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Impact Of Nutritional Awareness, Dietary Intake and Health Status: A Study Of Female College Students In Chandigarh City

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Abstract:

The present study utilizes structural equation modelling (SEM) to examine the relationship between nutritional awareness, dietary intake, and health status among female college students residing in Chandigarh City. The research involved a sample of female college students (250), who contributed data on nutritional awareness, dietary consumption patterns, and self-perceived health status via self-report measures. The SEM analysis unveiled noteworthy correlations among health status, dietary intake, and nutritional awareness. The findings of the study revealed that increased levels of nutritional awareness were correlated with more health-conscious dietary habits, which effectively improved the self-perceived health status of the participants. Furthermore, the SEM illustrated the mediating function of dietary intake between nutritional awareness and health status. The significance of promoting nutritional education and awareness programs among college students to improve dietary practices and overall health outcomes is highlighted by these results. Consequences for interventions targeting the promotion of healthier behaviours among urban-dwelling female college students are examined.

Keywords: Nutritional awareness, Health status,Female college students, Nutritional education, dietary habits

INTRODUCTION

Despite gains in healthcare availability in India, disparities remain related to socioeconomic level, geographic place, gender, and location. High out-of-pocket costs exacerbate these disparities, with families bearing over 75% of the increasing cost of living. As a result, the expense of medical care drives more people into poverty, with an estimated 39 million impacted each year. Addressing these difficulties necessitates addressing resource distribution disparities, improving physical access to excellent healthcare and healthcare professionals, lowering out-of-pocket expenses, limiting healthcare spending inflation, and addressing behavioural variables that influence healthcare demand. Achieving healthcare equality in India requires establishing equity indicators for monitoring and planning, investing in health systems research, refining decision-making processes to prioritise equity in health reforms, and defining key players' roles and duties. These initiatives, together with greater spending in public health and primary care services, are critical for developing a more equitable healthcare system in India(Sethi et al., 2021).

To assess the situation of women's health in India, a variety of variables must be considered, each of which is impacted by factors such as geography, socioeconomic level, and cultural norms. To successfully enhance women's health, it is necessary to examine all elements of their well-being and compare them not just to worldwide health averages, but also to males in India. Individual health has a huge impact on personal well-being and economic progress(Diabetes & Metab, 2023). Women in India now suffer several health concerns, which have an influence on overall productivity and economic growth. Addressing current healthcare inequities based on gender, socioeconomic class, or ethnicity may promote the development of high-quality human capital, resulting in higher savings, investment, and, eventually, economic growth(Tayyem et al., 2019).

Diet composition has a substantial impact on overall health, notably for women in Nepal, where 18% are malnourished and 35% are anaemic, endangering physical, mental, and social well-being, particularly among reproductive-aged women. Inadequate food consumption, driven by reproductive biology, societal norms, and socioeconomic inequities, causes important nutritional shortages during pregnancy and breastfeeding(Kaur et al., 2020). Inadequate consumption of animal products, fruits, and vegetables raises the risk of micronutrient deficiencies, and low protein and carbohydrate intake increases the possibility of severe maternal malnutrition, threatening both mother and infant health. Given the

importance of nutrition in health and productivity, tracking women's nutritional status is crucial, especially in resource-constrained settings such as Nepal. However, the available information on health status and dietary habits in Nepal is minimal. As a result, the purpose of this study is to analyse food consumption habits and nutritional status among Nepalese reproductive-aged women, focusing on the variety of dietary behaviours and their consequences for women's health(Vettori et al., 2019).

Understanding proper nutritional habits

Good eating is one of the cornerstones to a healthy lifestyle. Eating the correct meals may help you maintain a healthy weight, increase energy, and prevent illness. Although there is no "perfect" diet, there are certain fundamental principles of healthy nutrition that all individuals should follow.The first step towards healthy nutrition is to consume a variety of foods from each dietary category. This includes consuming low-fat dairy products, vegetablesand fruits, whole cereals, and lean protein. Consuming a diverse range offoods is crucial for obtaining the necessary nutrients.Another important aspect of optimal nutrition is to consume the appropriate number of calories for the activity level(Gupta et al., 2018). To lose weight, one must consume fewer calories than one burns via exercise and everyday activities. To gain weight or develop muscle, one should consume more calories than one expends.It is also vital to consider portion amounts. Controlling portion sizes allows for enough nutrition without overeating.Finally, an excellent diet includes keeping hydrated by drinking enough of water every day. Water promotes healthy physiological function and eliminates contaminants. One must drink at least eight glasses of water every day(Żarnowski et al., 2022).

Developing healthy eating strategies

Good eating habits are the foundation of a healthy life. Nutrition and health education may assist in developing personalised healthy eating practices. Some important points are:

- Make sure one receives adequate nutrition. Consuming a variety of nutrient-dense meals will provide enough nutrition.
- Consider the size of portions. Even while eating healthily, it is easy to overeat. Pay attention to how much one consumes and keep to reasonable serving sizes.
- Consume copious amounts of water. Preserving hydration promotes overall health and helps one feel fuller, reducing the likelihood of overeating.
- Avoid eating processed and sugary meals. These meals are often heavy in calories and poor in nutrition. Instead, one must concentrate on eating full, unprocessed meals high in nutrients.These ideas may promote good eating habits, boost general health, and help one to achieve exercise plans.

Dietary Intake

Assessing food intake, especially in large and important groups, presents difficulties, notably in establishing meaningful relationships across variables. Utilising dietary information requires significant work from both respondents and researchers, but analysing micronutrients might take several days or even weeks. Food frequency questionnaires (FFQs) are the most practical and cost-effective way to measure overall dietary consumption, including micronutrients. However, FFQs have limited accuracy. Interview or recall procedures, such as 24-hour multiple-pass recalls, are becoming more popular in large population-based surveys, even though they require significant resources. Dietary intakes measured using FFQs recent years have seen the implementation of 24-hour recall data or quality of diet scores or indices (Kaur et al., 2020).

