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ANALYZING FOOD CONSUMPTION BEHAVIOUR AND NUTRITION SENSITIVITY AMONG YOUNG COLLEGE STUDENTS

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Abstract

Obesity is a situation where a person gets overweight due to the consumption of unhealthy foods like Pizza, burgers, fast foods, etc. The problem of obesity is not only common in developed countries, but it is common in developing countries like India. Usually, overweight children experience some chronic diseases related to heart, diabetes, cancer, osteoarthritis, etc. Some of the research revealed that obesity issues have risen over the years. The present study aims to understand how sensitive and aware young college-going girls are about healthy dietary practices and nutrition, how they have positively or negatively impacted, and how they have coped with it. The data was collected from 245 respondents from a university in south India through random sampling. The study suggests that students should get nutrition awareness through the course curriculum to enhance their ability to lead a healthy, balanced life.

Index Terms: Knowledge, Awareness, Food Consumption, Dietary Habits, Youth, Students.

1. INTRODUCTION

Adolescence is a crucial period in human life as it has many remarkable changes in lifestyle, which comprise more unhealthy food choices, dining outdoors in restaurants, sedentary behaviours, and no physical activity, particularly amongst girls, which altogether make youngsters nutritionally weak. Eating junk food is popular among children and adolescents between the ages of 8 to 16 years. Created junk food was in vast quantities with a specific shape, size, attractive colours, and temping taste [1], [2]. Such fast foods contain more saturated fat, added sugar and salt, preservatives, fewer vitamins and minerals, and lack of fiber; therefore, such food's consumption adversely affects health. When it comes to maintaining healthy habits, eating is a crucial factor. Poor diet patterns among college students frequently worry parents in India [3]. They have little time to consider their diet because they are too busy with college work and other activities. They are under stress since they are going through a life transition. Now, this stage is seen as a key one for overall physical and mental growth since it is the second and final opportunity to grow throughout the life cycle and because bad dietary decisions can result in serious health issues and growth retardation. One should eat a balanced diet to provide all the essential nutrients to the body and stay healthy and fresh. A nutritious diet helps children grow and develop, including maintaining strong bones, skin, and energy levels

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[4]. It also reduces the various deficiencies in the body, such as dental cavities and nutritional deficiencies, and improves digestion, constipation, and weaknesses like anemia due to vitamins and minerals [5]. Additionally, it is crucial for the health of your organs and tissues, which depend on them for proper nutrition. An unhealthy diet makes the human body more susceptible to illness, infection, weariness, and subpar performance. Students' online learning increased unhealthy food consumption, leading to various health issues [6] due to internet overuse for education.

Objective of the Study

1. To explore the factors influencing food consumption behavior among young female college students.
2. To understand the regular food consumption pattern among young female college students and its impact on their health, assess their nutritional status
3. Whether they experience an imbalance? What necessary action was taken by them to rectify their food habit?

2. REVIEW OF LITERATURE

2.1 Theory of Planned Behaviour (TPB):

The Theory of Planned Behavior suggests that individual intention is a key predictor of behavior. The behavioral intention influences the attitudes toward the behavior, subjective norms (social influences), and perceived behavioral control (perceived ease or difficulty of performing the behavior). In the context of unhealthy food habits, approaches toward unhealthy foods, social pressures, and perceived control over dietary choices can impact intentions and, consequently, behaviors. Processed and unhealthy foods were designed to be highlypalatable, triggering the brain's reward system and leading to overconsumption. Psychological, social, and biological factors are crucial for developing effective public health initiatives and individual interventions to promote healthier eating habits.

2.2 Food Consumption Behaviour in India

The available literature on the impact of nutritional education lifestyle of youth in Tamil Nadu has shown that obesity issues have increased over the years among the youth because of the adoption of junk foods like Pizza, burgers, and samosa, etc. the study showed that more than seventy percent of adolescents who belonged to lower socioeconomic status were overweight while twenty-one percentage in upper- lower socioeconomic status were obese [7]. Deepika, et al [8] conducted a study on dietary practices and nutritional awareness among young girl's students in Telangana. The author found that rural students did not have enough knowledge about the nutrition requirements and consumption of less green leafy vegetables. 73% of adolescent girls have average nutrition awareness in rural areas, and 57% of urban girls have high nutrition consciousness. Verma, K et al. [9] discussed the impact of nutritional awareness and food consumption on girls' students in SHUATS. They found that insufficient

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knowledge of a balanced diet with dietary contents in daily life leads to problems like being underweight (16.76%), 20% being obese, only 60% knowing food consumption patterns, and the remaining having no idea about anything. Vijayapushpam et al. [10] explained nutrition and health education for students. They surveyed 687 students under the National Science scheme. They found that 11.36% of students knew about nutrition after some training programs on various topics such as protein, fat, obesity, lifestyle diseases, and infectious diseases. Table 1 shows the research summary, including the method used for analysis, study objectives, findings, and research gap.

