Comparison of Health Promoting Lifestyle of Undergraduate Students from Two Diverse Cultures of India

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Abstract :

Introduction : Non-Communicable Diseases (NCDs) are a major public health challenge worldwide, which accounts for nearly two-third deaths, with majority occurring in low- and middle-income countries. The unhealthy behaviours in early part of life are major contributors of NCDs. No attempt has been done to document health promoting lifestyle behaviours of university students in different geographical and socio-cultural settings. **Objective :** To compare the health promoting lifestyle of North Indian and North Eastern undergraduate students in Chandigarh. **Method :** This descriptive analytical study was done in year 2011 among undergraduate Northern and North Eastern students enrolled in different colleges of Chandigarh. A 50 item Health Promoting Lifestyle Profile (HPLP II) tool modified according to Indian standards was used to measure the health promoting behaviour. The anthropometric measurements of students were also assessed. **Results :** The Northern students had higher HPLP score as compared to North Easterns, (135.83 ± 13.8 vs 134.29 ± 12.5). The mean HPLP score of North Easterns was significantly associated with gender (p=0.03) and stream (p=0.006). Body Mass Index (BMI) measurements showed that more North Easterns (27.9%) were in overweight or obese as compared to Northern students (17%). Waist Hip Ratio (WHR) measurements showed that more Northern (56.9%) than North Eastern (48.6%) were under higher risk category, which however was not significantly different. **Conclusion :** The overall HPLP score is not significantly different between Northern and North Easterns. Further the anthropometric measurements of both groups showed that they were at high risk of NCDs. This demands integration of primary prevention in their educational curriculum, which should be supported by regular health promoting lifestyle interventions.

Key words : HPLP, Lifestyle, Health promotion, Body Mass Index, Adolescents

Introduction :

Non-Communicable Diseases (NCDs) are a major public health challenge worldwide which accounts for almost 63% deaths, with nearly 80% in low- and middle-income countries. [1] Further, the mortality due to NCDs is projected to increase by 15% globally between 2010 and 2020. [1] World Health Organization (WHO) estimates that 60% of all deaths due to NCDs occur in India. [2] In 2010, NCDs accounted for more disability-adjusted life years (DALYs) in India than communicable diseases. [3] The impact of NCDs is devastating in terms of premature morbidity, mortality, and economic loss. [4] The main contributing factor for increase in chronic diseases is change in lifestyle towards the unhealthy continuum and unhealthy behavior like tobacco use, excessive alcohol consumption, unhealthy dietary habits and physical inactivity leading to overweight, raised blood pressure and cholesterol.

The majority of the unhealthy behaviours that underlie NCDs start during adolescence. [5] Global trend indicates that these NCDs related behaviours are on the rise among young people and the patterns of behaviour persist throughout life and are often hard to change. [6-8] The effects of risk factors of various NCDs are avoidable if unhealthy behaviours are identified and modified at an early stage by adopting healthy lifestyle. [9,10] Many studies have demonstrated a negative relationship between health-promoting lifestyle and occurrence of NCDs,

while a positive relationship was observed with quality of life. [11-13] Hence, health promotion, which focuses on the pre-pathogenesis phase of disease, is the best strategy for prevention of NCDs.

The Northern part of India has become host to increasing number of migrant students from other parts of India especially North East India [14] due to increased opportunities in terms of higher studies, [15] prospects of better employment and decreased socio-political unrest as compared to North- East region. [16] These students differ from northern students in terms of eating habits, customs and traditions, costumes, faith and social systems, personal traits and lifestyle, all of which makes them difficult to adjust in changed situations of North India. They are exposed to various stressors in new environment leading to changed health behaviour, which may in-turn affect their health. [17]

Objective :

To compare the health promoting lifestyle of North Indian and North Eastern undergraduate students in Chandigarh.

Method :

Study Area: The study was carried out in Union Territory (U.T) Chandigarh, which is located in Northern part of India. It has a population of around 1.1 million, 90% of whom reside in urban areas. It has excellent health and socio-demographic indicators as compared to most of the states of India. The city has an overall high literacy rate of 86 percent.

