

Prioritizing Adolescent Health

Why India needs a healthy eating and living index

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Key messages

- > Adolescents comprise the largest population of the world today, especially in developing countries. Around 21 percent of the Indian population comprises adolescents.
- > As habits formed during adolescence get carried into adulthood, it is important to enforce healthy lifestyles right from a young age to ensure greater productivity among the future nation builders. Adolescence is a complex transitional phase during which a human being evolves into an adult, with various physical, psychological, sexual and neuro-development changes constantly taking place.
- > Indian adolescents face a triple burden of malnutrition due to factors such as the nutrition transition, the increased demands of growth and development, and compromised diets for both macro- and micronutrients.
- > There is a need to develop an 'easy-to-use' scale that measures overall diet quality and factors in physical activity, stress and sleep among adolescents to predict their wellbeing.

Background and context

Nutrition is crucial during all stages of the life cycle, especially the adolescent phase, as it is a milestone in the growth and development of an individual. Good dietary habits and healthy lifestyles in adolescence serve as a foundation for wellbeing in adulthood.

The health and nutritional status of adolescents hold prominence as they affect their productivity as well as their skills as innovators, builders and influential leaders of the future. Considering the increased demands of growth and development during adolescence, even slightly compromised diets can lead to macro- and micronutrient deficiencies. In addition, compromised lifestyles and faulty eating habits also lead to the problems of overweight/obesity and associated noncommunicable diseases (NCDs).

Adolescents in India comprise 20.9 percent of the country's population.¹ Investing in this segment of the population is the best way to power the nation's competitive advantage – its demographic dividend.² A vast majority of the world's adolescents – 88 percent – live in developing countries. A WHO report on the improvement of the nutritional status of adolescents recommends that measures be taken for a holistic approach toward improving the nutritional status of adolescents.³ Although a large number of national-level programs are being implemented by the Government in India, the nutritional status of adolescents still remains a matter that needs attention.

“Investing in India's adolescents is the best way to leverage the nation's demographic dividend”

Studies have shown that the diets of Indian adolescents are deficient in nutrients, and that most of them far from meet the recommended dietary allowances (RDAs).⁴ Various studies show an alarming status of dietary deficiencies among adolescents, especially for micronutrients such as vitamin A,⁵ vitamin C, riboflavin, iron, calcium and – especially among adolescent girls – magnesium.^{6–8}

India faces the paradox of being one of the fastest-growing economies of the world and going through a vast sociocultural transition while at the same time being a land plagued by the triple burden of malnutrition, represented by undernutrition, overweight and obesity, and micronutrient deficiencies.



Popular foods that are high in fat, salt and sugar (HFSS) in India



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The nutrition transition has impacted India through the spread of foods that are high in fat, salt and sugar (HFSS). These have become an integral part of Indian diets, as they are elsewhere in the world.⁹ Therefore, there is a need to constantly monitor the food, consumption, diets and lifestyles of adolescents in India in order to be able to propose viable corrective measures.

It is known that – apart from the availability of food and access to food – the eating patterns and behaviors of adolescents are influenced by a host of other factors, including peer influence, parental modeling, food preferences, cost, convenience, personal and cultural beliefs, mass media and body image.¹⁰ There is a need to examine the health and nutritional status of adolescents through the lens of other environmental and personal factors such as stress, quality of sleep and physical activity. The data on lifestyle indicators for adolescents in India reveals sedentary lifestyles and faulty dietary habits to be the foremost factors affecting nutritional status.¹¹ Another major factor affecting the

health and nutritional status of adolescents is physical inactivity. Research has demonstrated that almost half of youths and children in India do not meet the recommended guidelines for physical activity as given by WHO.^{12,13}

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“Almost half of youths and children in India do not meet WHO’s guidelines for physical activity”

Stress

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- > Academic stress and social stress are serious risk factors affecting adolescent wellbeing. They may lead to eating disorders.

The menace of easily accessible foods that are high in fat, salt and sugar (HFSS) rule the Indian palate, especially among adolescents



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Screen time

- > Several studies show that lengthy TV viewing and mobile use promotes sedentary behavior among adolescents and reduces their energy expenditure.
- > Targeted interventions need to be planned before screen-time addiction sets in for adolescents.

