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ORIGINAL ARTICLE

The Lifestyle and Behavioural Risk Factors of Future Doctors in Universiti Teknologi MARA, Malaysia

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ABSTRACT

Introduction: Lifestyle and behavioural risk factors in middle-aged adults are proven to have an impact on later-life outcomes; hence health promotion activities should aim at the population before they reach their mid-life. Medical students will be representing a community in promoting health, henceforth they should have a healthy lifestyle and behaviour in order to facilitate and adoption of preventive practices in their future life as physicians. Therefore, this study was aimed to determine the lifestyle and behavioural risk factors among future doctors in a public university in Malaysia. **Methods:** A cross-sectional study was conducted at the Faculty of Medicine, Universiti Teknologi MARA (Sungai Buloh Campus). Simple random sampling was used to select eligible subjects among undergraduate medical students (pre-clinical years). A self-administered pro forma checklist was given to the subjects who consented. Descriptive analysis was performed, and univariate analysis was done by Chi-square, Fisher's Exact test and independent t-test. **Results:** A total of 252 subjects participated. The majority (96.8%) were of Malay ethnicity and three-quarter of the subjects were females (76.2%). A small number of subjects were smokers (2.4%) and alcoholic consumers (1.2%). Approximately half (57.3%) of the female subjects had normal body mass indices, while this was only seen in one-third (35.0%) of male subjects. Most subjects (72.2%) exercised at least once a week, however only 17.1% of the subjects exercised at the recommended levels. There was a significantly higher proportion of males who had adequate exercise compared to that of females. **Conclusion:** Inadequate physical activity and imperfect BMI of the study subjects warrant exclusive promotion and education of healthy lifestyle in this population. It would probably be beneficial if assessment of lifestyle and behavioural risk factors could be conducted before these subjects embark into their professional working life.

KEYWORDS: lifestyle, behaviour, risk factors, future doctors, Selangor.

INTRODUCTION

"Lifestyle is defined as the set of habits and customs that is influenced by the life-long process of socialization, including social use of substances such as alcohol and tobacco, dietary habits and exercise, all of which have important implications for health" [1]. Poor practice of healthy lifestyle was observed among university students and recommendations have been made for universities to encourage healthy lifestyle practices in all facilities [2]. Lifestyle and behavioural risk factors were often reported to have an association with a large number of non-communicable diseases, disability and premature mortality [3-5]. However, promoting a healthy lifestyle remains one of the major unmet challenges for practitioners in both the public health sector and in clinical medicine. [6].

In comparison to the environmental, occupational and metabolic risk factors, the behavioural risk factors alone were reported as the prominent contributor, which corresponds with 16.37% (401,082,890 disability-adjusted life-years) of the total burden of disease around the world [7]. Behavioural risks include several components [7], but the present study highlights the prominent ones, namely smoking tobacco, alcohol use, low physical activity, and the metabolic risk of nutritional status (body mass index, BMI).

Globally, an approximate of 39% of adults (≥ 18 years) were overweight and 13% were obese [8]; in addition, at least 2.8 million people died yearly from overweight and obesity [9]. In Southeast Asia, the prevalence of overweight ranges from 7.6% to 53% [9], and Malaysia is the most obese country [10]. Across all age groups for adults in Malaysia, young adults have the highest prevalence of having normal BMI, but this figure is halved when they reach mid-life

[11, 12]. Interestingly, a local study has demonstrated that the prevalence of overweight and obesity is higher among medical students [13]. Hence, having more information about the BMI status in this population could help in tailoring strategies specifically for primordial and primary prevention.

Medical practitioners play a pivotal role in the health care system, namely in the prevention and treatment of diseases, as well as in the promotion of health education [14]. However, research that looked into the lifestyle risk factors of the medical students prior to them embarking into their professional working life is scanty. Evidence from different countries revealed similar findings on poor lifestyle choices in this population. For instance, a study revealed that they had poor knowledge on exercise and anthropometric variables, moreover only one-third exercised adequately [15]; besides that, those from Pakistan and United Arab Emirates also demonstrated poor lifestyle choices [16].