Table 1: Research summary

Author	Statistical method & country	Objective of study	Findings	Research gap supported by the current study
Paul & Mondal [11]	Questionnaire West Bengal (India)	Impact of mid-day meals on students health	Mid-day meals have helped improve the student's nutrition level, and their grades have also increased.	The mid-day meal programming test was only conducted in one school in Udaipur. So knowing the result from one school doesn't mean it is also successful in other parts of India.
Bhuvaneshwa ri B [7]	Questionnaire Madurai (India)	Obesity issues in Childhood	Obesity has increased in children over the years because, slowly, everyone is adopting Western culture.	
Kaur [12]	Questionnaire, Karnal Haryana (India)	Evaluation of Nutritional Status	The author found that 90% of girls were anemic, 94% were consuming junk food, skipping meals, and consuming less fruits & salads. Hence, mean nutrition was deficient. Teenage was a crucial period for the physical and mental growth of the kids.	Proper nutrition education should be provided in the college regarding balanced diet, nutrition values, and food patterns. Unhealthy eating patterns found as root cause of malnutrition in college students.
Ruel & Alderman [13]	Questionnaire (India)	To analyze the effectiveness of nutrition sensitivity programs	The author analyzed nutritional effects in four sectors—agriculture, social safety nets, early child development, and schooling and found that agricultural products should be boosted for quality and nutritional value	Nutrition sensitivity programs should be tested at a larger scale; parental education on nutrition values is needed. New programs need to be designed to improve nutrition values physical and mental health.
Sharma [14]	Questionnaire (India)	Develop conceptual model to measure nutrition sensitivity in women	The Proposed model found causes of nutrition deficiency and suggested actions to improve health based on different stages of life such as pregnancy, lactating, and adolescence.	Many researchers said malnutrition was found in maternal, Childhood, and lactating women.

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Tepper et al [15]	Questionnaire (USA)	To find the Genetic taste sensitivity in college women	The author found that non-smoking college women group who did not use vitamins/ supplements were having lower value of Plasma α-tocopherol than other group	PROP status was associated with α- tocopherol intake and not with antioxidants, which can be extracted from vegetable oils and green vegetables.
Kim et al [16]	Questionnaire (Korea)	To analyze the impact of vitamin K deficiency on bone density in young women	A study found a positive correlation between vitamin K and intake level with bone mineral density and shows a negative correlation between pelvic bone fractures. %ucOC was higher, which decreased vitamin K at the age of 20s.	Vitamin K and the positive correlation between osteoprotegers in reducing bone loss reaction, with vitamin K supports bone development in the human body.
Bhatia et al [17]	Questionnaire, Bhopal (India)	To identify the occurrence of hypothyroidism	A study found that the occurrence of hypothyroidism was 7.6 %, which leads to pregnancy issues in the future. Hence, regular health checkups should be carried out by the administration.	The health problems of hypothyroidism, like menstrual irregularities, polycystic ovaries, and infertility, were present in the girls, and several studies had reported hypothyroidism during pregnancy.

3. HYPOTHESES DEVELOPMENT

3.1 Influence of Demographic, Social Cultural and Behavioral Factors

With the advent of social media, the friend community, and increased scrutiny of the female figure, there is a lot of pressure from many different parties that have an external say on women's bodies. Naturally, due to this increased pressure, many college students' nutritional habits take the brunt. Along with the rest of the globe, as social media sites such as Instagram grew, so did the number of influencers that promote unhealthy eating habits and body images. Ali Barzegari et al. [18] & Marshall et al. [19] explored the understanding of nutrition, food habits, and attitudes of the 415 students of PayamNour Universities. They found that physical education students have more nutrition knowledge than business management students, and attitude scores are highest for physical education students and lower for psychology students.

Hence, it is hypothesised that,

H1a: Demographic details have a positive impact on the food consumption behavior

H1b: Social status & cultural diversity positively impact food consumption behaviour.

H1c: Social behavior impacts positively on food consumption behaviour.

