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Original Article

Health Management and Policy Section

Assessment of Food Insecurity as an Indicator of Poverty among University Students Studying in Higher Educational Institutions in Tiruvallur District, Tamil Nadu, India

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ABSTRACT

Introduction: Food security mainly affects college students, even though countrywide schemes like the Public Distribution System (PDS) and mid-day meal programmes exist in India. However, students studying in postgraduate educational institutions, especially those from low-income or rural families, are more likely to experience food insecurity, emphasising the significance of targeted interventions and support systems on campus.

Aim: To assess the prevalence and determinants of food insecurity among university students in Higher Educational Institutions (HEIs) in Tiruvallur District, Tamil Nadu, India.

Materials and Methods: This was a cross-sectional study conducted in five HEIs located in rural areas of Tiruvallur District, Tamil Nadu, India, between January and March 2024. A total of 940 students participated, selected using a stratified random sampling technique. Data were collected using a bilingual (English and Tamil) version of the Household Food Insecurity Access Scale (HFIAS), which had been pretested and found to be reliable (Cronbach's alpha=0.916). Parameters evaluated included age, gender, marital status, education level, parental occupation, family income, type of accommodation, financial issues at home, and food insecurity score. Data were analysed using STATA software. Descriptive statistics, chi-square tests, and binary logistic regression were applied to identify determinants of food insecurity.

Results: The prevalence of food insecurity among the students was 34.1%. Female students or those who had financial stresses at home had higher odds of food insecurity. Living in college-hostel accommodation had significantly lower odds of food insecurity (OR=0.271, p<0.001).

Conclusion: A significant number of university students experienced food insecurity, which was considerably linked to female gender, financial hardship, and living arrangements. Interventions, including subsidised meal programmes, campus food banks, and financial literacy education, should be considered moving forward to address this widespread and overlooked public health issue.

Keywords: Education, Ethnic, Malnutrition

INTRODUCTION

Ending poverty is an objective of the Sustainable Development Goals, aimed at enabling individuals to live in harmony and prosperity [1]. The second Sustainable Development Goal of the United Nations seeks to "eradicate hunger, attain food security and nutrition, and promote sustainable agriculture". Current projections indicate that, despite some advancements, the world is unlikely to meet this goal by 2030, and the food security and nutritional conditions of the most vulnerable populations are expected to worsen due to the health and socioeconomic repercussions of the coronavirus pandemic [2].

Food insecurity defines a person in a family as being unhealthy and inactive due to a lack of regular access to sufficient food [3]. As many as 828 million people are said to be hungry, constituting an increase of 46 million since 2020. According to UN reports, the world is not addressing the root causes of hunger and food insecurity effectively enough to achieve these aims by 2030 [4]. Global researchers suggest that students in higher education institutions face a high prevalence of food insecurity, which has negative implications for their psychological wellbeing, weight management, chronic diseases, and other physical health problems [5,6].

University students represent a significant minority often neglected in debates surrounding food insecurity, despite increasing data highlighting its prevalence within this population [7]. In countries such as the USA, South Africa, Australia, Canada, and Malaysia, the prevalence of food insecurity has been found to range from 12.5 percent to as high as 84 percent [8,9]. Various factors contributing to food insecurity worldwide include unemployment, inadequate food supply chains, and rising financial disparities [10,11].

In India, food insecurity is a persistent public health issue, with its prevalence in urban areas found to be between 51 percent and 77 per cent, affecting approximately 30 percent of the overall population [12]. As many as 200 million people in India are undernourished [13]. The issue of undernourishment is strongly associated with food insecurity [14]. In 2013, the Government of India strengthened the Public Distribution System (PDS) and integrated the Child Development Scheme and mid-day meal programme to help the population overcome food insecurity. The strategy aims to cover 65 million people, including antenatal mothers and children attending middle and high school [13]. Despite this government intervention, the Global Hunger Index has categorised India as being in a "serious" category, indicating that the country has not effectively addressed hunger and malnutrition [15].

On the other hand, many studies have identified the significant role of the PDS and the National Food Security Act (NFSA) in enhancing food security in India through the provision of food [16-18]. However, these interventions do not cater to students in higher education institutions, even though strong PDS and mid-day meal schemes exist in Tamil Nadu. These initiatives do not address the unique needs of university students, a population often neglected by food security measures. Factors such as income, race, location, whether they are first-generation college students, and their transition to a four-year college contribute to their vulnerability [19].

