

## Conference Paper

# Health Behaviours and Its Associated Factors among Undergraduate Students in Kuala Lumpur, Malaysia

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## Abstract

University students are asset of any nations for future development. Their current lifestyle practices, diet and physical activity can determine their future health. This study aims to assess health behaviours and its associated factors among undergraduate students from a public university in Malaysia. This cross-sectional study was conducted between July to September 2015 among 1023 students using a structured questionnaire. The mean positive health practice score was 8.72/13 ( $\pm 1.77$ ). The most common positive health care practised was non-tobacco use while the least common was avoiding eating foods that contain fats and cholesterol. Year of study, self-perceived health status, internet addiction and self-perceived importance of taking health measures were significant predictors of health practice among the students. The odds ratios of 0.68, 0.49, and 0.57 indicate that the odds of students in year 2, 3 and 4, respectively practising positive health behaviours were 32% (1-0.68), 51% and 43% lower than those in Year 1. The odds of students who have self-perceived poor health status and those without Internet addiction were 95% and 25% lower in practising positive health behaviours compared to students who perceived themselves to have excellent health status and students with internet addiction, respectively. Students who perceived high importance of taking health measures were 1.77 times more likely to have positive health practices compared to those who have lower perceived importance of taking health measures. The findings of this study will enable development of targeted interventions to improve health behaviours among university students.

**Keywords:** health behaviours, undergraduate students, lifestyle, Malaysia

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Received: 21 January 2018

Accepted: 8 April 2018

Published: 17 May 2018

Publishing services provided by  
Knowledge E

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Selection and Peer-review under the responsibility of the 2nd International Meeting of Public Health 2016 Conference Committee.

## OPEN ACCESS

## 1. INTRODUCTION

University life is where young people undergo various changes in terms of biological, psychological, social and economic changes. When young people enter university, they face numerous challenges such as being away from home, adjustment to independent living, the need to establish new friendships in addition to coping with higher-level studies and academic stress [9]. It is also during this period, that university students are at the age where curiosity and experimentation are common among young people [11] and this exposes them to various health risk.

Few large-scale studies from various low, middle and high-income countries have found that there were relatively poor dietary healthy behaviours (mean healthy dietary behaviors: 2.8/6) [13, 14], high prevalence of overweight or obese (22%) [12], presence of depressive symptoms (moderate: 24%; severe: 12.8%) [16], engagement in sexual intercourse (41.9%), non-use of contraception (42.6%) [13], physical inactivity (range: 41.4 %), [17], involvement in gambling (less than once a week: 27.1%; once a week or more: 8.4%) [12] and drinking and driving (range 5%-35%) [14] among university students.

In Malaysia, university students have been shown to have poor healthy lifestyle practices as there was a significant proportion of them who were involved in smoking, consuming alcohol and having sedentary lifestyle [2]. They also had poor nutritional food intake as 37.6% of were underweight and 27.8% were overweight in a study among 200 university students, whereby majority of the participants were of Malay ethnicity (81.0%) [1]. There was also a lack of contraception practice among those who were sexually active [25]. Internet addiction [8], depression, anxiety, stress and even suicidal ideation [20, 22] were found in them.

Health behaviours during early phase of life can determine future health. University students are important asset for any nation as they will be the future contributor to advancement of a country. Hence, it is important to study the health behaviours of this sub-population so that early interventions can be conducted to improve their health and ultimately the country's development. Therefore, this study aims to assess health behaviours and the associated factors among students from a public university in Malaysia.

## 2. METHODS

This study received ethics approval from the University of Malaya Medical Ethics Committee (ref: MECID.NO: 201412-905).

A cross-sectional survey was conducted among all the undergraduate students from an urban public university between July to September. Stratified cluster sampling was adopted whereby all the faculties, centers and academies formed cluster. Within each clusters, students were stratified by gender and the selection was proportional to size in order to get equal representation of male and female. A total of 1132 students were recruited (response rate 90.4%).

The questionnaire used in this study is a combination of items to assess the students' socio-demography including age, gender, ethnicity, current year of study, self-perceived economic status and current residence; various health practices from the International Health Behaviour Survey (IHBS) such as tobacco and alcohol use, seatbelt wearing, add salt to meal, eat foods that are high in fibre, avoid eating foods that contain fats and cholesterol, brush teeth more than once a day, having sleep of more than 7 hours, eat breakfast every day or almost every day [21]; engagement in vigorous or moderate physical activity were assessed using items from the International Physical Activity Questionnaire (IPAQ) [5]; one item on engagement in sexual intercourse "Have you ever had sexual intercourse"; and items from the Global School-based Student Health Survey (GSHS) [24] questionnaire on consumption of carbonated drink at least once per day (in the last 30 days) and consumption of fast food (more than one time in the past 7 days).

