

Assessment of Health-promoting lifestyle behaviour (HPLB) of University workers in Nigeria

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Abstract

Objective: Lifestyle, high cost of medical care and limited resources in many national health systems should be an inducement for everyone to practice health-promoting lifestyle, knowing its benefits. This study examined the health-promoting lifestyle behaviour (HPLB) of university staff.

Methodology: This is a cross-sectional descriptive study conducted among 280 university staff in Nigeria. Self-administered health-promoting lifestyle profile II questionnaire was used for data collection. Data were analysed using both descriptive and inferential statistics via IBM-SPSS version 25.

Results: Self-actualization subscale had the highest mean score of 3.35 ± 0.65 ; interpersonal relations (2.94 ± 0.65); nutrition (2.81 ± 0.48); stress management (2.72 ± 0.62); physical activity (2.21 ± 0.64); health responsibility (2.19 ± 0.62) and Health-promoting lifestyle profile (HPLP) (2.74 ± 0.46). Age; study location; religion and type of marriage had significant association with self-actualization lifestyle while gender and type of marriage had significant association with HPLP. Lastly, socio-economic factors had a statistically significant influence on HPLP of workers.

Conclusion: The respondents practiced HPLB moderately. Strategies need to be put in place to motivate university staff to practice all the subscales of HPLP effectively.

Keywords: Health-promoting lifestyle profile, Health-promoting lifestyle behaviour, health promotion model, university staff, Nigeria

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Évaluation du comportement de mode de vie à la santé stimulée (CMVS) des travailleurs Universitaires au Nigéria

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Résumé

Objectif de l'étude: Le mode de vie, le coût élevé des soins médicaux et les ressources limitées dans de nombreux systèmes de santé nationaux devraient inciter chacun à adopter un mode de vie propice à la promotion de la santé, tout en connaissant les avantages. Cette étude a examiné le comportement du mode de vie à la santé stimulée (CMVS) du personnel universitaire.

Méthode d'étude: Il s'agit d'une étude descriptive transversale menée auprès de 280 membres du personnel universitaire au Nigéria. Un questionnaire auto-administré de profil II du mode de vie à la santé stimulée a été employé pour la collecte de données. Les données ont été analysées à l'aide de statistiques descriptives et inférentielles vers version 25 d'IBM-SPSS.

Résultats: La sous-échelle d'auto-actualisation avait le score moyen le plus élevé, de 3.35 ± 0.65 ; relations interpersonnelles (2.94 ± 0.65); nutrition (2.81 ± 0.48); gestion du stress (2.72 ± 0.62); activité physique (2.21 ± 0.64); responsabilité de santé (2.19 ± 0.62) et le profil de vie à la santé stimulée (PVS) (2.74 ± 0.46). L'âge ; lieu d'étude; la religion et le type de mariage avaient une association significative avec le style de vie qui s'actualisait, alors que le sexe et le type de mariage avaient une association significative avec PVS. Enfin, les facteurs socio-économiques ont eu une influence statistiquement significative sur les CMVS des travailleurs.

Conclusion: Les répondants pratiquaient CPVS avec modération. Des stratégies doivent être mises en place pour motiver le personnel universitaire à pratiquer efficacement toutes les sous-échelles de PVS.

Mots-clés: Profil du mode de vie à la santé stimulée, comportement du mode de vie à la santé stimulée, modèle de promotion de la santé, personnel universitaire, Nigéria

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INTRODUCTION

Health-promoting lifestyle enhances individual well-being, self-actualization and personal fulfilment (1) at a level that brings about optimal health (2,3). A 'health-promoting lifestyle' behaviours' has become a critical point of study and focus of intervention because of its relation to prevalence of non-communicable diseases among adults (4,5). Poor compliance with a health-promoting lifestyle behaviour (HPLB) increases the risk of occurrence and exacerbates poor control of noncommunicable diseases (NCDs) with financial and human cost to the individual, family and the nation at large (6,7). The link between most NCDs and non-observance of health-promoting lifestyle, contributing to high morbidity and mortality has been established globally (4,8). Mehri, Solhi, Garmaroudi, Nadrian and Sigaldehy (9) reported that NCDs accounted for 80% of the global burden of diseases. Literature identifies some of these healthy lifestyle elements as physical exercise, healthy diet, avoidance of environmental hazards, weight control, stress management, optimal sleep and absence or cessation of tobacco smoking (10,11). Health-promoting lifestyle practices reduce NCDs mortality rate by 50% and increase life expectancy by more than 11 years (4).