3.2 Influence of Psychological Factors

In most industrialized nations, significant socioeconomic changes in recent decades have unquestionably impacted residents' eating patterns and levels of physical activity. The

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recent rise in diseases was due to obesity, which serves as a stark illustration of this trend. Poor diet and insufficient physical exercise are the primary risk factors for several diseases. According to several studies, any physical action reduces the rate of getting cardiovascular disease, as well as other chronic diseases like hypertension and diabetes, and enhances the quality of life for patients. Lack of nutrition hampers mental and physical health, decreases immunity, reduces body metabolism, and invites various other diseases. Our intake is unbalanced because many of us consume too many foods that are high in carbohydrates and less protein. Hence, it is hypothesised that,

H1d: A psychographic factor has a positive impact on the food consumption behavior

3.3 Impact of Food consumption behavior on Nutrition deficiency, Anxiety and Obesity

Generally, the high-carbohydrate foods were mainly processed and deficient in vitamins & minerals. A high carbohydrate diet causes diabetes. Fast food consumption is the main contributor to poor nutrition in college students, which contributes to anxiety, obesity, and undernutrition [20]. Junk food consumption is increased in adolescents, resulting in various diseases related to nutritional deficiency. College students make a massive mistake in their eating habits: skipping meals. Skipping regular meals and breakfast reduces body metabolism. Hence, it is hypothesised that,

H2: Food consumption behavior impact positively on Nutrition deficiency

H3: Food consumption behavior impact positively on anxiety

H4: Food consumption behavior impact positively on obesity

The research model for this study is shown in the figure 1. The model contains four constructs: demographic, social and culture, psychographic and behavioral. Food consumption behavior is an impacting variable. We want to test how these constructs are related to food consumption behavior, which will impact the nutritional deficiency, anxiety, and obesity of young college girl students.

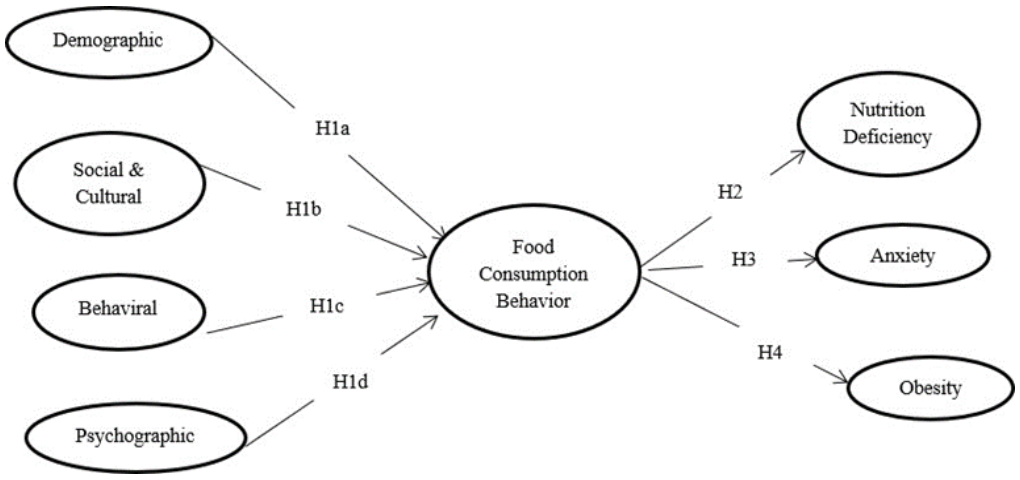

Figure 1: Proposed Research Model

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4. RESEARCH METHODOLOGY

Data Collection

The study was conducted among university students (girls) pursuing undergraduate and postgraduate courses in management discipline in Hyderabad. The selection of students was based on systematic random sampling. Data was collected through a questionnaire made using Google form. The university has students across India with education degrees from undergraduate to postgraduate degrees. Data was collected from the respondents without bias, and enough time was given to answer the questions. The questionnaire used in the study had 35 questions to which the respondents had to respond. The Google form was circulated to various WhatsApp groups within the campus, and female respondents were asked to fill out the form. Also, the researchers went around campus to physically interact with the respondents and get as many responses as possible. Interacting with many of our female friends outside the campus via social media also brought in a lot of responses. Few respondents were hesitant to take some time and fill the form. The number of responses received was 256, and all of the data was genuine and not manipulated. After data cleaning, 245 responses were used for analysis.

