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Original Article

Community Section

Dietary Practices among School-going Adolescents of Tiruvallur, Tamil Nadu, India: A Cross-sectional Study

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ABSTRACT

Introduction: Adolescence is a critical period of rapid growth and increased nutritional requirements. However, unhealthy dietary behaviours and the coexistence of undernutrition and overnutrition pose major public health challenges in India.

Aim: To assess Knowledge, Attitude and Practices (KAP) regarding dietary habits and identify factors associated with poor dietary practices among school-going adolescents in Tiruvallur district, Tamil Nadu, India.

Materials and Methods: The present school-based analytical cross-sectional study was conducted among 400 adolescents in Tiruvallur district, Tamilnadu aged 12-17 years selected through multistage sampling from September 2025 to November 2025. Data were collected using a pre-tested structured questionnaire assessing sociodemographic details, dietary behaviour, knowledge, attitude, and lifestyle practices. Anthropometric indices Height-for-age Z score (HAZ), Weight-for-age Z score (WAZ), Body Mass Index (BMI)-for-age Z score (BAZ) were calculated using World Health Organisation (WHO) AnthroPlus software. Chi-square test and multivariable logistic regression were used to identify factors associated with poor dietary practice.

Results: Frequent fast-food consumption 366 (91.5%) and screen time while eating 288 (72.0%) were common behaviours among the participants. Although 258 (64.5%) had adequate knowledge and 240 (60.0%) had a favourable attitude, only 170 (42.5%) demonstrated good dietary practices. Male gender, lower maternal education, abnormal BMI-for-age, inadequate knowledge, and unfavourable attitude were independently associated with poor dietary practices ($p<0.05$).

Conclusion: Despite adequate knowledge levels, poor dietary practices were common, highlighting the need for school-based and family-focused interventions to bridge the knowledge-practice gap.

Keywords: Adolescents, Body mass index-for-age, Fast food consumption, Nutritional status

INTRODUCTION

Adolescence, which spans between the ages of 10 and 19, is a significant period of rapid physical growth and biological changes. During this stage, individuals gain approximately 15% of their adult height and nearly half of their adult body weight. Because of this rapid growth, their nutritional needs increase so an appropriate diet is important for healthy development, learning, and future reproductive health [1,2].

Adolescents are now increasingly affected by a "triple burden" of malnutrition-undernutrition, micronutrient deficiency, and overweight/obesity which are driven by factors such as inadequate dietary intake, infections, socioeconomic disparities, and rapid shift in nutrition patterns [3,4]. This coexistence of these nutritional extremes poses serious public health challenges in Low and Middle-Income Countries (LMICs) including India. Adolescent malnutrition is still a major global issue. In 2022, about 390 million children and adolescents aged 5 to 19 were overweight, including 160 million who were obese, and nearly 190 million were undernourished [3]. A pooled global analysis reported that the mean body mass index and the prevalence of overweight and obesity have increased since 1975, while underweight remains prevalent in certain populations [5]. These patterns show how adolescent diets and lifestyles are changing around the world.

In India, factors like poverty, lack of food, and unequal access to health and nutrition services lead to undernutrition in adolescents. Not getting enough nutrition during this time can lead to stunted growth that lasts into adulthood and can result in problems like poor learning, lower school performance, less work productivity, and poor reproductive health, especially for girls [6]. At the same time, eating more high-calorie, low-nutrient foods and being less active have led to more overweight and obesity among adolescents, raising their risk for non communicable diseases later in life [7,8].

The eating habits formed during adolescence often continue into adulthood, so it is important to encourage healthy choices at this age. Adolescents need diets high in energy, protein, calcium, and key vitamins and minerals to support growth and bone development. However, many school-going adolescents are now skipping meals, eating fast food and sugary drinks frequently, eating at irregular times, and not consuming enough fruits and vegetables [9-11].

In Tamil Nadu, studies have reported that there is a high prevalence of unhealthy dietary behaviours among adolescents, including regular consumption of energy-dense foods, inadequate physical activity, inconsistent meal timings, and low intake of fruits, along with less knowledge regarding cardiovascular risk factors [12,13]. There is a clear gap in the literature as district-level evidence specifically examining dietary knowledge, attitudes, practices, and perceived barriers remains limited. Previous study from Tiruvallur have mostly focused on morbidity patterns rather than dietary behaviours, their determinants, and the barriers influencing them [14]. The current study is therefore aimed to assess the knowledge, attitude, and practices related to dietary habits, and to identify determinants associated with poor dietary practices among school-going adolescents in Tiruvallur district, Tamil Nadu, India.