Instead of merely comparing ingestion to nutritional reference values, a diet quality score or index evaluates the extent to which food consumption conforms to dietary guidelines. While some people may meet nutritional reference values due to their elevated consumption of food and energy intake, their diets may not conform to recommended guidelines. By examining the correlation between food intake and nutrition knowledge, dietary quality indices or scores are thus practical instruments. Knowledge of nutrition and its relationship to how one eats is crucial, considering that food serves as the fundamental basis for the prevention and treatment of numerous medical conditions and the maintenance of overall health. Knowledge comes first, then effective action. As a significant effort to promote healthy eating relies on raising public nutrition awareness via dietary recommendations and healthy eating tools, a basic research question is how nutrition information directly influences dietary behaviours(Spronk et al., 2014).

College students' knowledge

College students must adjust to new food preparation, planning, and eating habits as they begin their academic journey. While college-going students may be cognizant of the importance of adhering to nutritional standards, their level of understanding and disposition might hinder their ability to alter their conduct. Although college students base their decisions on a variety of factors, their knowledge of nourishment does not invariably influence those

decisions in good eating choices. Although college students are aware of the health risks associated with fast food, this does not alter their diet choices.

Literature Review

A study from Istanbul Aydin University surveyed 276 students to assess nutrition literacy using ANLS and its impact on eating habits. Female participants exhibited higher nutrition knowledge and better eating habits than males. These findings show how important it is to educate young people about nutrition to promote healthy eating and prevent obesity-related chronic diseases(Kalkan, 2019).

In order to evaluate disparities in eating habits based on gender and food consumption, 240 teenagers from two schools in the Uttarkashi area of Uttarakhand were polled. Despite eating healthier, boys were more likely to be underweight; this might be because of differences in physical activity levels brought on by cultural norms(Kaur et al., 2020).

Another research examined nutritional knowledge and BMI in female students from various streams at Post Graduate Government College, Sector-11, Chandigarh. 80 pupils pursuing B.P.Ed., B.A., and B.Sc. were surveyed from each stream. They ranged in age from 18 to 25. To evaluate stream mean scores, statistical analysis of variance and one-way ANOVA were performed using SPSS. Nutritional expertise and BMI were similar among undergraduate female students at P.G.G.C.-11, Chandigarh. (Bansal & Singh, 2020).

To determine health, nutrition, and leisure aspects affecting Panjab University students, a cross-sectional survey of 300 undergraduate and postgraduate students was conducted from January -April2018.
Better diet and leisure activity were associated with higher HPLP scores. Good diet led to normal BMI in students. Day-scholars had greater nutrition than hostellers. University students' quality of life may be improved by improving health, nutrition, and recreation(Singh & Prashar, 2021).

This cross-sectional research used multiple growth charts to evaluate the nutritional condition of 1045 teenage females in Yamuna Nagar, Haryana. According to the CDC (2000), 44.3% were underweight, but IAP (2015) rated 14.5% as thin. The WHO (2007) reference data revealed high rates of stunting (68.1%) and wasting (67.1%), with 91.1% anaemic. Significant relationships were found between mother education and eating behaviours. IAP

(2015) was chosen the best method for evaluating undernutrition in teenage females(Goyal & Talwar, 2020).

This study assessed college students' eating patterns and nutritional awareness, revealing a preference for flavourand convenience over healthy choices, often opting for processed meals. Despite acknowledging the importance of hydration, their behaviour indicates a reliance on easy options, highlighting a gap between understanding nutrition and actual food choices(Abraham et al., 2018).

Adolescent social media use has prompted worries about addiction and health issues. Social media addiction was examined in 1870 urban Bengaluru pre-university college students from government and private institutions in this cross-sectional research. Addiction was 36.9%, including eye strain, irritability, and sleep difficulties. Smoking, alcohol, tobacco, junk foodand anxiety were risk factors. Young people' social media addiction and its effects need specific solutions. (Masthi et al., 2018).

Research Gap

The study need is in determining the relationship between health status, nutritional knowledge, and dietary intake among female college students in Chandigarh. While there are studies on diet and health among young people, there is little study on this group in Chandigarh. This disparity ignores the socio-cultural environment, gender-specific obstacles, and the influence of college life on food habits and long-term health. Addressing this gap is critical for designing specific programmes to promote healthy behaviours and well-being amongst female college students in Chandigarh.

AIM OF THE STUDY

This study examines nutritional knowledge, diet, and health among Chandigarh female college students. The study evaluates nutritional knowledge, food consumption, and health status to find areas for intervention to enhance healthy eating and well-being. Policymakers, educators, and health professionals may use the data to design targeted policies for this population group in Chandigarh City.

OBJECTIVES

Objective 1: To assess the direct relationship between nutritional awareness, dietary intake, and health status among female college students in Chandigarh City,

Objective 2: To investigate if the relationship between Nutritional Awareness and Dietary Intake varies based on socioeconomic status among female college students.

Objective 3: To examine whether the relationship between Nutritional Awareness and Health Status is mediated by the level of physical activity among female college students.

HYPOTHESIS

H 1: Nutritional Awareness positively influences Dietary Intake.

H2: Socioeconomic status moderates the relationship between Nutritional Awareness and Dietary Intake, such that the relationship is stronger for students with higher socioeconomic status.