Studies also showed that a sedentary lifestyle increases the risk of developing non-communicable diseases like hypertension, type II diabetes, cancer (such as colon and breast cancer), coronary heart diseases, high blood lipid profile and obesity (12,13). The World Health Organization (WHO) in 2015 reported 38 million deaths annually arising predominantly from cardiovascular-related diseases, cancers, chronic respiratory conditions and diabetes (14), with lifestyle having a bearing on the outcomes in all these cases. Furthermore, WHO statistics give a figure of 40 million deaths related to non-communicable diseases, showing continuous rise in the prevalence of non-communicable diseases. Mehri et al. reported that 53% of all deaths attributed to NCDs globally are related to lifestyle practices (9). Several studies have reported on health-promoting lifestyle of different categories of workers while only few reported on academic staff (15-18). However, all these studies were conducted in developed countries except one that was conducted in a low middle-income country. According to the WHO, 15 million of all deaths attributed to NCDs occur between the ages of 30 and 69 years, and over three-quarters of these deaths happen in low- and

middle-income countries (5), of which Nigeria is one. With the increasing use of technology, reduced physical activities and easier means of transportation, many university staff live a sedentary lifestyle which makes them physically inactive (13,16) despite the availability of literature and campaigns on the benefits of health-promoting lifestyle practices that can increase life expectancy and quality of an individual's life (4).

With limited literature available on health-promoting lifestyle behaviour of workers in Nigeria, designing an intervention to promote and maintain health of university workers first requires an assessment of their health-promoting lifestyle behaviour. The workers being investigated are university staff. University staff were selected for this study as they represent civil servants (workers) in Nigeria as every profession (skilled and unskilled) are represented in the university community as there are limited literature on HPLB of workers in Nigeria. Therefore, we selected this population to examine their HPLB so that it can be a future reference to workers in other industries in Nigeria. In this study, HPLP refers to all the total subscales of health-promoting lifestyle profile II (HPLPII) questionnaire while HPLB refers to each of the subscales of HPLPII questionnaire.

The conceptual framework underpinning this study was the health promotion model developed by Pender. The health promotion model serves as a framework for health promoting lifestyle research aimed at changing specific lifestyle or modification of individual lifestyle (19). The model focuses on major determinants of health behaviour that provide a potential basis for behavioural changes to promote a healthy lifestyle (20). The model describes the multidimensional activities of people as they interact in their environment to achieve optimum health (19). According to Pender, the model has three components: individual characteristics and experiences, behaviour-specific cognitions and affect, and behavioural outcomes. Individual characteristics and experiences, coupled with behaviour-specific cognitions and affect, determine the behavioural outcomes of each person (20). This study accordingly examines the HPLB of university staff.

MATERIALS AND METHODS

This was a cross-sectional descriptive study that employed multistage sampling technique to select participants. A federal

university in Nigeria that has study locations across the country with 2,657 staff members was purposively selected. The headquarters of the institution was also purposively selected and simple random sampling technique (ballot method) was used to select one state from each of the six geo-political zones in the country. From each of the states, one major study centre (usually one per state) was purposively selected which were referred to as study location A to study location G in this survey. The third stage was selection of the staff from the selected study sites or locations. Data were collected from all staff in the selected study centres that were available weekdays and willing to participate in the survey. Convenience sampling technique (all staff that are available weekdays and willing to participate in the study) was used to select staff from every department at the university headquarters until we had the required number (320) needed for the study.

The study sample size was determined based on G*Power 3a statistical power analysis program for the social, behavioural, and biomedical sciences (21). The following parameters were used to determine the minimum sample size; number of groups was seven, corresponding to study locations (six study centres from the six geopolitical zones in Nigeria and the university headquarters); significant level of 0.05 and statistical power of 0.80 and effect size of 0.25. A minimum sample size of 231 was determined and increased by 15% to allow for a non-parametric test should the proposed parametric test not valid. Therefore, the calculated minimum sample size was 266 which was increased to 320 to account for attrition and non-responders. The 320 was not divided across the seven study locations in view of small staff numbers at study centres compared to the headquarters. Hence, all the staff members in the study centres were included in the study while rule-of-thumb stating that at least 10% of the total population is adequate for generalization in a descriptive study was applied to select participants from the headquarter. Data for the survey were collected from 280 staff who returned completed questionnaire from study locations as follows: study location A, 139; study location B, 19; study location C, 28; study location D, 33; study location E, 24; study location F, 18; study location G, 19.

