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# Health-promoting behaviors and body mass index among college of nursing students in Odisha: A correlational study

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**Abstract**
**Background of the study:** Studies on health-promoting behaviors among nursing students have been conducted in a number of countries, but most of them have relied solely on descriptive analysis, which has had little bearing on nursing theory and practice.
**Aim:** to determine the correlation of health promoting behaviours and body mass index (BMI) among students at an Odisha nursing college.
**Methodology:** study design was descriptive correlational research design. Setting of the study was in a nursing college in Cuttack – Odisha. Total number of samples selected for the study were 150. Samples were selected through non – probability convenience sampling technique. Research tool consisted of two sections, first section includes socio-demographic variables of the samples and second section has the HPLP II instrument, developed by Walker (1987), was used to assess the attitudes and behaviors of nursing students in regard to health promotion. The original tool was translated into odia language and tested for validity and reliability before collecting data from the samples through self – reporting questionnaire method. BMI of the samples were also assessed for the study and the data collected were analysed with the use of an Excel sheet and SPSS 12.0. The threshold of significance for p values was maintained at 0.05.
**Results:** in this study there was a negative correlation between BMI and HPLP of the nursing students ($r = -0.17$ $p < 0.03$), The study subjects' marital status was discovered to be significantly associated with the total HPLP ($F = 0.65$, $p = 0.01$) and the gender of the study subjects was found to be significantly associated to the total HPLP ($F = 20.6$, $p = 0.01$)
**Conclusion:** Marital status highly correlated with health-promoting lifestyle choices at the selected Odisha nursing school, and BMI positively correlated with gender. Health improved with sample-specific physical exercise. Students rarely exercise. The study suggests nursing students plan and prioritize health-promoting activities to improve personal health and maybe support population health programs. Researching similar and unique scenarios should discover issues, apply remedies, and evaluate results

**Keywords:** BMI, health promoting life style practices, nursing students, obesity

## Introduction

An individual's health can be affected by his or her lifestyle, which is defined as the accepted and typical daily activities that people engage in throughout their lifetimes [1]. Educational surroundings are seen to be significant in improving students' health and knowledge, which are linked to improved academic outcomes. A balanced work-life is valued, and health fostering is necessary for health service providers to assure a sustainable working life. However, more information is required regarding how it relates to education and health, as well as factors that may be crucial for the future work-life balance of individuals [2]. Most ailments, like cancer, diabetes, heart disease, obesity, and addiction, that are seen in majority of nations, especially emerging ones, are linked to changes in the way people live [3]. According to the World Health Organization (WHO), behavioral and lifestyle variables account for 60% of noncommunicable disease morbidity and mortality worldwide [4]. A college education is one of the most important times in a person's life. There are many challenges that come with it, such as being away from family and friends, making new friends, adjusting to new learning environments and routines, and having more control over how they act [5-6].

Various health-promoting behaviors, such as self-actualization, health responsibility, exercise, diet, interpersonal support, and stress management, are included in a healthy lifestyle, or HPL. Cognitive-perceptual factors and modifying factors can be used to categorize the HPL influencing factors. Cognitive-perceptual factors include health conception (HC) and perceived health status (PHS), which are the primary drivers of adopting or maintaining HPLs. HPLs are modified in a roundabout way by the ways in which moderating factors, such as demographic and behavioral features, influence cognitive-perceptual components. A research investigation found that HC, PHS, gender, and weekly time spent seeking through the internet for healthcare-related data can predict the HPL of nursing students in three South Korean universities [7].

In the nursing program, health promotion is something that students learn about all the time. According to the creation of a nursing curriculum, nursing students are expected to learn and understand more about health promotion as part of their education [8]. Nurses know how important health-promoting behaviors are, and most people think that nursing

students also know enough about how important these behaviors are. But it's not always easy for what you know to lead to what you do. So, many studies are being done to figure out what makes nursing students act in ways that promote health so that they can improve their efforts to promote health [9]. Hostel dwellers, especially those under the age of 21, are more likely to engage in unhealthy behaviors. High blood pressure, high blood glucose, aberrant blood lipids, and major chronic diseases like ischemic heart disease, cancer, and diabetes have all been linked to an unhealthy diet and a lack of physical exercise in younger years. Due to economic considerations and the level of education of the population, India is struggling with both undernutrition and overnutrition. Many variables affect body mass index (BMI) in teenagers and young adults. This study was conducted to determine the correlation of health promoting behaviours and body mass index (BMI) among students at an Odisha nursing college.