The study area is located close to urban centres and comprises mixed rural and urban regions with economic disparities, housing shortages, and fluctuating grocery prices, which may contribute to food insecurity. Research has shown that students from low-income families, particularly first-generation learners, are more likely to experience food insecurity, which can adversely affect their academic performance and increase dropout rates [20-22].

It is well known that food insecurity can exacerbate mental health problems such as anxiety, depression, and stress [23]. Food insecurity not only adversely affects mental health but also worsens cognitive issues, creating a cycle that hinders students' overall development [24,25]. There is a growing prevalence of mental health problems among young people in Tamil Nadu [26]. Food insecurity among marginalised university students has been inadvertently caused by certain government initiatives that have failed to provide adequate or appropriate food resources. This includes delays in the implementation of the Mid-day Meal Scheme extension to colleges and irregularities in hostel ration distribution programmes [27]. While India has constitutional and international obligations regarding food and health, the execution of these initiatives is lacking. It is crucial to study food security laws in disadvantaged communities. Given the rising food prices, urban-rural disparities, and social exclusion of certain groups (such as first-generation learners), there is an urgent need to assess and address food insecurity in this demographic.

Few studies in India, and none specifically from Tiruvallur District, have evaluated food insecurity among university students using a validated scale such as the Household Food Insecurity Access Scale (HFIAS) along with detailed sociodemographic profiling [28-30]. Addressing this issue is vital for student well-being. This study focuses on the prevalence and determinants of food insecurity among students studying in Higher Education Institutions (HEIs) in Tamil Nadu, India. It aims to enhance understanding of the burden of food insecurity on students from different racial or ethnic backgrounds. This research is part of a larger study examining food-related issues among university students, encompassing food insecurity and the psychosocial and demographic determinants of these challenges.

MATERIALS AND METHODS

A cross-sectional study was conducted among students from HEIs in Tiruvallur District, Tamil Nadu, India, from January 2024 to November 2024. Institutional Ethics Committee approval was obtained from SRMIEC with reference number "SPH/ST/2020/0907". The study was initiated after obtaining prior approval from their respective institutions and administrations. The confidentiality of participant data were maintained throughout the study and all personal information will be anonymised to prevent any breach of privacy.

Inclusion and Exclusion criteria: All students aged over 18 years, from both undergraduate and postgraduate programmes, who provided informed consent, were included in the study. Those with incomplete responses or who had withdrawn from the study were excluded.

Sample size calculation: The sample size was calculated using the formula $n=Z^2pq/d^2$, where Z is 1.96 (for 95% confidence interval), p is 31.7% prevalence [31], Q=1-p and d=3.5%. The estimated sample size was calculated to be 940 samples, accounting for anticipated high non-response.

Study Procedure

The study tool had two components. In Section A, all the demographic variables were included, while Section B contained the Household Food Insecurity Access Scale (HFIAS), which consists of nine occurrence questions to estimate food insecurity over the last 30 days. For each occurrence question, there is one frequency of occurrence question to determine the level of food insecurity, scored as rarely (1), sometimes (2), and often (3). If the occurrence question had a score of 0, the corresponding frequency question was also coded as 0. The tool was categorised into four HFIAS categories:

- Food secure (1a=0 or 1a=1 and 2=0 and 3=0 and 4=0 and 5=0 and 6=0 and 7=0 and 8=0 and 9=0)
- Mildly food insecure (1a=2 or 1a=3 or 2a=1 or 2a=2 or 2a=3 or 3a=1 or 4a=1 and 5=0 and 6=0 and 7=0 and 8=0 and 9=0)
- Moderately food insecure access (3a=2 or 3a=3 or 4a=2 or 4a=3 or 5a=1 or 5a=2 or 6a=1 or 6a=2 and 7=0 and 8=0 and 9=0)
- Severely food insecure access (5a=3 or 6a=3 or 7a=1 or 7a=2 or 7a=3 or 8a=1 or 8a=2 or 8a=3 or 9a=1 or 9a=2 or 9a=3) [32].

The questionnaire was translated into the local language and pretested in a pilot study to ensure clarity, cultural appropriateness, and comprehensibility. Reliability and validity were assessed, yielding a Cronbach's alpha value of 0.916, indicating high internal consistency. For the main study, the questionnaire was circulated directly to all students studying arts and science courses (English, Tamil, commerce, accounts, etc.), among them, 940 students responded.