This study was conducted in accordance with the Helsinki Declaration, following ethical approvals obtained from the Ethics Committee of the University of KwaZulu-Natal, Durban, South

Africa (BFC423/16) and the National Open University of Nigeria (NOUN) Health Research Ethics Review Committee (NHREC 04). Written informed consents were also obtained from each participant. Data were collected using a questionnaire consisting of two sections. Section A gathered information on participants' individual characteristics and experiences. Based on existing literature, data were collected on socio-demographic and personal characteristic of participants, which was the first component of the health promotion model.

Section B gathered information on the behavioural outcome component of the model. Data were collected via an adapted Health-Promoting Lifestyle Profile II questionnaire, with 65 test items divided into six subscales. Health-promoting lifestyle profile (HPLP) is widely used to measure and evaluate lifestyle or daily activities of individuals (22). It has six components: health responsibility, physical activity, nutrition, interpersonal relations, spiritual growth, and stress management, with some authors using self-actualization instead of spiritual growth (16,23).

The Cronbach's alpha coefficient of the total scale of the questionnaire was 0.91 and the reliability coefficient of the subscales were as follows: nutrition, 0.78; physical activity, 0.81; health responsibility, 0.87; stress management, 0.82; interpersonal relations, 0.86; and self-actualization, 0.90. The health-promoting lifestyle behaviour of participant was measured using a 4-point Likert scale consisting of 'never', 'sometimes', 'often' and 'routinely', which were represented as 1, 2, 3 and 4 (24). The use of mean rather than sums of scale items of the HPLP was adopted to retain the 1–4 metric of item responses and to allow meaningful comparisons of scores across sub-scales (23). Respondents who reported health-promoting lifestyle subscales as 'often' and 'routinely' were considered as practicing health-promoting lifestyles and respondents who reported health promoting lifestyle subscales as 'never' and 'sometimes' were considered not to be practicing health-promoting lifestyles. Furthermore, a mean score of all the test items in each subscale of the HPLP > 3.00 (on a scale ranging between 1 and 4) was taken as practicing an adequate health-promoting lifestyle. Data were collected from October 2016 to January 2017. Three hundred and twenty questionnaires were distributed to participants. A total of 280 (88%) were completely filled and returned anonymously.

Data were analysed using IBM-SPSS

(Statistical Package for the Social Sciences) version 25 (IBM Corp., Released 2018. IBM SPSS Statistics for Windows, version 25.0. Armonk, NY: IBM Corp.) Continuous variables such as participants' ages were summarized as mean \pm standard deviation (SD). Categorical and ordinal variables such as religion, gender were summarized using proportion and percentage. Inferential statistics such as the Chi-squared test were used to determine if there was any statistically significant association between demographic characteristics and health promoting lifestyle variables. A One-Way ANOVA was used to determine whether there were any statistically significant differences in HPLP means between sub-groups within each independent variable, i.e. age-groups, gender, study locations, religion, marital status, type of marriage and number of children. Turkey's post-hoc test was used to investigate differences between pairs of groups. Canonical correlation was also conducted to predict the influence of socio-economic factors (educational level, occupation and average monthly income) on participants HPLP. Statistical significance was determined at p-value of 0.05.

RESULTS

Table 1: Socio-demographic characteristics of the respondents

The overall response rate in this study was 87.5%. One hundred and twenty-six (45.0%) were within the age range 30 to 39 years, with minimum age of 22 years, maximum age of 68 and mean age of 40.13 ± 9.53 years. More than half, 156 (55.7%) of the respondents were male, 244 (87%) were Christian, 207 (73.9%) were married, 190 (67.9%) were in a monogamous marriage and 155 (55.4%) had between 1 and 4 children (Table 1).

Table 2: Socio-economic status of the respondents

Table 2 shows that 84 (30%) of the respondents had bachelor's degrees, 144 (51.4%) were senior non-academic staff and 138 (49.3%) earned low monthly income.