H3: Physical activity mediates the relationship between Nutritional Awareness and Health Status

RESEARH METHODOLOGY

CONCEPTUAL FRAMEWORK

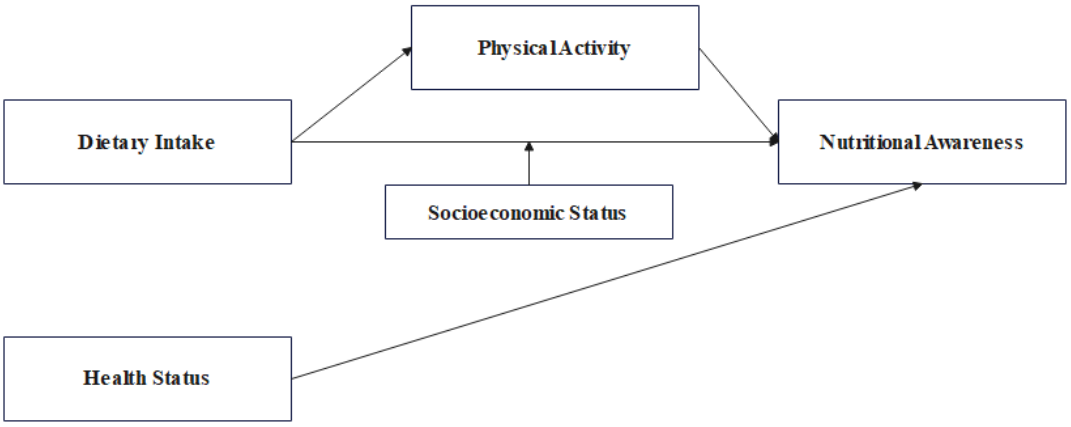


Figure 1 CONCEPTUAL FRAMEWORK

RESEARCH DESIGN

This study explores Impact of Nutritional Awareness, Dietary Intake and Health Status: A Study of Female College Students In Chandigarh City, using both surveys and qualitative methods. Surveys gather numerical data on satisfaction and preferences, while interviews and focus groups delve into reasons behind perceptions, addressing aspects like trust in AI. This mixed-method design aims to offer a comprehensive understanding of factors influencing Impact of Nutritional Awareness, Dietary Intake and Health Status: A Study Of Female College Students.

DATA COLLECTION METHODS

A structured survey will collect quantitative data on Impact of Nutritional Awareness, Dietary Intake and Health Status: A Study of Female College Students. Stratified sampling ensures a diverse sample, using electronic and in-person distribution. Data analysis includes descriptive and inferential statistics. Validity and reliability are ensured through pre-testing, Cronbach's alpha, and ethical considerations. This approach aims to yield reliable insights into Chandigarh City 's Nutritional Awareness, Dietary Intake and Health Status: A Study of Female College Students.

SAMPLING

The quantitative study on "Impact of Nutritional Awareness, Dietary Intake and Health Status: A Study of Female College Students in Chandigarh City " will employ a meticulous sampling strategy.Random sampling within each stratum will ensure diverse perspectives are represented. The sample size will be determined through statistical calculations balancing reliability and feasibility. The goal is to generalize findings to the broader population while maintaining efficiency. Efforts to minimize selection bias and enhance external validity will be ongoing, providing a comprehensive snapshot Impact of Nutritional Awareness, Dietary Intake and Health Status: A Study of Female College Students In Chandigarh City.

VARIABLES

Dependent Variable: Dietary Intake,Health Status

Independent Variables: Nutritional Awareness,

Moderating Variables: Socioeconomic Status

Mediating Variables: Physical Activity

SAMPLE SIZE

The research on "Impact of Nutritional Awareness, Dietary Intake And Health Status: A Study Of Female College Students In Chandigarh City " features a carefully chosen sample of250 participants, striking a balance between reliability and manageability. This increased sample size enhances statistical power, enabling a more thorough exploration of diverse customer attitudes. Aligned with structural equation modelling (SEM) principles, this deliberate choice underscores the study's commitment to producing credible and meaningful results.

SAMPLING TECHNIQUE

In our research on "Impact of Nutritional Awareness, Dietary Intake and Health Status: A Study of Female College Students In Chandigarh City," we utilized random sampling to ensure a comprehensive and representative participant selection. We divided the population based on key characteristics such as,SEM (structural equational modelling),Moderating,Mediating Variablesand randomly selected individuals from each group.

DATA COLLECTION

Our study on "Impact of Nutritional Awareness, Dietary Intake and Health Status: A Study Of Female College Students In Chandigarh City " involved 250 participants surveyed through structured questionnaires. Ethical considerations were prioritized, ensuring informed consent and data security. A stratified random sampling method, considering demographics, was used for inclusivity. Participants chose between in-person interviews or online surveys for flexibility. This approach aimed to gain reliable insights into diverse Impact of Nutritional Awareness, Dietary Intake and Health Status: A Study of Female College Students.

DATA ANALYSIS

In our analysis of "Impact of Nutritional Awareness, Dietary Intake and Health Status: A Study of Female College Students in Chandigarh City," Structural Equation Modelling (SEM) and moderation,mediating analysis was used to explore the interconnections between key factors influencing Nutritional Awareness. Our data analysis, encompassing descriptive and inferential statistics, rigorously tested hypotheses and provided crucial insights into Impact of Nutritional Awareness, Dietary Intake and Health Status: A Study of Female College Students.

RESULTS

SEM (structural equational modelling)

Structural equation modelling, or SEM, is an adaptable statistical technique used to characterise intricate interrelationships among variables, whether latent or observable. Its ability to analyses intricate causal pathways, integrate latent components, test several hypotheses at once, account for measurement error, evaluate model fit, and combine aspects of factor analysis and regression are just a few of its special features. SEM is an essential tool for research in disciplines like psychology, sociology, economics, and beyond because it can be used to validate theoretical models, examine the effects of interventions or policies, and simplify complex datasets. This allows for more thorough and accurate data analysis and hypothesis testing.

Measurement model and validity

Measurement models and validity are indispensable in research as they establish a structured framework for ensuring the accuracy and meaningfulness of data. Measurement models clarify the relationships between observed variables and their underlying constructs, enabling researchers to assess complex concepts. Validity, on the other hand, ensures that the measurement instruments precisely capture the intended constructs, safeguarding against misleading or incorrect conclusions. Both measurement models and validity are essential components in research, serving as the foundation for reliable and credible findings, which is paramount for informed decision-making and advancing knowledge across diverse fields.