STATISTICAL ANALYSIS

Data were managed using Microsoft Excel and analysed using Statistics and Data (STATA) version 17. All the categorical variables are summarised with frequency and percentage. Chi-square tests were used to examine associations between demographic variables and food insecurity; p-values of less than or equal to 0.2 were included in the regression analysis. Binary logistic regression analysis was employed to identify predictors of food insecurity, with results reported as Odds Ratios (OR) and 95% Confidence Intervals (CI). Statistical significance was set at p-value <0.05. Food insecurity was categorised as a binary outcome: food secure respondents were coded as 0 ("No"), while mild, moderate, or severe food insecure respondents were coded as 1 ("Yes").

RESULTS

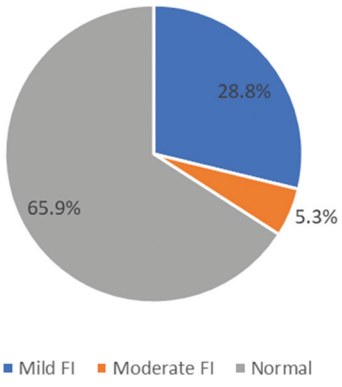
[Table/Fig-1] provides the sociodemographic characteristics of the respondents. Based on the overall sample of 940 students, 633 (67.3%) were 20 years old or younger. A total of 631 (67.1%) were female, compared to 309 (32.9%) who were male. The largest proportion of the study group were single 857 (91.2%). The majority of families 743 (79%) had a monthly income of ₹10,000 or more. In terms of financial assistance, 599 (63.7%) of students reported having enough pocket money, while 341 (36.3%) stated that it was insufficient or that they had none. For accommodation, 596 (63.4%) of the students lived at home, while 344 (36.6%) were in hostels, rented houses, or staying with friends. This sociodemographic profile indicates a predominantly rural, female-dominated undergraduate cohort with little financial independence and part-time work. Age, gender, religion, academic stream, year of education, and the occupations of the mother and father, along with pocket money and accommodation, were all significantly associated with food security (p-value <0.05).

Characteristics	Food insecurity				Total		χ^2	p-value
	Yes		No					
	n	(%)	n	(%)	n	(%)		
Age group (years)								
<=20	262	(81.6)	371	(59.9)	633	(67.3)	45.1942	<0.001
>20	59	(18.4)	248	(40.1)	307	(32.7)		
Gender								
Female	190	(59.2)	441	(71.2)	631	(67.1)	13.9185	<0.001
Male	131	(40.8)	178	(28.8)	309	(32.9)		
Relationship								
Single	293	(91.3)	564	(91.1)	857	(91.2)	0.0069	0.934
Married/In relation	28	(8.7)	55	(8.9)	83	(8.8)		

Religion								
Non-hindu	22	(6.9)	83	(13.4)	105	(11.2)	9.1540	0.002
Hindu	299	(93.1)	536	(86.6)	835	(88.8)		
Academic stream								
Arts	207	(64.5)	447	(72.2)	654	(69.6)	5.9625	0.015
Science	114	(35.5)	172	(27.8)	286	(30.4)		
Degree								
Postgraduate	27	(8.4)	50	(8.1)	77	(8.2)	0.0313	0.860
Undergraduate	294	(91.6)	569	(91.9)	863	(91.8)		
Year of education								
1	152	(47.4)	110	(17.8)	262	(27.9)	127.796	<0.001
2	79	(24.6)	377	(60.9)	456	(48.5)		
>=3	90	(28)	132	(21.3)	222	(23.6)		
Father's occupation								
Farmer	163	(50.8)	400	(64.6)	563	(59.9)	27.6125	<0.001
Daily wage	133	(41.4)	155	(25)	288	(30.6)		
Self-employed/ salaried	18	(5.6)	39	(6.3)	57	(6.1)		
Unemployed	7	(2.2)	25	(4)	32	(3.4)		
Mother's occupation								
Farmer	79	(24.6)	311	(50.2)	390	(41.5)	67.0447	<0.001
Homemaker	207	(64.5)	241	(38.9)	448	(47.7)		
Daily wage	33	(10.3)	52	(8.4)	85	(9)		
Unemployed	2	(0.6)	15	(2.4)	17	(1.8)		
Family income								
<10K	78	(24.3)	119	(19.2)	197	(21)	3.2859	0.070
>=10K	243	(75.7)	500	(80.8)	743	(79)		
Pocket money								
Not sufficient/ no money	175	(54.5)	166	(26.8)	341	(36.3)	70.1604	<0.001
Sufficient	146	(45.5)	453	(73.2)	599	(63.7)		
Part-time work								
Never/No	223	(69.5)	464	(75)	687	(73.1)	3.2379	0.072
Always/ sometimes	98	(30.5)	155	(25)	253	(26.9)		
Accommodation								
Home	274	(85.4)	322	(52)	596	(63.4)	101.2560	<0.001
Hostel/rented/ with friends	47	(14.6)	297	(48)	344	(36.6)		
Total	321	(100)	619	(100)	940	(100)		