Table 3: Health promoting lifestyle behaviour (HPLB) of respondents (N=280)

Table 3 reveals that 218 (77.8%) of the participants practice nutritional lifestyle with a mean score of 2.81 ± 0.48 and 79 (28.3%) practice physical activity lifestyle with a mean score of 2.21 ± 0.64 . Only 73 (26.1%) of the participants practice health responsibility lifestyle with mean

score of 2.19 ± 0.62 , 169 (60.4%) practice stress management lifestyle with mean score of 2.72 ± 0.62 and 215 (76.8%) practice interpersonal relation lifestyle with mean score of 2.94 ± 0.65 . The Majority 254 (90.5%) of the participants practice self-actualization lifestyle with mean score of 3.35 ± 0.65 while 233 (83.2%) practice the HPLP with mean score of 2.74 ± 0.46 .

Table 4: Association between Socio-demographic characteristics and health promoting lifestyle behaviour of respondents

Using a Chi-squared test, age was found to have a statistically significant association with self-actualization ($P=0.01$). However, age did not have a significant association with nutrition ($p=0.73$), physical activity ($P=0.31$), health responsibility ($P=0.19$), stress management ($P=0.77$), interpersonal relation ($P=0.55$) and HPLP ($P=0.83$). The different age-groups in the study, had statistically significant mean scores of self-actualization lifestyle ($P=0.001$) and health responsibility lifestyle ($P=0.015$), based on a One-Way ANOVA. Using, a Tukey's post-hoc test statistically significant differences in mean values of self-actualization lifestyle, were observed between age-groups 30-39 years and 50-59 years as well as 40-49 years and 50-59 years, with P-values 0.006 and 0.029 respectively. In addition, statistically significant differences in mean values of health responsibility lifestyle, were found between the following age-groups, 20-29 years and 50-59 years ($P=0.019$); 30-39 years and 50-59 years ($P=0.001$) and 40-49 years and 50-59 years ($P=0.011$).

Gender had a statistically significant association with physical activity lifestyle ($P=0.001$), health responsibility ($P=0.01$), stress management ($P=0.02$) and HPLP ($P=0.04$) respectively. However, gender had no statistically significant association with nutrition ($P=0.52$), interpersonal relation ($P=0.44$) and stress management ($P=0.80$). Using, a One-Way ANOVA, statistically significant differences in mean of physical activity lifestyle and stress management between males and females, with P-values ($P=0.001$) and $P=0.017$), respectively (Table 4). Study location had a significant association with only self-actualization lifestyle ($P=0.02$). However, study location had no significant association with nutrition lifestyle ($P=0.70$), physical activity lifestyle ($P=0.14$), health responsibility ($P=0.95$), stress management ($P=0.69$), interpersonal relation ($P=0.06$) and HPLP ($P=0.14$). Table 4 shows that

study locations, had statistically significant differences in mean value of interpersonal relation lifestyle ($P=0.007$), self-actualization lifestyle ($P=0.001$) and HPLP ($P=0.013$). Using a Tukey's post-hoc test further reveals statistically significant differences in the interpersonal relation mean value between study location F and study location G ($P=0.024$); study location A and study location G ($P=0.010$) and study location C and study location G ($P=0.039$) as well as study location F and study location G ($P=0.012$). Furthermore, the self-actualization lifestyle mean value showed statistically significant differences between study location C and study location G ($P=0.039$) as well as study location A and study location G ($P=0.010$) respectively. Also, HPLP mean value shows statistically significant differences between study location A and study location E ($P=0.015$); study location C and study location E ($P=0.046$) and study location D and study location E ($P=0.025$).

Religion had a significant association with nutrition ($P=0.04$) and self-actualization ($P=0.003$) respectively while One-Way ANOVA showed that there were statistically significant differences in mean self-actualisation between different religions in the study, ($P=0.04$) (Table 4). Marital status was found to have no statistically significant association with HPLP-Nutrition ($P=0.44$), physical activity ($P=0.10$), health responsibility ($P=0.47$), stress management ($P=0.26$), interpersonal relation ($P=0.69$), self-actualization ($P=0.83$) and HPLP ($P=0.11$). However, significant differences between different marital statuses, were observed with respect to physical activity ($P=0.024$) and HPLP ($P=0.046$) respectively.

