

Survey of Fruits, Vegetables & Juice Intake of School Children, Nutritionists & Dieticians

Brochure



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Foreword

India is one of the fastest growing economies in the world and is home to over 1.3 billion people that comprise 17.6 per cent of the global population. It is likely to be the most populous country by the year 2030. Young Indians (those under the age of 30 years) account for nearly 60 per cent of the total population and, it is this group that can drive India towards a healthy knowledge-based economy.

As a developing country, India continues to face challenges of 'food security' and 'nutrition security'. As population grows, it becomes important not only to ensure 'food security' but also 'nutrition security', through the right diet consisting of an optimum mix of fruits and vegetables. A number of studies conducted by the World Bank, World Health Organization (WHO) and the Food and Agriculture Organization (FAO) have highlighted that a large number of Indians suffer from micronutrient deficiency as they are not eating the right quantity of fruits and vegetables. Indian Council for Research on International Economic Relations (ICRIER)'s own study—India's Phytonutrient Report, based on the WHO's recommended daily intake of fruits and vegetables, found gaps in consumption across urban rich and middle income groups, which is more acute for students than adults. Indian dietary pattern can be different from global consumers. To understand if the earlier findings are applicable using Indian dietary recommendations, this report is based on the National Institute of Nutrition (NIN) recommendations.

Consumption can vary across different age groups and across people with different levels of knowledge and awareness. To find this variation, the report is based on two surveys. The first survey covered professional nutritionists/dieticians and students who are pursuing their degree in nutrition. They are assumed to be the most-knowledgeable group, in terms of understanding the dietary requirements. The second survey covered a large number of students across 36 government and 54 private schools, with varying socioeconomic background in the National Capital Region (NCR). This is the first of its kind survey-based study which looks into these two completely different groups and their consumption patterns. While children are dependent on their

parents and schools, among others, to provide them the right diet, nutritionist can take their own dietary decision and also guide others.

The findings of this report will enable policymakers to take informed decisions to drive India towards a 'nutrition secure' economy. The core finding which deserve attention is that both nutrition experts and school-going children are deficient in their daily intake of fruits and vegetables. Thus, 'nutrition security' is crucial and should be a key component of 'Ayushman Bharat' mission. The report makes recommendations on how to mitigate the nutrition gaps, learning from global best practices. A number of countries including the United Kingdom (UK), the United States (US), and Australia have come up with policies, which are implemented in partnership with the private sector, non-government organisations (NGOs) and nutrition experts, to mitigate the nutrition gaps and increase awareness about the right diet. In India, too, a number of government bodies including the Food Safety and Standards Authority of India (FSSAI) and the National Institution for Transforming India (NITI Aayog) are working towards ensuring availability of nutritious food and raising awareness about healthy diets. I am sure that this survey-based study will provide inputs into their initiatives. I would also like to mention that the availability of alternatives such as fortified fruits and vegetable juices, which can be consumed on-the-go, are packaged hygienically and available at a reasonable price, can probably help counter some of the nutrition shortfall. I sincerely hope that the industry will come up with research and develop more such products which will offer wider choice to Indian consumers. I also hope that there are more awareness campaigns in schools, regarding the right diet, especially those related to fruits and vegetables consumption. The ICRIER team can disseminate the study findings in schools and help to build programmes on healthy diet for school children in partnership with government bodies such as the FSSAI and industry. We would like to continue our support and work with the government and private companies on initiatives such as the 'Ayushman Bharat'.

I would like to thank our sponsors PepsiCo India Holdings Private Limited for funding this study. We are grateful to research team at Tropicana, Swashrit Society (the survey of school children) and Saizen Global Insights and Consulting (the

survey of nutritionists and nutrition students) for conducting the survey. I hope that this report will contribute to the debate and discussion and the

findings would further help to scale-up the efforts to bring innovative solutions to address micronutrient deficiencies, a key public health issue.