Yet another emerging factor is increasing stress – especially social stress and anxiety, which can have a negative impact on dietary behavior and body weight. Several studies in India have explored academic stress in detail.^{14–17} Other studies have found academic stress is associated with a higher intake of confectionaries, candies, chocolates, flavored milk, etc.^{18–20} These findings also indicate that there is a vicious and complex cycle

of stress, eating and obesity. However, more evidence needs to be generated, because its progression may be instrumental in identifying successful stress-management techniques that can be used by food and nutrition practitioners to improve nutrition-related outcomes.

Moreover, inadequate sleep duration has also emerged as a potential factor predisposing adolescents to obesity.^{21,22} The National Sleep Foundation Scientific Advisory Council recommends 9–11 hours of sleep for school-going children aged 6–12 years and 8–10 hours for teenagers aged 14–17 years.²³

Another emerging factor influencing adolescent wellbeing is increasing screen time.²⁴ Screen time is the time spent watching television and using video game consoles, smartphones and computers. The American Association of Pediatrics (AAP) recommends at maximum 2 hours of screen time per day.²⁵ Currently, no Indian benchmarks exist for the various indicators mentioned above, such as physical activity, stress, sleep and

screen time, except the recommended dietary guidelines given by the Indian Council of Medical Research.

In order to examine adherence to dietary guidelines and the relationship between health and diet-related outcomes, diet quality and the effectiveness of nutrition intervention programs, some countries have developed Healthy Eating Indices (HEIs) for adolescents. Such an index was pioneered by the United States Department of Agriculture (USDA) Center for Nutrition Policy and Promotion (CNPP). This HEI reflects the dietary guidelines prescribed for Americans.²⁶ The HEI is revised from time to time and updated to reflect the changes in the dietary guidelines for Americans.

Indices available for Indians are sparse

In the Indian context, there are barely any such measurement attempts. Therefore, there is a need to develop and disseminate an index specific to the Indian context, which can assess nutrition, diet and other lifestyle factors governing the health and nutritional wellbeing of adolescents. Such an index will be even more reliable if it is comprehensive, factoring in lifestyle factors, stress, etc. It will certainly serve as a scoring metric that can be deployed as a community-based tool to assess the diet and lifestyle quality of adolescents and also to design nu-

trition communication strategies for effectively targeting the factors that promote nutrition.

Internationally, various dietary diversity measures have been used to assess the variety of foods and food groups consumed, such as the Entropy Index and Herfindahl's Index.²⁷ However, the dietary diversity element has not been adequately addressed either in research or in the implementation of food security policies in India.²⁸ The indices used determine only dietary diversity among the Indian population in the context of implementing food security interventions.

There have been scanty attempts at developing an HEI specifically for Indian adolescents. A micronutrient quality index of adolescent girls consuming lacto-vegetarian diets has been developed to measure dietary adequacy and micronutrient adequacy.²⁹ Correspondingly, an HEI to measure the dietary quality of adolescents has been developed.³⁰ However, the health spectrum must include the other health parameters, such as physical activity, stress and sleep, along with diet (Figure 1).

Current attempts at developing a comprehensive healthy eating and living index (CHELI) for Indian adolescents

Considering that diet and nutrition cannot be addressed in seclu-

FIGURE 1: Conceptual framework for an adolescent comprehensive healthy eating and living index (CHELI)