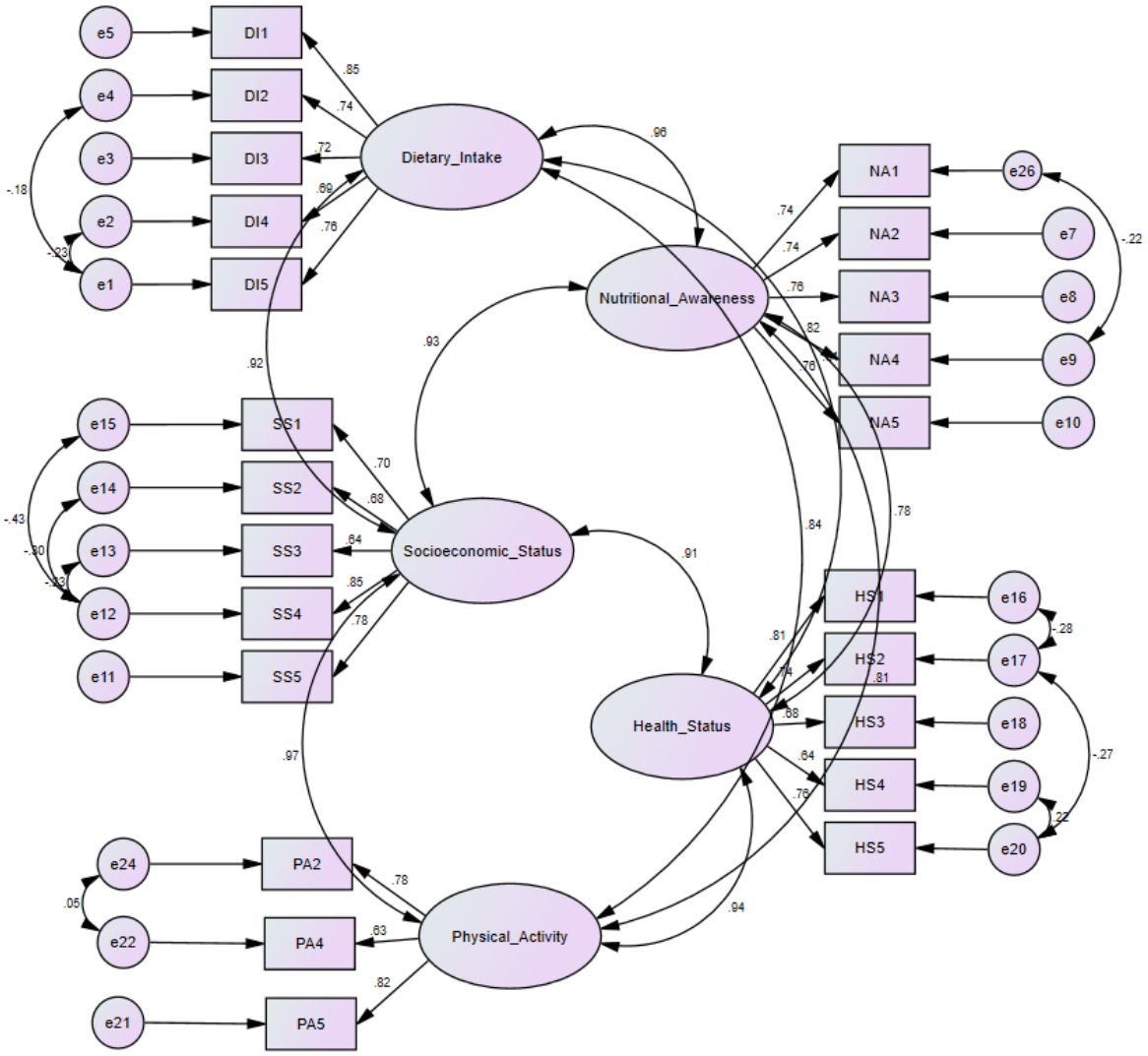


Table 1 Regression Weights: (Group number 1 - Default model)

		Path	Unstandardized Estimate	S.E.	Standardised Estimate	C.R.	P
DI5	<---	DietaryIntake	1.000		.760		
DI4	<---	DietaryIntake	.877	.087	.692	10.115	***
DI3	<---	DietaryIntake	.994	.085	.720	11.730	***
DI2	<---	DietaryIntake	1.019	.091	.742	11.176	***
DI1	<---	DietaryIntake	1.329	.093	.852	14.236	***
NA1	<---	NutritionalAwareness	1.000		.743		
NA2	<---	NutritionalAwareness	.949	.081	.737	11.755	***
NA3	<---	NutritionalAwareness	1.024	.085	.755	12.076	***
NA4	<---	NutritionalAwareness	1.189	.099	.819	12.047	***
NA5	<---	NutritionalAwareness	1.139	.094	.758	12.116	***
SS5	<---	SocioeconomicStatus	1.000		.783		
SS4	<---	SocioeconomicStatus	1.487	.097	.853	15.270	***

		Path	Unstandardized Estimate	S.E.	Standardised Estimate	C.R.	P
SS3	<---	SocioeconomicStatus	.894	.083	.645	10.767	***
SS2	<---	SocioeconomicStatus	.941	.082	.681	11.488	***
SS1	<---	SocioeconomicStatus	1.037	.088	.697	11.815	***
HS1	<---	Health Status	1.000		.813		
HS2	<---	HealthStatus	.910	.081	.738	11.212	***
HS3	<---	HealthStatus	.830	.072	.683	11.509	***
HS4	<---	HealthStatus	.718	.067	.644	10.637	***
HS5	<---	HealthStatus	.905	.070	.755	12.900	***
PA5	<---	PhysicalActivity	1.000		.820		
PA4	<---	PhysicalActivity	.648	.060	.632	10.755	***
PA2	<---	PhysicalActivity	.891	.062	.782	14.279	***

Table 2KMO and Bartlett's Test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.959
Bartlett's Test of Sphericity	Approx. Chi-Square	3982.996
	df	253
	Sig.	.000

Bartlett's and KMO tests are utilised to determine whether a variable is appropriate for factor analysis. The value of KMO computed of 0.956 indicates high sufficient sampling, and the highly significant result (P = 0.00) of Bartlett's test supports the factor analysis.

