

Physical Activity and Health Promoting Lifestyle among Diploma Nursing Students in Malaysia

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ABSTRACT

The aims of this study are to assess the physical activity level and health-promoting lifestyle among diploma nursing students in Malaysia. Besides, this study also aims to compare whether there were significant differences in term of the physical activity level and health-promoting lifestyle between urban and rural diploma nursing students. This study involved 123 diploma nursing students who currently pursuing the diploma degrees in the two local government institutions. The YAMAX Digi-Walker pedometer was used to measure physical activity based on their weekly (7 days) step counts. And the Health-promoting Lifestyle Profile (HPLP) II questionnaire was used to measure the nursing student's health-promoting lifestyle. The HPLP II consisted of six sub-scales which included health responsibility, physical activity, nutrition, spiritual growth, interpersonal relations, and stress management. The mean weekly step counts reported was 8839.96 ± 2613.58 steps. The diploma nursing students in the urban institution were reported to have higher mean step counts as compare to the diploma nursing students in the rural institution. Mean score obtained for HPLP II among the diploma nursing students was 2.56 ± 0.34 . Both diploma nursing students were found to have the highest score for spiritual growth, follow by interpersonal relations and stress management. Meanwhile, health responsibility was reported to be the lowest score for both institutions. Since unhealthy behaviors are associated positively with the nurses' health promotion roles in the future, so encouraging them to live healthily starting when they were pursuing their diploma was necessary in order to achieve this noble mission.

Key words: Physical activity, health promotion lifestyle, nursing students, and pedometer.

INTRODUCTION

Physical activity, health, and lifestyle of student's nurses have been widely explored especially among researchers who were interested in health promotion (Stark *et al.*, 2005; Wills and Kelly, 2017). Studies have shown that there was a close relationship between health behaviors and health promotion among nurses (Stark *et al.*, 2005; Rodriguez-Gazquez *et al.*, 2017; Wills and Kelly, 2017). As a health professional by careers, it will be essential for them to behave in a way that will allow them to have a positive influence on the health of others as well as their own (Stark *et al.*, 2005). Nurses who are unhealthy were found to be more reluctance to undertake health promotions as their roles (Wills and Kelly, 2017). A recent study in New Zealand reported that approximately 51% of their tertiary nurses were either overweight or obese (Mearns *et al.*, 2017). A similar finding was also reported among nurses in Spain and Colombia, where 1 of 3 nurses reveal not an appropriate lifestyle that involves risks for the deferred development of chronic diseases (Rodriguez-Gazquez *et al.*, 2017). According to Dayi *et al.* (2017), medicine students and related disciplines are aware of the importance of proper diet and maintaining adequate levels of

physical activity in order to gain a better health, however, they did not implement theory that they have known into practice. As the results, only 30% of the students were reported to be engaged in some type of physical activity during their university education. Inactive and unhealthy lifestyle among student nurses will have an impact on their role as caregiver, besides restricting these nurses ability to achieve their full potential as health promotion agents in the future. According to Al-Kandari and Vidal (2007), the nursing students are potential key players in the global quest for health promotion. Thus, their own health-promoting lifestyle profile behaviors could be a good indicator to determine how they will perform their role in the future (Hui, 2002). Thus, these nursing students need to be encouraged to live healthily when they starting pursuing their study. As had been acknowledged by many, nursing is a very stressful job/career, hence opportunities for these nursing students to make lifestyle changes and modification when they started working will be very challenging (Wills and Kelly, 2017). Nurses play a very significant role in Malaysia healthcare system. The diploma nurses in Malaysia were both either trained by the private sector or the government sector. Some nursing students were

trained in the urban area, while the rest were trained in the rural area depending on where they received their training. Studies have shown that nurses coming from a different background, for example, different locations and institution portray diverse habit and lifestyle (Hui, 2002; Haddad et al., 2004). However, whether this situation is true in Malaysia context is yet to be determined. Hence, this study was

carried out to determine the levels of physical activity and health-promoting lifestyle profile among the diploma nursing students, and to investigate whether there was a difference between urban nursing students physical activity levels and health promoting lifestyle profile as compared to the rural nursing students.

Table 1: Descriptive profile among diploma nursing students based on institutions.

Descriptive Profile	UM (n=57)		UNIZA (n=66)		Overall (n=123)	
	Mean	SD	Mean	SD	Mean	SD
Age	19.56	1.71	19.47	0.50	19.51	1.22
Weight (kg)	52.44	8.30	52.08	11.51	52.24	10.11
Height (cm)	156.37	5.01	156.23	6.01	156.29	5.55

Table 2: Daily physical activity levels (step counts) based on institutions.