MATERIALS AND METHODS

The present school-based cross-sectional study was conducted among adolescents in selected government co-educational high and higher secondary schools in Tiruvallur district, Tamil Nadu, India, from September 2025 to November 2025. Ethical approval

was obtained from the Institutional Ethics Committee (IEC No: 228/2025/IEC/ACSMCH).

Inclusion and Exclusion criteria: Adolescents aged 12–17 years who were present during data collection and provided assent along with parental consent were included. Students with known chronic medical conditions affecting dietary habits or those providing incomplete responses were excluded.

Sample size calculation: The sample size was calculated using the formula $N=Z^2pq/d2$, considering proportion of adequate dietary knowledge among adolescents be 38% [15], 95% Confidence Interval (CI), and 5% absolute precision. The estimated sample size was 363. After adjusting for 10% non-response, the final sample size was 400. A multistage sampling technique was adopted. Five co-educational government schools were selected randomly using simple random sampling from 17 eligible schools. Proportional stratified sampling was used to select participants from each school followed by simple random sampling within classes.

Study Procedure

Data were collected using a pre-tested semi-structured questionnaire developed based on WHO guidelines (Global school-based student health survey) [16], and National dietary recommendations {Indian Council of Medical Research-National Institute of Nutrition (ICMR_NIN)} [9], and adapted to suit the local context and study objectives. The questionnaire consisted of sections on sociodemographic characteristics, dietary behaviours, knowledge (7 items), attitude (6 items), practice (14 items) and barrier. Additionally, there were eight questions on demographic characteristics and one question on barrier to healthy dietary practice. The overall questionnaire included 36 items in total. The questionnaire was validated by three experts for content clarity and piloted among 40 adolescents to identify ambiguities. Internal consistency of the questionnaire was assessed using Cronbach's alpha. The values obtained were 0.74 for knowledge, 0.71 for attitude, and 0.69 for practice. Although the Cronbach's alpha for the practice domain was marginally below the conventional threshold of 0.70, it was considered acceptable given the behavioural variability and limited number of items [17]. Written informed consent from parents and assent from students were obtained prior to participation.

Scoring Criteria

- **Knowledge:** Knowledge on dietary practices was assessed using seven items covering fast food risks, balanced diet, diet–health relationship, calorie requirement, nutritional labelling, carbohydrate misconceptions, and MyPlate components. Each correct response was scored 1 and incorrect/don't know responses were scored 0. The total score ranged from 0-7.
- **Attitude:** Attitude was assessed using six items on a 5-point Likert scale related to perceived influence of diet on health, dietary modification, adherence to a balanced diet, perceived barriers, carbohydrate beliefs, and motivation. Responses ranged from strongly disagree to strongly agree. For analysis, responses of "agree" and "strongly agree" were considered positive and scored as one, while other responses were scored as zero. Negatively worded items were reverse coded before analysis.
- **Practice:** Dietary practice was assessed using 14 behavioural items including meal skipping, fast food and sugary drink consumption, screen time during meals, late-night eating, fruit and vegetable intake, water intake, physical activity, and meal regularity. Of these, 12 key items were selected for scoring based on relevance and expert guidance, while the remaining items were used for descriptive analysis. Healthy behaviours were scored one and unhealthy behaviours zero.

Knowledge, attitude, and practice levels were categorised using modified Bloom's cut-off points [18]. Participants scoring ≥50% were categorised as having 'adequate' status, while those scoring <50% were categorised as having 'poor' or 'inadequate' status.

Anthropometric measurements such as height and weight were recorded using standard calibrated instruments and following uniform procedures. Height was measured to the nearest 0.1 cm using a stadiometer and weight was recorded to the nearest 0.1 kg using a digital weighing scale, with participants wearing light clothing and no footwear. HAZ, WAZ, and BAZ Z-scores were calculated using WHO AnthroPlus software based on WHO growth reference standards [19].

STATISTICAL ANALYSIS

Data were analysed using Statistical Package for the Social Sciences (SPSS) version 23. Descriptive statistics were expressed as frequency and percentage. Chi-square test was used to assess association between categorical variables. Variables with p<0.20 were included in binary logistic regression. Adjusted Odds Ratio (AOR) with 95% CI was reported. A p-value <0.05 was considered statistically significant.