Self-perceived academic performance and health status was measured using the respective items "How would you rate your academic performance?" and "In general, what would you say your health is?" with response options from 1=excellent to 5=poor. Self-perceived importance of taking health measures was measured using items also from the IHBS with response options from 1=very low importance to 10=of very great importance. Internet addiction was assessed using the Young's Diagnostic Questionnaire [26]. Depression was assessed using the 10-items Center for Epidemiological Studies-Depression [3].

The data was anonymized and analysed using SPSS version 20. Health practice was determined using 13 items on various health care behaviours. Mean health practice scores was a summation of the 13 health behaviours, whereby 1 point was given to each positive health behaviour, thus giving a maximum of 13 points. The higher

the score indicates more positive health practice behaviour. Bivariate analyses (t-test, ANOVA) were performed to test the associations between the mean practice and characteristics of the students. K-means cluster analysis procedure was used to categorize the participants to two groups; lower and higher mean positive health practices.

Multivariate logistic regression was performed to determine the predictors for higher positive health behaviour practice using the Enter method. Predictors for practice of positive health behaviours among students were identified using multiple logistic regression. The significance level was determined at  $p \leq 0.05$ .

### 3. RESULTS

#### 3.1. Health practices among students

The mean health practice score was 8.72/13 ( $\pm$ s.d 1.77). The more common positive health care practised were non-tobacco use, abstinence from sexual intercourse and no consumption of carbonated drink at least once per day (in the last 30 days) while the less common were avoid eating foods that contain fats and cholesterol, eat foods that are high in fibre and avoid adding salt to meal (Table 1).

#### 3.2. Association between mean health practice scores and characteristics of students

The mean health practice scores were significantly higher among students of lower age group (18-20 years old), of Chinese ethnicity, those in year 1 and 5, those who perceived themselves to have excellent health, have internet addiction and high self-perceived importance of taking health measures (Table 2).

TABLE 2: Bivariate analyses of the association between mean behaviour scores and characteristics of students.

| Characteristic | Respondent overall<br>n (%) | Mean practice score (0-13) |                   |              |
|----------------|-----------------------------|----------------------------|-------------------|--------------|
|                |                             | Mean (sd)                  | MD (95% CI of MD) | test p value |
| Age (years)    |                             |                            |                   |              |
| 18-20          | 515 (50.3)                  | 8.96 (1.74)                | 0.48              | t = 4.39     |
| 21 and above   | 508 (49.7)                  | 8.47 (1.77)                | (0.27-0.69)       | p < 0.001    |
| Gender         |                             |                            |                   |              |
| Male           | 501 (49.0)                  | 8.64 (1.84)                | -0.14             | t = -1.28    |
| Female         | 522 (51.0)                  | 8.79 (1.70)                | (-0.36-0.07)      | p = 0.199    |

TABLE 1: Proportion of respondents practising healthy behaviours (n=1023).

| Health behaviour (Range: 0-13)   | n (%)      |
|--|------------|
| Tobacco use  |            |
| Yes  | 31 (3.0)   |
| No   | 992 (97.0) |
| Engaging in sexual intercourse   |            |
| Yes  | 40 (3.9)   |
| No   | 983 (96.1) |
| Drink carbonated at least once per day (in the last 30 days)               |            |
| Yes  | 147 (14.4) |
| No   | 876 (85.6) |
| Brush teeth more than once a day   |            |
| Yes  | 851 (83.2) |
| No   | 172 (16.8) |
| Consume alcohol  |            |
| Yes  | 199 (19.5) |
| No   | 824 (80.5) |
| Eat food from fast food restaurant (more than one time in the past 7 days) |            |
| Yes  | 244 (23.9) |
| No   | 779 (76.1) |
| Wear seatbelt all the time   |            |
| Yes  | 719 (70.3) |
| No   | 304 (29.7) |
| Duration of sleep  |            |
| More than 7 hours  | 593 (58.0) |
| Less or equal 7 hours  | 430 (42.0) |
| Engagement in vigorous or moderate physical activity                       |            |
| Yes  | 533 (52.1) |
| No   | 490 (47.9) |
| Eat breakfast every day or almost everyday                                 |            |
| Yes  | 517 (50.5) |
| No   | 506 (49.5) |
| Add salt to meal   |            |
| Yes  | 588 (57.5) |
| No   | 435 (42.5) |
| Eat foods that are high in fibre   |            |
| Yes  | 428 (41.8) |
| No   | 595 (58.2) |
| Avoid eating foods that contain fats and cholesterol                       |            |
| Yes  | 386 (37.7) |
| No   | 637 (62.3) |