Days	UM (n=57)		UNIZA (n=66)		Overall (n=123)	
	Mean	SD	Mean	SD	Mean	SD
Monday	9796.74	3245.11	8306.14	3956.78	8996.90	3705.70
Tuesday	10511.30	3351.72	6731.94	2890.07	8483.35	3631.47
Wednesday	11185.95	8640.91	7863.27	3151.03	9403.05	6506.18
Thursday	9203.96	2996.62	7879.58	3104.41	8493.32	3113.88
Friday	8758.07	4052.79	9565.80	3774.31	9191.49	3910.59
Saturday	7982.54	3208.20	8475.12	7951.69	8246.85	6202.66
Sunday	10111.82	2610.24	8160.42	3083.71	9064.73	3024.65

Table 3: Weekday and weekend physical activity levels (step counts) among diploma nursing students based on institutions

Days	UM (n=57)		UNISZA (n=66)		Overall (n=123)	
	Mean	SD	Mean	SD	Mean	SD
Weekday	9891.20	2773.87	7788.27	2261.08	8762.80	2713.74
Weekend	9047.19	2418.30	9020.46	4975.35	9032.85	3984.12
Mean Step/day	9650.06	2323.80	8140.32	2663.84	8839.96	2613.58

Table 4: Physical activity categories suggested by Tudor-locke and Bassett (2004) based on institutions

Step Counts	Categories	UM		UNISZA		Overall	
		Frequency	%	Frequency	%	Frequency	%
<5000 steps/day	Sedentary Lifestyle	1	1.8	6	9.1	7	5.7
5000-7499 steps/ day	Low Active	7	12.3	24	36.4	31	25.2
7500-9999 steps/ day	Somewhat Active	28	49.1	21	31.8	49	39.8
10,000-12,499 steps/ day	Active	17	29.8	12	18.2	29	23.6
>12500	Highly Active	4	7.0	3	4.5	7	5.7
Total		57	100	66	100	123	100

Table 5: Overall score for Health-Promoting Lifestyle Profile II based on institutions.

Sub-scales	UM		UNISZA		Overall	
	Mean	SD	Mean	SD	Mean	SD
Health responsibility	2.30	0.49	2.24	0.45	2.27	0.47
Physical activity	2.32	0.52	2.35	0.39	2.34	0.46
Nutrition	2.43	0.40	2.39	0.37	2.41	0.38
Spiritual growth	2.88	0.46	2.89	0.39	2.88	0.42
Interpersonal relations	2.86	0.41	2.89	0.38	2.87	0.39
Stress management	2.53	0.45	2.62	0.37	2.58	0.41
Health Promoting Lifestyle	2.56	0.38	2.57	0.31	2.56	0.34

Material And Methods

All the year-two diploma nursing students from two government tertiary education institutions Malaysia were invited to participate in this descriptive study. The institutions were University of Malaya (UM) in Kuala Lumpur and Universiti Sultan Zainal Abidin (UNISZA) in Terengganu. UM located in Kuala Lumpur was considered as the urban institution, while UNISZA located in Terengganu (East of Peninsular Malaysia) was considered as a rural institution. The total number of participants was 123, which consisted 57 diploma nurses from UM and 66 diploma nurses from UNISZA. Descriptive profiles among the diploma nurses based on their institutions were shown in Table 1. Two instruments were used in this study. They were the Yamax Digiwalker pedometer to measure the physical activity based on the weekly step counts (7 days), and the Health-Promoting Lifestyle Profile (HPLP) II questionnaire to use measure the nurse's lifestyle. The HPLP II questionnaire have 52-item with six subscales which are health responsibility (9-item), physical activity (8-item), nutrition (9-item), spiritual growth (9-item), interpersonal relationship (9-item) and stress management (8-item). This HPLP II questionnaire is based on 1 to 4 Likert scale, which is 1 = never, 2 = sometimes, 3 = often and 4 = routinely.

Results And Discussion

Physical Activity Levels

Daily step counts taken by the diploma nurses were shown in Table 2. Data show that the diploma nurses walked the most on Wednesdays (9403.05 ± 6506.18 steps), and the least on Saturdays (8246.85 ± 6202.66 steps). The UM nurses walked the most on Wednesday (11185.95 ± 8640.91 steps) and the least on Saturdays (7982.54 ± 3208.20 steps), while for the UNISZA nurses, they walked the most on Friday (9565.80 ± 3774.31 steps) and the least on Tuesday (6731.94 ± 2890.07 steps). Minimum and maximum step counts reported among these nurses were range between 3538.29 to 19437.57 steps per day. Nevertheless, based on the norm by Tudor-Locke and Bassett Jr. (2004), the overall daily mean step count (from Monday to Sunday) were reported to be in the same category, which is *somewhat active* physical activity levels (step counts between 7499-9999 step counts per day). Hence, it can be concluded that both diploma nursing students in the urban or rural institution did not achieve the minimum step counts required ($> 10,000$ steps per day) to be classified as *active* individuals. However, detail analysis based on institution found that UM diploma nursing students were more active and had recorded more than 10,000 steps per day on Tuesday (10511.30), Wednesday (11185.95) and Sunday (10111.82). All these steps count values classified the UM nurses as *active* individuals. On the other hand, UNISZA diploma nurses had