RESULTS

As demonstrated by the results in [Table/Fig-1], a total of 400 adolescents were included in the study, of whom 227 (56.8%) were aged 15-17 years and 201 (50.2%) were females. The majority were Hindus (347; 86.8%). Nearly half of the mothers (199; 49.8%) and fathers (195; 48.8%) had completed secondary education, and 70 (17.5%) reported a family history of non communicable diseases.

Variables	Category	n (%)
Age group (years)	12-14	173 (43.3)
	15-17	227 (56.8)
Gender	Female	201 (50.2)
	Male	199 (49.8)
Religion	Hindu	347 (86.8)
	Christian	30 (7.5)
	Muslim	21 (5.3)
	Others*	2 (0.5)
Mother's education	Primary	72 (18.0)
	Secondary	199 (49.8)
	Undergraduate	99 (24.8)
	Postgraduate	30 (7.5)
Father's education	Primary	49 (12.3)
	Secondary	195 (48.8)
	Undergraduate	110 (27.5)
	Postgraduate	46 (11.5)
Family history of Non-Communicable Diseases	Present	70 (17.5)
	Not aware/Absent	330 (82.5)
Height-for-age (HAZ)	Normal (≥ -2 SD)	347 (86.8)
	Mild stunting (-2 to -3 SD)	51 (12.8)
	Stunted (< -3 SD)	2 (0.5)
Weight-for-age (WAZ)	Normal (≥ -2 SD)	361 (90.3)
	Mild underweight (-2 to -3 SD)	30 (7.5)
	Underweight (< -3 SD)	9 (2.3)
BMI-for-age (BAZ)	Normal (-2 to +1 SD)	290 (72.5)
	Thinness (-2 to -3 SD)	58 (14.5)
	Overweight (> +1 to +2 SD)	37 (9.3)
	Obese (> +2 SD)	11 (2.8)
	Severe obesity (> +3 SD)	4 (1.0)

[Table/Fig-1]: Sociodemographic and anthropometric characteristics of study participants (N=400).
*Others include participants belonging to Sikh and Jain religions (n=2)

According to WHO Z-score classification presented in [Table/Fig-1], 51 (12.8%) were stunted and 2 (0.5%) were severely stunted. Similarly, 30 (7.5%) were underweight and 9 (2.3%) were severely underweight. Based on BMI-for-age, 290 (72.5%) were within the normal range, while 58 (14.5%) were thin and 52 (13.1%) were overweight or obese.

Distribution of dietary behaviours and lifestyle practices has been presented in [Table/Fig-2] which shows that frequent fast food consumption was the most commonly reported dietary behaviour 366 (91.5%), followed by screen time while eating 288 (72.0%). Daily vegetable intake was observed in 214 (53.5%) of participants, while no regular exercise was reported by 222 (55.5%). Daily fruit consumption was noted in 156 (39.0%) of adolescents. Skipping breakfast 128 (32.0%), frequent snack consumption between meals 132 (33%), inadequate water intake (9.5%) and frequently skipping meals 106 (26.5%) were comparatively less common behaviours.

Dietary behaviours and lifestyle practices	n (%)
Frequent fast food intake	366 (91.5)
Screen time while eating	288 (72.0)
No regular exercise/playtime	222 (55.5)
Daily vegetable intake	214 (53.5)
Late night eating	174 (43.5)
Irregular meal timing	162 (40.5)
Daily fruit intake	156 (39.0)
Skipping breakfast	128 (32.0)
Skipping meals	106 (26.5)
Snack consumption between meals	132 (33.0)
Inadequate water intake	38 (9.5)
Energy drink intake	55 (13.8)

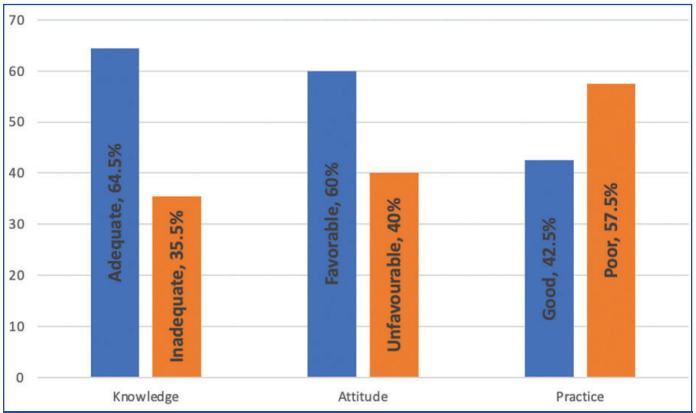
[Table/Fig-2]: Distribution of dietary behaviours and lifestyle practices among study participants.