[Table/Fig-1]: Socio demographic characteristics of the study participants (N=940).

The majority, 65.9% (619 individuals) fell into food secure category. Nearly one-third (34.1%) experience some degree of food insecurity. Although only a smaller group (50 individuals) faces moderate food insecurity, indicating more frequent or significant limitations in food access [Table/Fig-2].



[Table/Fig-2]: Distribution of the study participants according to HFIAS category.

[Table/Fig-3] presents the binary logistic regression model that predicts the probability of food insecurity as a function of the chosen predictor variables. A binary logistic regression test was conducted to investigate the relationship between sociodemographic variables and food insecurity among students. In comparison with female students, male students had significantly lower odds of being food insecure (OR=0.59, 95% CI: 0.41-0.86, p=0.006). Hindu students had significantly lower odds of food insecurity compared to students who were not Hindu (OR=0.43, 95% CI: 0.22-0.85, p=0.015).

Variables	Adjusted Odds Ratio (OR)	95% CI	p-value
Age group (years)			
<=20	Reference		
>20	0.65	(0.42-1.01)	0.057
Gender			
Female	Reference		
Male	0.59	(0.41-0.86)	0.006
Religion			
Non-Hindu	Reference		
Hindu	0.43	(0.22-0.85)	0.015
Academic stream			
Arts	Reference		
Science	1.04	(0.73-1.48)	0.839
Year of education			
1	Reference		
2	0.19	(0.12-0.31)	<0.001
>=3	0.5	(0.34-0.76)	0.001
Father's occupation			
Farmer	Reference		
Daily wage	0.96	(0.62-1.49)	0.872
Self-employed/Salaried	0.95	(0.45-2.02)	0.897
Unemployed	1.86	(0.64-5.38)	0.255
Mother's occupation			
Farmer	Reference		
Homemaker	0.94	(0.55-1.59)	0.808
Daily wage	0.60	(0.28-1.28)	0.183
Unemployed	0.28	(0.05-1.62)	0.156
Family income			
<10K	Reference		
>=10K	1.14	(0.77-1.68)	0.513
Pocket money			
Not sufficient/no money	Reference		
Sufficient	0.43	(0.30-0.61)	<0.001
Part-time work			
Never/No	Reference		
Always/sometimes	1.10	(0.77-1.58)	0.586
Accommodation			
Home	Reference		
Hostel/Rented/with friends	0.39	(0.22-0.69)	0.001

[Table/Fig-3]: Binary logistic regression estimates the odds of experiencing food insecurity based on selected predictor variables (N=940).

The school year demonstrated a very significant protective effect; second-year students (adjusted OR=0.19, 95% CI: 0.12-0.31, p-value <0.001) and third-year students and above (adjusted OR=0.50, 95% CI: 0.34-0.76, p=0.001) had significantly lower odds of food insecurity compared to first-year students. No statistical significance was observed between family income and food security; however, the odds of food insecurity were 1.1 times higher for students who belonged to families with an income greater than or equal to 10,000. The availability of part-time work was not

statistically significant; however, the odds of food insecurity were 1.1 times higher for students who worked part-time jobs always or sometimes. The risk of food insecurity decreased significantly for students who reported having enough money in their pockets (OR=0.43, 95% CI: 0.30-0.61, p-value <0.001). Additionally, the type of accommodation was of great importance; those who resided in hostels, rented houses, or with friends had lower odds of being food insecure compared to their counterparts who lived at home (adjusted OR=0.39, 95% CI: 0.22-0.69, p=0.001).

