Class: A Qualitative Study. Frontiers in Nutrition.

46 Law C, Green R, Suneetha K, Bhavani S, Knai C, Brown KA, et al. Purchase trends of processed foods and beverages in urban India. Glob Food Sec. (2019), ref. Kumar GS, Kulkarni M and Rathi N (2022) Evolving Food Choices Among the Urban Indian Middle-Class: A Qualitative Study. Frontiers in Nutrition.

47 Law C, Green R, Suneetha K, Bhavani S, Knai C, Brown KA, et al. Purchase trends of processed foods and beverages in urban India. Glob Food Sec. (2019), ref. Kumar GS, Kulkarni M and Rathi N (2022) Evolving Food Choices Among the Urban Indian Middle-Class: A Qualitative Study. Frontiers in Nutrition.





In recent years, there has been an exponential rise in the popularity of western food items. Google in its report 'Year in Search – India: Insights for Brands', reported that pizzas were a favourite among Indian consumers when ordering online. The report, which is based on real time search trends in Google search engines, showed "pizza" as the most searched term in 9 out of 11 states with the highest of the food tech queries in 2018.⁴⁸ This comes as a large proportion of Indians get connected online, and there was a steep rise in searches for food aggregator brands.

The shift in food preference to western cuisine is reflected in recent market trends as well. According to a market report published in 2021, burgers and pizzas have dominated and would continue to dominate the quick service restaurant (QSR) space, even as there has been a growing interest in Indian ethnic foods in recent years. According to this research, in FY2020, the burgers and sandwiches category dominated the QSR format and was valued at INR 58 billion, followed by pizza (INR 50 billion). In comparison, Indian ethnic food was valued at INR 28 billion.

According to this report, one of the key reasons as to why international brands have been able to successfully scale up is because they were able to rightly bet on select products, which would suit the consumers' palate. On the other hand, Indian cuisine focused QSRs had been on the side-lines till recently since it took time to evaluate which products would cater to the hyperlocal crowd of India. Existence of a strong unorganized segment (at times even preferred by consumers) also made it difficult for the home grown QSRs serving Indian cuisine to scale up.⁴⁹

Understanding the food behaviour of a country as diverse as India, is complex. A qualitative study done by IIT Bombay to understand the urban middle-class Indian consumers' views about processed foods and rapidly changing food choices, highlighted the following factors driving this rapid shift,

- ♦ changes in the socio-cultural environment,
- ♦ globalisation and urbanisation,
- ♦ long work days and sedentary living,
- ♦ rise in income levels and;
- ♦ decrease in household cooking.⁵⁰

48 'Google Internal Data, January – October, 2018', "Year in Search – India: Insights for Brands" (2019)

49 The India QSR Story: Slice & Bite", Nirmal Bang, Institutional Equities (June 7, 2021)

50 Kumar GS, Kulkarni M and Rathi N (2022) Evolving Food Choices



Food choice decisions are described as being recurrent, multifaceted, contextual, dynamic, and complex which result in different forms of food behaviours.⁵¹ There are three key determinants affecting food choice, environmental (e.g., physical surroundings, type of food presentation and location, time-related characteristics), social (e.g., social modelling and social norms), and psychological factors (e.g., past behaviour, habit strength, hedonic appreciation, and motivational regulation). Research shows that the final outcome of food choice is based on the interactions between these three factors.⁵²

Despite an increased awareness and preference among Indian consumers to shift towards packaged foods, the balance is tilted in favour of unpackaged food, which is the managed by the unorganised sector which often lacks the basic hygiene standards. This puts the country in a peculiar situation where a large proportion of the urban population is gravitating towards a less unhealthy food choice; on the other side, a significant majority rely on unorganised food industry which may not have the necessary hygiene food standards.

Is the shift in preference towards processed food diets organic?

There is no denying that with demographic shifts and rising income levels, there is the tendency to shift for

Western food. However, much of the shift is done as part of a concerted plan to culturally alter the food habits of Indians.

Wealthy industrialized nations in North America and the European Union spend significant sums of money to convince their citizens to replace dietary fats with simpler diet based on grains, vegetables, and fruit. Paradoxically, developing nations use their growing incomes to replace their traditional diets, rich in fibres and grains, with diets that include a greater proportion of fats and caloric sweeteners.⁵³

While the modern international food story is promoted actively in India, there is a growing global view which is opposed to modern eating and prefers traditional eating habits instead. American author and journalist Michael Pollan, in his New York Times bestseller "Food Rules", states, "regard non-traditional foods with scepticism" as one rule for eating wisely,⁵⁴ and that "people who eat according to the rules of a traditional food culture are generally healthier than those of us eating a modern Western diet..."⁵⁵

The gaining popularity of global food habits as opposed to traditional Indian food has been the result of many factors. While India is not immune to the effects of nutrition transition, the shift in dietary choices is also the result of plan to undermine traditional Indian food and find faults with it.

51 Sobal J, Bisogni CA. Constructing food choice decisions. Ann Behav Med. (2009), cited in 'Kumar GS, Kulkarni M and Rathi N (2022) Evolving Food Choices Among the Urban Indian Middle-Class: A Qualitative Study. Front. Nutr. 9:844413. doi: 10.3389/fnut.2022.844413"

52 Puddephatt J-A, Keenan GS, Fielden A, Reaves DL, Halford JCG, Hardman CA. 'Eating to survive': a qualitative analysis of factors influencing food choice and eating behaviour in a food-insecure population. Appetite. (2020), ref. 'Kumar GS, Kulkarni M and Rathi N (2022) Evolving Food Choices Among the Urban Indian Middle-Class: A Qualitative Study. Front. Nutr. 9:844413. doi: 10.3389/fnut.2022.844413"

53 Adam Drewnowski and Barry M. Popkin, "The Nutrition Transition: New Trends in the Global Diet", Nutrition Reviews, Vol. 55, No. 2. (February 1997)

54 Pollan M. Food Rules: An Eater's Manual; Penguin Press (December 2009), cited in, Sproesser et al. BMC Public Health (2019) 19:1606 <https://doi.org/10.1186/s12889-019-7844-4>

55 Ibid.



The impact of the shift from traditional to non-traditional dietary habits

As witnessed in the case of other Asian countries, India has seen a dramatic shift of diets away from staples, with rapid economic and income growth, urbanization, and globalisation. The shift has been more towards a westernized diet. This has exposed a large section of the population to the ill-consequences of obesity, diabetes and other lifestyle diseases. The Western diet is characterized for being rich in saturated fats, refined carbohydrates and salt. This diet has been linked to the increased prevalence of metabolic disorders, including obesity, diabetes or cardiovascular diseases and other associated conditions, including cognitive impairment, emotional disorders, depression, anxiety and chronic stress, etc. (López-Taboada et al., 2020).⁵⁶ The Western diet is characterized for highly palatable foods that can trigger eating addictive-like behaviors, including seeking and bingeing fat and sugar intake, causing long-term changes in the brain (Avena et al., 2009; Gordon et al., 2018).⁵⁷

There is scientific research which have highlighted the risks of transitioning to westernized food behavior. According to a paper published in National Library of Medicine, “How Western Diet And Lifestyle Drive The Pandemic Of Obesity And Civilization Diseases,”⁵⁸ the transition from Paleolithic nutrition to Western diets, along with lack of corresponding genetic adaptations, cause significant distortions of the fine-

tuned metabolism that has evolved over millions of years of human evolution in adaptation to Paleolithic diets.

The paper highlights that transition to a “Western diet” invariably leads to a dramatic increase in insulin resistance (IR) and hyperinsulinemia as well as obesity, type 2 diabetes mellitus (T2DM), hypertension, cancer and other lifestyle disorders.⁵⁹

The rapid shift from a healthy traditional diet to a western influenced diet among adolescents is complicated further by low level of physical activity. According to a study on physical activity, published in The Lancet Child & Adolescent Health journal, and produced by researchers from the World Health Organization (WHO),⁶⁰ India is among the top ten ranking countries with the lowest level of insufficient physical activity among adolescents. India is ranked eighth *with overall prevalence of insufficient physical activity in adolescents at 73.9%.*

Easy access to western food coupled with a sedentary lifestyle is coming in way of India's deterioration in nutritional outcomes. India's shift in food habits to a non-traditional diet has been rapid due to the impact of globalisation and urbanisation. India's nutrition tradition has resulted in a steady deterioration in the health outcomes. The rapid shift in food habits have resulted in changes in nutritional outcomes. The shift towards non-traditional foods have been coupled with people adopting a sedentary lifestyle, which together has adversely affected the quality of life.

⁵⁶ Enriqueta Garcia-Gutierrez, Lizbeth Sayavedra, in Comprehensive Gut Microbiota, 2022

⁵⁷ Enriqueta Garcia-Gutierrez, Lizbeth Sayavedra, in Comprehensive Gut Microbiota, 2022

⁵⁸ Wolfgang Kopp, How Western diet and lifestyle drive the pandemic of obesity and civilizational diseases, Diabetes, Metabolic Syndrome and Obesity: Targets and Therapy (2019)

⁵⁹ Wolfgang Kopp, How Western diet and lifestyle drive the pandemic of obesity and civilizational diseases, Diabetes, Metabolic Syndrome and Obesity: Targets and Therapy (2019)

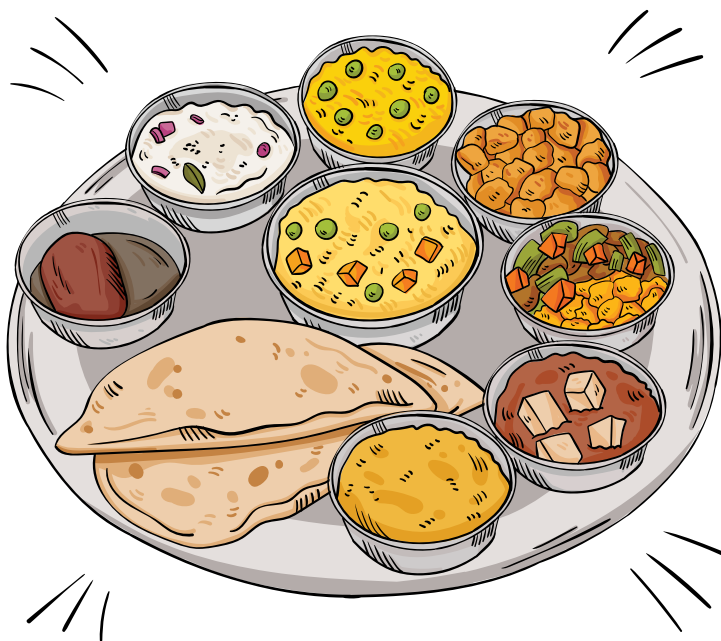
⁶⁰ <https://www.who.int/news/item/22-11-2019-new-who-led-study-says-majority-of-adolescents-worldwide-are-not-sufficiently-physically-active-putting-their-current-and-future-health-at-risk>





CHAPTER 4

Indian Food: Myths and Reality



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Indian Food: Myths and Reality

There is a common perception that Indian food is generally unhealthy. The current chapter examines some of the common myths associated with Indian foods in general. The chapter makes a comparison between some popular traditional food and popular western foods to see the benefits they have to offer. The chapter overall is aimed at busting some of the common myths surrounding Indian food.

Indian cuisine can best be described as a “*palimpsest*,” containing multiple layers or aspects beneath the surface, with each layer exerting an unalterable impact upon the whole.⁶¹ Indian food, for all its unique characteristics, offers insights into the quintessential Indian psyche when it comes to the food they would like to eat, irrespective of people’s social and economic condition.

The Indian palate has evolved over centuries and finds its origins around the traditional Ayurvedic way of living, an over 6000-years-old healthcare system, which lays special emphasis on ‘*Ahara*

(diet) and ‘*Anna*’ (food) as a means of good life, health and wellness.⁶² A central concept in Ayurveda is that everything that exists in the universe — the macrocosm — exists in the microcosm of the human body. All matter is made up of five elements, earth, water, fire, air and ether, which in turn are classified into ten pairs of contrasting qualities: heavy and light, cold and hot, oily/ moist and dry, slow and intense, stable and mobile, soft and hard, clear and sticky, smooth and rough, subtle and gross, and solid and liquid. As Caraka wrote, “*Without proper diet, medicines are of no use; with a proper diet, medicines are unnecessary.*”

⁶¹ ‘Evolution of Indian Gastronomy: A Tale of Fusion’, Indian Culture, Ministry of Culture, Government of India

⁶² Guha, Amala, “Ayurvedic Concept of Food and Nutrition” (2006)





The Ayurvedic concept of food: a philosophical journey

Ayurveda is a comprehensive medical system as well as a way of life. The individual is inseparable from his or her surroundings and is a 'microcosm' within the 'macrocosm'.

In contrast to western dietary understanding, Ayurveda states that a diet can be vegetarian (plant based) or non-vegetarian (animal based) and portion size should be customised for each individual according to one's own needs, body constitution (dosha) and agnibal (digestive power).

The quality and properties of food should also be taken into consideration such as heavy, light and oily. Quality and quantity are often weighed on the basis of how effectively the food is digested.

Ayurveda emphasises that a diet must be properly selected and wisely formulated, not only according to the physical conditions of a person, but taking into consideration the body type (*pita*, *kapha*, or *vata*) and should complement the seasonal and daily changes and other natural factors that surround an individual.

Due to innumerable varieties of food and food substances, food is characterised according to their action on the individual and is determined by their unique qualities: *ras* (taste), *virya* (active component or potency), *vipak* (post digestive effect) and *prabhav* (pharmacological effect). Hence, food is classified on the basis of its properties and its effect(s) on digestion.

Since taste (*rasa*) plays a major role in proper digestion, classification of foods and food groups is developed according to taste. The six tastes constitute: sweet (*madhura*), sour (*amla*), lavana (salty), pungent (*tikta*), bitter (*katu*) and astringent (*kasaya*). These six tastes also correspond to the six stages of the digestive process and play an important role in stimulating the digestive and immune systems.

Ayurveda provides a guide on how to combine food for optimum nutrition and proper digestion. In addition, it recommends spices and herbs in cooking (Ayurvedic cooking) to help the food become more compatible for digestion. Thus, Ayurvedic cooking is a great science of properly combining foods and food substances to maintain optimal health.



Ayurveda asserts that every root is a medicine so there is no good or bad food and provides a logical approach to designing balanced foods for optimal nutrition by formulating food groups that work in harmony, induce proper digestion and promote maximum absorption of essential nutrients.

The science behind Indian gastronomy

The uniqueness of flavour with interesting combinations/ pairing makes Indian cuisine truly special. Recent research in food pairing, has shown that no other global cuisine can match with the unique flavour notes found in Indian food.