As given in [Table/Fig-3] the mean knowledge score was 4.15±2.26, the mean attitude score was 3.17±2.03, and the mean practice score was 5.17±3.68. Scores were calculated based on maximum possible values of seven for knowledge, six for attitude, and 12 for practice.

Variables	Mean±SD
Knowledge score	4.15±2.26
Attitude score	3.17±2.03
Practice score	5.17±3.68

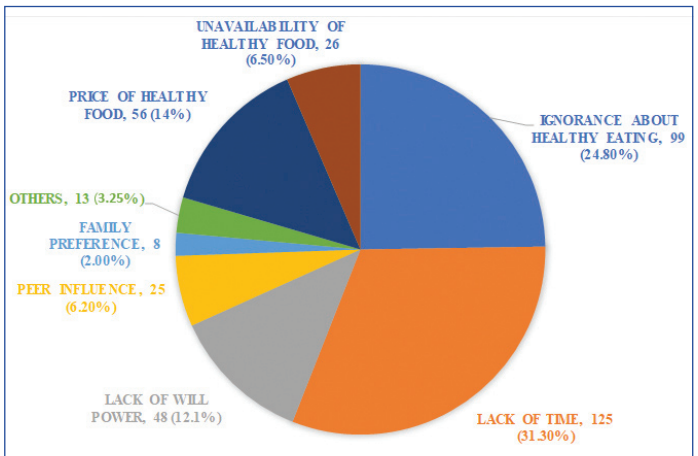
[Table/Fig-3]: Mean and standard deviation of knowledge, attitude, and practice scores among study participants (N=400).

As illustrated in [Table/Fig-4] the distribution of knowledge, attitude, and practice levels among the study participants. Adequate knowledge was observed in 258 (64.5%) of adolescents, while 142 (35.5%) had inadequate knowledge. Favourable attitude was reported by 240 (60.0%) of participants, whereas 160 (40.0%) demonstrated an unfavourable attitude. In contrast, only 170 (42.5%) exhibited good dietary practice, and 230 (57.5%) had poor practice.



[Table/Fig-4]: Distribution of knowledge, attitude, and practice levels regarding dietary habits among study participants.

As depicted in [Table/Fig-5] the distribution of perceived barriers to healthy dietary practices among study participants, with lack of time 125 (31.3%) being the most commonly reported barrier, followed by ignorance about healthy eating 99 (24.8%) and high cost of healthy food 56 (14.0%).



[Table/Fig-5]: Distribution of barriers to healthy dietary practices among study participants.
Others include less frequently reported barriers such as taste preference, habit of consuming outside food, and convenience

As shown in [Table/Fig-6], poor dietary practice was higher among males, those with lower maternal education, abnormal anthropometric indices, inadequate knowledge, and unfavourable attitude ($p<0.05$). No significant association was observed with age

Variables	Category	Poor (n=230) n (%)	Good (n=170) n (%)	χ^2	p-value
Age group (years)	12-14	92 (53.2)	81 (46.8)	2.41	0.120
	15-17	138 (60.8)	89 (39.2)		
Gender	Male	130 (65.3)	69 (34.7)	5.62	0.018*
	Female	100 (49.8)	101 (50.2)		
Religion	Hindu	202 (58.2)	145 (41.8)	-	0.36[a]
	Christian	17 (56.7)	13 (43.3)		
	Muslim	9 (42.9)	12 (57.1)		
	Others	2 (100)	-		
Family history of Non communicable Diseases	Present	45 (64.3)	25 (35.7)	2.95	0.086
	Absent	185 (56.1)	145 (43.9)		
Mother's education	Primary	52 (72.2)	20 (27.8)	9.84	0.020*
	Secondary	124 (62.3)	75 (37.7)		
	Undergraduate	38 (38.4)	61 (61.6)		
	Postgraduate	16 (53.3)	14 (46.7)		
Father's education	Primary	30 (61.2)	19 (38.8)	1.92	0.589
	Secondary	115 (59.0)	80 (41.0)		
	Undergraduate	63 (57.3)	47 (42.7)		
	Postgraduate	22 (47.8)	24 (52.2)		
Height-for-age (HAZ)	Normal (≥ -2 SD)	185 (53.3)	162 (46.7)	-	0.039*[a]
	Mild stunting (–2 to –3 SD)	43 (84.3)	8 (15.7)		
	Stunted (< -3 SD)	2 (100)	0 (0)		