— RAJAT KATHURIA

Director and Chief Executive,
Indian Council for Research on
International Economic Relations (ICRIER)

Executive Summary

A large variety of fruits and vegetables are produced in India due to its varied agro-climatic conditions and topography. Yet, studies conducted by the World Bank, World Health Organization (WHO), and Food and Agriculture Organization (FAO) have highlighted that a large number of Indians suffer from micronutrient deficiency as they do not eat the right quantity of fruits and vegetables. This shortfall is a matter of even more concern if it is among the educated, and high income and middle income population, and among the children (even those living in urban cities and attending private schools) who will become adults in the future. Hence, it is important to focus on attaining “nutrition security”. A number of government bodies including the Food Safety and Standards Authority of India (FSSAI) and the National Institution for Transforming India (NITI Aayog) are working towards ensuring availability of nutritious food and raising awareness about healthy diets. However, there is need for data and research to understand consumption shortfall and how to mitigate it.

According to the National Institute of Nutrition (NIN), India, based on the Indian dietary patterns, every individual should consume at least 300g of vegetables (including green leafy vegetables: 50g; other vegetables: 200g and roots and tubers: 50g) in a day. In addition, fresh fruits (100g) should be consumed daily. Given this as benchmark, the objective of this study is to: (a) examine the fruit, vegetable, and juice intake among professional nutritionists and dietitians, and students studying these courses, and understand the consumption patterns and shortfall in consumption, if any, of this group, (b) examine the fruits, vegetables, and juice fruits intake among school-going children in the National Capital Region (NCR) to understand their consumption patterns and shortfall in consumption, if any, and (c) based on the findings of the survey, make policy recommendations to the government on how to ensure ‘nutrition security’.

The study is based on two primary surveys. The first survey covered 1,004 professional nutritionists/dietitians and undergraduate, masters or PhD students who were pursuing their degree in nutrition. The second survey covered 98,596 students enrolled in classes between 5 to 12 in 90 (36 government and 54 private) schools in the NCR.

Key Survey Findings

The survey of professional nutritionists/dietitians and students who were pursuing their degree in nutrition found that 44 per cent of respondents fall short of the daily recommended intake of vegetables (which is 300g of vegetables), while 13 per cent do not consume vegetables at all on a daily basis. Further, 8.5 per cent of respondents do not eat fruits daily. Students and younger age groups have a higher shortfall in consumption of both fruits and vegetables compared to professionals and older age groups. When asked about the consumption of fruits and vegetables in other formats, particularly juice, 72.1 per cent said that they like drinking juices, and students showed higher preference for drinking juice. When asked about packaged and non-packaged juices, 44.6 per cent preferred to drink packaged juice, while 38.3 per cent preferred non-packaged juices, and the rest did not respond. The survey also found a significant inverse correlation between the preference for drinking juice and intake of fruits and vegetables. Thus, those who eat more servings of fruits and vegetables generally prefer to drink less juice. Overall, the interviews showed that juice can be an alternative format for mitigating nutrition gaps. When asked about the price that the respondents are willing to pay for a 200 ml pack of juice, the average price selected by majority was INR 21-30. The top three reasons for choosing packaged juice as is given by the survey respondents include hygiene (66.3 per cent), easy availability (61 per cent), and convenient to carry or store (53 per cent). However, only 24.4 per cent respondents believed that packaged juice is a good source of vitamins and minerals, and only 21.6 per cent felt that it is reasonably priced and offers value for money. Interestingly, the concept of fortified package juice is still new in India, even among experts.

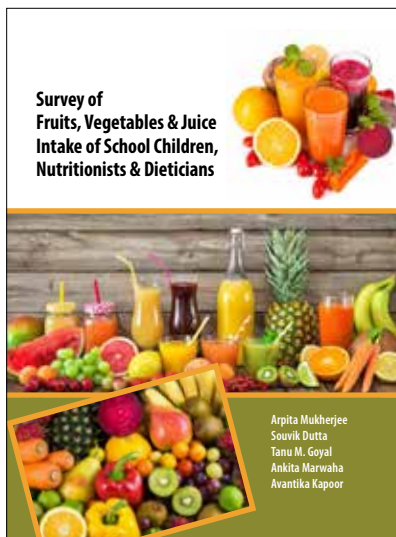
The survey of school-going children found that 56.3 per cent students had less than the recommended intake of vegetables, and the average intake was 2.4 servings (1 serving is 100g). There is no significant difference in consumption patterns across gender, but school-going children in younger age groups are likely to have a larger shortfall. Since the younger group is more likely to depend on parents, teachers and other elders for the dietary composition of their food intake, the shortfall requires appropriate awareness-raising programmes and policy interventions. By school type, average intake in government schools is 2.5 servings compared to 2.3 servings in private schools. Thus, students in private