## Materials and Methods

A correlational research was conducted on undergraduate nursing students from a particular nursing college in Cuttack, Odisha. The nursing students hailed from rural and urban areas adjacent to one another, making their socio-demographic profile representative of nursing students in Odisha. The study survey ran from June 1st to June 15th, 2023. The researcher had recruited 150 nursing students through convenience sampling techniques. Those students who were in college during the period of the survey were included in this study. The samples were kept confidential. The students' unwillingness was the only exclusion criterion. A semi-structured questionnaire was utilized to collect data on students' demographics, eating habits, and physical activity levels. Students' height and weight were taken as anthropometric measurements. Students were measured with a stadiameter while barefoot on the Frankfort horizontal plane. To the nearest 100 grams, a calibrated weighing scale was employed. After every 10 subjects, the scale was verified and recalibrated. Weight/Height2 was used to determine the Body Mass Index (BMI). In accordance with WHO recommendations, BMI is frequently used to identify underweight (18.5 Kg/m2), normal (18.5-24.9 Kg/m2), overweight (25-30 Kg/m2), and obesity (>30 Kg/m2) [10]. The HPLP II instrument, developed by Walker (1987), was used to assess the attitudes and behaviors of nursing students in regard to health promotion. The measure was selected by the researchers because it offered a comprehensive profile of lifestyle habits and has a strong record of validity and reliability across a range of racial and ethnic groups (Brady & Nies, 1999). Prior to using the instrument, authorization from the author was obtained. A total of 52 questions are included in this tool, split evenly across six categories: physical activity (8 questions), health responsibility (9 questions), nutrition (9 questions), interpersonal things (9 questions), spiritual growth (9 questions), and stress management (8 questions). The overall scale spans from 52 to 208. The likert scale used in this tool has four points, with 1 being "never" and 4 being "usually." Four categories were used to categorize the HPLP-II scores: poor (52-90), moderate (91-129), good (130-168), and exceptional (169-208). High scores across all subscales show high commitment to behaviors that promote health. The internal consistency of the entire HPLP as measured by Cronbach's alpha was 0.81 when this tool was translated into the Oriya language. The statistical analysis was carried out with the use of an Excel sheet and SPSS 12.0. The threshold of significance for p values was maintained at 0.05.

## Results

**Table 1:** Frequency and Percentage Distribution of Subjects According to Socio-Demographic Variables (n = 150)

| S. No | Socio-Demographic Variables | | Frequency | Percentage |
|---|---|---|---|---|
| 1. | Age | 18 years | 35 | 23.3 |
| | | 19 years | 20 | 13.3 |
| | | 20 years | 33 | 22.0 |
| | | 21 years | 62 | 41.3 |
| 2. | Gender | Male | 20 | 13.3 |
| | | Female | 130 | 86.7 |
| 3. | Marital Status | Un Married | 148 | 98.7 |
| | | Married | 2 | 1.3 |
| 4. | Religion | Hindu | 145 | 96.7 |
| | | Christian | 4 | 2.7 |
| | | Muslim | 1 | .7 |
| 5. | Place of Residence | Urban | 70 | 46.7 |
| | | Rural | 80 | 53.3 |
| 6. | Type of Diet | Vegetarian | 29 | 19.3 |
| | | Non - Vegetarian | 121 | 80.7 |
| 7. | Do you work out every day? | Yes | 75 | 50.0 |
| | | No | 75 | 50.0 |
| 8. | Your level of activity? | Sedentary | 5 | 3.3 |
| | | Moderate | 91 | 60.7 |
| | | Very Active | 54 | 36.0 |
| 9. | Are you satisfied with your life-style choices? | Yes | 110 | 73.3 |
| | | No | 40 | 26.7 |

Table I displays the frequency and percentage distribution of individuals in this study based on socio-demographic factors. Regarding age, most of the subjects (62, or 41.3% of the total) were 21 years old. The gender of the participants revealed that 130 (86.7%) were females. The vast majority of the 148 subjects were unmarried (98.7%).