Study type and Sampling :

The present cross sectional comparative study was done in year 2011 among undergraduate Northern and North Easterns Indian students enrolled in various colleges of Chandigarh. A list of colleges with primary enrolment of North Easterns was prepared, out of which, five colleges were purposively selected using lottery chits. All students who belonged to North East in selected classes of five colleges were enrolled in the study. An equal number of Northern students were randomly selected from the same college in which North Easterns were enrolled. In this fashion, a total of 250 students (125- North Easterns and 125- Northern) were enrolled for the study. However, 16 students

(14- North Easterns and 2-Northern) did not complete the study tool and hence were not included in the analysis.

Study Tool :

A validated and standardized tool for use among adults and adolescents 'Health Promoting Lifestyle Profile (HPLP) II' was used for the study. [18-20] The instrument provides a multidimensional assessment of health promoting behaviour and psychosocial well-being of individuals. [18] The HPLP II scale was adapted to Indian settings with two items deleted from the original HPLP- one from 'physical activities' subscale "Check my pulse rate when exercising" and other one from 'nutrition habits' subscale, "Eat only two to three servings from the meat, poultry, fish, dried beans, eggs each day". [21] The adapted HPLP tool has six sub-scales with 50-items. The six subscales contain items related to health responsibility (n=9 items), nutrition (n=8 items), physical activity (n=7 items), stress management (n=8 items), spiritual growth (n=9 items) and interpersonal relations (n=9 items). All items were scored on a 4-point Likert scale from 1 to 4; 1 = never, 2 = sometimes, 3 = often, 4 = routinely. Higher mean HPLP score represented a higher level of health-promoting behavior.

Data Collection :

After obtaining informed consent from Principals of respective colleges, the students were asked to gather in one class room at predetermined time. The tool was administered to them and their anthropometric measurements (height, weight, waist circumference, hip circumference) were done using standardized equipments and procedures. Body Mass Index (BMI) and Waist-Hip Ratio (WHR) was calculated and classified according to WHO guidelines. [22] Students doing graduation through correspondence or during the evening hours were excluded from the study.

Data Analysis :

The data were analyzed using IBM Statistical Product and Service Solutions -version 16 (SPSS-16) for windows. Descriptive statistics was used to calculate HPLP score of study population, while t-test for independent samples was used to compare the mean HPLP scores in two groups of students.

Ethical Permissions :

The study was approved by Institute Ethical Committee, Post Graduate Institute of Medical Education and Research (PGIMER), Chandigarh. The prior written consent was obtained from Vice Chancellor, Panjab University, Chandigarh; principals and selected students of respective colleges.

Results :

All 250 students participated in the study making a response rate of 100%. However, the data of 234 students was analyzed as rest did not respond to few questions in the questionnaire. The socio-demographic variables of students are provided in Table-1.

Table 1 : Socio Demographic profile of the study participants

Study variables	Northern students (N=123)	North Eastern Students (N=111)
Age (years)		
17-19	109(88.61)	87(78.37)
20-22	14(11.38)	24(21.62)
Gender		
Male	58(47.15)	57(51.35)
Female	65(52.84)	54(48.64)
Religion		
Hindu	84(68.29)	107(96.4)
Muslim	6(4.878)	1(0.9)
Sikhs	32(26.01)	0
Christian	1(0.813)	3(2.7)
Gross Income (INR) *		
<10000	34(27.64)	19(17.11)
10000-25000	32(26.01)	29(26.12)
25000-50000	29(23.57)	37(33.33)
50000-75000	10(8.13)	11(9.90)
>75000	11(8.94)	12(10.81)
Stream*		
Arts	56(45.52)	88(79.27)
Science	9(7.31)	21(18.91)
Commerce	58(47.15)	1(0.90)
Accommodation*		
House (rented/own)	87 (70.73)	43 (38.73)
Hostel	29 (23.57)	55 (49.54)
Paying Guest	5 (4.06)	12 (10.81)

*Column total do not correspond to total number of respondents due to non responders

Majority of students, Northern (88.6%) and North Eastern (78.4%), were in the age group of 17-19 years. Majority of North Eastern (79.3%) belonged to arts stream whereas more Northern students belonged to science and commerce stream. BMI measurements showed that more North Eastern (27.9%) were in overweight or obese category as compared to Northern students (17%). WHR measurements showed that more Northern (56.9%) than North Easterns (48.6%) were under higher risk category, which however was not significantly different. (Table 2)