DISCUSSION

In this study, 34.1% of university students were food insecure, reflecting a significant vulnerability within the group. This incidence aligns with findings reported at other campuses. Recent research has documented that food insecurity is a widespread issue among college students, with prevalence rates ranging from 34% to 59% [33-35]. An unweighted mean food insecurity prevalence of 43.5% was reported by a systematic review among college students, which is much higher than the national household prevalence of 13% [35]. This consistency indicates that food insecurity is not only widespread but also persistent among university students globally.

The current findings show that male students were significantly less likely to experience food insecurity than female students, which is similar to the present study. This indicates that women are more at risk of food insecurity due to role expectations and caregiving obligations [36,37]. First-year students were much more likely to be food insecure compared to second and third-year students. This pattern mirrors that of Canadian university studies, which also consistently identify lower experiences of food insecurity among more senior students [38]. More senior students may benefit from improved budgeting, well-developed social networks, part-time income, and acclimatisation to the institution.

Two of the strongest predictors in the present study were residence and financial adequacy. Students with sufficient pocket money had lower odds of food insecurity, and those living in hostels or paying rent had lower odds than students living at home. These results reaffirm that early financial independence and the ability to afford one's needs are the strongest protective factors, a finding supported by research across a wide range of higher education environments [39,40].

While the Hindu religion and younger age were linked to food insecurity in the bivariate model, age no longer had an effect in the adjusted model, implying that economic considerations override its influence. Interestingly, the Hindu religion remained a significant protective variable, which could suggest that cultural, family, or communal economic factors more effectively protect students-an aspect that is rarely explored in the current literature [41,42]. Academic discipline, the occupations of both father and mother, family income, part-time employment, and relationship status showed no significant association in the adjusted analyses, aligning with several studies that also found no significant association with food insecurity among students in higher education institutions [43,44].

While some sociodemographic factors (e.g., parental employment, field of study, household income, and age) were most closely related to food insecurity in the Chi-square bivariate analyses, they were not significant in the adjusted model. This points to the fact that they have an indirect impact through more immediate factors such as financial access (e.g., pocket money) and accommodation type, which were the only statistically significant predictors in the model. This is consistent with findings from previous studies that identified financial hardship and housing instability as the most determining factors of food insecurity among students [45,46]. For instance, in a survey of Malaysian university students, several reported forgoing food purchases to meet the costs of improved living situations, highlighting that housing circumstances and the availability of cash at the time mediate food access [47]. These findings underscore that although more distal background circumstances may render individuals vulnerable to risk, it is the proximal, day-to-day resource constraints, such as the adequacy of pocket money and living situations, that are the immediate determinants of food security outcomes.

This study points to significant gaps in existing food security interventions, such as the Public Distribution System (PDS) and the mid-day meal scheme, which largely omit university students [48]. Such programmes do not take into account the unique barriers that many marginalised racial, ethnic, or caste groups face. There is an urgent need for targeted initiatives such as campus food pantries, subsidised meal plans, and emergency financial aid to address food insecurity in this population [49]. Programs that prioritise equity and inclusivity, and that provide culturally appropriate food and services, could help bridge these gaps. In nations like Australia and the United States, it has been demonstrated that institutional food assistance programmes can play a major role in effectively alleviating food insecurity [50]. For example, culturally sensitive food banks have shown success in addressing food insecurity and structural inequity, particularly for minority students [51].

The prevalence of food insecurity was found to be 34.1% in this study, compared to earlier estimates from developed countries such as the United States, where the rate is 10.2%, and Canada, where it is 15.6%. Globally, this prevalence is consistent with estimates of food insecurity from other developing countries, ranging from 15% to 50%, with 45% in India and about 45% in various African countries [52-56]. Despite government efforts in India, including the National Food Security Act and the Public Distribution System (PDS), food insecurity rates remain high due to challenges such as rural-urban disparities and fluctuating food prices [57]. The absence of targeted interventions for these groups further exacerbates their vulnerability to food insecurity, highlighting the need for the development of culturally and contextually relevant strategies [58].