Scientific research done in the area of food pairing—an idea in culinary science that ingredients having similar flavour composition may taste well in a recipe, has revealed a strong negative food pairing across Indian recipes, unlike global cuisines.⁶³ Such a study is key to understanding the characteristics of a cuisine in terms of their ingredient usage pattern.

Recipe composition pattern in a cuisine provides a means for investigating its gastronomic history and molecular constitution. The Indian culinary system has traditionally developed dietary practices where food has nutritional as well as medicinal value.

Research on the food pairing system of Indian recipes, has revealed that spices occupy a unique position in the ingredient composition of Indian cuisine and plays a major role in defining its characteristic profile. Spices, individually and as a category, emerged as the most critical contributors to the negative food pairing.⁶⁴

Historically, spices have been used to serve multiple purposes such as, as colouring and flavouring agents, preservatives, and additives. They find mention as medicines in Ayurvedic texts such as Charaka Samhita. One of the strongest rationales for the use of spices is the antimicrobial hypothesis—spices are primarily used due to their activity against food spoilage bacteria. Spices also serve as antioxidants, anti-inflammatory, chemopreventive, antimutagenic, and detoxifying agents.

The significance of spices in Indian cuisine is also highlighted by the fact that its recipes have many derived ingredients that are spice combinations. To neutralise the pungency of red chilli and soothe the stomach, curd is used in a variety of Southern Indian dishes. Researchers from MIT showed that probiotics can potentially reverse the effects of too much salt in the diet.

Traditional Indian food formulations show ingenuity in the choice of ingredients and additives with critical attention to wholesome nutrition beyond taste. They have great aromas and in-depth taste profiles, which are derived from a complex combination of spices and preparation techniques.

The well-balanced Indian meal contains all the six defined tastes, namely sweet, sour, salty, spicy, bitter, and astringent. Indian cooking principles however, go beyond balancing tastes. Every meal aims to achieve a good balance between these sensations to promote digestion and well-being. Side dishes and condiments contribute to the overall flavour and texture. The hot, sour, and crunchy side dishes and condiments, whether chutneys, curries, or broths, enhance and provide balance to the

63 Jain A, Rakhi N, Bagler G. Spices form the basis of food pairing in Indian cuisine

64 Jain A, Rakhi N, Bagler G. Spices form the basis of food pairing in Indian cuisine



overall flavour and texture of the main staple. Inclusion of natural antimicrobials and antioxidants in the form of spices and condiments also improves the shelf-life of prepared foods against spoilage.

The concept of food pairing has its genesis in ancient texts, and has been intuitively passed on through generations. The underlying principles of gastronomy and health benefits of food, as in other global cuisines, cannot therefore be applied to Indian food. The clever use of spices in Indian food not just enhances its flavour profile, but has health benefits. To preserve this scientific character found in Indian food, it is important that the ingredient profile that goes into Indian cooking is not randomly changed without understanding the underlying reasons for which they were originally introduced in recipes.

A research by Paul W. Sherman, a professor at Cornell University, analysing global cuisines, found the number of spices per recipe is related to temperature of a region. It found that the use of spices was on an average higher compared to cooler climates. On an analysis of 91 Indian recipes, the research found the spices per recipe to be 9.3; the number significantly low in case of recipes in Europe and United States.

The paper noted that behind the use of spices in hotter climates lay the need for food conservation. The research noted, “...use of spices takes advantage of plant defensive compounds. Not surprisingly, in view of their evolved functions, these phytochemicals have antioxidant, antimicrobial, and antiviral properties. The use of spices essentially borrows plants' recipes for survival and puts them to similar use in cooking. ...



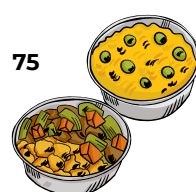
Thus, cookbooks from different eras are more than just curiosities. Essentially, they represent written records of our co-evolutionary races against food-borne diseases.”⁶⁵ The need to use spices, as passed on through generations, is built around the need to preserve food for long, nutritious and healthy consistent with

Phytochemicals in spices, which primarily serve in plant protection, are considered vitamins of the 21st century. The Indian traditional medical systems use turmeric for wound healing, rheumatic disorders, gastrointestinal symptoms, deworming, rhinitis and as a cosmetic. Fenugreek seeds, a rich source of soluble fiber used in Indian cuisine reduces blood glucose and lipids and can be used as a food adjuvant in diabetes. Similarly, garlic, onions, and ginger have been found to modulate favorably the process of carcinogenesis.⁶⁶

The use of spices in Indian food not just enhances the flavour profile but is useful for the benefits they bring to food. It naturally follows that any unscientific change to the use of spices, including salt, will not just change the flavour profile of food but also its scientific character which in many instances was directly the result of climatic variations typical to a region.

65 Paul W. Sherman and Jennifer Billing, “Darwinian Gastronomy: Why We Use Spices”, June 1999, Downloaded from <https://academic.oup.com/bioscience/article/49/6/453/229475>

66 Kamala Krishnaswamy, “Traditional Indian spices and their health significance”, Asia Pac J Clin Nutr 2008;17(S1):265-268



Rajasthani cuisine

A confluence of climate, culture and history



Rajasthan is famous for its regal culture and heritage, has a rich history, has witnessed many wars and the infusion of different cultures. It is unlike any other region of India in terms of its geographical features, climate and availability of resources.

Climate and geography

The Aravalli Mountain Range is a defining feature of the topography of Rajasthan dividing the land into two natural divisions: the arid northwestern and the fertile southeastern parts. The Thar Desert or the Great Indian Desert, recounted in legends as Marusthali or the land of death, is a vast expanse of arid desert located in the northwestern half of the state. Overall, rainfall is sparse and water is treated as a precious resource. The landscape is mainly dominated by scrub-like vegetation and less than 10% of the area is under forest cover.

The culinary basket of Rajasthan includes hardy crops and grains such as jowar, *bajra*, *sesame*, *ragi*, *tur*, *pulses*, *gram*, ground-nuts, etc. that can survive in the harsh climatic conditions of the region. Various kinds of bread form the staple and the use of rice is limited. Apart from this, various berries, roots and beans that grow abundantly in the desert have also been ingeniously incorporated into the cuisine to make up for the absence of leafy-green vegetables.

Culinary style

Unavailability of a large variety of fresh vegetables fruits and other ingredients, coupled with, scarcity of water due to the arid nature of the region has profound effect on the cooking style of the locals, particularly those living in the desert pockets. Due to scarcity of water, it is sparingly used in cooking, and oil, milk and ghee are used instead. Animal husbandry is an important means of livelihood



for several communities and tribes of the region and hence dairy forms a major component of the cuisine.

The locals have moulded their culinary styles in such a way that many of their dishes can be shelved for several days and served without heating. Spices are used generously to add flavour and spunk to the food. Spices grown in Rajasthan are known to be particularly potent and pungent in nature. Commonly known spices such as cumin, coriander, pepper, chillies, cardamom, cinnamon and cloves are used. Pickling is also one of the important ways for preserving food for longer durations and harnessing their nutrients.

The influence of culture on food habits

Rajasthani cuisine has been greatly influenced by the lifestyle and aesthetics of its royalty, the Rajputs. The Rajputs made lasting contributions to the food and eating habits of the region, especially its non-vegetarian fare. The food of the royals was deeply connected to their lavish lifestyle. The signature non-vegetarian dish of Rajasthan is *laal maas*. *Laal maas*, literally translated as 'red meat', is lamb cooked in a fiery gravy of chillies, onion, yogurt and garlic. *Safed maas*, a white and creamier cousin of the laal maas, is a delightful preparation of lamb cooked in a gravy of almond-cashew paste, milk, cream and spices.

The quintessential dish of the Rajasthani cuisine is perhaps the *dal baati and churma*. Baatis are bread dumplings made of whole wheat flour and can be stored for a considerable period of time. Dal is made out of a mixture of boiled lentils with a tadka or tempering of ghee and red chillies. *Churma* is made of coarsely ground wheat sweetened with ghee and jaggery or sugar. It is said that *baati* was an essential food item used by the soldiers during war.





Evolution of the concept of calories: the trio of sugar, salt and fats

Indian food for its unique use of ingredients cannot be analysed in the same manner as Western cuisine is analysed, often by their calorie content. This is because Indian food uses a unique ingredient pairing method, which for the longest time has remained unknown to most parts of the world. The interplay of sugar, salt, spice, umami creates a unique melody of flavours. Indians also rarely eat one thing as part of the meal, as food is supplemented with other accompaniments. This makes Indian food conceptually unclear to outsiders, even as these techniques are commonly understood by Indians.

Indian traditional foods are also recognized as functional foods because of the presence of functional components such as body-healing chemicals, antioxidants, dietary fibres, and probiotics. These functional molecules help in weight management,

*and blood sugar level balance and support immunity of the body. The functional properties of foods are further enhanced by processing techniques such as sprouting, malting, and fermentation.*⁶⁷

Comparatively, the concept of calories in nutrition came in much later. It may not be fully applicable to traditional food systems. Calorie entered the popular vocabulary across Europe and the United States by the late 19th century. For example, the Oxford English dictionary cites E. Atkinson's 1863 translation of Adolphe Ganot's French physics text as the first occurrence of the Calorie in English.⁶⁸ The Calorie began to enter popular American vocabulary in 1887.⁶⁹

Nutritionist Rujuta Diwekar in her book, *"Indian Super Foods"*⁷⁰ says the problem with nutrition science is that it keeps changing its mind. "In 1999, fat was the

67 Preetam Sarkar, Lohith Kumar DH, Chanda Dhumal, Shubham Subrot Panigrahi, Ruplal Choudhary, Traditional and ayurvedic foods of Indian origin, Journal of Ethnic Foods, Volume 2, Issue 3, 2015

68 James L. Hargrove, History of the Calorie in Nutrition (The Journal of Nutrition), 2006

69 James L. Hargrove, History of the Calorie in Nutrition (The Journal of Nutrition), 2006

70 Rujuta Diwekar, "Indian Super Foods", Juggernaut



major villain, sugar was okay. By 2015, we had swung around to arguing that fat was not responsible for obesity and obesity-related diseases, it was sugar”.

The combination of ingredients associated with Indian food is not without reason. For example, the use of ghee in Indian food. Diwekar in the book says, “the reason why there are such combos such as dal-chawal-ghee, roti-shakar-ghee, puran-poli-ghee, modak-ghee, etc. in our culture is that ghee reduces the glycemic index of these meals. The addition of any fat to food reduces its glycaemic index and ghee is brilliant in this regard. The consumption of ghee is not necessarily related to *diabetes*. *In her book, she says, “PCOD, diabetes and obesity arise out of insulin-resistance and one way of improving this is to eat meals that have a low glycaemic index.”*

Hence, to examine the benefits of food simply by its sugar, salt and fat content, would be a lack of a deep understanding of pairing of food components, which on one hand enhances the food profile while improving their nutritional character. The origin of Indian food which dates back over 6,000 years and is based on a holistic understanding of what will provide nutrition to humans, is a complex and little understood phenomenon. It is complex in terms of interplay of spice, i.e., negative pairing of ingredients and takes into account the wellness factor which is intrinsic to all traditional Indian cuisines.

The unique use of spices in Indian cuisine makes it stand out from the rest. Every ingredient that goes into the making of Indian food has its roots in centuries old flavour combinations, which often can be traced in Ayurveda and other ancient scriptures. Hence, it is important to uphold the integrity of the

ingredients to ensure that the final food stands true to the heritage that comes ingrained with the cuisine. The interplay of flavours, achieved through negative pairing of ingredients (mostly spices) is rarely seen in other cuisines worldwide. Hence, any interpretative food labelling system or assessment effort as to the value of an Indian food cannot be based on an understanding of other cuisines.

According to eminent sociologist, Asish Nandi, “both India’s diversity and uniqueness in the matter of food owe their vivacity to a certain cultural openness to the strange and unknown. This effectively describes the depth and width of Indian food.”⁷¹

Use of salt in food

Historically, the main reason for the addition of salt to food was for preservation. Because of the emergence of refrigeration and other methods of food preservation, the need for salt as a preservative has decreased (He and MacGregor, 2007), but sodium levels, especially in processed foods, remain high. However, taste is not the only reason for the continued use of high levels of sodium in foods. For some foods, sodium still plays a role in reducing the growth of pathogens and organisms that spoil products and reduce their shelf life. Prior to refrigeration, salt was one of the best methods for inhibiting the growth and survival of undesirable microorganisms.

Although modern-day advances in food storage and packaging techniques and the speed of transportation have largely diminished this role, salt does remain in widespread use for preventing rapid spoilage (and thus extending product shelf life), creating an inhospitable environment for pathogens, and

⁷¹ Nandi, A. “The Changing Popular Culture of Indian Food: Preliminary Notes”, Centre for the Study of Developing Societies, Delhi (2004).





promoting the growth of desirable micro-organisms in various fermented foods and other products. Salt is effective as a preservative because it reduces the water activity of foods. The water activity of a food is the amount of unbound water available for microbial growth and chemical reactions. The share of households with refrigerator in India stood at 38%. The use of refrigerator is skewed across states.

Salt is an essential part of Indian cuisine as the traditional means of cooking calls for moderate use of salt. Ayurveda is salt-friendly since salt is considered one of the basic tastes in human life. According to Ayurveda salty taste is required for development, for hydrating the body, to improve digestion, absorption and excretion. The salty taste is said to alleviate Vata and strengthen Pitta and Kapha.

According to data available in Statista, the estimated mean adult salt intake equivalent in India is 9.1 per gram, nearly the same as the U.S (9.0 per gram) and Australia (9.0 per gram). The mean adult salt intake is the highest for China (10.9 per gram) and for Italy (9.7 per gram).

The WHO recommended daily limit is 5.0 per gram.

Consumption data indicates mean salt intake of 7.8g/day - exceeding the WHO/ NIN limits of 5g/day, among Urban Indian population. Added salt (during the cooking process or at the table - >80%) is the key contributor to salt intake.⁷²

The use of salt greatly enhances the flavour profile and provides enormous health benefits. Salt is also known to increase flexibility in the joints thus keeping rheumatism at bay. Salt is also known to boost digestion, fuel the craving for food, sharpen the alertness to fine food, helps digest natural contaminants and clear subtle channels of the body. With large parts of India having a hot and humid climate, the use of salt in food is also important as rehydration with proper electrolyte balance is required to counter the impacts of dehydration and excessive sweating.

It also has a calming effect on the nerves and emotions. *Any attempt to limit its use in food categories should be based on a scientific understanding of its use. The scientific character of Indian*

⁷² Laxmaiah A. "Time Trends in sugar, Salt and Fat consumption and chronic disease epidemic in India: Is there a need for Intervention". Seminar on Recent Developments In Food Science and Technology For Better Nutrition: Report: International Life Sciences Institute (ILSI) India



food must be kept in consideration before any reduction in salt use is made compulsory.