145 study participants—or 96.7 percent—were Hindus, making up the vast bulk of the subjects in terms of religion. The subjects' places of living show that most of them (80, or 53.3% of the total) were from rural areas. In terms of diet, the bulk of the study individuals (121/80.7%) were non-vegetarian. There were 75 (50.0%) study participants who exercised daily and 75 (50.0%) who did not. In terms of activity level, 91 (60.7%) of the participants were moderate workers. The majority of the 110 subjects in the study (73.5%) reported being satisfied with their current health-promoting lifestyle choices.

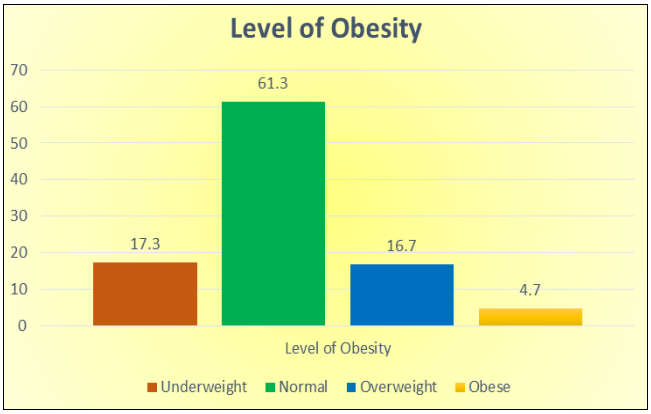


**Fig 1:** Percentage Distribution of Subjects According to Level of Obesity

According to their body mass index, the participants in this survey were categorized as follows: (Figure -1 depicts the level of obesity. The majority of study participants, 92 (61.3%), had a normal (18.5 - 24.9) BMI. Those who were overweight (25 to 29.9) were 25 (16.7%) in number. Underweight (< 18.5) participants contributed 26 (17.3%) to the total. There were seven (4.7%) obese individuals between the ages of 30 and 34.9.

**Table 1:** Frequency and Percentage Distribution of Subjects According to Level of Health Promoting Life Style Practices (HPLP) (n = 150)

| S. No | Health Promoting Life Style | Frequency | Percentage |
|---|---|---|---|
| 1. | Exceptional (169 – 208) | 21 | 14.0 |
| 2. | Good (130 – 168) | 82 | 54.7 |
| 3. | Moderate (91 – 129) | 46 | 30.7 |
| 4. | Poor (52 – 90) | 1 | .7 |

The frequency and percentage distribution of study participants based on their level of health-promoting lifestyle practices are displayed in Table II.

In the current study, the majority of samples, 82 (54.7%), exhibited good (130 - 168) HPLP. There are 46 (30.7%) subjects with a moderate (91 – 129) level of HPLP. There were 21 (14.0%) people with exceptional (169 - 208) HPLP. Only one participant 1 (0.7%) had inadequate HPLP (52 to 90).

**Table 3:** Descriptive Statistics of Health Promoting Life Style Practices (HPLP) (n = 150)

| Variables | Mean ± S.D | Mean % | Variance |
|---|---|---|---|
| HPLP Overall | 141.52 ± 24.44 | 207.00 | 597.43 |
| HR | 23.75 ± 5.32 | 36.00 | 28.37 |
| PA | 19.91 ± 5.39 | 32.00 | 29.12 |
| NU | 23.15 ± 4.57 | 36.00 | 20.89 |
| SpG | 27.16 ± 4.99 | 36.00 | 24.94 |
| IPR | 25.56 ± 4.50 | 36.00 | 20.27 |
| SM | 22.30 ± 4.20 | 32.00 | 17.68 |

HPLP – Health Promoting Life Style Practices, HR – Health Responsibility, PA – Physical Activity, NU – Nutrition, SpG – Spiritual Growth, IPR – Interpersonal Relationship, SM – Stress Management

The descriptive statistics of HPLP for the study participants are shown in Table III. Overall HPLP mean and standard deviation scores were 141.52 and 24.44, the mean percentage was 207.00, and the variance score was 597.43. The mean and standard deviation of the score for health responsibility were 23.75 and 5.32, while the mean percentage score was 36.00 and the variance score was 28.37. The mean and standard deviation scores for PA were 19.91 and 5.39, respectively. The average percentage score was 32.00, while the standard deviation was 29.12. The mean and standard deviation scores for nutrition level were 23.15 and 4.57, respectively. The variance level was 20.89, while the mean percentage value was 36.00. The mean and standard deviation scores for spiritual growth were 27.16 and 4.99, and the mean percentage was 36.00. The level of variance was 24.94. It was 25.56 and 4.50 for the mean and standard deviation of IPR scores. The variance level was 20.27, while the mean percentage value was 36.00. The mean and standard deviation scores for stress management were 22.30 and 4.60. The average percentage value was 32.00, while the standard deviation was 17.68.