To address food insecurity among university students, targeted campus-based interventions such as subsidised meal programmes, food banks, and emergency financial aid should be implemented [59]. Universities should integrate nutritional education and financial literacy programmes to help students manage food resources effectively. Expanding research to include students from professional courses and conducting longitudinal studies will provide deeper insights into trends and causal factors. Future studies should also assess dietary intake and nutritional quality to understand the broader health impacts of food insecurity and develop evidence-based interventions [60]. Additionally, future research should focus on longitudinal studies examining the interrelationship between food insecurity, mental health, and academic outcomes across diverse racial and ethnic groups [61]. Expanding the sample to include students from professional courses or tribal communities could enhance understanding of the broader scope of food insecurity disparities. Policymakers should consider extending public food distribution schemes to higher education institutions.

This study provides valuable insights into food insecurity among university students in Tamil Nadu, India, with several noteworthy strengths. The use of the Household Food Insecurity Access Scale (HFIAS) ensures reliability in measuring food insecurity among college students. A stratified and simple random sampling approach enhances representation across institutions, while binary logistic regression allows for identifying key risk factors. Ethical approval was obtained, and a bilingual questionnaire (in English and the local language) ensured accessibility, improving the relevance and cultural appropriateness of the study tool.

Limitation(s)

Despite these strengths, the study has limitations. The cross-sectional design potentially limits the generalisability of the findings, as it prevents establishing causal relationships between food insecurity and

associated factors. The study relies on self-reported data, introducing the risk of recall and social desirability bias. While food insecurity levels were measured, dietary intake and nutritional quality were not assessed, which limits insights into the broader health impacts. Furthermore, the study primarily includes arts and science students, excluding individuals from professional disciplines such as medicine or engineering, which may affect generalisability. Geographical constraints also limit the study's applicability beyond the selected institutions in Tamil Nadu. Consequently, the findings may not fully represent students in other regions with different socioeconomic conditions.

CONCLUSION(S)

This article addresses the central problem of food insecurity among university students and highlights a high prevalence rate of 34.1%, referencing international evidence that university students form a vulnerable group. Pocket money and type of residence were identified as strong predictors of food insecurity, with students living in hostels or away from home and those with financial adequacy being significantly less food insecure. Surprisingly, first-year students and female students were found to be at greater risk, which aligns with potential transitions, poor financial literacy, and socio-cultural contextual determinants of food access.

While a range of sociodemographic factors, such as parental work status, household income, and course of study, showed associations in bivariate tests, the lack of significance in the adjusted model underscores that proximal individual-level economic and housing conditions have direct effects on food security status. The protective effect observed among Hindu students may reflect culturally unique safety nets that warrant further exploration through qualitative research. These conclusions inform the need for targeted interventions, including institutional financial literacy programmes, low-cost assistance for disadvantaged students, and housing policies that reduce the risk of food insecurity. Longitudinal interventions must consider economic contexts, as well as cultural, gendered, and academic transformations that shape students' food accessibility. Providing sufficient and equitable support to students is essential for improving their academic performance and overall health.

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Authors' contribution: GR contributed to the conceptualisation and design of the study, as well as the development of the study framework. MSK was responsible for data collection, screening, and data extraction, ensuring accuracy and consistency. MSK and BGP provided supervision and methodological guidance throughout the study. The statistical analysis and interpretation of results were conducted by MSK, with inputs from all authors. The draft manuscript was reviewed and edited by GR, MSK and BGP. All authors actively participated in revising and refining the manuscript and have read and approved the final version.

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Annexure 1: Questionnaire

Food insecurity questionnaire among students.

S. No.	Questions	Categories
1	Unique Identification Code	
2	Name of the Student (Preferable)	
3	Name of the College	
4	Name of the Department	
5	Age (Years)	
6	Gender	Male
		Female
		Others
7	Marital status	Single
		Married
		Divorced
		Separated
		Others
8	Education of the student	UG Degree
		PG Degree
		Diploma
		Engineering
		Certificate Course
		Others_____
9	Year of education	1st year
		2nd year
		3rd year
		4th year
10	Fathers occupation	Agriculture
		Labour
		Salaried employment
		Business
		Unemployed
		Retired
		Others_____
11	Mothers occupation	Agriculture
		Labour
		Salaried Employment
		Business
		Unemployed
		House wife
		Retired
		Others_____
12	Family income/Per month	Below Rs. 10000-Rs. 20000 >20000-30000 >30000 and above
13	Are you belongs	Rural
		Urban
		Semi-urban
14	Monthly pocket money	