Weight-for-age (WAZ)	Normal (≥ -2 SD)	193 (53.5)	168 (46.5)	-	0.004*[a]
	Mild underweight (-2 to -3 SD)	28 (93.3)	2 (6.7)		
	Underweight (< -3 SD)	9 (100)	0 (0)		
BMI-for-age (BAZ)	Normal (-2 to +1 SD)	145 (50)	145 (50)	-	<0.001*[a]
	Thinness (-2 to -3 SD)	46 (79.3)	12 (20.7)		
	Overweight (> +1 to +2 SD)	27 (73.0)	10 (27.0)		
	Obese (> +2 SD)	8 (72.7)	3 (27.3)		
	Severe obesity (> +3 SD)	4 (100)	0 (0)		
Knowledge	Adequate	105 (40.7)	153 (59.3)	14.6	<0.001*
	Inadequate	125 (88.0)	17 (12.0)		
Attitude	Favourable	90 (37.5)	150 (62.5)	22.5	<0.001*
	Unfavourable	140 (87.5)	20 (12.5)		

[Table/Fig-6]: Association between poor dietary practice and selected variables (N=400).
*Statistically significant at p<0.05
[a]Fisher's-exact test used due to small cell counts.

group, family type, family history of non communicable diseases, or father's education.

As shown in [Table/Fig-7], crude analysis demonstrated that male gender, lower maternal education, Height-for-age below -2 Standard Deviation (SD), Weight-for-age below -2 SD, abnormal BMI-for-age, inadequate knowledge, and unfavourable attitude were significantly associated with poor dietary practice (p<0.05).

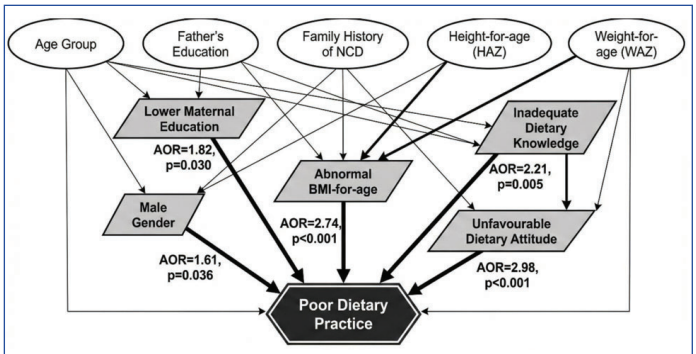
Variables	Category	Crude OR (95% CI)	p-value	Adjusted OR (95% CI)	p-value
Age group (years)	15-17	1.32 (0.89-1.96)	0.168	1.21 (0.79-1.86)	0.372
	12-14	Reference		Reference	
Gender	Male	1.78 (1.17-2.71)	0.007*	1.61 (1.03-2.52)	0.036*
	Female	Reference		Reference	
Family history of Non communicable Diseases	Present	1.84 (1.02-3.30)	0.086	1.29 (0.68-2.46)	0.435
	Absent	Reference		Reference	
Mother's education	Primary/ Secondary	2.14 (1.32-3.45)	0.002*	1.82 (1.06-3.12)	0.030*
	Graduate/ Postgraduate	Reference		Reference	
Father's education	Primary/ Secondary	1.22 (0.78-1.91)	0.384	1.08 (0.66-1.77)	0.752
	Graduate/ Postgraduate	Reference		Reference	
Height-for-age (HAZ)	< –2 SD	1.96 (1.10–3.48)	0.021*	1.38 (0.71-2.66)	0.338
	≥ –2 SD	Reference		Reference	
Weight-for-age (WAZ)	< –2 SD	2.63 (1.45-4.76)	0.001*	1.64 (0.84-3.19)	0.148
	≥ –2 SD	Reference		Reference	
BMI-for-age (BAZ)	Abnormal	3.12 (1.92-5.08)	<0.001*	2.74 (1.58-4.73)	<0.001*
	Normal	Reference		Reference	
Knowledge	Inadequate	4.32 (2.55-7.32)	<0.001*	2.21 (1.27-3.86)	0.005*
	Adequate	Reference		Reference	
Attitude	Unfavourable	6.08 (3.60-10.27)	<0.001*	2.98 (1.69-5.26)	<0.001*
	Favourable	Reference		Reference	