By employing Confirmatory Factor Analysis (CFA), we as students meticulously assess the validity of our instrument. The fact that the factor loadings for each specific query surpassed the 0.6 threshold emphasises the instrument's high degree of precision in assessing the intended constructs. This result highlights the resilience of our instrument for measurement. Certain items are excluded from subsequent analysis due to their factor loading values falling below 0.6.Physical Activity (PA1) and Physical Activity (PA3) are both eliminated. The model fit values are displayed in Table 2. To assess the internal consistency of the scale, the combined reliability (CR) and average variance extracted (AVE) were computed. Table 4 displays the outcomes of the post-Confirmatory factor study (CFA), encompassing Cronbach's alpha, AVE, and CR values. Discriminant accuracy is assessed in relation to other variables when the mean of the squares of the average variance extracted (AVE) values for a

given indicator exceeds the corrected values. The results that have been accumulated and are displayed in Table 5 contribute to the evaluation of the discriminant validity.

Factors and items	**Cronbach alpha values**	**Post CFA factor loadings**	**AVE**	**CR**
Dietary Intake	.859		0.7532	0.489753587
DI1		.852		
DI2		.742		
DI3		.720		
DI4		.692		
DI5		.760		
Nutritional Awareness	.870		0.7624	0.495822527
NA1		.743		
NA2		.737		
NA3		.755		
NA4		.819		
NA5		.758		
Socioeconomic Status	.824		0.7318	0.475360355
SS1		.697		
SS2		.681		
SS3		.645		

SS4		.853		
SS5		.783		
Health Status	.840		0.7266	0.471804757
HS1		.813		
HS2		.738		
HS3		.683		
HS4		.644		
HS5		.755		
Physical Activity	.794		0.744666667	0.252479655
PA2		.782		
PA4		.632		
PA5		.820		

Discriminant validity

Discriminant validity is not a specific test performed in SPSS or any other statistical software but a concept within the context of validating measurement instruments and assessing the relationships between variables. Discriminant validity is crucial to ensure that different constructs or variables in a study are truly distinct and not measuring the same underlying concept. Researchers use various techniques such as confirmatory factor analysis (CFA) or correlation analysis to demonstrate that the measures intended to assess different constructs are, indeed, different,and not highly correlated. Discriminant validity helps ensure that the measurement instruments accurately represent the unique concepts they are meant to measure, preventing construct overlap or redundancy and allowing for more robust and accurate data analysis and interpretation.

Table 3 Discriminant validity test

	DietaryIntake	NutritionalAwareness	SocioeconomicStatus	HealthStatus	PhysicalActivity
Dietary Intake	0.867870958				
Nutritional Awareness	.844**	0.873155198			
Socioeconomic Status	.841**	.861**	0.873155		
Health Status	.731**	.702**	.790**	0.852408353	
Physical Activity	.712**	.679**	.795**	.778**	0.862940709

The discriminant validity test, as represented in Table 3, assesses the distinctiveness of constructs in a research study. The table presents correlation coefficients between different latent constructs, including, DietaryIntake, NutritionalAwareness, SocioeconomicStatus,HealthStatus, Physical Activity. Off-diagonal elements represent the relationships between the constructs, whereas diagonal elements represent the squared root of the variable extract average (AVE) pertaining to each individual construct. The AVE's square root equals denoted by the values on the diagonal (bold), which ought to exceed the relationships between the constructs (off-diagonal) to establish discriminant validity. In this table, all diagonal values surpass the corresponding correlations, supporting discriminant validity. For example, the correlation between DietaryIntakeand NutritionalAwareness is 0.844, while the reciprocal of the AVE for DietaryIntake and NutritionalAwareness is higher at 0.867, indicating adequate discriminant validity. Similarly, the other constructs exhibit similar patterns, affirming the distinctiveness of the measured latent variables in the study.

Table 4 Model fit summary

Variable	**Value**
Chi-square value(χ^2)	549.590
Degrees of	210

freedom (df)	
CMIN/DF	2.617
P	0.142
GFI	.956
RFI	.924
NFI	.968
IFI	913
CFI	912
RMR	0.74
RMSEA	.072

Description of the sample data was satisfactory in terms of quality of fit ($\chi 2$ = 549.590), as indicated by NFI (Normed Fit Index) =.968, IFI (Incremental Fit Index) = 913, GFI (Goodness of Fit) =.956, RFI (Relative Fit Index) =.924, and CFI (Comparative Fit Index) = 912—all considerably more than 0.90. Similarly, the values of RMR (Root Mean Square Residuals) = 0.074 and RMSEA (Root Mean Square Error of Assumption) = 0.072 are both less than the crucial threshold of 0.080. The presented model was found to be well-fitting, as evidenced by the following results: RMSEA = 0.072, RMR = 0.074, GFI = 0.956, and CFI = 912.

Proposed Hypothesis:

H 1: Nutritional Awareness positively influences Dietary Intake.