Table 2 : Comparison of anthropometric measurements of Northern and North Eastern Students

Anthropo-metric Measure-ment	Northern Students (N=123) n(%)	North Eastern Students (N=111) n(%)	Chi square value	P value
Body Mass Index				
Underweight (<18.5)	35 (28.5)	23(20.7)		
Normal (18.5 - 22.9)	67(54.5)	57(51.4)	4.61	0.09
Overweight (23.0-24.9)	11(8.9)	15(13.5)		
Obese (>25)	10(8.1)	16(14.4)		
Waist Hip Ratio				
Low Health Risk	53(43.1)	57(51.)		
Medium Health Risk	16(13)	8(7.2)	3.59	0.16
High Health Risk	54(43.9)	46(41.4)		

Table-3 shows the comparison of HPLP score between Northern and North Eastern. The Northern students had significantly higher mean HPLP score as compared to North Eastern (135.83 ± 13.8 vs 134.29 ± 12.5, p=0.04). There was no significant difference in various mean sub-scales scores between two groups of students except for mean Interpersonal relations score which was significantly higher in Northern students (26.09 ± 13.8 vs 25.07 ± 12.5).

Table 3: Comparison of HPLP Subscale Score between Northern and North Eastern Students

HPLP Sub-scales (Maximum Permissible Score)	Northern students (N=123)	North Eastern students (N=111)	Mean difference	t- test	p value
	Mean Score				
Health responsibility (32)	25.13	24.40	0.73	1.24	0.06
Physical activity (28)	16.13	16.80	-0.67	-0.87	0.65
Nutritional habit (32)	21.10	20.84	0.26	0.79	0.46
Stress management (32)	20.01	20.18	-0.17	-0.02	0.19
Interpersonal relation (36)	26.09	25.07	1.02	2.34	0.01*
Spiritual growth (36)	27.37	27.70	-0.33	-0.58	0.78
Total score (200)	135.83	134.29	1.54	82.9	0.04*

 * p- value significant at 0.05 level

Table 4 : Association between socio-demographic variables and mean HPLP score between Northern and North Eastern Students

Study variables	Northern Students (N=123)			North Eastern Students (N=111)		
	Mean HPLP(SD)	F	p-value	Mean HPLP(SD)	F	p-value
Gender						
Male	135.0 (13.6)	0.37	0.54	135.0 (13.6)	0.37	0.54
Female	136.5(13.9)			136.5(13.9)		
Age (years)						
17-20	136.1(14.0)	0.42	0.51	133.8(12.75)	0.59	0.44
21-22	133.5 (11.6)			136.6(12.08)		
Gross Income (INR)						
<25,000	132.6 (12.4)			135.1(10.2)	0.17	0.68
>25,000	139.2(15.2)	6.5	0.01*	134.1(14.0)		
Stream						
Arts	135.8(13.8)			132.7(12.5)	5.31	0.006**
Science	137.0(11.5)	0.036	0.96	141.7(10.3)		
Commerce	135.6(14.2)			120(12.6)		
BMI						
Underweight (<18.5)	135.4(13.6)			130.2(10.0)		
Normal (18.5 - 22.9)	134.3(13.1)	2.9	0.03*	136.2(11.7)	2.1	0.1
Overweight (23.0-24.9)	147.1(12.9)			133.4(18.2)		
Obese (>25)	135.0(15.7)			124.0(4.3)		

* p- value significant at 0.05 level   **p- value significant at 0.05 level

The mean HPLP score of North Eastern was significantly associated with gender (p=0.03) and stream (p=0.006) whereas among Northern students, it was significantly associated with income (p=0.01) and BMI (p=0.03) of respondents (Table-4).