Use of sugar in food

Sugar occurs naturally in all foods that contain carbohydrates, such as fruits and vegetables, grains, and dairy. Consuming whole foods that contain natural sugar is okay. Since your body digests these foods slowly, the sugar in them offers a steady supply of energy to your cells. A high intake of fruits, vegetables, and whole grains also has been shown to reduce the risk of chronic diseases, such as diabetes, heart disease, and some cancers. However, problems occur when one consumes too much added sugar — that is, sugar that food manufacturers add to products to increase flavor or extend shelf life. Ayurvedic principles of eating in moderation, as seen in a wide array of traditional cuisines, takes care of the rules of excess sugar, which ensuring that taste of food is not compromised.

India's per capita consumption of sugar is lower than most countries.

According to Euromonitor, in 2014, the average person in the United States consumed more than 126 grams of

sugar per day, against 5.1 grams per person per day. Despite an increase in sugar consumption among Indians, it is lower than most developed countries. For instance, data on per capita sugar consumption worldwide in 2019 (Faostat data), shows sugar consumption per capita reached 19.6 kg in 2019, compared to 33.1 kg in the U.S, 29.8 kg in the UK, 34.5 kg in Canada and 36.7 kg in Australia.⁷³

Excess sugar consumption is a global challenge. Compared to other comparable nations, consumption of sugar is relatively less. However, as per the NNMB surveys, the mean consumption of sugar among rural and urban population in India is 13g/CU/day and 16g/CU/day, which is lower than the recommended levels of Indian Council of Medical Research (ICMR) - 30g/CU/day. Consumption data hence indicates sugar (added) intake is within the WHO/NIN limits and is <10% of total daily dietary energy. Data suggests contribution to daily intakes from packaged foods is lesser than other sources.⁷⁴ The traditional Indian food science Ayurveda prescribes moderate consumption of sugar, which when done is not harmful.



⁷³ Sugar Consumption per capita, Helgi Library, <https://www.helgilibrary.com/indicators/sugar-consumption-per-capita/>

⁷⁴ Laxmaiah A. "Time Trends in sugar, Salt and Fat consumption and chronic disease epidemic in India: Is there a need for Intervention". Seminar on Recent Developments In Food Science and Technology For Better Nutrition: Report: International Life Sciences Institute (ILSI) India



Comparing some common traditional and non-traditional food

Despite a wide variety of traditional delicacies available easily, people have increasingly gravitated towards non-traditional foods. In the table below, we compare some traditional Indian food and contrast them against similar food from non-traditional/modern cuisines.

Calorie content across traditional and non-traditional food items

Traditional Indian Food / portion	Calories	Non-traditional food / portion	Calories
Gulab jamun (1 serving)	291	Chocolate Cake without icing (1 piece)	340
Kulfi (1 serving)	136	Chocolate Ice Creams (1/2 cup)	143
Rasmalai (1 serving)	188	Cheesecake (1 piece)	257
Bhelpuri (1 serving)	349		
Dhokla (1 piece)	60	Cheese Pizza (1 piece)	237
Idli (1 serving)	121	Potato French Fries (100 g)	274
Ragi mudde (1 serving)	246		
Masala Dosa (1 serving)	160		
Aloo Paratha (1 serving)	330		
Chutney (1 serving)	51	Mayonnaise (1 tbsp)	57
Jalebi (1 serving)	150	Chocolate coated or Frosted Doughnuts (1 large)	270
Poha (100 gram)	110	Veg burger (100 gram)	177
Sandesh (1 serving)	270	Apple Pie (1/8 23 cm dial)	411
Pav Bhaji (1 serving, 150 g)	160	Cheeseburger (Single Patty with Condiments) , 1 sandwich	295
Vada Pav (1 serving)	304		
Indian Flatbread Naan- 1 piece (1/4 25.5 cm dial)	137	Italian Flatbread Focaccia (1 slice)	182
Lemonade (1 cup – 240 ml)	99	Cola Soft Drink (1 can – 350 ml)	137
Coconut water (1 cup)	46		

Source: <https://www.fatsecret.co.in/calories-nutrition/>



A comparative analysis of food groups highlight towards two important pointers:

- ♦ Contrary to the popular understanding that Indian food is not healthy compared to their non-traditional comparative food item, our analysis shows that Indian food across snacks, drinks, accompaniments and sweets are less in calories than their non-traditional food comparatives.
- ♦ Even for higher calorie dish such as *dosa* and *aloo paratha*, the satiety quotient is better than small calorie dense foods such as pizza as they are rich in protein, fibre, etc.
- ♦ Unlike traditional Indian foods which are prepared generally fresh, non-traditional foods listed use preservatives and additives, making them greatly unhealthy—way more than their calorie content.
- ♦ Consumption of non-traditional savoury snacks (such as pizza, burger) get far more calorie heavy for the reason that that what they contain because of a consumer's propensity to consume a carbonated beverage along with them.
- ♦ Simply by the manner traditional food is generally served (portion size as in our traditional Indian *Thalis* allow consumers to not over eat, compared to a Western food such as pizza which by its nature can quite more

Overall, our analysis highlights that traditional Indian foods are comparatively lower in calories as compared to their comparative non-traditional food by virtue of their less portion size.

Importantly, they are less harmful for the reason that they use less preservatives and tasting agents and are often freshly prepared and served. This counteracts the theory often raised that traditional Indian food is more on calories and are more harmful.

The use of preservatives and flavourings makes modern snacks harmful than their traditional alternative. Take for example, the comparison between samosa and burger. Centre for Science and Environment (CSE) in a report "*Body Burden: Lifestyle Diseases*" said that for reasons that a samosa, despite calorie-dense, is freshly prepared and is free of additives, preservatives and flavourings, it is healthier than a burger.

Samosa has fresh and chemical free ingredients, like refined wheat flour, cumin, boiled potatoes, peas, salt, chilies, spices, vegetable oil or ghee which are all healthier alternatives to ingredients that go in making a burger. A burger, on the other hand, has preservatives, acidity regulator, emulsifier, improver and antioxidant along with refined wheat flour, sugar, wheat gluten, edible vegetable oil, yeast, salt, soya flour, sesame seed, vegetables, mayonnaise, and cheese or potato patty. The report concludes, when compared, samosa is a better choice than a burger as it contains none of the chemicals present in westernized foods

This argument hold true for all traditional Indian foods as compared to processed foods. Hence, vada pav would be healthier than a cheese pizza; kulfi better than a chocolate ice cream; and sandesh between than apple pie.



Some Healthy Indian snacks

Snacks need not always be unhealthy. Here are a few examples of healthy Indian snacks:

Dhokla: Dhokla is one of the most popular Indian healthy snacks present in the market. It is composed of fermented chickpea flour and rice batter. You can eat this snack also for a light breakfast. In a single serving of a dhokla, there are 11 grams of protein, zero cholesterol, and 283 calories. This snack is also another high source of calcium, iron, and magnesium.



Paneer Kathi Roll or wrap: A single paneer Kathi roll consists of 260 to 350 calories. The high content of vegetables will give you enough carbohydrates, vitamin C, A, and E, and fiber. Whether you select the veg or non-veg option, you will get enough protein sources from this.



Dosa: A single dosa consists of 133 calories, most of it coming from proteins and carbohydrates. Dosa also consists of potassium, calcium, and iron, making it an exceptional all-rounder snack.



Bhel Puri: Bhel Puri is a savory snack from Central India. It is composed of mixed spices, vegetables, puffed rice, tamarind chutney drizzle, and peanuts. To snack on this delicacy with no guilt, you can ignore the chutneys and load with nuts, herbs, and fresh vegetables. A single bhel puri serving includes 60 calories with the perfect combination of complex carbohydrates and high protein.



Besan Khandvi: It is a popular Gujarati snack containing natural ingredients like yogurt, mustard seeds, chickpea flour, and sesame. Khandvi is a steamed snack and tempered with different seasonings. A single Khandvi serving consists of about 100 grams which is nearly 200 calories. This delicious snack is full of nutrients, high protein, and is gluten-free. It includes other nutritional benefits like manganese, iron, fiber, calcium, and zinc.



Idlis: It is a steamed snack from South India. You can also consume this item as lunch or for breakfast. It is generally composed of urad dal and fermented rice batter, but you can also make it with other oatmeal, semolina, ragi, and many more batters. Medium-sized single idli will contain 36 calories, 8 grams of carbohydrates, and 6 grams of proteins. They are also rich in calcium and iron. It will not only keep you contained but also assists in maintaining the blood sugar level.



Some common myths about Indian food

Traditional Indian food is different from other cuisines, in the manner they are prepared, the use of ingredients and flavour combinations. Indian food is unfairly criticised for it being high on carbohydrates, use of fat and also cooking methods. We look some of these common myths. The perception that the use of carbohydrates in Indian food is harmful, is a myth. According to nutrition experts, carbohydrates are extremely good for the brain and complex carbohydrates contribute to the slow release of glucose in the body ensuring you stay satiated for a longer time. Giving up carbohydrates completely denies the human brain its natural source of sugar, making one crave for foods higher in sugar.⁷⁵

Contrary to the belief that there is no fibre in carbohydrates, dieticians say they are a major source of fibre. According to nutrition and lifestyle coach Vinita Contractor, “many studies, including research from the Harvard School of Public Health, have shown that dietary fibre, which is essentially a type of carbohydrate found in foods such as whole grains, legumes, fruits, and vegetables, is necessary to maintain

normal weight, a healthy heart, good gut health and for longevity.”⁷⁶

The debate regarding ghee being a good or bad fat has been going on for a while now, but within Ayurveda, ghee has always been classified as a positive ingredient. While it is essentially a form of saturated fat, it contains conjugated linoleic acid or CLA, a type of fatty acid, butyric acid and other compounds that aid in the absorption of fat-soluble minerals and vitamins. In fact, ghee is said to be a healthier alternative than butter and refined oil, both of them being highly processed.

According to renowned chef Sanjeev Kapoor, research shows that Indian cuisine is one of the most healthy and nutritious in the world. Besides ghee, which we already know is a good ingredient, we use a variety of fresh vegetables, millets & grains, pulses, fish, etc. as opposed to red meat in our food. Indian cuisine also boasts of a wide variety of vegan and gluten free recipes. Sure, we have our share of fried indulgences, but most recipes call for grilling, pan frying, poaching, boiling or steaming. Even beyond ingredients and methods, the fact that we eat with our hands causes the food to be absorbed and digested better!⁷⁷

⁷⁵ Pallavi Mehra, 5 most common myths about carbs busted by experts (Jan-23,, 2022); GQ India.

⁷⁶ Ibid.

⁷⁷ Sanjeev Kapoor, Indian food myths: busted! –Is Indian food unhealthy?



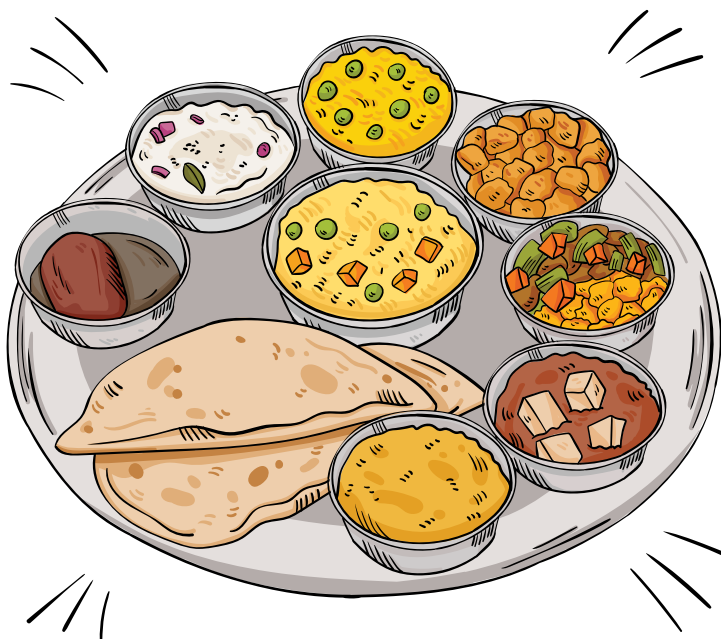
Indian food prepared the traditional way is healthier than their non-traditional peers. The traditional cooking methods used in Indian cuisine, such as grilling, pan frying, poaching, boiling or steaming and the fact that most of Indian food are mostly freshly prepared, make them a healthy source of nutrition and in the case of snack and sweets, the tasty indulgence. Compared to non-traditional foods easily available in the market, traditional Indian food is typically built around fresh vegetables, grains, and other produce, very little of which is processed. The clever mix of ingredients and use of spices makes Indian food healthy, and is suited to Indian climatic conditions and nutrition requirements of people living in a region. Indian food is characterised by its essence of eating in moderation and hence will always take care of both taste and health.





CHAPTER 5

Food Regulation in India



CHAPTER 5

Food Regulation in India

The chapter examines food regulation in India to examine the policy objectives it sought to achieve and contrasts them against the priorities facing the country.

In 2006, the Indian parliament passed the Food Safety and Standards Act, 2006. The preamble to this law read,

*"it is an act to consolidate the laws relating to food and to establish the Food Safety and Standards Authority of India for laying down science-based standards for articles of food and to regulate their manufacture, storage, distribution, sale and import, to ensure availability of safe and wholesome food for human consumption and for matters connected therewith or incidental thereto."*⁷⁸

Commentators and parliamentarians who debated the passage of the law had raised the points that the unorganised

food sector which caters to the bulk of India's population may not gain from the passage of this legislation the objective of which was, among others, improving the standards of food safety in India.

Twelve years since the passage of the law, the Rajya Sabha Parliamentary Standing Committee on Health and Family Welfare, in its report⁷⁹ on Functioning of Food Safety and Standards Authority of India (FSSAI), in August 2018, highlighted India's institutional failure to provide "safe and wholesome food" to a large part of the populace, and cited the Supreme Court of India's judgement in *Centre for Public Interest Litigation vs. Union of India*⁸⁰ which emphasised that the Constitutional right to life also includes the right to pure food and beverages.

⁷⁸ 'Evolution of Indian Gastronomy: A Tale of Fusion', Indian Culture, Ministry of Culture, Government of India.

⁷⁹ Parliamentary Standing Committee on Health and Family Welfare: 'One Hundred Tenth Report on 'Functioning of Food Safety and Standards Authority of India' (presented to the Rajya Sabha on August 9, 2018)

⁸⁰ Centre for Public Interest Litigation v. Union of India, W.P (Civil) No. 681 of 2004, The Supreme Court of India (dt. October 22, 2013).



In its judgement, the Supreme Court said,

"We may emphasise that any food article which is hazardous or injurious to public health is a potential danger to the fundamental right to life guaranteed under Article 21 of the Constitution of India. A paramount duty is cast on the States and its authorities to achieve an appropriate level of protection to human life and health...."