| Characteristic                                | Respondent overall | Mean practice score (0-13) |                   |              |
|---|--------------------|----------------------------|-------------------|--------------|
|   | n (%)              | Mean (sd)                  | MD (95% CI of MD) | test p value |
| <b>Ethnicity</b>                              |                    |                            |                   |              |
| Malay   | 535 (52.3)         | 8.70 (1.74)                |                   |              |
| Chinese                                       | 409 (40.0)         | 8.86 (1.81)                | NA                | F=4.36       |
| Indian  | 40 (3.9)           | 8.38 (1.63)                |                   | p=0.005      |
| Others  | 39 (3.8)           | 7.87 (1.72)                |                   |              |
| <b>Year of study</b>                          |                    |                            |                   |              |
| Year 1  | 387 (37.8)         | 9.10 (1.74)                |                   | F=-9.01      |
| Year 2  | 284 (27.8)         | 8.62 (1.73)                |                   | P<0.001      |
| Year 3  | 154 (15.1)         | 8.27 (1.72)                | NA                |              |
| Year 4  | 187 (18.3)         | 8.41 (1.81)                |                   |              |
| Year 5  | 11 (1.1)           | 9.09 (1.38)                |                   |              |
| <b>Self-perceived academic achievement</b>    |                    |                            |                   |              |
| Excellent                                     | 40 (3.9)           | 8.98 (1.80)                |                   |              |
| Very good                                     | 118 (11.5)         | 8.67 (1.88)                | NA                | F=0.71       |
| Good  | 549 (53.7)         | 8.72 (1.76)                |                   | p=0.589      |
| Satisfy                                       | 281 (27.5)         | 8.75 (1.76)                |                   |              |
| Not satisfy                                   | 35 (3.4)           | 8.31 (1.71)                |                   |              |
| <b>Self-perceived health status</b>           |                    |                            |                   |              |
| Excellent                                     | 45 (4.4)           | 9.04 (1.64)                |                   |              |
| Very good                                     | 163 (15.9)         | 8.93 (1.76)                | NA                | F=4.61       |
| Good  | 617 (60.3)         | 8.77 (1.78)                |                   | p=0.001      |
| Fair  | 186 (18.2)         | 8.33 (1.75)                |                   |              |
| Poor  | 12 (1.2)           | 7.58 (0.99)                |                   |              |
| <b>Depression symptoms</b>                    |                    |                            |                   |              |
| No  | 722 (70.6)         | 8.76 (1.79)                | 0.18              | t =1.37      |
| Yes   | 301 (29.4)         | 8.60 (1.73)                | (-0.07-0.41)      | p=0.171      |
| <b>Addiction to internet</b>                  |                    |                            |                   |              |
| Yes   | 590 (57.7)         | 8.82 (1.83)                | 0.26              | t = 2.31     |
| No  | 433 (42.3)         | 8.57 (1.69)                | (0.04-0.47)       | p=0.021      |
| <b>Perceived importance of health measure</b> |                    |                            |                   |              |
| Low importance                                | 476 (46.5)         | 8.36 (1.78)                | -0.66             | t=-6.03      |
| High importance                               | 547 (53.5)         | 9.02 (1.71)                | (-0.87,-0.44)     | p<0.001      |

### 3.3. Predictors for practice of positive health behaviours among students

Table 3 shows that year of study, self-perceived health status, internet addiction and self-perceived importance of taking health measures were significant predictors of health practice among the students. Odds ratio of 0.68, 0.49, and 0.57 indicate that the odds of students in year 2, 3 and 4 respectively practising positive health behaviours were 32% (1-0.68), 51% and 43% lower than those in Year 1. Similarly, the odds of students who perceived themselves to have poor health status and without internet addiction were 95% and 25% lower to practice positive health behaviours compared to students who perceived themselves to have excellent health status and students with internet addiction, respectively. On the other hand, students who have high perceived importance of taking health measures were 1.77 times more likely to have positive health practice compared to those who have lower perceived importance of taking health measures. Age and ethnicity were not significant predictors for health practice among the students.

## 4. DISCUSSION

The mean health practice of this study indicated that the practice of positive health behaviours were moderate among the students. The top two most common health behaviours practised by the students were related to lifestyle risky behaviours (abstinence from smoking and sex) while the two least common health behaviours practised were related to diet (eating foods that are high in fibre and avoid eating foods that contains fats and cholesterol). This indicates that dietary aspects of undergraduate students merit extra attention. A study among Lebanese university and college students also reported low consumption of fruits and vegetable [19]. The challenges to make healthy food choices among university students were independency, the restricted choice of selecting healthy foods due to being in university settings such as availability and accessibility, appeal and prices of food products, the need to be involved in university social activities, parental control or lack of control and friends and peers' influence [6].