recorded the lowest steps count per day for Tuesday (6731.94), which was considered as a *low active* category (Table 2). Overall physical activity results showed that the diploma nursing students walked on average 8839.96 ± 2613.58 step per day (Table 3). This value suggested that the diploma nurses have a *somewhat active* physical activity levels based on the norm by Tudor-Locke and Bassett Jr. (2004). This suggested that most of the diploma nursing students were involved in the volitional activity as demanded by their job scope. Detailed analysis based on the institution reported that nursing students in the urban (UM) walked more as compare to their peers in the rural area (UNISZA). The mean steps reported by the UM diploma nurses was 9650.06 ± 2323.80 steps, which was 1510 step higher as compared to UNISZA diploma nursing students at 8140.32 ± 2663.84 steps count per day. UM nursing students were reported to walk more during weekdays with mean step counts of 9891.20 ± 2773.87 steps. While, UNISZA nursing students were reported to walk more during weekends with mean step counts of 9020.46 ± 4975.35 steps. Urban and rural nursing students were found to have almost similar step counts during the weekend e.g. 9047.19 ± 2418.30 steps for UM and 9020.46 ± 4975.35 steps for UNISZA. However, huge step counts differences were reported during weekdays among these nurses. Urban nursing students were reported to walk 2101.93 steps more as compared to the rural nursing students. The reported weekdays mean step counts for both urban and rural nurses' were 9891.20 ± 2773.87 steps and 7788.27 ± 2261.08 steps, respectively. One of the main factors contributing to the higher step counts among urban diploma nursing students is related to their clinical attachment to University Malaya Medical Centre (UMMC), which is the busiest and most crowded hospital in Malaysia. UMMC is located in Kuala Lumpur and is the only public hospital serving the bordering the city of Petaling Jaya, with a population of approximately two million people. On the other hand, diploma nursing students in UNISZA were less occupied during their clinical attachment because they were assigned to the smaller hospital (Hospital Sultanah Nur Zahirah Kuala Terengganu) or district clinics (Besut and Dungun Districts) which serving fewer patients. Hence, nursing students working in a crowded hospital (more patients) will tend to have higher mean step counts as the results of the more demanding job requirement. Where else, during weekend both diploma nursing students in urban and rural were found to have almost similar mean weekend step counts. However, urban nursing students were found to walk less during weekend (resting at home/university) as compared to the weekday. While, for rural nursing students, they were reported to walk more during weekend as the results of travelling home or shopping activities. Analysis

using independent samples t-test showed that there was a significant difference in terms of physical activity levels among diploma nurses from both institutions. The reported t value was $t(121) = -3.32, p = 0.001$. UM nursing students were reported to achieve higher mean step counts per day which were 9650.06 ± 2323.80 step as compared to UNISZA at 8140.32 ± 2663.84 step counts per day (Table 3). Overall mean steps count value for both institutions for weekday and weekend indicated that nurses walk more during the weekend ($9.032.85 \pm 3.984.12$) as compared to weekday ($7.909.75 \pm 2.432.67$). Although the values classified them in the same category, which was *somewhat active* (step counts value between 7500–9999 per day) (Tudor-Locke and Bassett, 2004), the reported t values were found to be not significant. Higher step counts value during the weekend was associated with shopping activities/buying grocery and travelling home to spend time with family members. When comparing the physical activity levels among the urban and rural nursing students based on the Physical activity category suggested by Tudor-Locke and Bassett (2004), a surprising result was obtained, where 70.7% of the diploma nursing students were found to walk less than 10,000 step per day. Rural area nursing students (77.3%) were found to walk less than 10,000 steps per day as compared to urban nursing students (63.2%). A similar trend was also reported for *Sedentary Category*, where more rural diploma nursing students was found to be maintaining sedentary lifestyle (9.1%) as compared to urban nursing students (1.8%). However, for the *Active and Highly Active Category*, opposite trends were found in the urban diploma nursing students, where 36.8% were reported to be more physically active as compared to the rural diploma nursing students (22.7%). As mentioned by Al-Tannir *et al.* (2017), nurses are the health promoters and the role models for the patients, hence, when the nurses adopt a healthy lifestyle, they will become the best role models that can inspire the patients and society around them to practice health-promoting behavior (Hui, 2002).