Yet, however, the country has failed to ensure that safe food reaches all its citizens, and not a limited few who are privileged enough to consume branded packaged food. A 2016-17 report by , The Foundation for Millennium Sustainable Development Goals (FMSDGs) estimates that the direct and indirect economic costs of food and water contamination in India is about Rs 704,000. This puts into perspective the challenges that lie ahead for the government to solve.

As the Parliamentary Standing Committee said,

"for a country that has to feed nearly 1.3 billion people, strict monitoring of the food supply chain can be an uphill task but not impossible. Sadly, the present food safety scenario in India speaks volumes of how we have failed as a State in providing safe and wholesome food to its population."

The FSSA does not define the term "wholesome." The Cambridge Dictionary defines the term "wholesome" as

81 <https://dictionary.cambridge.org/dictionary/english/wholesome>

82 Tulasi Srinivas, 'Exploring Indian Culture through Food,' Education About Asia, Volume 16, Number 3 (Winter 2011).

83 Cited in Parliamentary Standing Committee on Health and Family Welfare: '110th Report' (presented to the Rajya Sabha on August 9, 2018)

84 Cited in Parliamentary Standing Committee on Health and Family Welfare: '110th Report' (presented to the Rajya Sabha on August 9, 2018)

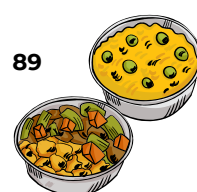


*"good for you, and likely to improve your life either physically, morally, or emotionally."*⁸¹ So, the underlying objective of the food regulation in India is to ensure that people have access to food which is safe, good for them and improves their physical, moral or emotional well-being. The concept of enjoyment from food can be seen in the Sanskrit word for food, which is *bhojana*, *"that which is to be enjoyed"*.⁸²

Fighting food adulteration –an unmet challenge

A study by the 'Food for All' partnership of the World Bank Group and the Netherlands Government revealed that **food borne diseases cost India almost 28 billion dollars (INR 178,100 crores) annually i.e.,** around 0.5% of the country's gross domestic product. The number of food-borne diseases is also expected to rise from 100 million in 2011 to 150-177 million in 2030.⁸³

*The cost of food borne diseases will reach between 7-8.4 billion dollars in 2030 which represents a significant increase from 3 billion dollars estimated in 2011. To reduce the economic burden, India needs to invest in ensuring food safety for the masses.*⁸⁴



The report, as cited in the Parliamentary Standing Committee's Report said, "... despite growing recognition of the importance of food safety, India's public funding priorities do not reflect the substantive investments to standardise the food safety system. It was also emphasised that efforts needed to be made to improve the country's food safety policy through coordination across the value chain, develop key infrastructure such as cold chains, storage facilities, better testing capacity crop protection and animal health to improve food safety. Further, India needed to strengthen training and education across all levels of the value chain, ensure "faster collaboration" amongst state governments, producers and consumers and embed food safety in nutrition programmes.

The Rajya Sabha Parliamentary Standing Committee on Health and Family Welfare, in its 2018 report said,

Food adulteration has been reported widely in the country. In the present scenario, when food adulteration is so common, one cannot be sure of the quality of food he/she eats. Several manufacturing units have been accused of not adhering to the food safety norms and many more are still indulging in unfair practices and resort to supply of substandard quality food to the consumers. Our country has a large unorganised food sector that provides inexpensive food to the economically weaker sections. The street food is popular for its rich aroma and complex flavours but the hygiene and sanitary practices are a matter of grave concern. One of the most common adulterated foods is milk and milk products.⁸⁵

According to WHO, more than 200 diseases are spread through contaminated food ranging from diarrhoea to cancers. In a presentation made before this Standing Committee, the Ministry of Health & Family Welfare submitted that *"food-borne illnesses are a greater health burden comparable to malaria, HIV/AIDS or tuberculosis."*⁸⁶

This poor implementation of the Food Law has resulted in rampant food adulteration and various food scandals with substandard quality food has been reaching the market and causing irreparable damage to public health. Despite the alarming situation with respect to food adulteration in India, enforcement against violators has been poor.

As per information shared by the Government before the Rajya Sabha, between FY 2016-17 to FY 2018-19, 49,564 civil/ criminal cases were launched against those indulging in food adulteration, with 7,504 convictions and penalties imposed against 25,118. This number is grossly inadequate to control the malaise of food adulteration.



⁸⁵ Parliamentary Standing Committee on Health and Family Welfare: '110th Report' (presented to the Rajya Sabha on August 9, 2018)

⁸⁶ Cited in Parliamentary Standing Committee on Health and Family Welfare: '110th Report' (presented to the Rajya Sabha on August 9, 2018)



According to Technopak, the Indian packaged food retail market is estimated at INR 6,00,000 Cr in FY 2020, contributing only 15% to the total food and grocery retail market estimated at INR 39,45,000 Cr in FY 2020. For 85% of the market, which is dominated by the unorganised industry, the action taken will hardly create any deterrence.

Street food vendors- an unsupervised backbone of food industry

From a social and economic point of view, street foods can help maintain the country's culinary traditions, attract tourists, and are an important source of income for the street food vendors. From a food security perspective, street foods account for a significant proportion of daily urban and rural food consumption for millions of consumers from diverse socio-economic backgrounds.

Street foods can represent a large part of a consumer's daily energy and nutrient intake; for example, a global review found them to provide as much as 50% of the recommended allowance for protein. Food safety risks related to the consumption of street foods are associated with vendors' poor personal hygiene, prolonged food storage, repeated handling, inadequate reheating, unclear environments, and the use of substandard water and unclear utensils.⁸⁷

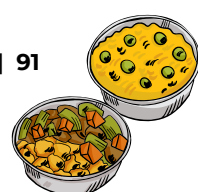
Analyses of street food safety have noted several risks to consumers' health, such as the use of illegal food additives, including colours, and microbiological contamination. A 2012 study⁸⁸ found *Escherichia coli* (*E. coli*) and *Salmonella typhimurium* (*S. typhi*) in more than 70% of three common types of street foods.

The failure to deal with the challenge of food adulteration becomes difficult because of the lack of infrastructure which was highlighted by the CAG in report, No 37 of 2017- Performance Audit on Implementation of Food Safety and Standards Act, 2006, which said,

- ♦ 65 out of the 72 State food laboratories to which FSSAI and state food safety authorities sent food samples for testing do not possess National Accreditation Board for Testing and Calibration Laboratories (NABL) accreditation. Consequently, the quality of testing by these laboratories cannot be assured.
- ♦ Though the Act stipulates gazette notification of empanelled food laboratories, FSSAI empanelled, between September 2011 and March 2014, 67 food laboratories through office orders.
- ♦ FSSAI has no data on public analysts declared eligible under the erstwhile Prevention of Food Adulteration Act who continue to function under the FSS Act. FSSAI also has no data on whether all the notified empanelled food laboratories have qualified food analysts. Audit test checks found that 15 out of the 16 test checked food laboratories did not have qualified food analysts.
- ♦ Shortage of qualified manpower and functional food testing equipment in state food laboratories and referral laboratories resulted in deficient testing of food samples
- ♦ There were significant delays in finalisation of cases by Adjudicating Officers. Further, a significant portion of the penalty imposed remained uncollected

⁸⁷ Andrea Durkin, "Investing to Nourish India's Cities", The Chicago Council on Global Affairs (June 2016)

⁸⁸ Garode AM, Waghode SM, Bacteriological status of Street-Vended foods and Public Health Significance, A Case Study of Buldhana District, MS, India. ISCA Journal of Biological Sciences. 2012, cited in Andrea Durkin, "Investing to Nourish India's Cities", The Chicago Council on Global Affairs (June 2016)





The country's failure to deal with the challenge of food safety serves as a poor example and also raised the concern as to the intent behind inaction, or limited action. The constitutional goals of providing the right to safe food to all and the regulatory objectives of providing "safe and wholesome food" is way off target. A country where a majority of the population lives on food prepared and served on the street side, it must direct all its focus on controlling food adulteration.

Thailand's street food project provides some helpful lessons in how to transform street food into a preferred tourist hub. The Thailand's project focused on all aspects of food safety—improving the sanitary conditions, undertaking risk-based actions on storage and handling of ice, food handling, cleaning of utensils, coupled with mobilization of support from the vendors and the public made Thailand's clean street project a global success.

This brings us to the question- if we are lost in terms of our focus on how to achieve the national goals of ensuring safe food to all. The regulatory focus on salt, sugar, and fat may be true for the world, but surely fails in terms of prioritising public health goals if we see India from a true perspective of the social and economic challenges facing the country.

While FSSAI has launched the Clean Street Food Hub project, and has taken certain steps, the regulatory focus seems limited if we look at the scale of the challenge. In India, the regulatory focus prioritise clean street project as the project would have multifold gains—improving the livelihood conditions of street vendors, help promote Indian food culture and help in safeguarding the health of people who rely on street food.



Determining the relevance of health ratings based on salt, sugar and fats

Dr Amala Guha, who teaches at the University of Connecticut School of Medicine, in a paper, *"Ayurvedic Concept of Food and Nutrition"* published in 2006, said

"In 1992 the U.S. Department of Agriculture released the national guide for maintaining good health in the form of a food pyramid. The nutritionists, doctors and other health care providers routinely used the guide across the nation. It was adapted on the basis of cardiovascular and cancer risk factors available at the time.

The guide recommended the reduction of total fat intake and promoted 6-11 servings of complex carbohydrates including rice, pasta, vegetables, and fruits and two servings of meat or animal products. Over the years and several research findings later, it was concluded that the recommended food pyramid had greatly faltered in providing a basis for a balanced diet since obesity was on the rise.⁸⁹

In contrast to the European dietary understanding and the US guide to diet, Ayurveda states that a diet can be vegetarian (plant based) or non-vegetarian (animal based) and portion sizes should be customised for each individual according to one's own needs, body constitution (dosha) and agnibal (digestive power). Also, the quality and properties of food should be taken into consideration such as heavy, light and oily.⁹⁰

It is worthwhile to remember here that Indian food, which has its genesis in

Ayurveda, and is still prepared using similar principles, had traditionally always promoted moderation in salt and sugar. One needs to understand that the genesis of the debate on consumption of sugar, salt and fat was in the context of modern foods.

An editorial published in NPJ Science of Food⁹¹ said

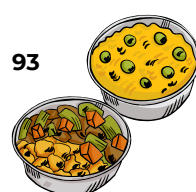
"By the mid-1900s, this trio of salt, sugar, and fat took on a new psychosensory dimension when the processed food industry discovered that these ingredients could be formulated to produce a state of satiety, pleasure, and hedonia in those who consumed them. American market researcher and psychophysicist, Howard Moskowitz, termed this the "bliss point" or the point where the levels of saltiness, sweetness, and richness were perceived by the consumer as just right. When the processed food industry added a crunchy mouth feel to their bliss point formulations, a whole new generation of "craveable" foods was created. A vast array of craveable chips, dry sweetened cereals, candies, cookies, fried foods, and even spaghetti sauces became wildly popular among consumers, particularly children, and profits for processed food companies soared."

Of course, as interest and consumption of craveable foods surged, interest and consumption of more traditional, home cooked cuisine that included fresh fruits, vegetables, and whole grains began to wane. In terms of current sugar consumption, developed countries like the U.S. are consuming between 68

⁸⁹ Willett, WC. Stampfer MJ: Rebuilding the food pyramid. Scientific American, 64-71. January 2003, cited in Guha, Amala, "Ayurvedic Concept of Food and Nutrition" (2006). SoM Articles. 25.

⁹⁰ Guha, Amala, "Ayurvedic Concept of Food and Nutrition" (2006). SoM Articles. 25.

⁹¹ Rao Pingfan, et al. "Addressing the sugar, salt, and fat issue the science of food way". Editorial (Open), npj Science of Food (2018) 2:12 ; doi:10.1038/s41538-018-0020-x



and 77 kg per year compared to the 1.8–2.7 kg consumed annually in the early 1700s. *It has been speculated by some in the fields of nutrition and biomedical research that these craveable foods can dysregulate the brain's food reward system by increasing dopamine production, thus making them addictive.*⁹² *In the event, if India follows a flawed nutritional food pyramid model of the West without adequate research and data, we could have disastrous consequences given the level of poverty, literacy and lower oversight.*

Per capita consumption of packaged food in India, portion size and obesity levels are quite low as compared to America and Europe. As our survey highlights, unbranded foods are the choice for Indians, which often is a compulsive choice for them because of their socio-economic status.

Peculiarities of the Indian dietary pattern, method of preparation, portion size and quantity of prepacked consumption are not considered in model selection and hence a replication of any global model will not just be futile but will destroy Indian tradition and food habits.

Regulating food is difficult and needs a scientific analysis, including studying their long-term nation-wide impact and scientific risk. The proposed 'Interpretative FoPL Labelling' will have to be different for categories of food and different communities at large and cannot be generalised by a mathematical equation of Salt, Sugar, Fat. Such an approach would be confusing and may create an impression that certain products are safer than the others. This will have a completely different impact in a country like India where people may start completely rejecting certain foods believing that they are unhealthy and then move towards more unsafe, low quality and some options that have been falsely marked as "healthy".

Challenges implementing health star rankings in India

Internationally, based on study and analyses of dietary patterns, FOPNL (Front of the Pack Nutritional Labelling) is generated and implemented as voluntary labelling for trial and improvement purposes. Once impact analysis to health and trade is accessed, it will become mandatory labelling. Only around 10 countries in the world have mandatory provisions for Front of Pack Labelling; other countries have had voluntary FOPNL for up to 15 years without mandating it. FSSAI is in the very preliminary stages of FOPNL implementation.

The health star rating system rates the overall nutritional profile of packaged food and assigns it an interpretive rating from 0.5 to 5 stars – the higher the stars, the healthier the product.

Health Star Rating (HSR) *has a complex nutritional algorithm which has been formulated in an attempt to weigh up the good, and not so good nutrients a particular food offers.* But its failure to isolate specific ingredients such as sugar within this to obtain a better rating, and beating the calculation, has resulted in some foods which are naturally higher in saturated fat (like full cream dairy) having a lower rating than lower fat, yet heavily processed foods including snack food and confectionery often gets a higher rating. The classic example of this can be seen in the case of *Greek yoghurt — a natural whole food which scores just one star using the rating system, compared to a bag of lollies which scores two stars.*

HSR rates foods on a five-star scale based on factors such as energy, saturated fat, sodium, total sugar, and healthier aspects such as protein, natural ingredients, and the like. The final rating is decided by an algorithm that takes into account all this, with healthier food receiving higher

92 Rao Pingfan, et al. "Addressing the sugar, salt, and fat issue the science of food way". Editorial (Open), npj Science of Food (2018) 2:12; doi:10.1038/s41538-018-0020-x



ratings. These would be displayed on the front of the packaging.