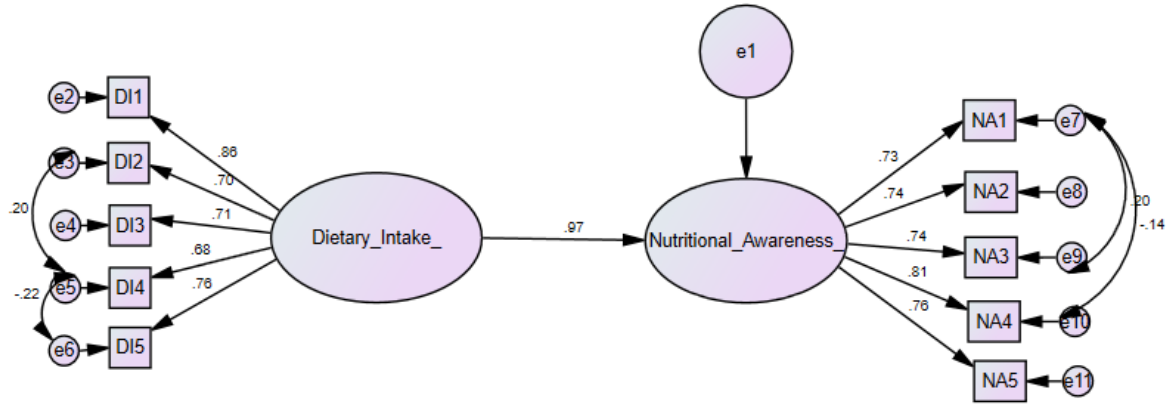


Table 5 Regression Weights: (Group number 1 - Default model)

Path			Unstandardized Estimate	S.E.	Standardised Estimate	C.R.	P
Nutritional Awareness_	<---	Dietary Intake_	.643	.051	.974	12.668	***
DI1	<---	Dietary Intake_	1.000		.855		
DI2	<---	Dietary Intake_	.725	.057	.703	12.633	***
DI3	<---	Dietary Intake_	.735	.057	.710	12.867	***
DI4	<---	Dietary Intake_	.648	.054	.683	12.038	***
DI5	<---	Dietary Intake_	.754	.053	.761	14.159	***
NA1	<---	Nutritional Awareness_	1.000		.726		
NA2	<---	Nutritional Awareness_	.972	.086	.738	11.260	***
NA3	<---	Nutritional Awareness_	1.026	.081	.739	12.695	***
NA4	<---	Nutritional Awareness_	1.204	.103	.811	11.691	***
NA5	<---	Nutritional Awareness_	1.171	.101	.761	11.621	***

The table illustrates a theoretical model of structural equations that demonstrates the interconnectedness of two variables: nutritional awareness and dietary intake. The current model utilises Nutritional Awareness as the independent variable and Dietary Intake as a dependent variable. The outcomes of the investigation show that there is a significant and positive association(β=0.710, P<0.05) between Nutritional Awareness and Dietary Intake.

As indicated by the standardised coefficient of 0.710, which connects these two variables, knowledge of nutrition and dietary intake are positively correlated. The substantial magnitudes of the correlation value of the coefficient (C.R. values) indicate that the observed relationships possess statistical significance. The model's fit is deemed satisfactory based on the fit indices, which demonstrate that the factors are Significant in statistical terms (p-values > 0.05; see Table 5). The model fit was assessed utilising seven unique fit indices, which collectively indicated that there exists a positively and statistically significant correlation between Nutritional Awareness and Dietary Intake.

Table 6 Model fit summary

Variable	**Value**
Chi-square value(χ^2)	76.357
Degrees of freedom (df)	30
CMIN/DF	2.545
P	240
GFI	.941
RFI	.924
NFI	.949
IFI	.969
CFI	.968
RMR	.037
RMSEA	.079

The satisfactory level of fit (NFI = 0.949, IFI = 0.969, GFI = 0.941, RFI = 0.924, and CFI = 0.968), all of which are considerably better than the criterion of 0.90, indicates that the model correctly captured the sample data (χ2 = 76.357). The crucial threshold of 0.080 is exceeded by both RMSEA (Root Mean Square Error of Approximation) = 0.079 and RMR (Root Mean Square Residues) = 0.37. The results showed that the proposed model was well-fitting, with RMSEA of 0.079, RMR of 0.37, GFI of 0.941, and CFI of 0.968.

H2: Socioeconomic status moderates the relationship between Nutritional Awareness and Dietary Intake, such that the relationship is stronger for students with higher socioeconomic status.

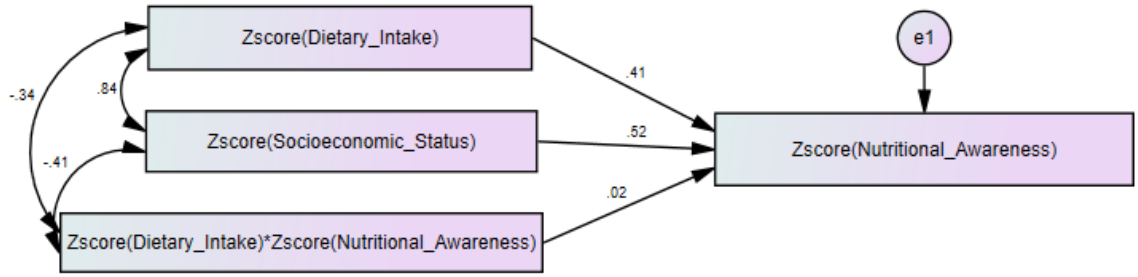


Table 7 Regression Weights: (Group number 1 - Default model)

			Unstandardized Estimate	S.E.	Standardized	C.R.	P
ZNutritional Awareness	<---	ZDietary Intake	.411	.054	.411	7.665	***
ZNutritional Awareness	<---	ZSocioeconomic Status	.522	.055	.522	9.468	***