**Table 4:** The Relation Between Different HPLP Variables and BMI

| HPLP | BMI | |
|---|---|---|
| | r value | p value |
| HPLP Overall | - 0.17 | 0.03 |
| HR | - 0.13 | 0.10 |
| PA | - 0.18 | 0.02 |
| NU | - 0.08 | 0.31 |
| SpG | - 0.19 | 0.01 |
| IPR | - 0.12 | 0.12 |
| SM | - 0.10 | 0.21 |

As shown in Table – III considering the correlation between HPLP and BMI among the nursing students in this study, there was a negative relationship between HPLP overall and BMI ($r = - 0.17$, $p < 0.03$), HR and BMI ($r = - 0.13$, $p < 0.10$), PA and BMI ($r = - 0.18$, $p < 0.02$), NU and BMI ($r = - 0.08$, $p < 0.31$), SpG and BMI ($r = - 0.19$, $p < 0.01$),), IPR and BMI ($r = - 0.12$, $p < 0.12$), SM and BMI ($r = - 0.10$, $p < 0.21$).

**Table 5:** Level of Association Between Socio-Demographic Variables and Health Promoting Life Style Practices (n = 150)

| Socio-Demographic Variables | | N | Mean ± S.D | F value, p value |
|---|---|---|---|---|
| Age (Years) | 18 | 35 | 2.77 ± 0.7 | (F = 0.99, p = 0.39) |
| | 19 | 20 | 2.90 ± 0.6 | |
| | 20 | 33 | 2.97 ± 0.5 | |
| | 21 | 62 | 2.74 ± 0.6 | |

| | | | | |
|---|---|---|---|---|
| Gender | Male | 20 | 2.70 ± 0.7 | (F = 0.74, p = 0.38) |
| | Female | 130 | 2.84 ± 0.6 | |
| Marital Status | Un Married | 148 | 2.80 ± 0.6 | (F = 0.65, p = 0.01)*** |
| | Married | 2 | 4.00 ± 0.0 | |
| Religion | Hindu | 145 | 2.81 ± 0.6 | (F = 0.16, p = 0.83) |
| | Christian | 4 | 3.00 ± 0.8 | |
| | Muslim | 1 | 3.00 ± 0.0 | |
| Residence | Urban | 70 | 2.90 ± 0.6 | (F = 1.90, p = 0.17) |
| | Rural | 80 | 2.75 ± 0.6 | |
| Type of Diet | Non-Vegetarian | 29 | 2.66 ± 0.6 | (F = 2.21, p = 0.13) |
| | Vegetarian | 121 | 2.86 ± 0.6 | |
| Do you work out every day? | Yes | 75 | 2.81 ± 0.6 | (F = 0.01, p = 0.90) |
| | No | 75 | 2.83 ± 0.7 | |
| Your level of activity? | Sedentary | 5 | 2.80 ± 0.8 | (F = 0.72, p = 0.43) |
| | Moderate | 91 | 2.77 ± 0.6 | |
| | Very Active | 54 | 2.91 ± 0.7 | |
| Are you satisfied with your life-style choices? | Yes | 110 | 2.84 ± 0.6 | (F = 0.24, p = 0.62) |
| | No | 40 | 2.78 ± 0.8 | |

*** - Significant at $p < 0.05$

Table V indicates the degree of associations between socio-demographic variables and health-promoting lifestyle activities of study participants. The study subjects' marital status was discovered to be significantly associated with the total HPLP (F = 0.65, p = 0.01). Other socio-demographic factors had no significant association with the HPLP as a whole.