India isn't alone in going the HSR route. Australia, too, adopted the HSR system as far back as 2014. However, despite the Australian government's best intentions, things haven't quite gone to plan. Mark Lawrence, professor of public health nutrition at Deakin University in Australia, told The Ken that 73% of ultra-processed food on supermarket shelves displayed ratings of 2.5 stars or higher. Effectively, Lawrence, who studied the star rating implementation, said, that the ratings

failed to convey anything of value—nutrition-wise—to the consumer. Worse, HSR also created a 'health halo' effect, which is the perception that a particular food is good for you even when there is little or no evidence to back this. Indeed, there were numerous instances where decidedly unhealthy products received the highest possible health rating, hence defeating the entire purpose.

For the diverse range of foods India has to offer, how can a health ratings model, as developed outside of India, work to give accurate information?

Applying global HSR ratings framework to select Indian food items

To understand how the concept of rankings works and can be manipulated or gamed, we picked up a random sample of 10 branded food products, such as cheese, snacks (moong dal, bhujia sev, mathri, pista badam cookies), sweets (rasgulla, kaju katli, badam ladoo), dahi and chicken drumstick, and checked their health star ratings using the HSR calculator, made publicly available by the Australian Government.

For the products, we have used the nutritional information as available on the packs for select brands (names omitted), and checked what their ratings would be under the existing health rating system. Except for dahi and chicken drumstick, every other product received two or lower stars, with two of them getting no stars. The results cast doubt on the metrics used for such a calculation. Under the current rating system, most food products would be rated between 0.5 and 2 stars. An important highlight of this analysis is how the rating changes if fibre is added to the list of ingredients, which in the case of the badam ladoo and mathri, changed from 1 star to 2 star in addition to fibre.

A mere replication of the algorithm would not suffice for the diverse Indian cuisine. India based impact analysis (Cause & Effect) is necessary to develop the right kind of algorithm. Regional culture and heritage have to be considered in formulation of policies, especially the algorithm.

Replicating a global model of food ratings could adversely impact local food types, which are still prepared using traditional spices and flavours. As any adverse health ratings could dampen the consumer sentiment with respect to the quality of a particular food item, there could well be a shift in consumer willingness to eat more of Western food products. This in effect could damage the traditional Indian cuisine, leading to significant loss of traditional knowledge systems and livelihoods of people associated across the food chain. *Overall, the cost of such a move could be severe as it could affect our food industry including food processing while altering people's food preferences from traditional Indian food to modern international food habits.*





Lack of study on implementation hurdles

India lacks an evidence-based study into the implementation of health star ratings across different food categories.

- ♦ The study by Indian Institute of Management (IIM) Ahmedabad, which has formed the basis for the proposal, has not gone into the issues that have made implementation difficult in the country of origin of HSR, nor has there been any suggestion on how to categorise the diverse food legacy of India – both formal, informal. Much more research is needed to make relative judgements for nutrients and assign proper weights in the algorithm.
- ♦ The Health Star Rating System in Australia captures one of the challenges the concept poses: “A high star rating doesn’t necessarily mean the product provides for a complete, balanced diet and should replace items from other core food groups or be eaten to excess. In addition, many healthy foods, like fresh fruit and vegetables and lean meats, are not generally packaged and may

not display or have a Health Star Rating.” Hence even countries who pioneered the rating system have kept it voluntary after 10 years of its introduction.

- ♦ Implementing a star rating system across Indian food categories, with their diversity and uniqueness, will not just be difficult but unfair unless a scientific basis is established. The first component relates to incentivising manufacturing of four major food product segments viz. Ready to Cook/ Ready to Eat (RTC/ RTE) foods including Millets based products, Processed Fruits & Vegetables, Marine Products, Mozzarella Cheese.

Is India ready for mandatory FOPNL norms?

With limited scientific understanding of the nature of Indian food and how food ratings can be built taking on board an understanding of people’s food habits, preferences and needs driven by India’s rich diversity, India appears to be far from implementing a ratings model.

The food processing sector, which currently is small, holds a lot of potential.



Already the PLI scheme has drawn significant traction and is expected to serve as an economic enabler. Proposed reforms such as FSSAI's proposal to introduce Front of Pack Labelling (FOPL) could act as a disruptor to the growth of an industry which is still in its development stage.

IIM Ahmedabad in its report said that FOPL can influence purchase intentions, with just the presence of an FOPL (along with a healthy or unhealthy prime) leading to a change in the level of purchase intention. Any FOPL will influence the purchase intention at $p < 01$ level...⁹³. The quantifiable effect on the processed food market due to such a change in decision can be up to USD 600 million,

Disruptive proposals, such as proposed new interpretive product information, could serve as a detriment, particularly when the packaged industry is already taking significant steps to improve the health standards of the food. Further, if influencing consumer behaviour is the public objective, one must not ignore the point that over 65% of its food business in India is done by unorganised industry where packaging is not the standard practice. Policy goals, which can have a

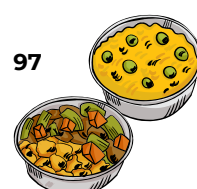
disruptive impact, should not be selective. The Government's focus is to improve the overall food safety environment, for all and not few. The food regulatory focus should be to improve the overall food safety framework including the people infrastructure that is necessary to make Indian food consumption safe for all.

Packaged food versus unpackaged food – which is a bigger priority?

The packaged food industry is a small proportion of India's food economy which is largely unorganised and feeds off food prepared by the roadside. The size of the street food vendors is significant. It is this group which is critical to India's economic growth and livelihood. While there is evidence to suggest that India's drive against food adulteration has miserably failed, and calls for urgent action, the packaged food industry is on the path to further improvement, as was evident in FSSAI's pan-India survey results on trans-fat in different packaged food categories. According to this survey, only 3.14% (196 samples) contained trans-fat exceeding 2%. About 90% (176 samples) of the 196 samples that exceeded 2% trans-fat belonged to the category 6 (Oils, Vanaspati, Shortenings and Margarine), leaving the other food



⁹³ IIM Ahmedabad, "Consumer preferences for different nutrition front-of-pack labels in India"



categories such as sweets, topping and chocolates; fried foods; bakery and confectionary products, etc., seeing very little breach.⁹⁴ With such levels of compliance with food safety laws, new measures of safety without data and research specific to India makes such efforts tentative.

Processed foods are sometimes unfairly targeted for all the healthcare woes, which for a country like India is not true. India, among the major global economies, is still very low in food processing, accounting for less than 10% of its total food. The Indian food sector is still heavily reliant on the unorganised industry space, a large proportion of which still caters through unpackaged food. Income inequality, lack of access, lack of education, poor standards of household hygiene, lack of access to adequate healthcare, all contribute to India's poor health outcomes.

Setting the priorities right

Food safety is a national priority. Food being a sine qua non to human life, the basic requirement, it is imperative that unadulterated and safe food is accessible to all sections of society including the poorest.⁹⁵ Food safety, nutrition and taste are not contrarian objectives. Food adulteration is a serious challenge in India. The unorganised sector which caters to the majority Indian population, is left exposed to poor standards of hygiene. Regulatory priorities should not lose focus in terms of targeting

foods which are consumed by those who are replete with choices (those who can afford to buy the food they want); instead, it should focus on those who are marginalised and need all possible help. The lack of sufficient action on instances of food adulteration makes India's food safety programme a distant reality. Our focus should be to improve food safety for all.

The Indian regulation on food envisions providing safe and wholesome food for all. On most parameters of food safety, it would appear that the country has failed to deliver. So, is it a case of setting objective priorities? Regulatory efforts in recent years, including the currently under consideration FOPL norms can be detrimental to the food chain and the food processing industry, which though small in the organised sector has the maximum effect on employment and economics at the grass roots. The focus on the more serious problem of food adulteration in India, which is a silent killer and the health effects of unsupervised street vendors, who give majority meals for a large section of the poor population gets muted and diffused. Lack of innovative planning to control and curb the challenge of food adulteration would leave the majority population susceptible to food-borne diseases and regulatory focus of food safety needs to set priorities as what are the most important objectives for the common good of most of the Indians.

94 https://fssai.gov.in/upload/press_release/2021/09/6149d70fca843Press_Release_Survey_TransFat_21_09_2021.pdf

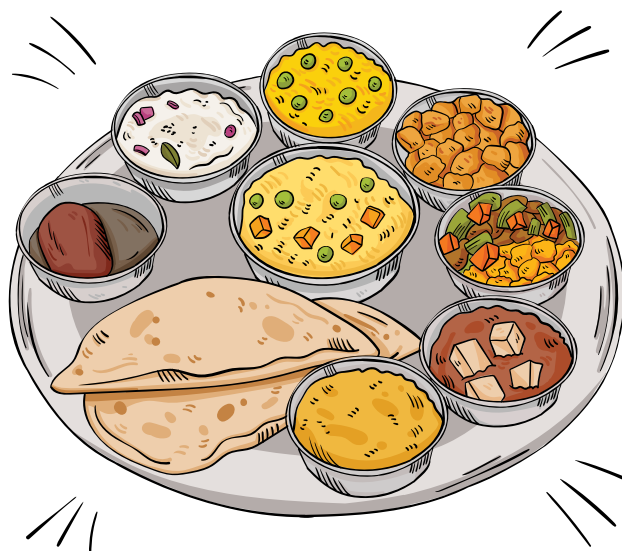
95 Twenty-first report of Public Accounts Committee (2020-21) on 'Implementation of Food Safety and Standards Act, 2006', Ministry of Health and Family Welfare, Seventeenth Lok Sabha, February 2021





CHAPTER 6

Voices from the ground: consumers' motivations to food, purchase behavior



CHAPTER 6

Voices from the ground: Consumers' motivations to food, purchase behavior

At the center of any policy discourse on food is the consumer. The questions of what food consumers eat and why is important to understand people's perception about food. Similarly, what drives their decisions to buy a particular food is key to understanding the motivation of the consumers about their food choices. The chapter is based on findings of a nation-wide survey conducted in early 2022, across 15 populous cities in the country, and explores the questions of what people eat, why and the driving factors behind their purchase behavior.

Divergent from a view often held, Euromonitor International's Health and Nutrition Survey, 2019 found that over 60% of Indians considered their eating habits "extremely healthy" or "healthy", and was second only among the countries after Indonesia to rate their food habits positively.⁹⁶

There is not enough evidence from the ground which would suggest what people like eating and the reasons for their choices. ASSOCHAM Foundation for Corporate Social Responsibility (AFCSR) in coordination with Convergent View Research & Consultancy Private Limited

undertook a one-time cross-sectional study covering over 5,000 respondents pan-India, covering all regions, across 15 cities (Tier 1 and Tier 2) to gauge the consumer sentiment affecting the manner in which consumers decide what they buy and also understand information which matters to them more. Please refer the Methodology in Annexure to this report. *The survey aimed at understanding the Indian consumer's views about the food they eat, how they decide what to purchase, the information they look for, among other things.*

⁹⁶ Health and Nutrition Survey, Euromonitor International, 2019, cited. In "Food Regulation and the Future of Ultra-Processed food", Euromonitor International



What food do people eat and why?

Our survey sought to understand what food people eat and why? The survey asked respondents the food they consumed frequently (at least once in a month) and were shown a list of items including fast /street food (deep fried samosas, mithai from local sweet shops, street foods such as noodles), and branded food items such as potato wafers/ chips, chocolates, biscuits, etc.

According to the survey,

- ♦ *nearly all respondents said they consumed branded or unbranded packaged food, at least once every month*
- ♦ *for branded food categories, quality matters at 62%, which becomes less important as people fall below in the socio-economic classification; taste matters at 53%, brand at 49% and price at 33% of the respondents at a pan-India level. The importance of price increases as consumers fall below in the socio-economic classification.*
- ♦ *for unbranded food categories, quality matters at 69%, which becomes less important as people fall below in the socio-economic classification; taste matters at 58%, price at 44%, known shops at 29%, of the respondents at a pan-India level. The importance of price increases as consumers fall below in the socio-economic classification.*

The following aspects also emerge with respect to people's food habits

- ♦ *while the average Indian consumer is increasingly becoming aspirational and consume branded food products frequently, the socio-economic realities of people have made unbranded food products a preferred choice among the majority of the population*

- ♦ *consumption of branded to unbranded food in India is roughly 1:3 in terms of value, making consumption of unbranded food pervasive in terms of value and more so in terms of quantity*
- ♦ *with income inequality among the population a stark reality in India, this trend is unlikely to see a change in the near future.*

Most of India being hot and humid, there is a preponderance of fried, especially deep-fried food across India. The high temperature of oil along with salt acts as a preservative and extends the life of food, whether at home or in small eateries making food accessible and affordable. Any standards governing Indian food need to factor such fundamentals of Indian habits and needs.



Consumption shifts with economic status and across cities

Consumption of unbranded goods increases with declining socio-economic status. City wise consumption figures highlight the popularity of unbranded food products across all cities. According to the survey, over 75% of respondents surveyed in the cities of Delhi, Mumbai, Hyderabad, Bengaluru, Ahmedabad, Chennai, Kolkata, Surat, Jaipur, Lucknow, Thane and Indore regularly consume unbranded goods.

While consumption of branded goods including packaged products is popular among all sections of population, the overall quantity of unbranded food consumption is significantly higher than that of packaged branded food.

The Indian food retail sector is projected to reach INR 5,99,784 crores at a CAGR of 9% by 2022-23. Market estimates of the unorganised food segment, which caters to a large proportion of unbranded/unpackaged food, is significantly high. The unorganised sector holds a share of 65%⁹⁷ in the overall food service market and by 2022-23 is expected to reach a value of INR 3,41,877 crores.⁹⁸ *The proportion of the unorganised food segment, across various food categories such as mithai, unbranded biscuits including bakery, street food corners, is not publicly available yet is expected to be significantly large.*

The consumption of unbranded goods is understandably a result of a lot of factors including price, availability/ access, awareness, preferences, and habits. Culture also plays a role in people's food choices.

Does price influence purchase decisions?

The pandemic has dragged down the economy of India, along with most economies globally. The economic slowdown and rising costs have led households to operate with tighter budgets. According to MINTEL Indian Consumer 2022, tighter budgets will impact the way consumers shop and make purchase decisions. Many consumers are spending less on discretionary purchases such as dining out. Consumer preferences are driven by price which is a factor for a large proportion of Indian consumers.

Understandably, people in rural and urban areas do not decide in a similar manner. According to India Food Report 2018,⁹⁹ In urban India, particularly in metros and tier 1 cities, consumers are becoming not just cautious about what to eat, but also how much to eat. There is a continuous dilemma between the need to indulge and the guilt of indulgence. As a result, consumers are increasingly opting to buy multiple smaller portions/packs to control calorie intake per occasion. In rural India, where consumers are still transitioning from unbranded to branded products, every purchase is evaluated in terms of value associated with the product resulting in smaller packs becoming more and more relevant.