Health-Promoting Lifestyle Profile II (HPLP II)

Based on Table 5, HPLP II score among the diploma nurses reported the mean value of 2.56 ± 0.34 . Spiritual growth was reported to achieve the highest score with HPLP II mean value of 2.88 ± 0.42 . Similar result was also reported among Canadian and Jordanian nurses, where they were reported to achieve the higher score for spiritual growth (Haddad, L., Kane, D., *et al.*, 2004). Detailed analysis based on the six subscales found that the second highest mean score for the HPLP II was for interpersonal relations with a mean value of 2.87 ± 0.41 ; followed by stress management with a mean value of 2.58 ± 0.41 . Nutrition subscale mean value was 2.41 ± 0.38 ; which was higher than physical activity subscale with the mean value of

2.34 ± 0.46 , while the lowest HPLP II score was for health responsibility subscale with mean value of 2.27 ± 0.47 . Based on the overall mean value of HPLP II subscale, it can be concluded that the diploma nursing students gave more emphasis to spiritual growth, while health responsibility was given the least priority (Table 5). When comparing the results with the study by Haddad *et al.* (2004) and Al-Kandari and Vidal (2007), a similar finding was reported where Canadian, Jordanian and Kuwaiti nursing students were found to give more emphasis in promoting spiritual growth and interpersonal relations. On the other hand, least emphasis was given to health responsibility and physical activity. However, the HPLP II score was found to be lower among Malaysian diploma nursing students. Findings from another study in Hong Kong reported that they performed best in interpersonal relation but worst in physical activity (Hui, 2002). A good interpersonal relation is important as prerequisites for effective teaching, and for the nurses to pass on the health promoting messages to the client. However, the lowest physical activity score indicates that the nurses are not exercising enough and will increase their health risks toward non-communicable diseases such as osteoporosis, heart disease, and diabetes mellitus (Hui, 2002) and depression (Lee *et al.*, 2017). Hence, in order to fulfil their health promotion roles, they must first comply with excellent health behavior. No significant results were reported for all the six subscales of HPLP II when comparing their HPLP based on the institutions, These results indicated the HPLP among the urban and rural diploma nursing students were almost similar (mean 2.56 ± 0.38 versus 2.57 ± 0.31), and surprisingly, the arrangement or the priorities given for all the six subscales for HPLP II among diploma nursing students in the urban and rural institutions were also found to be the same. The top two priorities were given to spiritual growth (mean 2.88 ± 0.46 and 2.89 ± 0.39) and interpersonal relationship (mean 2.86 ± 0.41 and 2.89 ± 0.38), while the least two priority were given to health responsibility (mean 2.30 ± 0.49 and 2.24 ± 0.45), and physical activity (mean 2.32 ± 0.52 and 2.35 ± 0.39).

Conclusion

In conclusion, the diploma nursing students in Malaysia were found to have low physical activity level as measured using weekly step counts. The mean step counts reported was 8839.96 steps, which is lower than the minimum 10,000 step per day suggested in order to maintain a desirable level of physical activity for health (Choi *et al.*, 2007). Recently, Ministry of Health had given warning that Malaysia is in the midst of an obesity epidemic (Stephanie Scawen, 2016). Malaysia has been rated as the highest among Asian countries for obesity and will cause the country a very big problem in the future because it has implication on diabetes, heart

problem and others (Ministry of Health, 2017). Finding from the *Lancet*, showed that 49% of women and 44% of men in this country were obese. The main reason contributed to this epidemic are poor diets (high calories food) and office-oriented lifestyles where one is sedentary and without any exercise (Mustafa, 2016). Furthermore, a report by CNN showed that most general population in Malaysia were misinformed or had limited information regarding weight loss and diet (CNN, 2015). As a caregiver and health promotion agent, nurses played a very important role in combating this epidemic in the community. Adherence to the recommendations for physical activity and lifestyle change not only help to reduce stress and health cost (Hui, 2002; Brinda et al., 2017), it is also proven for disease prevention (Robbins et al., 2001) and to reduce colorectal cancer risk among population (Kirkegaard et al., 2010). Besides, these nursing students were also found to have the lowest score for health responsibility. If nurses are to promote the health of others, they must have a high level of compliance with health behavior (Hui, 2002). Thus, unhealthy behavior among nursing students needs to be tackled quickly because it was also closely associated with a reluctance to undertake health promotion in their daily roles (Al-Kandari and Vidal, 2007; Wills and Kelly, 2017). Diploma nursing students in the urban area were found to be significantly more active physically as compared to the nursing students in the rural area. However, no significant difference were reported when comparing physical activity levels among these nursing students during weekday and the weekend. However, there was a trend that these nurses walk less during the weekday, and increases their step counts during weekend due to shopping and return to their home. On the other hand, diploma nursing students were also found to have moderate HPLP as measured by HPLP II questionnaire. Spiritual growth was given the top priority by nurses from both universities, while the least important HPLP indicated by these nurses was in health responsibility.

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