Therefore, this study was conducted to determine the lifestyle and behavioural risk factors of future doctors in one of the public universities in Malaysia.

METHODS

A cross-sectional study was conducted among medical undergraduate students (pre-clinical years) in 2015. The study venue was Faculty of Medicine, Universiti Teknologi MARA, one of the public universities in the state of Selangor. The subjects were eligible for the study if their age was in the range of 19 to 25 years, consented for the survey and had a known anthropometric status. Sample size was calculated using Open Epi Software based on the proportion of subjects being physically active (46.3%), with a level of significance of 0.05 and a power 80%. The estimated sample size was 229, which was inclusive of a 10% non-response rate. Subjects were selected through simple random sampling using the random digit table, based on their matric number.

An anonymous self-administered pro forma checklist was given to the subjects. The pro forma checklist consisted of socio-demographic data, self-reported (practicing) lifestyle and behavioural risk factors, including tobacco smoking (yes/no), alcohol consumption (yes/no), physical activity, and anthropometric status (height and weight). Subjects were required to report the frequency of their physical activity, including number of days per week, duration per session and type(s) of physical activity. The BMI category referred to the classification of the Malaysia Clinical Practice Guidelines on Management of Obesity, and the categories were underweight (BMI <18.5 kg/m^2), normal (18.5-22.9 kg/m2), overweight/pre-obese (23.0-27.5 kg/m^2) and obese (>27.5 kg/m^2) [17]. The "recommended level of physical activity" was defined as spending at least 150 minutes a week (30 minutes per day x 5 days) of moderate intensity physical activity [18, 19].

Descriptive analysis was performed, univariate analysis was done by Chi-square, Fisher's Exact and independent t-test. Data entry and analyses were done using R version 3.5.1.

RESULTS

A total of 252 (96.9%) completed questionnaires were collected. The majority (96.8%) of the respondents were Malay and three-quarter (76.2%) of them were females. The profiles of the study subjects are presented in Table 1. Male subjects had significantly higher mean BMI than the females, with a mean difference of 2.485 (95% confidence interval 1.401, 3.570). The graph depicting the proportion of gender in four BMI categories is displayed in Figure 1.

Regarding physical activity, most (72.2%) respondents exercised at least once a week, however only 17.1% subjects had achieved the recommended level of physical activity. In terms of the exercise frequency, almost equal proportion of subjects were in the category of below median (31.3%), median (30.2%) and above median (38.5%). There was a significant association between gender and levels of physical activity. Male subjects reported higher proportion to exercise (86.6%) compared to females (67.8%), $p<0.001$. Males also reported a higher percentage of achieving the recommended levels of physical activity (43.3%) compared to females (8.9%).

Table 1 Profile of study subjects based on their lifestyle and behavioural risk factors (n=252)

Variables	Overall n (%)	Male (n=60) n (%)	Female (n=192) n (%)	t-statistic / x^2 statistic (df)	p value
Smoking status					
No	246 (97.6)	55 (91.7)	191 (99.5)	-	0.003^
Yes	6 (2.4)	5 (8.3)	1 (0.5)		
Alcohol consumption					
No	249 (98.8)	58 (96.7)	191 (99.5)	-	0.142^
Yes	3 (1.2)	2 (3.3)	1 (0.5)		
BMI category					
Underweight	39 (15.5)	5 (8.3)	34 (17.7)	-	-
Normal	131 (52.0)	21 (35.0)	110 (57.3)		
Overweight	40 (15.9)	13 (21.7)	27 (14.1)		
Obese	42 (16.6)	21 (35.0)	21 (10.9)		
Mean BMI	21.85 (3.38)*	23.73 (3.88)*	21.25 (2.99)*	4.559 (82.038)	<0.001#
Recommended PA					
No	209 (82.9)	34 (56.7)	175 (91.1)	36.004 (1)	<0.001+
Yes	43 (17.1)	26 (43.3)	17 (8.9)		

BMI: Body mass index; PA: physical activity
* mean (standard deviation)
+ Chi-square statistics; ^Fisher's Exact test, #Independent-t test.
Level of significance was set at p<0.05.