The aforementioned sections describe the diversity prevailing in the Indian food space. No two Indians think the same about the food: their behaviour is influenced by need, taste, price, habits, culture, among others.

⁹⁷ "Indian Food Processing Sector: The untapped growth opportunity", Invest India, Research Unit (SIRU), June 22, 2020.

⁹⁸ Ibid.

⁹⁹ India Food Report 2018 (Wazir Advisors Pvt Ltd).



Consumer eating habits, preferences and choices

Food being a *sine qua non* to human life, the basic requirement, it is imperative that unadulterated and safe food is accessible to all sections of society including the poorest.¹⁰⁰ Issues concerning food safety and improving nutritional deficiency calls for a holistic approach. There is a need to look at some of the critical questions concerning people's food choices to understand the barriers, if any, to making informed choices regarding the food they consume.

Food safety norms proposed by Food Safety & Standards Authority of India (FSSAI), the country's food regulator, includes health star ratings based on, 'High in Salt Sugar Fat' (HSSF) and 'Front of Pack Labelling' (FoPL), with the stated objective of helping consumers make healthier food choices.

FSSAI was established under the Food Safety and Standards Act, 2006, the preamble to which reads, "*it is an act to consolidate the laws relating to food and to establish the Food Safety and Standards Authority of India for laying down science-based standards for articles of food and to regulate their manufacture, storage, distribution, sale and import, to ensure availability of safe and wholesome food for human consumption and for matters connected therewith or incidental thereto.*"¹⁰¹

The key regulatory goals, as underlined in the Act, is to ensure the availability of safe and wholesome food for human consumption. *Changing the nature of food, in order to adjust to a globally acceptable health rating scheme, would change the nature of Indian food, leading to a loss of its character, taste and food value.*



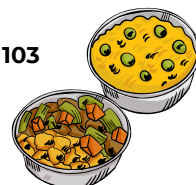
The health benefits of salt, sugar and fat is often ignored in debates to limit the use of excess sugar, salt and fat. Humans have had a long and beneficial relationship with salt, sugar and fat that dates back to the origins of the species. Salt is essential for fluid balance; sugar provides the energy for physical and mental activity while fats of various types make up most of the mass of the brain.¹⁰² Negative health outcomes resulting from the excess use of sugar, salt and fat forms the basis, including a higher incidence of obesity across the globe, forms the basis on which food safety norms to limit excess sugar, salt and fat are built.

While obesity is a global health challenge, the scale of the problem is not uniform across the globe. The percentage of obese adults in India in 2022 is 3.90%, far lesser when compared to countries such as United States (36.20%), Canada (29.40%), United Kingdom (27.80%),

¹⁰⁰ Twenty-first report of Public Accounts Committee (2020-21) on 'Implementation of Food Safety and Standards Act, 2006', Ministry of Health and Family Welfare, Seventeenth Lok Sabha, February 2021

¹⁰¹ 'Evolution of Indian Gastronomy: A Tale of Fusion', Indian Culture, Ministry of Culture, Government of India.

¹⁰² Pingfan Rao et al, "Addressing the sugar, salt, and fat issue the science of the food way", npj Science of Food (2018) 2:12; doi:10.1038/s41538-018-0020-x



Australia (29%), New Zealand (30.80%).¹⁰³ Therefore, any regulatory intervention which perhaps is suited for Western economies, because of the nature of food they consume, cannot readily be replicated and implemented in the Indian context, known for its diversity in cuisine, variance in the use of sugar, salt and fat based on regional food choices prevalent there.

Limiting the use of sugar and salt without regard to the reasons why they form part of Indian cuisine in the first place will not just be unscientific but imprudent. In a country where 32.1% of the children under 5 years are underweight, according to National Family Health Survey-5 (NFHS-5), 2019-21,¹⁰⁴ any unscientific reduction in sugar and salt will lead to foods losing their intrinsic food value. It is well known that sugar and salt are linked to weight gain. Hence, a simplistic presumption that limiting sugar and salt in food shall make food healthy is not correct. While excess sugar, salt and fat is unhealthy, any unscientific reduction in the use of these essential ingredients shall lead to outcomes which are far worse in a country like India where food choices of people depend on factors such as their economic status, culture, preferences and health awareness. One must also be cognizant of the low literacy level of India's population, and it is erroneous to believe that people would understand the finer nuances why a food is rated the way it is.

Are people aware of the health aspects of food?

Is the average Indian consumer in the dark when it comes to the nutrition level in the food they are consuming? The survey asked, "Are you aware that high sugar, high salt/ sodium, and high fat may adversely affect your health? 91% of respondents said they were aware of

the consequences of salt, sugar and fat on their diet.

While the average Indian consumer understands the implications of sugar, salt and oil in food, their understanding varies based on their level of health awareness.

However, despite understanding the health aspects of food, nearly half i.e., 46% of the respondents, said that they would not shift to a healthier alternative if the food of their choice was given a low health rating. This finding seems to suggest that a large number of Indian consumers are significantly influenced by food choices even though they consider themselves aware of the health aspect of food.

City wise proportion of respondents shows that when compared to Tier 1 cities, respondents across Tier 2 cities have greater awareness of the health effects of sugar, salt and fat.

Perceived harm from packaged food ingredients

The survey sought to understand what consumers consider to be harmful from among ingredients. To the survey question: "Below are a list of things that people like you have mentioned are not good for health. How harmful do you think each of these are for your health? [list included, (1) lack of vitamins/ nutrients, preservatives, amount of saturated fat, artificial color, amount of sugar, amount of fat, calorie, amount of salt].

- ◆ Lack of vitamins/ nutrients: 76%
- ◆ Amount of calorie: 39%
- ◆ Amount of salt: 33%
- ◆ Preservatives: 29%
- ◆ Amount of sugar: 28%
- ◆ Amount of saturated fat: 24%
- ◆ Artificial colour: 13%

¹⁰³ Obesity Rates by Country 2022, World Population Review

¹⁰⁴ National Family Health Survey-5 (2019-21), Ministry of Health and Family Welfare, Government of India





Overall, the survey seems to indicate that the level of awareness is reasonable across all groups of people, even as those with elevated levels of health consciousness are more aware. Consumer awareness about sugar, salt and fat is linked to their health awareness. The survey shows while 97% of the high health-conscious people said they were aware; it fell to 90% for those who consider themselves less health conscious. Overall, the survey shows that consumers understand the health effects of sugar, salt and fat in food.

How aware are people when it comes to sugar, salt and fat?

What is high on sugar?

The survey asked, “What according to you is high sugar? (Respondents were given the options – ½ tea spoon, 1 teaspoon, 2 teaspoons, 3 tea spoons)” 23% of the respondents felt ½ teaspoon sugar to be high sugar. The awareness level increases with respondents’ low in the socio-economic classification. Compared to Tier I cities, respondents across Tier 2 cities have a more profound understanding of what comprises high sugar

What is high fat?

The survey asked, “What according to you is high fat? (Respondents were given the options – ½ table spoon, 1 tablespoon, 2 tablespoons, 3 tablespoons)” 21% of the respondents felt ½ table spoon was high fat. The awareness level increases with respondents falling below in their socio-economic classification. Compared to Tier I cities, respondents across Tier 2 cities have a more profound understanding of what comprises high fat.

What about oil in food?

The survey asked, “Which product has more oil levels? (Respondents were given three options: (1) One Rs 10 pack of potato chips, (2) Or one samosa, (3) Don’t Know. 78% of the respondents replied it was “one samosa”. 16% of the respondents said “one Rs 10 pack of potato chips.” The awareness level increases with respondents falling below in their socio-economic classification. Compared to Tier I cities, respondents across Tier 2 cities seemed more aware.

The survey suggests that choice of foods is important for the Indian consumer which is determined chiefly



by taste, price, availability/access, health consciousness, habits and preferences and the average Indian consumer is aware of the health effects of sugar, salt and fat in food items.

What information do consumers look for when buying a packaged food product, and improvements which consumers like to see?

Do consumers care to look for ingredient information at the back of the pack, for packaged branded goods? *The survey asked: "When you buy packaged branded food items, do you generally check the back of the pack before buying?" 92% said yes.*

To the question as to *how easy or difficult it was for them to read the information* provided at the back of the packaged food product, 81 % of the respondents said it was easy for them to understand, with 40% saying it "very easy" to read.

To a question, how useful was such information, nearly 70% felt the ingredient details provided at the back of the pack was helpful in their purchase decisions, while 63% of the respondents felt it helped them in understanding the health benefits. Also, half the respondents were of the view that the ingredient details helped understand if there were any allergens in the food.

What information do most consumers look for?

62% of the respondents said they looked for "best before or expiry date". Other things also looked at include date of manufacturing (53%) and ingredient details (42%). Overall, references to any of this information points to the fact that, the average Indian consumer is conscious about the quality of the food they consume, which according to most means that the food being sold has not expired, and is not stale. Expiry date to most respondents seems to be the proxy for quality.

Further, a drill down assessment of the respondents who ranked the factors in Top 3 order, as highlighted in the table above, were those who are either highly or moderately health conscious. *It is also noteworthy ingredient details do not rank higher in the rank, signifying therefore that even to the health conscious it is the expiry date and manufacturing date that matter more.*

The survey sought to understand if the consumers were satisfied with the format in which packaged foods declare the quantity of sugar, salt or fat, which is for every 100 grams, to understand if format of reporting came in the way of a consumer's understanding about the quality of food. The survey asked: *"Currently branded packaged food products declare the quantity of sugar, salt or fat basis every 100 grams of the product. This detail per 100 grams is provided irrespective of the weight of the pack. It can also be that the declaration of things like sugar, salt & fat, at the back of the pack, can be the basis of the actual weight of the pack."* Accordingly, responses were sought to understand the consumer's viewpoint. The results showed that consumers largely found it easy to understand. Overall, 46% said that the information was easy to understand per 100 grams, while 11% were found both formats easy to understand.

Among the highly health conscious, 53% found it easy to understand the declaration per 100 grams, while 36% would prefer it as per actual weight. Among the moderately health conscious, 44% found it easy to understand the declaration per 100 grams, while 47% would prefer it as per actual weight. 9% were fine with both.

The survey highlights that the Indian consumer is concerned about the quality of the food product they purchase and satisfies her/himself by looking at information provided at the



back of the pack of packaged products. At the same time, most people appear satisfied with the manner and the detail of the existing current format, and found it useful. The message that emerges is that an information overload is not always required, as health-conscious individuals/ families are careful about the food they eat.

Does the lack of information on unbranded food concern consumers?

Indian consumers, while largely satisfied with the product information provided for packaged branded goods, are, however, concerned when it comes to unbranded goods.

The survey asked: “How concerned are you that unbranded packaged food products do not carry information like details of ingredients, expiry date etc.?”

An overwhelming 94% of the respondents said they were concerned. The response does not significantly change based on the health awareness of individuals. 99% of the highly health conscious said yes, either very concerned or somewhat concerned, while in the case of moderate to less health-conscious respondents, it was 95% and 94% respectively.

The survey asked: “How helpful would it be for you if unbranded packaged food products carried similar information like,

details of ingredients, expiry date etc.?” 97% of the respondents felt it would be helpful if ingredient details would be made available for unbranded food items, with 62% of them thinking it would be “very helpful” if such information was provided.

The overwhelming message is that the lack of product information with respect to unbranded goods is a matter of concern for consumers and availability of ingredient details would benefit them greatly towards understanding the quality of the food they eat.

In summary, it appears that the average Indian consumer while purchasing a food item is driven by quality, taste and price with each factor impacting different sections of people differently. While the consumer who purchases a packaged branded food understands health benefits of food based on product information, it is the person who cannot afford to always buy branded food and commonly buys unbranded unpackaged food suffers with fears of hygiene most on their mind. The message for regulators is that food regulation should target to improve the lives of the masses and not the classes, by which we mean the 10-15% of the educated urban class who is aware, understands health but is driven by habits.



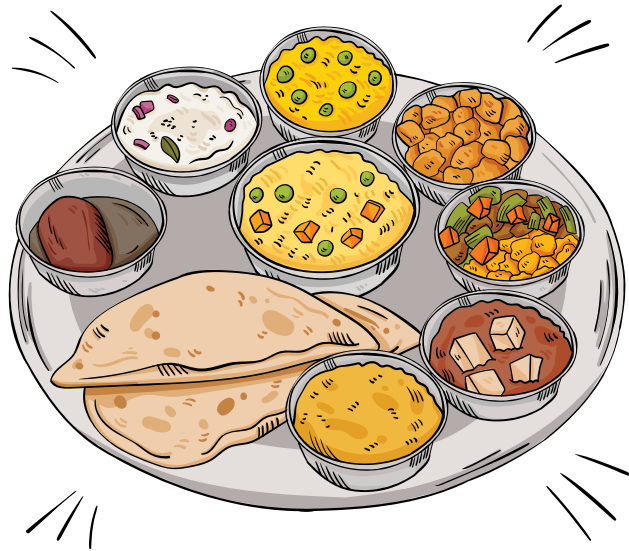




CHAPTER 7

Recommendations





CHAPTER 7

Recommendations

Ongoing debates on nutrition have often argued that Indian food in general is unhealthy. The food one eats determines health. It is ironic that our traditional and ethnic food we have been eating is being blamed for India's poor nutritional standards. This argument often ignores the fact that nutrition is also a result of lifestyle and is driven by economic factors such as income inequality with education standards also playing a part. Issues concerning food safety and improving nutritional deficiency calls for a holistic approach. We look at some of the important focus areas for the Government and the food regulator in order to ensure that while access to safe and healthy food is ensured for all citizens, the country's food heritage is not lost.

Ensuring food safety for all

Food safety is a national priority. Food being a *sine qua non* to human life, it is imperative that unadulterated and safe food is accessible to all sections of society including the poorest.¹⁰⁵ The Supreme Court of India has included in a citizen's fundamental right to life the right to pure food and beverages. India's food safety objectives seems to have failed to ensure food safety for all.