5. RESULT AND DISCUSSIONS

5.1 Descriptive Statistics

Demographic details of the female students are shown in Table 2. As per the data, most (62%) of the female students are 18-23 years old. 50.61% of the students are doing post-graduation, and 40.4% are studying at graduation level. A student's behavior depends on the parent's occupation and family income [21]. Data shows that the majority of student's parent are private employees (35.1%), have a nuclear family of 4 members (54.28%); belong to the Hindu religion (52.44%), and have family income between 10.1 – 20 lakhs.

Table 2: Demographic details of the female students

Variable	Items	Percentages
Age	< 18 years	9
	18-23 years	62
	24-29 years	16
	30-35 years	13
Education	Intermediate	4.08
	Graduate	40.4
	Postgraduate	50.61
	Others(PhD)	4.89
Parent occupation	Businessman	28.97
	Private employee	35.1
	Government employee	25.71
	Others(farmer, builders)	10.2
Family Size	Below 4	54.28
	5-8 members	18.36
	9 and above	27.34

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Religion	Hindu Muslim Christian Others	42.44 35.51 12.65 9.38
Family Type	Nuclear Joint Extended	54.28 18.36 27.34
Food Habits	Vegetarian Non-vegetarian	33.46 66.53
Family Income	>5 lakhs 5.1 – 10 lakhs 10.1 – 20 lakhs	21.63 37.14 41.22

5.2 Hypotheses Results

Table 3: Factor loading with Reliability test

Parameters	Mean	SD	Factor loading	Cronbach Alpha
Demographic dimensions				
Gender plays an important role in food consumption	4.46	1.01	0.87	0.848
Age plays an important role in food consumption	4.39	0.99	0.82	
Family size affects food consumption	4.07	1.02	0.79	
Education background affects food consumption	4.23	1.11	0.76	
The Financial Status of an individual affects food consumption	4.37	1.09	0.75	
Social and Cultural dimensions				
social media exposure	3.99	0.97	0.89	0.873
Food reels on YouTube and Instagram tempted to try a new dish	3.79	1.23	0.87	
Hangout with friends for birthdays and other occasions	4.09	1.11	0.86	
official gathering affects food consumption	4.37	1.21	0.83	
Religious celebrations affect food consumption	4.52	1.03	0.81	
Behavioural dimensions				
Class timings affect food consumption	3.17	0.97	0.87	0.779
Late night study	4.05	0.67	0.88	
Subject project pressure	4.12	0.69	0.85	
Placement and internship pressure	3.98	0.75	0.82	
peer class performance creates study pressure	3.22	0.93	0.79	
Regular assignments and projects	4.01	0.78	0.73	
Frequently going out from campus	4.23	1.02	0.71	
The tasteless food of the hostel	3.79	0.58	0.68	
Psychological dimensions				
Peer Eating habits affect my food consumption	3.88	0.59	0.87	0.685
Lifestyle of my peer group	3.92	0.67	0.83	
Peer attitude toward food	4.13	0.88	0.81	
Food consumption behaviour				
The frequency of consuming outside food	3.53	0.85	0.88	

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The frequency of consuming junk food	3.47	0.78	0.85	0.799
The frequency of consuming tea/coffee	3.91	0.92	0.84	
The frequency of hangouts/ parties with friends	3.96	0.69	0.81	
The frequency of taking fruits and vegetables	4.12	0.97	0.77	
The frequency of taking water/juices	4.18	0.84	0.75	
The frequency of taking healthy supplements/Vitamin tablets	4.11	0.58	0.73	
Nutrition deficiency				
Poor Complete Blood Count (CBC) in blood test	3.95	0.69	0.89	0.728
Poor Body Mass Index(BMI)	4.53	0.87	0.86	
Advised to take Vitamin D, calcium, and multivitamin supplements	4.73	1.01	0.75	
Advised to take fish oil	3.68	0.79	0.77	
Anxiety				
Feel depressed	4.23	0.75	0.83	0.801
Feel lonely	4.47	0.88	0.75	
feeling irritated	3.99	0.91	0.89	
feeling nervous	3.96	0.65	0.83	
difficulty concentrating	4.19	0.94	0.76	
mind going blank	4.13	0.84	0.75	
Sleep problems, muscle tension headaches, stomachaches, and pain.	4.15	0.59	0.83	
Obesity				
Type 2 diabetes	4.56	1.01	0.83	0.793
High cholesterol and high blood pressure	4.49	0.99	0.72	
Nonalcoholic fatty liver disease (NAFLD)	4.17	1.02	0.78	
Breathing problems	4.33	1.11	0.56	
Joint pain	4.47	1.07	0.65	
Excess body fat, particularly around the waist	4.03	1.02	0.79	
Inability to perform simple physical tasks	4.23	1.11	0.86	
Skin problems from moisture accumulating in the folds	3.37	1.01	0.75	