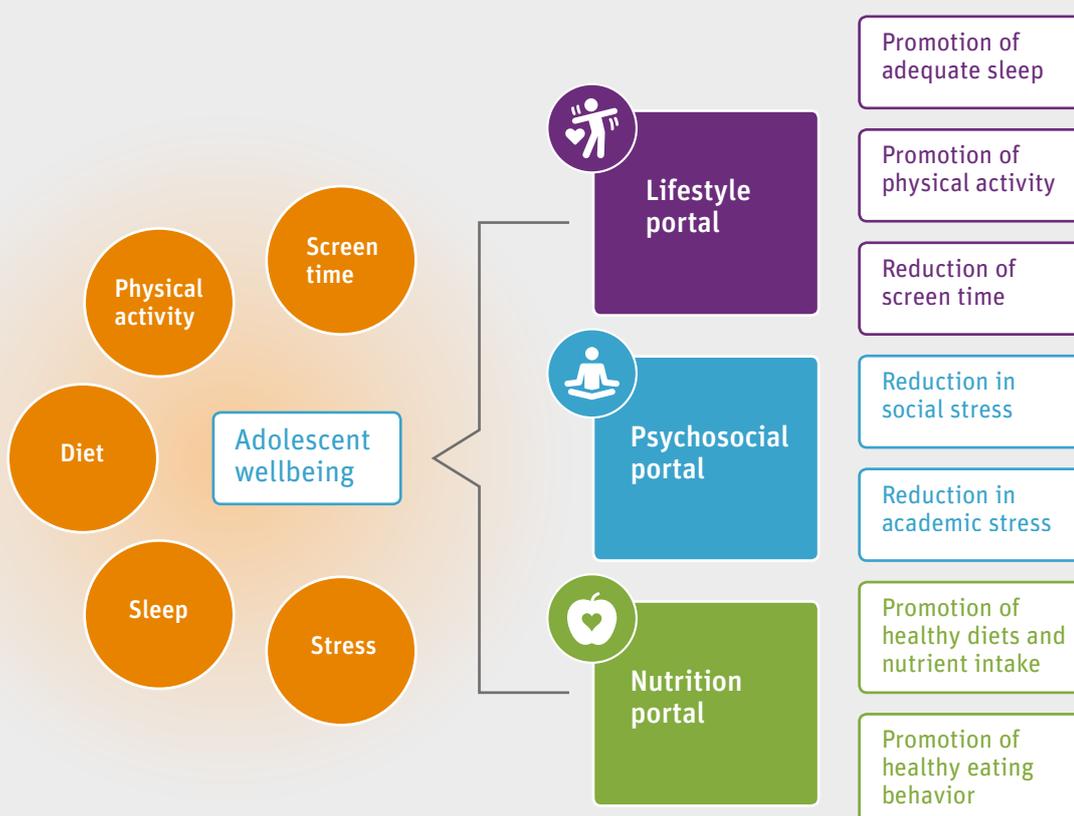
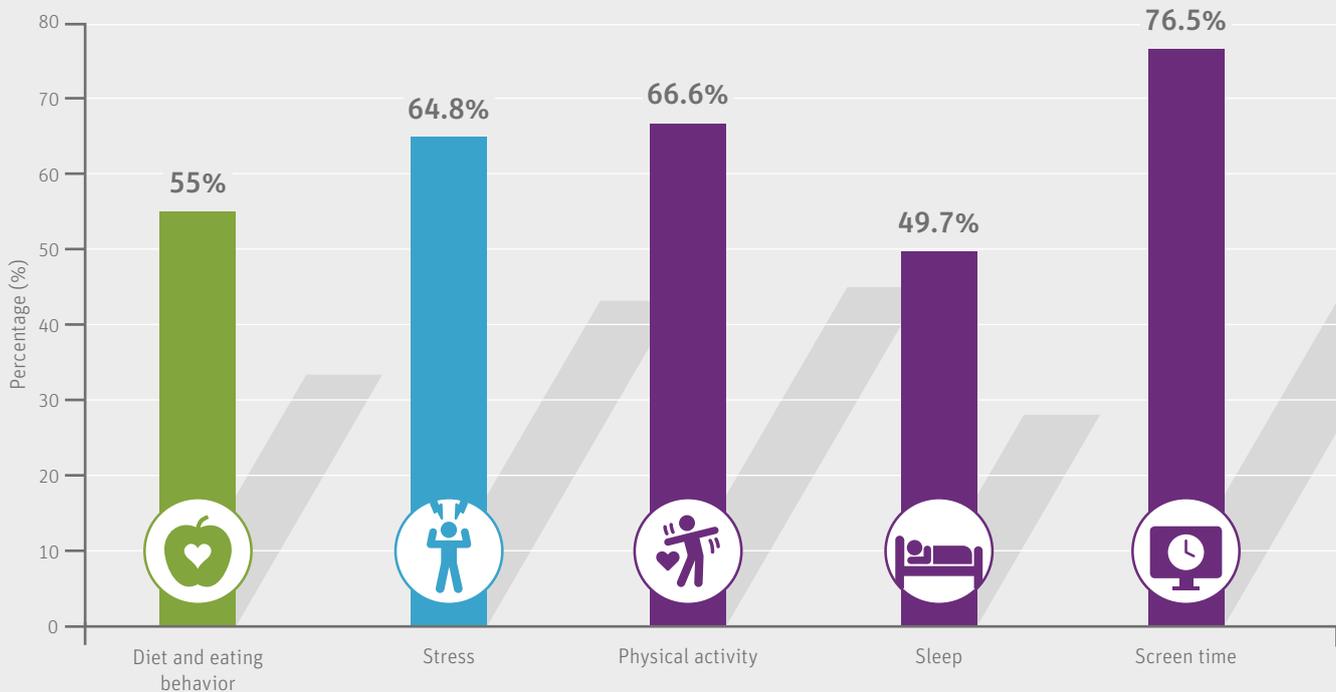