The Economic Survey 2019-20 was apt when it said, *food is not just an end in itself but also an essential ingredient in the growth of human capital and*

therefore important for national wealth creation. 'Zero Hunger' has been agreed upon by nations of the world as a Sustainable Development Goal (SDG). On SDG 2 (Zero Hunger), India has shown little improvement. On prevalence of undernourishment (%), which is a critical measure of people's economic upliftment, India is on the decline trend (2019).¹⁰⁶ The prevalence of undernourishment is often a factor of poverty and it impacts that section of the population which depends on the unorganised food industry for its two square meals a day. The anaemia prevalence is high among adults, as

¹⁰⁵ Twenty-first report of Public Accounts Committee (2020-21) on 'Implementation of Food Safety and Standards Act, 2006', Ministry of Health and Family Welfare, Seventeenth Lok Sabha, February 2021

¹⁰⁶ SDG Dashboard and Trends, INDIA, <https://dashboards.sdgindex.org/profiles/india>





57% of women and 25% of men in the age group of 15-49 years in India being anaemic, and have increased over time, as per data released under National Family Health Survey (NFHS-5), 2019-21, shows. The prevalence of anaemia is high in households with lower income. In the case of women, it varies by maternity status and in the case of young adolescent young girls, it decreases with the years of schooling.¹⁰⁷ The higher prevalence of anaemia results from a lack of appropriate calories, hygiene and protein along with iron and vitamins.

India's overall economic progress requires uplifting the quality of life for all its citizens. Food safety is a critical factor which impacts the quality of life and should be the foremost priority of the Government. The policy focus on food safety must prioritise the bigger concerns of malnutrition, undernourishment and food hygiene.

In this regard, it is suggested that highest priority be placed on ensuring that the unorganised food industry is made compliant to food safety standards. The Clean Street Food Hub project should be expanded in earnest to cover a wide cross section of the industry and can be linked to the tourism goals, similar to the Thailand's clean street food project. The Government of India's focus on improving the livelihood of street food vendors should be integrated into FSSAI's Clean Street Food Hub initiative and further be integrated to promote Indian food culture tourism to bring enhanced focus and delivery on the ground.

India should integrate consumers as part of its overall policy framework nutrition goals and food safety systems. A holistic approach calls for mobilising consumers as part of the overall process, as they are the most important stakeholders.

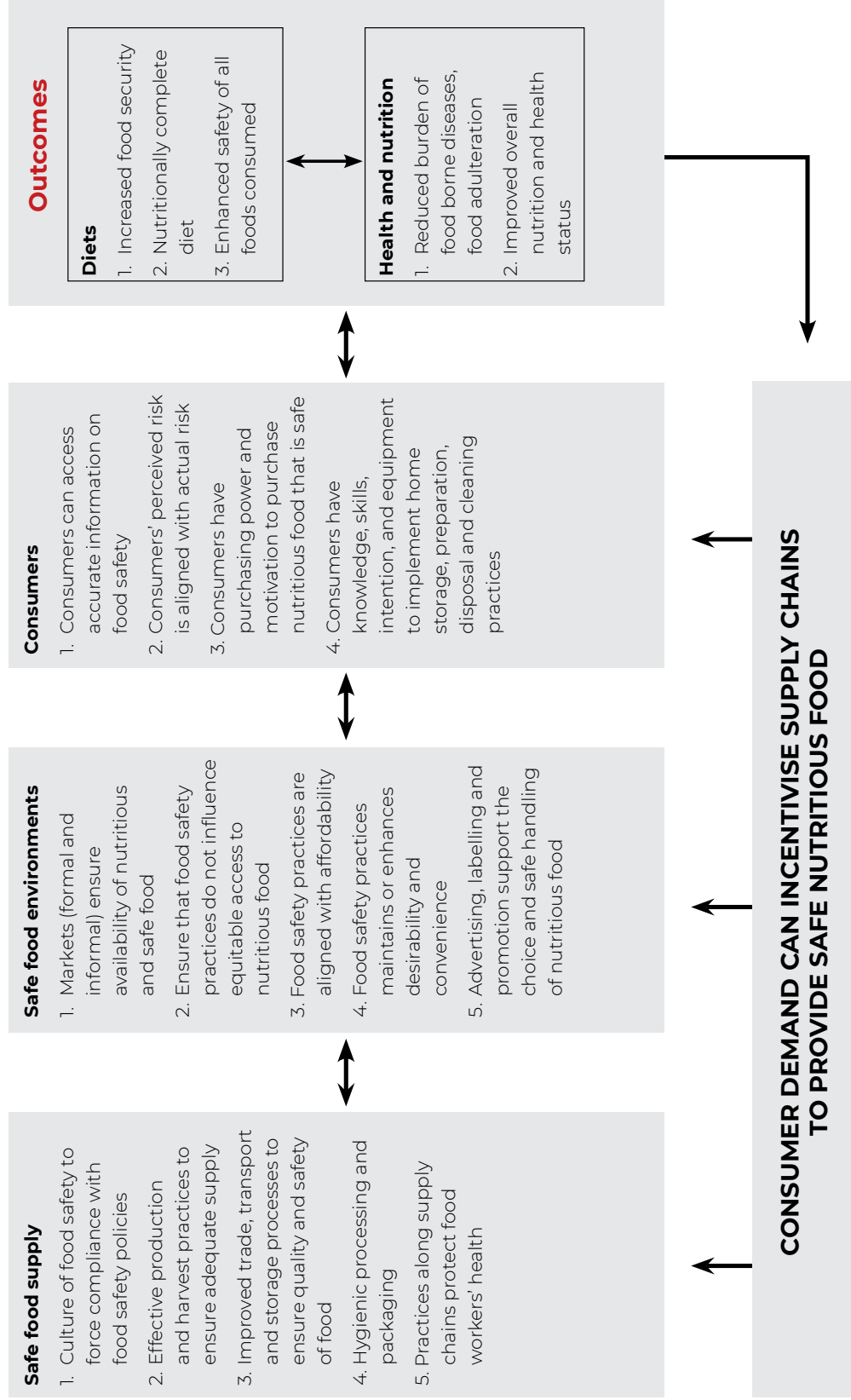
¹⁰⁷ National Family Health Survey (NFHS-5), 2019-21, India Report, Ministry of Health and Family Welfare, Government of India.



Adapted from Nordhagen, S, et al; “Integrating nutrition and food safety in food systems policy and programming,”
Global Food Security, Vol 32, 2022



Food System: Supply and Demand for safe, nutritious food



G20 AND THE FOCUS ON FOOD SECURITY AND NUTRITION

In November 2022, in his address at the G20 Summit in Bali, Prime Minister Narendra Modi highlighted the need to build mutual agreement between nations to maintain the supply chain of both manure and food grains stable and assured. In this context, he highlighted India's efforts in ensuring sustainable food security through promoting natural farming and repopularising nutritious and traditional food grains such as millets.¹⁰⁸

As India assumed the Presidency of the Group of Twenty (G20) on 1 December 2022, Prime Minister Modi unveiled Government of India's priorities while leading the G20. India's agenda, he said, would be to strengthen cooperation and coordination between G20 countries by depoliticising the *"global supply of food, fertilisers and medical products, so that geo-political tensions do not lead to humanitarian crises"*.¹⁰⁹

India is hosting a series of events across the country since it assumed the group's presidency. With nutrition and food security a key priority area, G20 has laid down a strong focus on discussing issues related to food security and nutrition.

With culture intrinsically related to people's food choices, the G20 has lent importance to celebrating traditional food celebrated across nations. The recently concluded G20 International Food Festival themed, **"Taste the World"** held in the national capital in February 2023 saw the participation of four G20 nations—China, Turkey, Japan and Mexico, also providing visitors the joy of tasting local regional cuisines from various Indian States and Union Territories.

With 2023 being declared the International Year of Millets (IYOM), meetings held across various cities in India have been celebrating millet-based recipes. According to reports, at the G20 Summit scheduled to be held in September this year in Delhi, guests would be served millet-based culinary delights to promote the long-forgotten crop that has been displaced by other staple foods.

India is the largest producer and the second largest exporter of millets in the world. Millets are termed as nutri-cereals because of their high nutritional qualities and also a crop suited for the changing climate. Millets have been an integral part of diet in the past owing to its nutritional functional and nutraceutical properties.

India has been an abode of millet cultivation since ages. Owing to the subcontinent's large areas of dry land, millet is one of the few crops that can withstand the harsh climatic conditions. When it comes to the nutritional

¹⁰⁸ Prime Minister Shri Narendra Modi's address at the G-20 Summit in Bali, Session I: Food and Energy Security (November 15, 2022).

¹⁰⁹ B Dhar, 'Prioritising agriculture and energy at G20', Heinrich-Böll-Stiftung (March 6, 2023)



benefits, millets contain high amounts of dietary fibre, B-complex vitamins, essential amino and fatty acids and vitamin E. They are particularly high in minerals, iron, magnesium, phosphorous, potassium and release lesser percentage of glucose over a longer period of time causing satiety which lowers the risk of diabetes.

G20 this year has been a melting pot of food traditions and culture with a strong focus on celebrating tradition in food whilst promoting nutrition at the same time. As acknowledged by experts, helping millets make a comeback is not just popularization of a neglected and underutilized crop but also an effort to achieve the sustainable development goals (SDGs) – mainly SDG 2 (zero hunger), SDG3 (good health and well-being), SDG 12 (sustainable consumption and production), and SDG 13 (climate action).¹¹⁰

The broad theme underlined in the objectives laid down IYOM 2023 with respect to food security and nutrition and being promoted at the G20 meetings complement each other.



¹¹⁰ 'Millets prove tasty solution to climate and food security challenges' (May 29, 2021), UN News, United Nations





Indian food heritage must be well and truly preserved

Food intake depends on a person's choice and needs and food is as much about enjoyment, as it is for nutrition. Policy discussions affecting food thus must take on board the preferences as well as the needs of people.

Unscientific change in food habits can lead to catastrophic results for people. Change in dietary food habits can impact the sustainability of regions which have traditionally lived off the earth, with livelihoods revolving around agriculture. A research done on the shift in the food habits of indigenous Pahariya and the Santhal tribes of Sundarpahari block in Godda district of Jharkhand said that giving up on traditional food and blindly having 'development' agendas in agriculture thrust on them has resulted in the tribals losing their wise and time-tested habits and practices, leading to heavy loss in health and economic terms.¹¹¹ Irrespective of their socio-economic standings, food plays an important part in everyone's life as it connects family, is part of our traditions

and makes us happy and fulfilled. It is therefore inappropriate to define food by ratings and categories simply based on their contents of salt, sugar and fat. *A typical Indian food is rich in spices and, hence, the majority of them would probably be clubbed unhealthy if one was to grade food by interpretive health star ratings.*

The traditional Indian palate is deeply entrenched in the Indian psyche. With sedentary lifestyles especially among the urban population, there has been a rapid shift in people's food habits. Indian food habits, as our ancient texts had propagated and passed on in the kitchens of every Indian for generations together, must be safeguarded not simply because of the health benefits they offer, more so because it is India's proud heritage.

Various benefits related to various ethnic products carrying our unique Indian heritage like Ayurveda, spices, ghee, millets would be lost, if they get blindly labelled as "unhealthy" because of non-scientific algorithms.

¹¹¹ Mishra, A, "Shift in tribal food habits: From sustainable to unsustainable", <https://www.pradan.net/wp-content/uploads/2017/02/Shift-in-Tribal-Food-Habits.pdf>



In a country where food has since centuries been considered as an extension of health, food and health are not conflicting objectives.

Prime Minister Narendra Modi, addressing 7th meeting of the Governing Council of NITI Aayog, highlighted the country's need to focus on modernized agriculture, animal husbandry and food processing.¹¹² He emphasised the need for India to focus on modernized agriculture, animal husbandry, and food processing to become self-sufficient and a global leader in the agriculture sector. In his closing remarks at the recently held 7th meeting of the Governing Council of NITI Aayog, the Prime Minister emphasised the need to encourage people to use local goods wherever possible (Vocal for local').¹¹³

India's food goals should the objectives of food safety and care for India's heritage intertwined.

Develop a scientific reasoning about food quality

India's efforts against malnutrition requires an integrated approach which is built around the relationship between food environments (covering both organised and unorganised food economy). While on one hand, India has to deal with the challenge of malnutrition, it must contend with the effect of the nutrition transition which is rapidly degenerating into a crisis where the younger population adopt western food habits coupled with a sedentary lifestyle.

Any artificial measure to help people make healthy choices, needs to be holistic and well researched. Indian food, for its scientific character, needs

a comprehensive-research into the use of ingredients, flavour profile and combinations, in recognition of the centuries old practices of Ayurveda. Until a holistic understanding of Indian food is achieved, it would not be appropriate to import global concepts of rating food products.

The fundamental difference between Indian cuisine and Western cuisine is that many of their principles differ. Not enough scientific research has gone into understanding the finer nuances of pairing of ingredients in Indian food, a subject which in recent years has gained interest. As Dharamjit Singh, chef and expert on Indian food notes, Indian recipes are complex, often using many ingredients and spices, and many different cooking methods, such as roasting, baking, flash frying, steaming, and so on, in combination so they fuse into complex, layered flavours (Singh, 1970).¹¹⁴

Traditional Indian food recipes must be understood in its entirety before any changes can be made to their making. Therefore, the regulators should ensure that a thorough and scientific understanding of Indian recipes is conducted to highlight the uniqueness of the regional cuisines we eat.

Promoting the food processing industry and livelihood

Policy goals, which can have a disruptive impact, cannot be selective. Processed foods are sometimes unfairly targeted for all the healthcare woes, which for a country like India is not true. India, among the major global economies, is still very low in food processing, accounting for less than 10% of its total food.

¹¹² Press Information Bureau (India) www.pib.gov.in/PressReleaseDetailm.aspx?PRID=1849410

¹¹³ "PM Modi chairs 7th Governing Council meeting of NITI Aayog, Aug-7, 2022.. See. <https://newsonair.gov.in/News?title=PM-Modi-chairs-7th-Governing-Council-meeting-of-NITI-Aayog-in-New-Delhi&id=445599>

¹¹⁴ Singh, Dharamjit. (1970), Indian Cookery. London: Penguin



The food processing sector, which currently is small, holds a lot of potential. Already the PLI scheme has drawn significant traction and is expected to serve as an economic enabler. Proposed reforms such as FSSAI's proposal to introduce Front of Pack Labelling (FOPL) could act as a disruptor to the growth of an industry which is still in its development stage. Disruptive proposals, such as proposed new interpretive product information, could serve as a detriment, particularly when the packaged industry is already taking significant steps to improve the health standards of the food. Further, if influencing consumer behaviour is the public objective, one must not ignore the point that over 65% of its food business in India is done by unorganised industry where packaging is not the standard practice.

People must be at the centre of any regulatory discourse on food. Food choices should evolve organically and must not be forced on people, as doing so will lead to shifts in food choices which could have even worse impacts on health outcomes. Indian food choices are the result of a conscious choice and cannot be influenced artificially. As our survey shows, food choices correspond to people's health consciousness. Therefore, what is more important is to create a culture of health consciousness among people, which naturally would make them shift to healthier food choices. People may not like to alter their food choices, as indicated in the survey, unless it is due to factors such as poor quality. It is wholly inappropriate to presume the consumer is not aware of their well-being, although it is true that food choices are sometimes compulsive, driven by economic factors such as household income.