15. What is you perception about your college fees
    _____ A LOT
    _____ SOMETIMES
    _____ NEVER
16. Do you work part time to fulfil your needs
    _____ A LOT
    _____ SOMETIMES
    _____ NEVER
17. Type of accommodation
18. Do you have financial issues at home?
    _____ A LOT
    _____ SOMETIMES
    _____ NEVER
19. Do your friends scold you?
    _____ A LOT
    _____ SOMETIMES
    _____ NEVER
20. Did your friends insult you?
    _____ A LOT
    _____ SOMETIMES
    _____ NEVER
21. Do you feel isolated by your friends
    _____ A LOT
    _____ SOMETIMES
    _____ NEVER
22. Have you been harassed by your friends
    _____ A LOT
    _____ SOMETIMES
    _____ NEVER
23. Do your friends used you to fulfill their needs
    _____ A LOT
    _____ SOMETIMES
    _____ NEVER
24. Do you have feeling of not having good friends
    _____ A LOT
    _____ SOMETIMES
    _____ NEVER
25. Would you be happy if you were with friends
    _____ A LOT
    _____ SOMETIMES
    _____ NEVER
26. Do you feel your teacher encourage you
    _____ A LOT
    _____ SOMETIMES
    _____ NEVER
27. Do you feel your teacher shows partiality
    _____ A LOT
    _____ SOMETIMES
    _____ NEVER
28. Do you feel you are burdened with lots of assignments
    _____ A LOT
    _____ SOMETIMES
    _____ NEVER
29. Do you understand the subjects taught by the teachers
    ____ A LOT
    _____ SOMETIMES
    _____ NEVER
30. Do you have fear towards your teachers
    _____ A LOT
    _____ SOMETIMES
    _____ NEVER

31. Do you find it difficult to understand English teaching methods
    _____ A LOT
    _____ SOMETIMES
    _____ NEVER
32. If yes, is English a barrier
    _____ A LOT
    _____ SOMETIMES
    _____ NEVER
33. How is your academic performance
    _____ A LOT
    _____ SOMETIMES
    _____ NEVER
34. How is your relationship with parents
    _____ A LOT
    _____ SOMETIMES
    _____ NEVER
35. Does your family have any history about mental illness
    _____ A LOT
    _____ SOMETIMES
    _____ NEVER
36. Do you have any family issues or family burden
    _____ A LOT
    _____ SOMETIMES
    _____ NEVER
37. Are you worried about your parents health conditions
    _____ A LOT
    _____ SOMETIMES
    _____ NEVER
38. Have you ever had a serious argument with your parents and are you worrie
    _____ A LOT
    _____ SOMETIMES
    _____ NEVER
39. Do you have strict family with restrictions
    _____ A LOT
    _____ SOMETIMES
    _____ NEVER
40. Do you feel your parents have over expectations on you
    _____ A LOT
    _____ SOMETIMES
    _____ NEVER
41. Do you think your parents don't have time for you
    _____ A LOT
    _____ SOMETIMES
    _____ NEVER
42. How is your sleep pattern
    _____ A LOT
    _____ SOMETIMES
    _____ NEVER
43. Are you satisfied with your sleep pattern
    _____ A LOT
    _____ SOMETIMES
    _____ NEVER
44. How many hours do you use internet daily
    _____ A LOT
    _____ SOMETIMES
    _____ NEVER
45. How many hours do you spend on social media if yes
    _____ A LOT
    _____ SOMETIMES
    _____ NEVER
46. Do you have any following Physical activities
    _____ A LOT
    _____ SOMETIMES
    _____ NEVER
47. Do you have any social or relationship problems
    _____ A LOT
    _____ SOMETIMES
    _____ NEVER
48. If yes how are you worried
    _____ A LOT
    _____ SOMETIMES
    _____ NEVER
49. Are you subjected to any form of abuse
    _____ A LOT
    _____ SOMETIMES
    _____ NEVER
50. If you fall ill do you have any one to take you to hospital
    _____ A LOT
    _____ SOMETIMES
    _____ NEVER
51. Do you have any one support you financially
    _____ A LOT
    _____ SOMETIMES
    _____ NEVER
52. What is your perception about general health status
    _____ A LOT
    _____ SOMETIMES
    _____ NEVER
53. Do you have any physical health issue
    _____ A LOT
    _____ SOMETIMES
    _____ NEVER
54. If yes what issues
    _____ A LOT
    _____ SOMETIMES
    _____ NEVER
55. Do you have any known mental health issues
    _____ A LOT
    _____ SOMETIMES
    _____ NEVER
56. If yes what issues
    _____ A LOT
    _____ SOMETIMES
    _____ NEVER
57. Perception about your body size
58. Perception about your colour