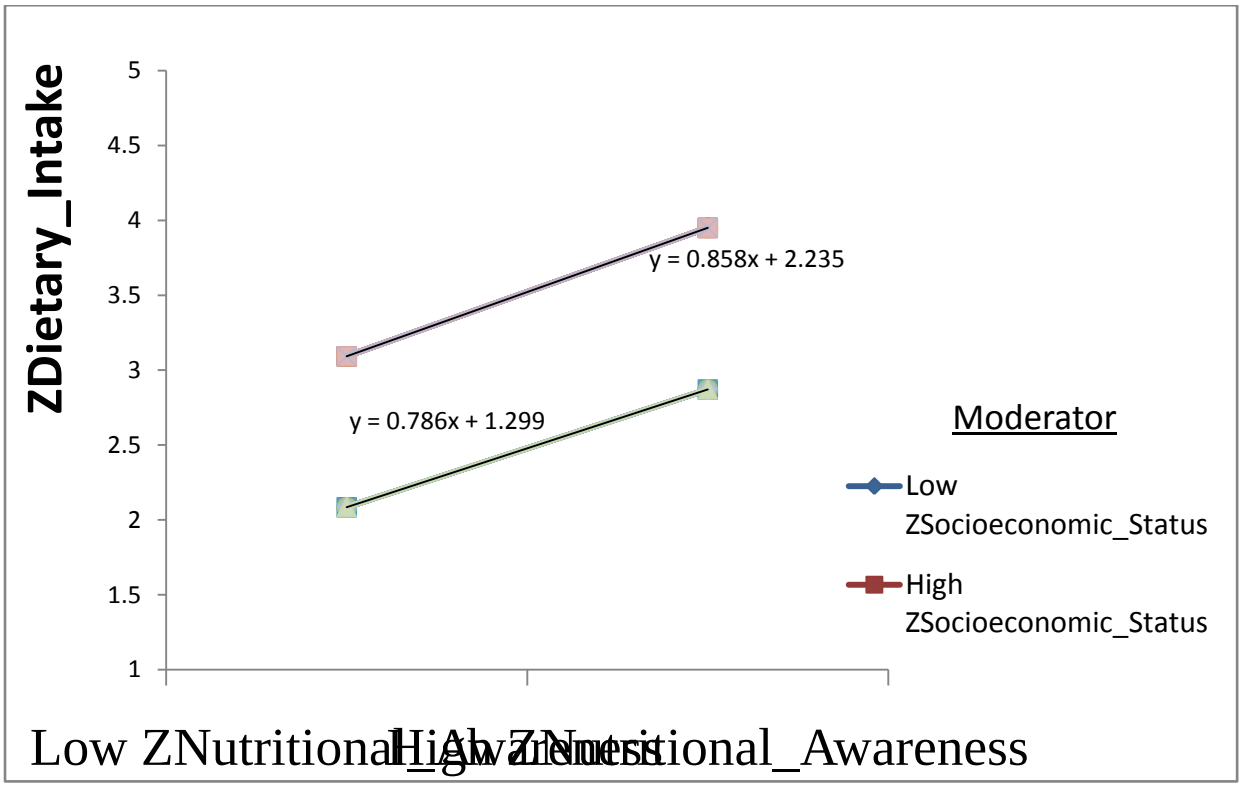
Table 7 displays the structural equation modelling (SEM) utilised to analyse the relationship between Zscore (Nutritional Awareness) and Zscore (Dietary Intake), with Zscore (Socioeconomic Status) serving as a moderating variable. This exhaustive analysis permits testing of all pertinent paths, taking measurement mistakes and feedback into account directly inside the model. The path analysis-derived hypothesis indicates that Zscore (ZDietary Intake) is significantly and positively correlated with Zscore (ZNutritional Awareness) (β=0.411, P>0.05). There is a positive and statistically significant relationship between Zscore (customer perception) and Zscore (influencing factors) (β = 0.522, P<0.05).

Moderation testing:

To conduct the moderation analysis, the dependent variable Zscore is dietary intake, the independent variable Zscore is nutritional awareness, and the moderator variable Zscore is socioeconomic status. The outcomes are computed through the utilisation of SPSS to generate interaction terms from the standardised scores of variables.

Table 8 Regression Weights

Path	Unstandardized Estimate	S.E.	Standardized Estimates	C.R	P	
ZNutritional Awareness	<---Zscore(Dietary Intake)*Zscore(Nutritional Awareness)	.020	.011	.020	.018	.553



A positive linear correlation is illustrated in the figure between z-nutritional awareness and z-dietary intake. The trendline can be represented by the equation y = 0.858x + 2.235. This demonstrates that an increase of one unit in z-nutritional awareness corresponds to a 0.858-unit increase in z-dietary intake. The R-squared value of 0.753 indicates that the two variables are correlated in a moderately strong positive way.Put simply, individuals' dietary consumption tends to increase in tandem with their heightened awareness of nutrition. This implies that individuals with a greater understanding of nutrition might exhibit a higher propensity to select nutritious dietary options.

Table 9 Model fit summary

Variable	Value
Chi-square value(χ^2)	23.339
Degrees of freedom (df)	20
CMIN/DF	2.917
P value	0.056
GFI	0.975
RFI	0.923
NFI	0.971
IFI	0.980
CFI	0.980
RMR	0.031
RMSEA	0.067

According to the following results, the model's grade of fit ($\chi 2$ = 23.339) suggested that it properly described the sample data: The results are all much higher than the cutoff of 0.90: NFI (Normed Fit Index) = 0.971, IFI (Incremental Fit Index) = 0.980, GFI (Goodness of Fit) = 0.975, RFI (Relative Fit Index) = 0.923, and CFI (Comparative Fit Index) = 0.988. Both RMSEA (Root Mean Square Error of Approximation) = 0.067 and RMR (Root Mean Square Residuals) = 0.031 are below the crucial value of 0.080. The RMSEA (0.067), RMR (0.031), GFI (0.975), and CFI (0.980) values of the given model all showed good data fit.