schools (who are more likely to come from a better economic background) are more likely to fall short of the recommended consumption of vegetables. The survey found that 27.2 per cent of school-going children consume fruits daily. Children in lower age groups are more likely to fall short of recommended consumption. While 34.3 per cent children enrolled in private schools consumed fruits daily, only 20.8 per cent in government schools did so. Thus, school-going children in private schools are more likely to meet their daily fruit requirements than those in government schools. The children were asked about the timing of fruit consumption and the top three responses were—breakfast (34.5 per cent), evening snacks (16.3 per cent), and between meals (14.1 per cent). Interestingly, only 12 per cent said that they eat fruits as part of school tiffin. When asked about their preferences for fruits, 44.3 per cent of the children said that they like eating fruits very much, 36.6 per cent mentioned that they like eating fruits somewhat, and 19.1 per cent do not like eating fruits at all. However, only 40.7 per cent of those who like eating fruits very much eat fruits daily, and the gap between ‘like to eat and actually eat’ is wider for children going to government schools than to private schools, which may be linked to the access to and affordability of fruits. When asked about juice intake, 51 per cent children preferred consuming juices. In terms of the kind of juice preferred, 42.1 per cent preferred home-made juices while 30.8 per cent preferred packaged juices. The remaining children either preferred non-packaged juices or did not respond to the question. By school type, 52.7 per cent of children in government school preferred juices compared to 49.2 per cent in private schools, and children enrolled in government schools have lower preference for home-made juice compared to children enrolled in private schools.

Key Takeaways and Policy Interventions Needed

The two surveys found that there are gaps in fruit and vegetable consumption across the two groups of consumers based on the NIN’s recommendations. The shortfall in consumption can be addressed through awareness-building. Specifically, there is a need to work closely with nutritionists and students studying nutrition on the benefits of fruit and vegetable consumption, and how they can share the benefits with their clients. All fruit juices may not be healthy, hygienic, or affordable. There is need to work with nutritionists and experts on fortified juices, which are affordable at reasonable prices, and which can be alternatives to the consumption of fruits and vegetables. The Indian beverage industry can work with the FSSAI and nutritionists to develop the right products to mitigate the nutrition gap.

This paper shows that in a number of countries, governments, non-governmental organisations (NGOs), companies, and civil societies have come together through innovative initiatives to increase awareness about the benefits of fruit and vegetable consumption, and have implemented programmes to improve the availability and consumption of fruits and vegetables. India can learn from their best practices. Fruits and vegetables should be made available to students in school canteens. Packaged juice is sometimes more convenient for schools to offer due to the perishable nature of fruits and vegetables. Schools can work with private organisations and NGOs to inculcate good eating habits among children. It is also important to work with parents of school-going children to promote the right diet through consumer awareness programmes such as Jago Grahak Jago. Aware parents and schools can help children meet nutrition targets.



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As a developing country, India continues to face challenges of 'nutrition security'. It is important to ensure 'nutrition security', through the right diet consisting of an optimum mix of fruits and vegetables to help prevent nutritional deficiencies and chronic diseases. A number of studies conducted by the World Bank, World Health Organization (WHO) and the Food and Agriculture Organization (FAO) have highlighted that a large number of Indians suffer from micronutrient deficiency as they are not eating the right quantity of fruits and vegetables. Indian Council for Research on International Economic Relations (ICRIER)'s own study—India's Phytonutrient Report, based on the WHO's recommended daily intake of fruits and vegetables, found gaps in consumption across urban rich and middle income groups, which is more acute for students than adults.

Using the National Institute of Nutrition recommendations, this report is based on two surveys. The first survey covered professional nutritionists/dieticians and students who are pursuing their degree in nutrition. The second survey covered a large number of students across 36 government and 54 private schools, with varying socio-economic background in the National Capital Region. While the two surveys look at different population groups, both indicate that there is a shortfall in the consumption of fruits and vegetables among Indians across various age groups and awareness levels. The shortfall is more acute for younger Indians.

The study makes a number of suggestions on how government, businesses, nutritionists, schools, academic organisations and NGOs can come together to: (a) mitigate the nutrition gaps (b) drive India towards a 'nutrition secure' economy, and (c) help achieve the objectives of 'Ayushman Bharat' mission.



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