59. Do you consume alcohol
    _____ A LOT
    _____ SOMETIMES
    _____ NEVER
60. Do you smoke
    _____ A LOT
    _____ SOMETIMES
    _____ NEVER
61. Do you consume tobacco
    _____ A LOT
    _____ SOMETIMES
    _____ NEVER
62. Are you affected by COVID-19 virus
63. Does any one of your family members affected by COVID-19
64. Are you worried about you or family members getting affected by COVID-19
65. Any one known to you died of COVID-19
66. Do you feel sad when you are at home
    _____ A LOT
    _____ SOMETIMES
    _____ NEVER
67. Do you feel sad when you are at college
    _____ A LOT
    _____ SOMETIMES
    _____ NEVER
68. Are you afraid about your future life
    _____ A LOT
    _____ SOMETIMES
    _____ NEVER

Section - B

S. No.	Question	Response options	Code
1	In the past four weeks, did you worry that your household would not have enough food?	0=No (skip to Q2) 1=Yes	
1A	How often did this happen?	1=Rarely (once or twice in the past four weeks) 2=Sometimes (three to ten times in the past four weeks) 3=Often (more than ten times in the past four weeks)	
2	In the past four weeks, were you or any household member not able to eat the kinds of foods you preferred because of a lack of resources?	0=No (skip to Q3) 1=Yes	
2A	How often did this happen?	1=Rarely (once or twice in the past four weeks) 2=Sometimes (three to ten times in the past four weeks) 3=Often (more than ten times in the past four weeks)	
3	In the past four weeks, did you or any household member have to eat a limited variety of foods (less kinds of food on the plate) due to a lack of resources?	0=No (skip to Q4) 1=Yes	
3A	How often did this happen?	1=Rarely (once or twice in the past four weeks) 2=Sometimes (three to ten times in the past four weeks) 3=Often (more than ten times in the past four weeks)	
4	In the past four weeks, did you or any household member have to eat some foods that you really did not want to eat because of a lack of resources to obtain other types of food?	0=No (skip to Q5) 1=Yes	
4A	How often did this happen?	1=Rarely (once or twice in the past four weeks) 2=Sometimes (three to ten times in the past four weeks) 3=Often (more than ten times in the past four weeks)	
5	In the past four weeks, did you or any household member have to eat a smaller meal than you felt you needed because there was not enough food?	0=No (skip to Q6) 1=Yes	
5A	How often did this happen?	1=Rarely (once or twice in the past four weeks) 2=Sometimes (three to ten times in the past four weeks) 3=Often (more than ten times in the past four weeks)	
6	In the past four weeks, did you or any other household member have to eat fewer meals in a day because there was not enough food?	0=No (skip to Q7) 1=Yes	
6A	How often did this happen?	1=Rarely (once or twice in the past four weeks) 2=Sometimes (three to ten times in the past four weeks) 3=Often (more than ten times in the past four weeks)	
7	In the past four weeks, was there ever no food to eat of any kind in your household because of lack of resources to get food?	0=No (skip to Q8) 1=Yes	
7A	How often did this happen?	1=Rarely (once or twice in the past four weeks) 2=Sometimes (three to ten times in the past four weeks) 3=Often (more than ten times in the past four weeks)	
8	In the past four weeks, did you or any household member go to sleep at night hungry because there was not enough food?	0=No (skip to Q9) 1=Yes	
8A	How often did this happen?	1=Rarely (once or twice in the past four weeks) 2=Sometimes (three to ten times in the past four weeks) 3=Often (more than ten times in the past four weeks)	
9	In the past four weeks, did you or any household member go a whole day and night without eating anything because there was not enough food?	0=No (questionnaire is finished) 1=Yes	
9A	How often did this happen?	1=Rarely (once or twice in the past four weeks) 2=Sometimes (three to ten times in the past four weeks) 3=Often (more than ten times in the past four weeks)	