[Table/Fig-7]: Logistic regression analysis for factors associated with poor dietary practice (N=400).
*Statistically significant at p<0.05

In multivariable logistic regression analysis, male gender, lower maternal education, abnormal BMI-for-age, inadequate knowledge, and unfavourable attitude remained independently associated with poor dietary practice. Age group, family history of non communicable diseases, father's education, Height-for-age, and Weight-for-age were not statistically significant after adjustment.

The logistic regression model was statistically significant (Model χ^2=74.62, df=10, p<0.001). The Hosmer-Lemeshow test indicated good model fit (χ^2=6.48, df=8, p=0.593). The Nagelkerke R^2 was 0.34, and the model correctly classified 73.5% of cases.

As illustrated in [Table/Fig-8] the conceptual framework of the factors associated with dietary practices among adolescents. Knowledge and attitude are proximal determinants that directly influence dietary practices, whereas sociodemographic factors such as gender and maternal education act as distal influences. Nutritional status (BMI-for-age) is also linked to dietary practices, indicating the interplay between behavioural factors and health outcomes.



[Table/Fig-8]: Directed Acyclic Graph (DAG) of factors associated with poor dietary practice among school-going adolescents.

DISCUSSION

The present study from Tiruvallur district documents a mixed nutritional profile among school-going adolescents, with coexisting undernutrition and overnutrition alongside unhealthy dietary behaviours and a clear knowledge-practice gap.

The anthropometric findings indicate a double burden of malnutrition: 12.8% were stunted and 0.5% were severely stunted and 14.5% were thin, while 13.1% were overweight or obese. These results are align with the patterns seen in other Indian settings where chronic undernutrition persists along with overweight; Khan MF et al., reported thinness and micronutrient risk in adolescents in Nagpur [20] and Ahmad S et al., also reported similar double-burden patterns from a study conducted in Uttar Pradesh [21]. According to the Comprehensive National Nutrition Survey (CNNS), the prevalence of stunting among Indian adolescents is approximately 27% and thinness around 24%, which are higher than the present study, where 13.3% of participants were stunted and 14.5% were thin, suggesting comparatively better nutritional status in the study population, possibly due to regional differences and improved nutrition programmes in Tamil Nadu. Conversely, the prevalence of overweight and obesity in the present study (13.1%) was more than double the national estimate of approximately 5% reported in the CNNS, suggesting a rising burden of overnutrition in the study population [22].

Unhealthy dietary behaviours were highly prevalent in Tiruvallur. Frequent fast-food consumption (91.5%) and screen time while eating (72.0%) were particularly common. Rathi N et al., found that taste, convenience and peer influence drive snacking and ultra-processed food consumption among Indian adolescents, supporting our observation that the food environment around schools is a key

determinant of adolescent intake [23]. Screen-based distracted eating has been linked to poorer diet quality and greater energy intake in Indian adolescents, as reported by Sarkar S [24]. Breakfast skipping (32.0%) and low daily fruit intake (39.0%) further indicate suboptimal meal patterns with potential implications for both macro- and micronutrient status; Meher S et al., similarly reported inadequate dietary diversity among school adolescents in urban settings [10].

The proportion of frequent fast-food consumption in the present study (91.5%) is higher compared to several Indian studies, where fast-food consumption among adolescents has been reported to range from approximately 30% to 70%. According to the CNNS, around 30% of adolescents consume fried or junk foods. This difference may be attributed to increased accessibility of fast foods in urban and semi-urban settings and the influence of changing dietary patterns among adolescents. Additionally broader operational definition of consumption of fast foods >1 time per week may attributed to this difference [10,22,23,25].

Despite moderately high levels of nutritional knowledge (64.5%) and favourable attitude (60.0%), only 42.5% of participants demonstrated good dietary practice, indicating a knowledge-practice gap. This disconnect has also been described in other Indian contexts, where awareness does not automatically translate into healthier choices due to environmental and socioeconomic constraints [8,11]. In this study, perceived barriers such as a lack of time (31.3%) and cost (14.0%) may explain why knowledge alone is insufficient to change behaviour. Similar studies have been compared in [Table/Fig-9] [10,21,25-29].