Age may also serves as a proxy for year of study and students of age 18-20 years old were most likely to be in year 1 if not 2. The mean practice score were significantly higher among students of younger age group; 18-20 years old as well as among the year 1. This may be due to students who are in the first year of university has yet

TABLE 3: Logistic regressions on predictors for positive health practices (n=1023).

| Variables   | Coefficient | p value | Adjusted OR (95%CI) |
|---|-------------|---------|---------------------|
| Age   |             |         |                     |
| 18-20   |             |         | Reference           |
| 21 and above  | -0.02       | 0.949   | 0.99 (0.67-1.45)    |
| Ethnicity   |             |         |                     |
| Malay   |             |         | Reference           |
| Chinese   | 0.15        | 0.28    | 1.16 (0.88-1.54)    |
| Indian  | -0.51       | 0.14    | 0.60 (0.31-1.18)    |
| Others  | -0.45       | 0.188   | 0.63 (0.33-1.25)    |
| Year of study                                       |             |         |                     |
| Year 1  |             |         | Reference           |
| Year 2  | -0.37       | 0.034   | 0.68 (0.48-0.97)    |
| Year 3  | -0.71       | 0.006   | 0.49 (0.29-0.82)    |
| Year 4  | -0.55       | 0.032   | 0.57 (0.35-0.95)    |
| Year 5  | -0.66       | 0.319   | 0.51 (0.14-1.88)    |
| Self-perceived health status                        |             |         |                     |
| Excellent   |             |         | Reference           |
| Very good   | -0.03       | 0.938   | 0.97 (0.48-1.97)    |
| Good  | -0.22       | 0.509   | 0.80 (0.42-1.54)    |
| Fair  | -0.56       | 0.116   | 0.57 (0.28-1.15)    |
| Poor  | -2.92       | 0.008   | 0.05 (0.01-0.46)    |
| Addiction to internet                               |             |         |                     |
| Yes   | -0.29       | 0.031   | Reference           |
| No  |             |         | 0.75 (0.58-0.97)    |
| Self-perceived importance of taking health measures |             |         |                     |
| Low importance                                      | 0.57        | <0.001  | Reference           |
| High importance                                     |             |         | 1.77 (1.37-2.29)    |

"Multiple logistic regression, 'Enter' method was applied; Multicollinearity were checked and not found; Hosmer-Lemeshow test, ( $\chi^2=8.11$ ,  $p=0.423$ ); Pearson chi-square and Significant for Model ( $p< 0.001$ ) and Classification table (overall correctly classified percentage=73.5) were applied to check the model fitness

been subjected to more gruelling time schedules and harder courses as they progress through their degree course and this rendered them having more time to practise healthy behaviours. This study also reported that year 5 students have higher mean practice score and this may be due to; year 5 students would have been adjusted to university life and able to manage their stress related to studies, they may also have less subjects as they are almost at the end of their study, hence have more time practising healthy lifestyle. However, while this study found that students in year 2, 3



and 4 were less likely than those in Year 1 to practice health behaviours, no significant difference was found between Year 5 and Year 1 students. Notwithstanding, in a study among health sciences university students in Brazil reported that there is no significant difference in health behaviours between students at the beginning and end of their courses [7].

While studies have shown that internet addiction is associated with inappropriate dietary behavior and poor diet quality [10] and poorer health outcomes such as increased BMI or obesity [4, 23], surprisingly, this study showed that students with internet addiction has significantly higher mean health practice score. One reason for this may be students with internet addiction may have obtained a lot of information on health from the time spent on the internet and this led them to having higher mean practice scores as compared to those without internet addiction. Eventhough internet addiction was reported among participants of this study, the reasons for the addiction was not known whether it is due to academic or recreational purposes.

This study highlighted that students who perceived themselves to have poor health status were less likely to practice positive health behaviours compared to students who perceived themselves to have excellent health status. University authorities need to target students of this sub-population and conduct interventions to encourage positive health behaviours. Efforts are also needed to emphasize the importance of taking health measures as this study also showed that students with high perceived importance of taking health measures were more likely to have positive health practice.

## 5. CONCLUSIONS

This study revealed that the university students have moderate healthy practices. Health promotion interventions are needed to improve health behaviours particularly among students who are in the middle of the course, had self-perceived poor health status and placed low self-perceived importance of taking health measures.

## ACKNOWLEDGEMENTS

We thank to the University of Malaya Research Grant (UMRG RPD001D-15HTM) for supporting this study.

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