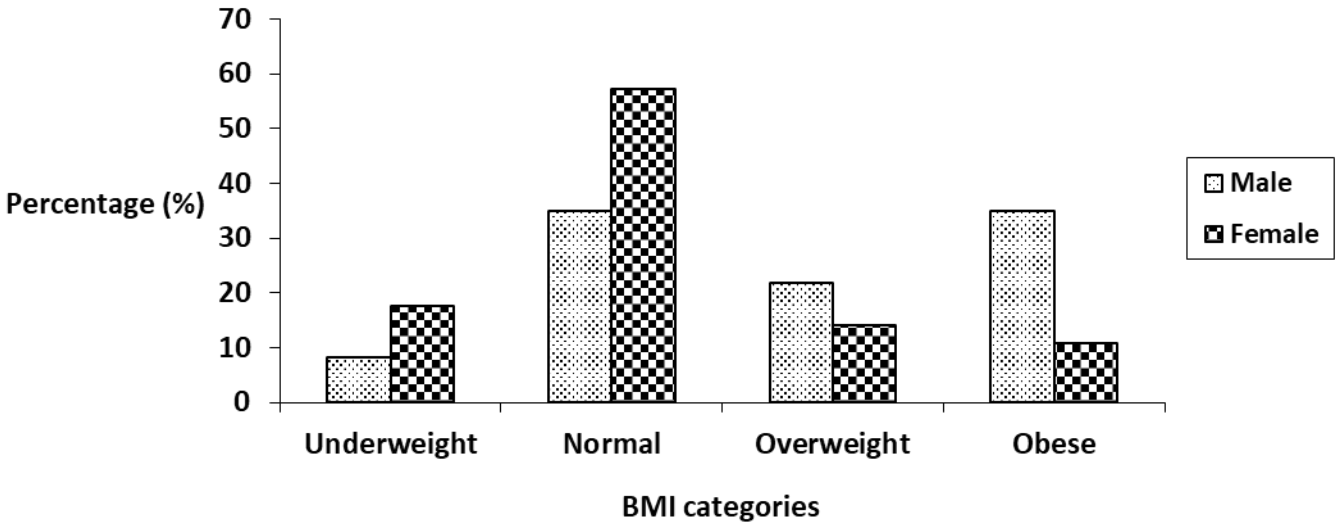

Figure 1 A bar chart representing the percentage of female and male subjects categorized according to their BMI categories (n=252)

DISCUSSION

Lifestyle is significantly associated with health status [20]. Changing pattern of the diseases, as well as the increasing public expectations towards medical doctors warrant the need to equip future doctors with the knowledge and skills in playing multiple roles – patient advocates, teachers, researchers and health educators [14]. Thus, being aware of self-lifestyle status and having knowledge on that could assist with the goal of preventing lifestyle and behavioural risk factor development. In our subjects, two out of the four lifestyle and behaviour risk factors being studied, i.e. nutritional status and physical activity, yielded alarming results.

Among the subjects in this study, a low proportion (<3%) of smoking habits and alcohol consumption was revealed. Interestingly, the smoking habit prevalence is much lower compared to previous

studies, either in Malaysia (29% to 31.6%) [2] or overseas (6.4% to 22.2%) [15, 16, 21, 22]. These contradictory findings could be further investigated using a qualitative method. We speculated that the low alcohol consumption rate might be due to the majority (97%) of the subjects being Malay. A similar pattern of results was obtained in a local study which enrolled a higher proportion of Malay respondents, reporting that 75.6% had never drank alcohol [2]. On the contrary, studies abroad have reported a range of 8.7% to 86% of their medical students indulged in drinking alcohol [15, 22]. The reason for these discrepancies may be due to the different religion practices and cultural background.