Study	Location (setting)	Sample size (n)	Materials compared	Key findings/ Conclusion
Present study	Tiruvallur, Tamil Nadu, India	400	KAP regarding dietary habits; HAZ, WAZ, BAZ scores	High fast-food consumption (91.5%); only 42.5% had overall "good" dietary practice
Aurino E, 2017 [29]	Andhra Pradesh and Telangana, India	1,000	Gender disparities in dietary diversity	Wide pro-boy gap emerges at 15 years old; girls consume fewer protein- and vitamin-rich foods
Ahmad S et al., 2018 [21]	Barabanki, Uttar Pradesh, India	1,000	Double burden of malnutrition among adolescent girls	47.0% underweight and 8.6% overweight/ obesity (5.9% overweight, 2.7% obese)
Meher S et al., 2018 [10]	Kolkata, West Bengal, India	440	Dietary pattern of school-going adolescents in a metro city	48% of adolescents overweight/obese, 12% underweight; inadequate dietary diversity
Kaur S et al., 2025 [25]	North India	453	Nutritional assessment of adolescents in public schools	90% low fruit intake; 83% low vegetable intake; boys had higher odds of poor practices due to freedom to get outside food
Shah NN et al., 2024 [26]	USA (national survey, NHANES)	National sample	Fast-food intake among children and adolescents	30.1% of US youth reported eating fast food on any given day; 14.6% of daily calories derived from fast food
Moosburger R et al., 2020 [27]	Germany (EsKiMo II)	1,353	Fast food consumption among German teens	23% of teens had $\ ge10\%$ of energy from fast food; girls obtained 6.5% and boys 7.8% of energy from fast food
Elias C et al., 2025 [28]	Southern Ethiopia	563	Fast food consumption and overweight among adolescents	6.0% combined overweight/obesity; frequent fast-food intake significantly associated with higher odds of overweight

[Table/Fig-9]: Comparison of key findings among adolescent studies [10,21,25-29].

Multivariable analysis identified male gender, lower maternal education, abnormal BMI-for-age, inadequate knowledge, and unfavourable attitude as independent predictors of poor dietary practice. The association with lower maternal education aligns with prior Indian evidence showing maternal education as a very important determinant of household diet quality and child nutrition outcomes [30]. As stated by Kaur S et al., and Aurino E, adolescents in this study had higher odds of poor practice, a pattern reported in several Indian studies that attribute this to freedom to get outside foods and social disparity around food for boys and girls (Kaur S et al., Aurino E) [25,29]. Abnormal BMI-for-age being associated with poor practice highlights that unhealthy behaviours contribute to both ends of the nutritional spectrum.

Height-for-age and weight-for-age were significant in crude analysis but lost significance after adjustment, likely because BMI-for-age captured current nutritional status more directly and overlaps with HAZ/WAZ measures. This is consistent with epidemiologic expectations when correlated anthropometric predictors are modelled together.

Programmatic implications from Tiruvallur include the need for school-based, environment-focused interventions: regulating school canteens, restricting sales of energy-dense snacks around schools, and integrating practical behaviour-change activities into curricula. School-based and community programmes that engage mothers, pair nutrition education with skills (e.g., cooking, budgeting), and address time- and cost-related barriers will likely be more effective than knowledge-only approaches (WHO; ICMR-NIN) [9,11].

Strengths of the study include a reasonably large sample, anthropometry using WHO Z-scores rather than just Body mass index, which are used in many other studies in the literature that are not comparable as in adults.

Limitation(s)

The present study relied on self-reported dietary behaviours, which may be subject to recall and social desirability bias. Additionally, residual confounding cannot be ruled out due to unmeasured factors such as household food security.

CONCLUSION(S)

Adolescents in Tiruvallur district are currently going through a precarious nutritional transition. The current study demonstrates that despite possessing adequate levels of nutritional knowledge and favourable attitudes toward healthy eating, dietary practices remain suboptimal. The high prevalence of fast food consumption (91.5%) and screen-based eating (72.0%) reflects an environment conducive to sedentary behaviours and overnutrition. The identification of male gender, lower maternal education, and abnormal BMI-for-age as independent predictors of poor dietary practices highlights important areas for the targeted interventions. These findings suggest that awareness-building alone may be insufficient, and that effective strategies should address the broader structural and environmental factors influencing the adolescent dietary behaviours.

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