Table 3 shows the factor analysis results with the factor loading and Cronbach alpha. Confirmatory factor analysis was carried out through AMOS. Principle component analysis (PCA) is one of the methods used with orthogonal rotation to identify the uncorrelated factors. However, it also eliminates the multicollinearity problem in further analysis using multiple regressions.

Results show that demographic, social and cultural, behavioural, psychological, and food consumption were 5 factors, and each consists of 5, 5, 8, 3and 7 latent variables. The items showing factor loading greater than 0.5 were considered for analysis. Because factor loading of more than 0.5 contributed significantly to the results. The Cronbach alpha between 0.7- 0.8 was a good and acceptable value [22]. Cronbach alpha is the reliability test of items within the group, which should be higher than 0.7 [23]. As per the analysis, all the items are closely related, with values nearly greater than 0.7. A higher Cronbach alpha value indicates the items are consistent.

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Table 4 shows the regression analysis result of food consumption behaviour. Analysis output shows that all the independent variables are significant as the p-value is less than or equal to 0.05. The psychological dimensions have the highest b-value of 0.602. It indicates that peer eating habits, food attitudes, and peer lifestyles significantly impact female students' food consumption habits. Social and Cultural dimensions have a little less value b-value of 0.564, indicating that social gathering and cultural functions have a higher impact on food consumption behavior. Study-related items such as project/assignment submission, attending classes, late-night study, tasteless hostel food, and outings with friends have less impact (0.435) on food consumption behavior. Demographic factors are less impacted (0.322) due to parent occupation, financial status, family size, and age group. The overall R-square value for the model is 0.795, meaning demographic, social and cultural, behavioral, and psychological factors explain 79.5% variation in food consumption behavior. The adjusted R-square value is 0.632, which hows that adding more independent variables does not influence the model.

Table 4: Regression Analysis

Independent variable	b value	t value	significance
Demographic dimensions	0.322	1.002	0.002
Social and Cultural dimensions	0.564	4.19	0.01
Behavioral dimensions	0.435	1.122	0.014
Psychological dimensions	0.602	6.803	0.001

(R = 0.795; R2 = 0.632; F = 175.963); * significant level at P ≤ 0.05

Table 5 shows the hypothesis test result obtained in regression analysis. All hypotheses are supported as the p-value is less than 0.05.

This means that all the variables positively impact the behaviour of female students concerning food consumption.

Table 5: Hypothesis Test Results

Hypothesis	Path	P-value	Remark
H1a	Demographic Details →Food Consumption Behaviour	0.002	Supported
H1b	Social Status & Cultural Diversity →Food Consumption Behaviour	0.01	Supported
H1c	Behavioural Factor →Food Consumption Behaviour	0.014	Supported
H1d	Psychological Factors → Food Consumption Behaviour	0.001	Supported
H2	Food Consumption Behaviour→ Nutrition deficiency	0.032	Supported
H3	Food Consumption Behaviour→Anxiety	0.001	Supported
H4	Food Consumption Behaviour→ Obesity	0.010	Supported

6. CONCLUSION, LIMITATION AND FUTURE SCOPE

A balanced, healthy lifestyle can be achieved by regular exercise, getting enough sleep, and juggling work responsibilities with downtime. More focus on one area while neglecting others due to stress, ill health, and an inability to meet daily expectations. The risk of lifestyle diseases like cardiovascular, diabetes, and anemia increased due to the reduced

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daily intake of fruits and vegetables. The populace consumes fruits and vegetables daily to the tune of %. The young population began to feel the need to achieve optimal health. According to numerous studies, over 57.5% of girls in India experience serious health issues like anemia, cardiovascular disease (CVD), low immunity, and poor physical fitness as a result of poor eating habits, malnutrition, filthy living conditions, and a lack of nutrition education. The current study aimed to comprehend how college students behaved in terms of diet. The limitation of this paper is that first, data was collected only from girls' students studying in various colleges located in urban areas, so there could be some biased results. Future research can be extended by collecting sample data from both boys and girls. Second, there could be better results if more samples were analyzed from different cultural and social groups.

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