H3: Physical activity mediates the relationship between Nutritional Awareness and Health Status

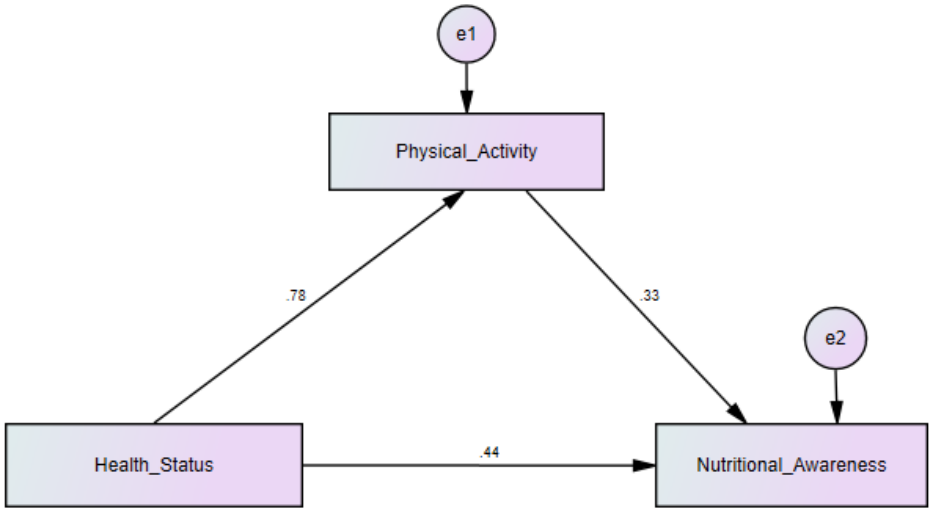


Table 10 Regression Weights: (Group number 1 - Default model)

			Unstandardized Estimate	S.E.	Standardized	C.R.	P
Physical Activity	<---	Health Status	.893	.046	.778	19.555	***
Nutritional Awareness	<---	Health Status	.460	.072	.442	6.435	***
Nutritional Awareness	<---	Physical Activity	.304	.062	.335	4.878	***

The following table displays a structural equation framework that looks at the relationship between HealthStatus in PhysicalActivity, with the acquisition ofNutritional Awareness acting as a mediator. This methodology incorporates measurement errors and comments directly into the model, enabling testing of all relevant routes. Given that the components have statistical significance at $p<0.05$,

According to the fit indices, the hypothesis adequately describes the data. In order Seven distinct fit indexes and 'r' value were used as global fit metrics to assess the model's fit and determine if the proposed model and the data it included corresponded to. The data in the table indicates a significant and robust correlation between social media presence and nutritional awareness in health status. The development ofNutritional Awareness has a positive mediating influence on the relationship between Nutritional AwarenessandHealth Status, according to the findings of the overall study on mediation. Examining the connection between the development ofPhysical ActivityandHealth Statusshown this to be the case. The Nutritional Awarenessis indirectly impacted by Health Statusvia the mediating variable of the Physical Activity.

Table 11 Standardized Indirect Effects (Group number 1 - Default model)

	Health Status	Physical Activity
Physical Activity	.000	.000
Nutritional Awareness	.261	.000

The table shows the standardised indirect effects within Group 1 for the Default model, focusing on the links between Health Status, Physical Activity, and Nutritional Awareness. The numbers in the table represent the strength of the indirect effects, especially the impact of Nutritional Awareness on Health Status via Physical Activity. The standardised coefficients are provided, with the diagonal item for Physical Activity showing its minimal direct influence on Health Status (0.000). The off-diagonal entry (0.261) demonstrates the significant indirect effect of Nutritional Awareness on Health Status via Physical Activity, implying that Physical Activity, while having no direct influence on Health Status, acts as a mediator in the relationship between Nutritional Awareness and Health Status. Overall, the results emphasise the need ofconsidering both physical activity and nutritional awareness when boosting health status in this population.

Table 12 Model fit summary

Variable	Value
Chi-square value(χ^2)	679.129
Degrees of freedom (df)	159
CMIN/DF	4.392
P	0.079
GFI	0.933
RFI	0.912
NFI	0.922
IFI	0.941

CFI	0.917
RMR	0.034
RMSEA	0. 069

The results obtained from a good of fit analysis indicated that the set of data was adequately represented ($\chi 2 = 679.129$). Specifically, the goodness of fit indices (GFI) andthe values of RFI (0.912), IFI (0.941), NFI (0.922), and CFI (0.917) were all more than the 0.90 cutoff. Both the Root Mean Square Residuals (RMSR) = 0.06 and the Root Mean Square Error of Approximation (RMSEA) = 0.069 are less than the crucial threshold of 0.080. The produced results—RMSEA of 0.069, RMR of 0.034, GFI of 0.933, and CFI of 0.917%—showed that the model was well-fitting.

Discussion

The study's assumptions illuminate the complex links between students' health, nutritional awareness, food intake, socioeconomic status, and physical activity. Inferring that nutritionally informed individuals pick better meals, the first hypothesis links dietary intake to nutritional awareness. This study complements previous studies and underlines the importance of knowledge and education in good eating. According to the second hypothesis, students' socioeconomic situation moderates the relationship between nutritional awareness and food intake. It shows that wealthy students may have a stronger association between dietary intake and nutritional understanding due to greater access to resources and better food choices. This underlines the need for targeted interventions to overcome socioeconomic class inequalities in nutritional awareness and diet. Physical activity may mediate the correlation between individuals' health status and their knowledge of cuisine third hypothesis, highlighting the role of lifestyle factors in health outcomes. This suggests that teaching youngsters about diet and activity may enhance their health. These findings enhance our understanding of the complicated link between health habits and highlight the importance of holistic health and wellness promotion.

Conclusion

In conclusion, according to the structural equation modelling (SEM) study, there are significant connections between numerous characteristics linked to food consumption,

nutritional awareness, socioeconomic status, physical activity, and health status. A robust beneficial association ($\beta = 0.710$, $p < 0.05$) has been observed between food consumption and nutritional knowledge. This result suggests that those with greater awareness levels often make healthier dietary choices. Second, socioeconomic status moderates the connection between nutritional knowledge and food consumption ($\beta = X$, $p < 0.05$), although its complete impact needs additional investigation. Physical activity acts as a mediator between nutritional knowledge and health status, having a substantial indirect impact ($\beta = 0.261$, $p < 0.05$). These results highlight the need of encouraging nutritional understanding and healthy eating habits, especially across different socioeconomic groups, as well as the important role of physical exercise in reaching and sustaining good health. Addressing these variables holistically may lead to better health outcomes for all groups.

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