India should actively promote more startup ventures promoting Indian traditional food. There have already been some significant efforts that have gone into the promotion of traditional Indian food recipes. Samosa Singh, a Bengaluru based venture which aims for the "rebirth of the samosa," raised USD 2.7 million in funding in 2020, while another startup Samosa Party, also raised \$2 million in its preliminary funding in 2021. In its financial submissions, Samosa Party estimated that 60 million samosas are sold and eaten in India every day, which means a market opportunity of around \$3.65 billion.--If yoga can be extolled as a great example of Indian soft power, it seems like samosas should be close behind.¹¹⁵ More such efforts are needed.

Meeting the nutritional needs of people

In his address to the Nation on the occasion of 76th Independence Day, 2022, the Prime Minister highlighted the need for celebrating India's heritage. He said, *"We are the people who know how to live with nature. We know how to love nature. Today the world is facing environment related problems. We have that legacy and the solutions to the problems of global warming. Our ancestors have given us the same. When we talk about an environment-friendly lifestyle and LIFE mission, we attract the attention of the world. We have this power. Coarse paddy and millets are household items. This is our heritage."*¹¹⁶

India's efforts against malnutrition requires an integrated approach which is built around food security. Millets have traditionally been an important staple cereal crop in India, the production declined since the eighties. Millets have

¹¹⁵ Vikram Doctor, "How Indians turned the samosa into a billion-dollar global snack", The Times of India, Jul 9, 2022

¹¹⁶ "English Rendering of Prime Minister's address from the ramparts of Red Fort on 76th Independence Day", Aug-15, 2022.. See: <https://pib.gov.in/PressReleasePage.aspx?PRID=1851994>





larger stake in household food security, especially nutritional, both for human food, feed and fodder for livestock. Considering the wide spread prevalence of nutritional deficiency such as protein, vitamin A, iron and iodine, especially among children and women, millets can act as a shield against nutritional deficiency disorders and provide for nutritional security. The anaemia (iron deficiency), B-complex, vitamin deficiency, pellagra (niacin deficiency) can be effectively tackled with intake of less expensive but nutritionally rich food grains like millets.

In view of the nutritional value of the millets, the Government has notified millets as nutri-cereals in April, 2018. The Millets are a rich source of Protein, Fibre, Minerals, Iron, Calcium and have a low glycaemic index. The National Year of Millets was celebrated in 2018. To create domestic and global demand and to provide nutritional food to the people, Government of India had proposed to United Nations for declaring 2023 as International Year of Millets (IYoM).

Support is also given to start-ups and entrepreneurs for developing recipes & value-added products that promotes consumption of millets. 8 bio-fortified varieties/hybrids of Bajra have been released for cultivation from 2018 to till date.¹¹⁷ The efforts undertaken in this regards are laudable and must be promoted. Greater efforts may be made to promote millet-based products among consumers through celebrity promotions and other promotional efforts which overall will widely support India's nutritional goals.

Celebrating Indian food

Cuisines have been an essential part of traditional diplomacy since ancient times, when imperial courts provided lavish feasts for diplomats (De Vooght, 2011). In contrast to the use of cuisine for improving formal state relations, the recent frenzy for gastrodiploacy has broader dimensions. The term gastrodiploacy was first used in an Economist article on Thailand's public diplomacy campaign to promote its

¹¹⁷ Press Information Bureau (India) <https://pib.gov.in/PressReleasePage.aspx?PRID=1796559#:~:text=Through%20the%20efforts%20made%20by,tonnes%20during%20the%20same%20period.> (February 8, 2022)



food and culinary art to the world ("Food as Ambassador", 2022). Since then, gastrodiploacy's popularity has spread rapidly.

Thailand was the first to engage in gastrodiploacy as foreign policy, as countries such as Japan, South Korea and Taiwan has been active on this front. In a recent initiative, the U.S Department of State has launched a gastronomic initiative exploring the U.S India Partnership Fusion Food. The initiative, launched to commemorate the 75th anniversary of U.S-India relations, has the stated objectives of strengthen and advance its strategic partnership with India, improve people-to-people relationships that plant the seed for greater appreciation of both India and U.S. cultures, and highlight the importance of food and the blending of Indian fusion cuisines through the secondary objective of promoting U.S. food product sales.¹¹⁸

Food diplomacy was at play in 2020 ahead of the meeting of Prime Ministers of India and Australia. Ahead of his video meet with Prime Minister Narendra Modi, the then Prime Minister of Australia Scott Morrison shared pictures of samosas on twitter, saying he would have liked to share the popular snack with the Indian leader.

It said, *"Sunday ScoMosas with mango chutney, all made from scratch -- including the chutney! Apity my meeting with @narendramodi this week is by videolink. They're vegetarian, I would have liked to share them with him."*

PM Modi replied the two countries are **"Connected by the Indian Ocean, united by the Indian Samosa!"** He added that it looked delicious and once the battle against Covid-19 ends, they would enjoy the samosas together.

According to internationally accomplished chef Suvir Saran, whose New York restaurant Devi became the first Indian restaurant in the US to receive a Michelin Star, Indian culinary wisdom is key to gastrodiploacy. "Food diplomacy is sure to bring much more rewards of long-term lucrative success than any other. You're not using bullets in muscle and brute power of any kind, but winning over minds and spreading your culture. So, I think India should be investing in itself and it begins by Indians educating themselves about what Indian food is, appreciating and understanding the heart and soul of Indian home cooking."¹¹⁹

The country should actively promote the traditional Indian food in its truest version. Indian food is celebrated worldwide and is one of the most popular cuisines. We must celebrate Indian food, and not castigate it.

¹¹⁸ Gastrodiploacy – Exploring the U.S.-India Partnership Fusion Food, Funding Agency: Department of State (2022); <https://www.grants.gov/web/grants/view-opportunity.html?opId=339326>

¹¹⁹ Arunima Gupta, "Indian Culinary Wisdom Key to Gastrodiploacy: Michelin Chef Suvir Saran", Indica, Feb 24,2022



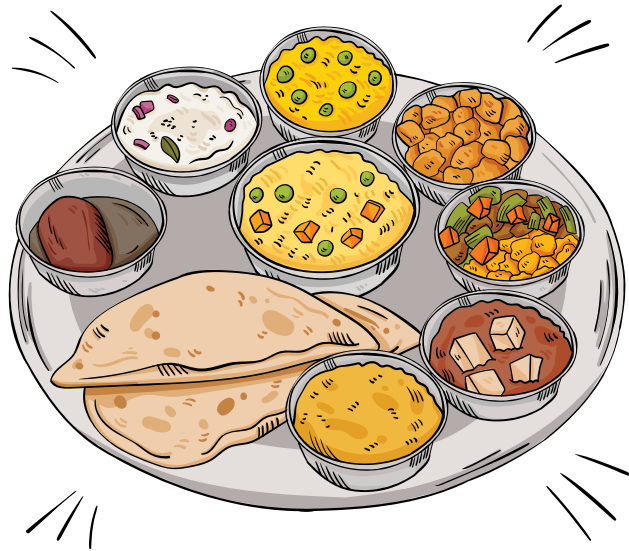




Annexure

Methodology and Research Design





Annexure

Methodology and Research Design

The current study uses data generated by a primary survey conducted by Convergent View Research & Consultancy Private Limited, aimed at understanding the level of knowledge and awareness of citizens with respect to product information on packaged branded food products, also assessing their preferences on how product information should be provided to help them decide better.

The survey was conducted between January and February 2022, across 15 populated cities in India across all four regions.

The research is a one-time cross-sectional study with a specific population strata representing all 4-regions of India. The cities covered under this study has been chosen for their population relevance. Therefore, the top 15 cities in India in terms of their population is selected. A minimum of 200 sample size was covered in each city. Wards in each city were sampled through systematic random sampling. It was ensured that all five regions (north, south, east, west and central) within the city were equally covered.

City	Total	
	Target	Achieved
Tier 1 cities		
Mumbai	650	664
Delhi	800	805
Bangalore	500	510
Hyderabad	200	211
Kolkata	240	286
Chennai	250	259



City	Total	
	Target	Achieved
Tier 2 cities		
Ahmedabad	370	372
Surat	250	252
Pune	300	301
Jaipur	200	210
Lucknow	200	220
Kanpur	200	204
Nagpur	200	201
Indore	200	201
Thane	440	440
Total	5000	5136

Research Design

The survey was a one-time cross-sectional design

Sampling Methodology:

Step-1: Selection of wards in each town

Geographically dispersed wards in each city ranging 80 (in Delhi) to 20 (in Hyderabad) were covered with around 10 interviews per ward. Wards were selected randomly using Census 2011 data.

Step-2: Selection of Household

Interviews were conducted using right-hand rule from a random starting point in each ward. Right hand-rule was followed till we found the household in the A to B1 SEC

Step-3: Selection of the respondent.

Household Purchase Decision Makers

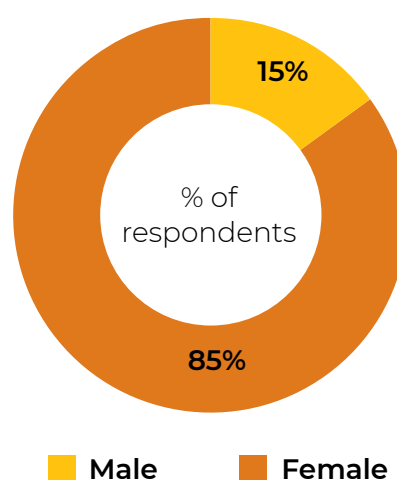
Survey Period

Survey period is between January 2022 and February 2022

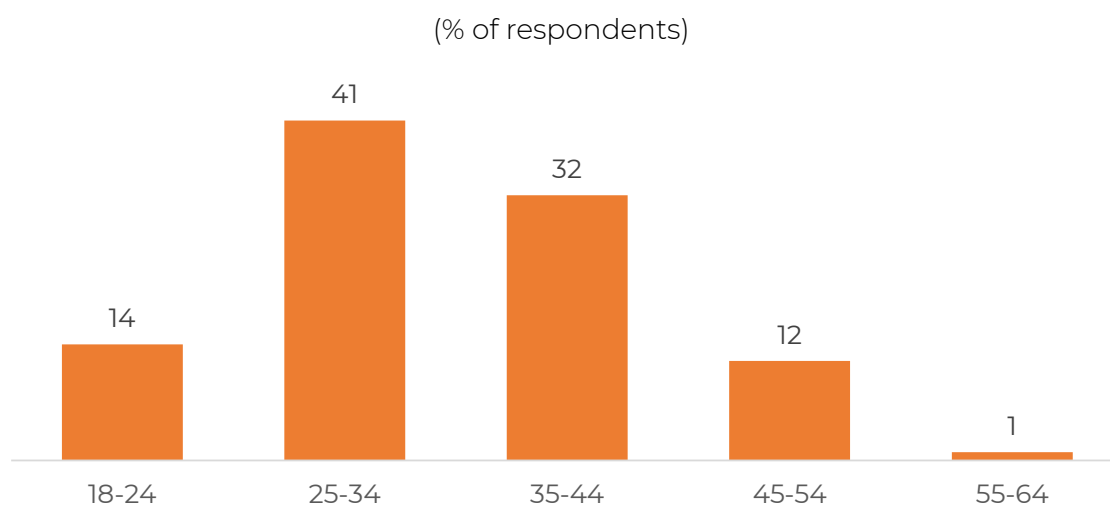
Stimulus

The questionnaire included showing the respondents an example of how the presentation of information about ingredients may change.

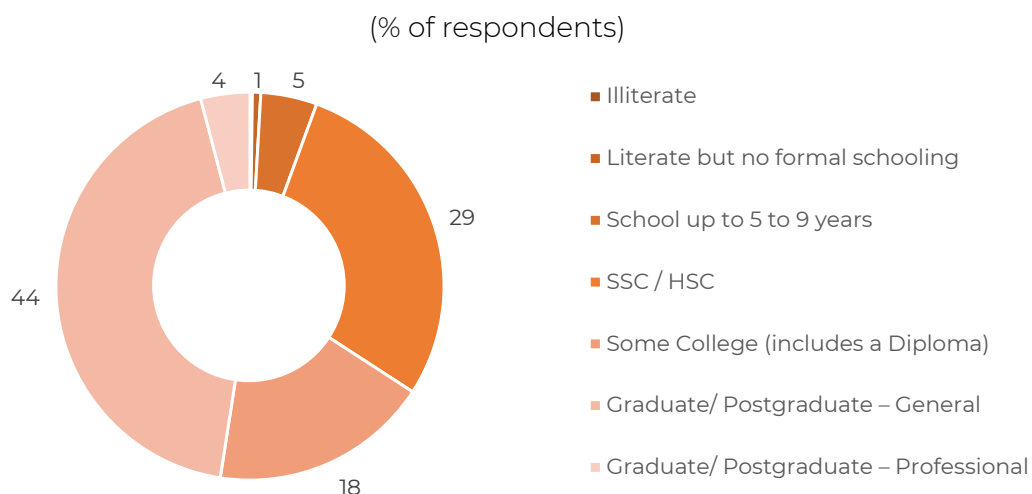
Gender and Age Profile



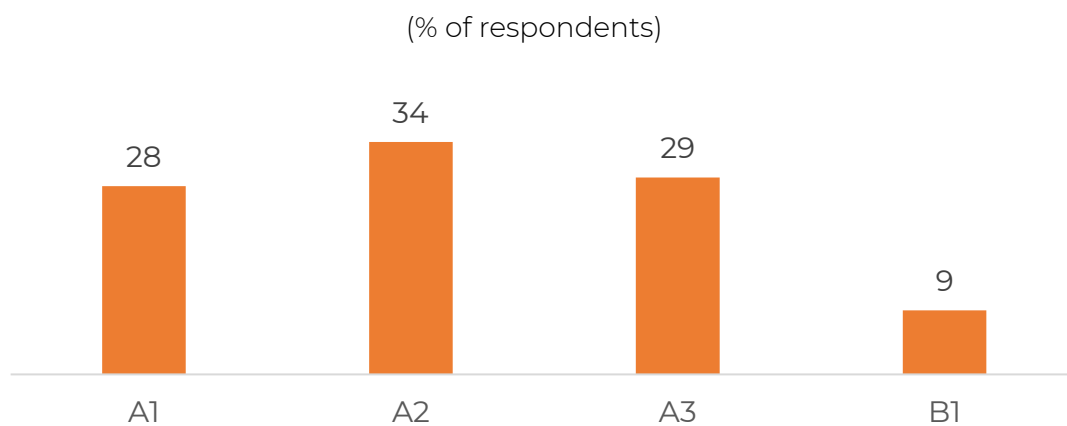
Education levels



Education profile of respondents



Socio-economic profile of the respondents



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Knowledge Partner