An almost equal proportion of total subjects had normal weight (52.0%) and malnutrition status (underweight, overweight and obese, 48.0%). The prevalence of normal weight is consistent with previous studies carried out throughout the world, ranging from 49.2% to 58.3% [13, 21, 23]; but not for the prevalence of malnutrition categories. The present study, with 32.5% subjects being overweight and obese, marked a relatively higher rate when compared to the medical students in China (7.6%) [24] and Carolina (32.1%) [23]; however, the malnutrition status in the current study subjects was lower than those in Pakistan (41.7%) [21]. Comparing with local studies for these BMI categories, 35% was found in the medical students from AIMST university, Malaysia [13] and 57.1% was documented in adults with a similar age group (20-24) from a local nationwide health survey [11]. The present finding of imperfect nutrition status might impede their later working life performance [25]. Hence, there is room for intervention among our subjects in order to achieve ideal pre-employment BMI.

Almost three-quarter of the subjects (72.2%) exercised at least once per week. This reflected a good prevalence, which was in agreement with the findings reported elsewhere, ranging from 70% to 85% of the medical students [16, 21, 22]. Our statistical analysis reported a smaller prevalence of being inactive compared to the medical college students in Delhi (42.6%) [3] and other Malaysian university students (53.7%) [2]. Nevertheless, in terms of having adequate exercise, only 17.1% subjects had such a practice, and these subjects were less active than that (32.3%) reported among medical students in India [15]. It is difficult for this study to explain such results within the context of what barriers could possibly hinder the subjects such that they were unable to achieve the recommended physical activity level. Future qualitative research is required to further develop and explore these initial findings in the present study. Since jogging was chosen as the most popular activity in our study, in line with that of the St Louis medical students [22], a conducive environment combined with appropriate exercise prescription would probably encourage the subjects to achieve adequate physical activity in order to obtain significant health benefits [18, 19].

Gender disparities were found in terms of physical activity, whereby males were significantly more active than females. This is in line with studies done in India, which reported a range of 39.8% to 43.2% boys practiced exercise while this figure was 20.6% to 20.7% among girls [6, 15]. This significant association could be explained by the different socio-cultural expectations for gender, with males tending to want to have a muscular mesomorphism build [26]. This finding may also be due to the fact that there is a body image-exercise association which is used as a motivation for men to obtain a muscular physique [27]. Besides that, reduced physical fitness was found in women, in terms of speed, vital capacity and endurance, when compared to that of men [24].

Males had higher BMI and were more active than the females. This finding is however in disagreement with that of the health living behaviours, which stated that there was no significant relationship between sex and BMI [28]. This phenomenon could be explained as follows: indeed, for weight management reasons, males were likely to exercise or diet if they were overweight/obese, but females showed higher weight management motives if they perceived themselves to be as such [29, 30]. In addition, evidence showed males have a higher BMI compared to females [15, 23, 24], possibly due to the fact that males tend to prefer a bigger physique, which is different from the female, who would normally prefer a slim or a smaller appearance [31]. Future studies could possibly explore on the different perceptions and

health behaviours between genders, in preparation to customize intervention among males and females in order to assist them in achieving optimum health.

This was a cross-sectional study based on self-reporting by the subjects, and recall bias was a limitation and no inferences about causation were made. Besides that, this study was conducted in a public university in Selangor, thus limiting the generalizability to all medical students in Malaysia. Future studies could fruitfully explore this issue further by conducting a multi-centre study nationwide, along with the comparison of lifestyle curriculum and healthy environment offered in each respective university. The need to include lifestyle medicine in the Malaysian pharmacy curriculum has been addressed [32], what more to the medical colleges and schools in the country? It is indeed recommended to enhance health-promoting lifestyle or integrate lifestyle medicine as part of the assessment in medical schools [6, 33, 34], as they are the future physicians and professionals involved in public health interventions.

CONCLUSION

We have shown that our subjects have inadequate physical activity and imperfect BMI. It is a question of future qualitative research to investigate the root cause and how to maximize their health status prior to managing and supervising their patients' overall healthcare. It would be meaningful if the assessment of lifestyle and behavioural risk factors could be performed upon graduation (after clinical years). It is more persuasive if the medical practitioners (or doctors) could be the professional role model to the population when carrying out their roles and responsibilities.

Conflict of Interest

Authors declare none.

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