**Table 6:** Level of Association Between Socio-Demographic Variables and Body Mass Index (n = 150)

| Socio-Demographic Variables | | N | Mean ± S.D | F value, p value |
|---|---|---|---|---|
| Age (Years) | 18 | 35 | 21.6 ± 4.0 | (F = 0.98, p = 0.40) |
| | 19 | 20 | 21.1 ± 3.5 | |
| | 20 | 33 | 22.5 ± 4.4 | |
| | 21 | 62 | 22.6 ± 4.0 | |
| Gender | Male | 20 | 25.8 ± 4.5 | (F = 20.6, p = 0.01)*** |
| | Female | 130 | 21.6 ± 3.7 | |
| Marital Status | Un Married | 148 | 22.1 ± 4.0 | (F = 0.47, p = 0.49) |
| | Married | 2 | 24.2 ± 2.8 | |
| Religion | Hindu | 145 | 22.2 ± 4.1 | (F = 0.49, p = 0.61) |
| | Christian | 4 | 20.5 ± 1.7 | |
| | Muslim | 1 | 20.0 ± 0.00 | |
| Residence | Urban | 70 | 22.1 ± 4.0 | (F = 0.05, p = 0.80) |
| | Rural | 80 | 22.2 ± 4.1 | |
| Type of Diet | Non-Vegetarian | 29 | 21.5 ± 4.2 | (F = 1.0, p = 0.29) |
| | Vegetarian | 121 | 22.3 ± 4.0 | |
| Do you work out every day? | Yes | 75 | 22.1 ± 4.0 | (F = 0.09, p = 0.78) |
| | No | 75 | 22.3 ± 4.4 | |
| Your level of activity? | Sedentary | 5 | 24.7 ± 5.5 | (F = 1.45, p = 0.23) |
| | Moderate | 91 | 22.3 ± 3.9 | |
| | Very Active | 54 | 21.7 ± 4.0 | |
| Are you satisfied with your life-style choices? | Yes | 110 | 21.9 ± 3.8 | (F = 1.77, p = 0.18) |
| | No | 40 | 22.9 ± 4.7 | |

*** - Significant at $p < 0.05$

Table V displays the strength of associations between socio-demographic variables and the Body Mass Index of the study participants. The gender of the study subjects was found to be significantly associated to the total HPLP (F = 20.6, p = 0.01). Other sociodemographic factors were not associated to the HPLP as a whole.

## Discussion

In this study, vast majority of the nursing students in selected college were with normal BMI 92 (61.3%), among the samples in the current study there were 75 (50.0%) study participants who exercised daily and 75 (50.0%) who did not. In terms of activity level, 91 (60.7%) of the participants were moderate workers. The majority of the 110 subjects in the study (73.5%) reported being satisfied with their current health-promoting lifestyle choices. In the current study, the majority of samples, 82 (54.7%), exhibited good (130 - 168) HPLP. Overall HPLP mean and standard deviation scores were 141.52 and 24.44, the mean percentage was 207.00, and the variance score was 597.43.

F. Al-Kandari *et al*. (2008) did a cross-sectional, descriptive study of 202 nursing students in Kuwait to find out if there was a link between their body mass index and healthy habits. The study's findings show Overall, the nursing students in this study had a normal BMI (mean = 24.4). Female students were less likely to be overweight (24.1%) or obese (11%), compared to male students (31.6% and 14%, respectively). There was a low positive HPL P score among the students, and males did better than females in

physical exercise, relationships with others, and dealing with stress [11].

Adolescent obesity is mostly determined by the number of calories consumed and the amount of exercise they get. Even though nursing students are taught the value of a healthy diet and exercise, many of them don't do these things. Students tend to eat most of their meals in the canteen, which affects their nutritional condition. The BMI is considered to be a trigger that requires individuals to change their HPLP score. Infrequently observed in adolescents, the effects of obesity may manifest as increased morbidity and mortality as they persist into maturity.

**Conclusion**

There was a high link between marital status and health-promoting lifestyle choices among nursing students at the selected nursing institution in Odisha, and BMI was shown to have a positive correlation with the gender of the samples. Health-promoting behaviors varied across samples, notably in terms of physical activity. Many pupils do not participate in routine physical activity. The study's findings imply that nursing students should plan and prioritize health-promoting activities not just to enhance personal lives and health, but also to potentially promote population health-promoting programs. More studies should be undertaken at regular intervals in both similar and diverse settings to identify needs, employ possible solutions, and evaluate outcomes.

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