FIGURE 2: Percentage of adolescents needing improvements on the scale of CHELI

sion without considering lifestyle determinants that have a bearing on adolescent wellbeing, a comprehensive index questionnaire has been developed after reviewing a range of validated indices that measure diet, stress, physical activity, screen time and sleep components, using a scoring matrix. The questionnaire has been checked for content validity along with the cutoffs for individual components based on optimal recommendations and guidelines given in validated indices by allotting 'Good', 'Needs improvement' and 'Poor' scores suggestive of maximum, intermediate and minimum bidirectional scores, respectively. The index questionnaire is currently being checked for its construct validity.

The ongoing project on the development of a comprehensive healthy eating and living index (CHELI) has been sponsored by the Indian Council of Medical Research-Indian Council of Social Science Research (ICMR-ICSSR). The questionnaire was administered on a randomly selected sample of 219 adolescents (girls and boys) from urban coeducational schools. It was observed that around 69.9 percent of the adolescents needed improvement in their total CHELI score. Considering the subscores for individual components, adolescents needed improvements in all components as per the recommended guidelines (Figure 2).

Our ongoing study is being carried out among school-going adolescents. Schools serve as a system for long-term improvements in nutrition and lifestyle behaviors of the children, and are the best facilitators for promoting health and nutrition.³¹

Schools can serve as a platform for using multisectoral approaches for carrying out nutrition and lifestyle interventions. Such interventions would include blanket coverage of all stakeholders, such as students, peers, parents, teachers, school management and government, who can be dynamically involved in inculcating healthy eating and living among adolescents. Based on the findings obtained at baseline, a targeted communication intervention will be developed using the socioecological framework that assimilates behavior change at different levels of the model.³²

“There are very few indices available to measure healthy eating in adolescents”

Potential applications of the index

There are very few indices available to measure healthy eating in adolescents. The one that we are attempting to formulate takes a comprehensive look not only at healthy eating but also at healthy living, and endeavors to integrate nutrition with other health parameters such as stress, physical activity, sleep and screen time, so that the lifestyle determinants are not studied in silos but are assessed as composite factors impacting adolescent nutritional status.

At present, the index is in a nascent stage of development and caters to urban adolescents. However, we envisage a capacity for its additional application to adolescents coming from rural backgrounds. It has a vast scope to be scaled up in various community settings in order to reveal the associations between the risk of diseases and various determinants of adolescent wellbeing.

The final phase of this ICMR-ICSSR-sponsored project aims to develop targeted interventions using a multicomponent, multistakeholder approach that will be reflected through the CHELI scores postintervention.

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“We hope that CHELI can be used as a ready reckoner by healthcare providers, nutritionists and policymakers”

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The scalability of CHELI is possible with the support of India’s premier national research institutions and government bodies into school-based nutrition policy formulation. At an advanced stage, this index may be used as a self-assessment tool

by parents, adolescents and schools for checking the adherence to recommended guidelines given for adolescents and determining their wellbeing. We hope that CHELI, once developed, can be used as a ready reckoner by healthcare providers, nutritionists and policymakers for designing targeted and context-specific health and nutrition interventions for adolescents.

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