Discussion :

The students in a university are in a dynamic transition period between adolescence and adulthood, where they undergo a major physical, psychological, social development, and gradually assume responsibility for their own health. Most students acquire healthy or unhealthy lifestyle behaviours during this period. [23] The migration of students in this stage of their life further affects behaviour and lifestyle, as they try to adapt to their new surroundings in order to make new friends and society. [24] It has been established that promoting healthy lifestyle choices and preventing risky behaviour during this stage will go a long way to yield positive health outcomes in the future. Therefore, it is essential to understand their health-promoting behaviours in order to design suitable interventions. [25] The anthropometric measurements of both group of students showed that they were at high risk of NCDs. The finding is consistent with other studies. [26] This may be due to unhealthy dietary habits like frequent intake of junk foods and sweets with fewer intakes of fruits and green leafy vegetables, as was also found in our study. The present study also found that the study groups were less engaged in physical activity, which further adds to the NCDs risk. Similar findings were reported in other studies. [21, 27] Poor sporting facilities, heavy load of studies and engagements in smartphones/computers could also be reasons of physical inactivity. [28, 29]

According to BMI, more number of North Easterns (27.9%) were in overweight or obese category as compared to Northern students (17%). In contrast, Waist Hip Ratio (WHR) measurements showed that more Northern than North Eastern were under higher health risk group. Few studies support the findings of present study. [30, 31] The probable reason for this difference could be due to the fact that these two measures describe body habitus in different ways. BMI accounts for both lean muscle mass and total body fat whereas WHR represents predominantly truncal obesity.BMI does not distinguish between weight associated with muscle and weight associated with fat. As a result, the relationship between BMI and body fat content varies according to body build and proportion and therefore does notaccount for the wide variation in the nature of obesity between different individuals and populations.[22]

The mean HPLP score of both groups of students was similar to university students in other studies, ranging from 118.4 in Turkey, [32] 119.8 in Hong Kong [33] and 138.69 in North India. [21] It suggested that students in the same age groups display similar health behaviors globally. The male students and those studying in science stream had significantly better HPLP score than their counterparts. The reasons could be attributed to more involvement in physical activity amongst males than females and more knowledge about body and health to students studying science than those studying other subjects. [31, 29, 34] We also observed that there was a significant difference in mean HPLP score of Northern (135.8) and North Eastern (134.3) students. The study could not associate the effect of different variables on HPLP score; however, this may be due to differences in socio-cultural-geographical and behavioral characteristics of two groups of students. Further, the migration of North Eastern from their native place may have adversely affected the HPLP score.

Though in-significant, it was observed that Northern students had slightly better nutrition and health responsibility score as compared to their counterparts. Higher intake of fast foods and cold drinks and skipping of meals was reported in North Eastern. The reason could be that as around two third of North Eastern stay either in hostels or as Paying Guests, due to which they usually opt for junk food options which are readily available. Further frequent skipping of breakfast among hostlers has also been associated with lower nutritional status and the risk of cardiovascular diseases. [35] Other studies had also reported that irregular breakfast habits may contribute to development of obesity. [36]

The study provides clear evidence that there is a need for regular health education programs on health promoting lifestyle. The health promoting lifestyle education programs should be inbuilt in their

educational curriculum along with provision of facilities for physical activity (gym, sports complex etc). The interventions that support cultural strengths will be more successful than those that fail to take such a broad perspective. [37] The health behaviour change models like Trans theoretical model, Health Belief model, BASNEF model can be applied to record their behaviours and identify the factors that will bring change in belief and decision making. The study offers insights that might be useful in guiding the development of comprehensive interventions for university students to promote healthy lifestyle behaviours.

The study had few limitations. The information collected was based on a self-reported questionnaire, therefore, possibility of getting socially desirable responses may not be ruled out. However, anonymity of the questionnaire might have prevented creeping of socially desirable responses. Further, the results of study may not be generalized to individuals of different educational levels and age. The strengths of study were enrollment of representative group of students in both categories thus making it representative for students of similar settings, using a validated scale for measuring HPLP score and adhering to Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines for cross-sectional study.

Conclusion :

The HPLP score in significantly different between Northerm and North Eastern Students. Further, the anthropometric measurements of both group of students showed that were at high risk of NCDs. This demands integration of primary prevention in their educational curriculum, which should be supported by regular health promoting lifestlye interventions Qualitative studies are needed to provide insight into student' health promotion needs and intrests.

Declarations :

Conflict of interest : Nil

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