Type or form of marriage of the participant had a significant association with self-actualization ($P=0.002$) and HPLP ($P=0.01$) respectively. However, form of marriage had no statistical significant association with nutrition ($P=0.01$), physical activity ($P=0.38$), health responsibility ($P=0.78$), stress management ($P=0.52$) and interpersonal relation ($P=0.10$). Further analysis reveals that different types of marriages had statistically significant differences in mean values of self-actualization ($P=0.047$) and HPLP ($P=0.003$) respectively (Table 4). Equally, statistically significant differences in mean self-actualization values, were found between polygamous and monogamous marriages ($P=0.043$). However, there were significant differences in mean HPLP between polygamous and monogamous marriages ($P=0.027$) as well as between polygamous and single participants ($P=0.002$). Participants'

number of children had no statistically significant association with HPLP - Nutrition ($P=0.78$), physical activity ($P=0.59$), health responsibility ($P=0.43$), stress management ($P=0.58$), interpersonal relation ($P=0.92$), self-actualization ($P=0.06$).

Using a canonical correlation, significant association was observed between socio-economic status and HPLP of respondents ($F_{(21,775.84)}=2.24$, $p<0.05$, Wilk $\lambda = 0.84$). Univariate analysis indicated that socio-economic status of respondents had a significant effect on physical activity ($F = 3.49$, $p<0.05$), health responsibility ($F=5.10$, $p<0.05$) and self-actualization ($F=3.39$, $p<0.05$).

DISCUSSION

This study examined the health-promoting lifestyle behaviour (HPLB) of university staff. All the subscales of HPLP are activities of daily living that influence individual happiness, values, and well-being (3). Healthy lifestyle behaviours are important in maintaining good health and preventing disease, both of which improve the quality of life (25). We found that university staff were involved in practicing health-promoting lifestyle behaviours. However, only the self-actualization subscale met the presumed criteria for healthy living. Interpersonal relations and nutrition sub-scales had higher scores compared to stress management, physical activity and health responsibility subscales, which scored low. Also, the health-promoting lifestyle profiles (HPLP) did not meet the presumed criteria for healthy living. The findings in this study corroborate with the findings in studies conducted among female employees in Zagazig city, Egypt (26), and among academic staff in Turkey (16) while being at variance with findings from hospital staff in Taiwan (2).

The possible explanation for these results might be traced to the employment status and steady income of the study population. Nutrition has over the years been given priority in promotion of health and prevention of diseases. However, there is still a progressive rise in the prevalence of nutritional-related disease in most low and middle income countries (27). Employment and prevention of poverty are major factors in an individual being able to fulfil minimum requirements for good nutritional practice (28).

The study population were drawn from the same institution, in which they spend time together and there may be a tendency for them to

have and share good interpersonal relationships. In addition, the setting for the study is an organization that bases staff career progression on achievements in their primary responsibilities. Hence, it can be deduced from the findings that staff had good health-promoting lifestyle practices on the subscales that they can quantify as beneficial (perceived benefits of action), and poorly practiced subscales that seem less important because they cannot quantify the benefits (physical activity, health responsibility and stress management) or observe what effect the subscales have on their lives or health. Self-actualization is linked with belief in a superior being and achieving your goals in life. Respondents in this study had a high mean score in this subscale and it is obvious that they all follow either Christianity or Islam. The spiritual subscale ranked highest among nurses in Saudi Arabia. There is association in all the subscales of HPLP in this study; workers spend time at work to fulfil their responsibilities and earn a regular income, then achieve self-actualization because they can meet basic needs of life.

The stress management subscale was reported as not adequately practiced by the respondents. This finding corresponds with observations that workers are faced with stress from heavy workloads, extended working hours and time-related factors (2). These might be the reasons why the study population had a good health-promoting lifestyle on the nutrition, interpersonal relations and self-actualization subscales at the expense of the other three subscales (physical activity, health responsibility and stress management). Workers spend most of their time working at a workplace and, in turn, the workplace has a direct influence on their physical, mental, economic, spiritual and social well-being (29). Religion was found to be a significant influence on the self-actualization subscale and it can therefore be inferred, based on this study, that religion plays a role in health-promoting lifestyle of the respondents.

Our study further showed that gender, study locations (location of workplace), religion, marital status, type of marriage and socio-economic factors (educational level, financial status and occupation) were factors that influence HPLP of workers. Age had a significant mean value with health responsibility and self-actualization lifestyle of the participants. There is a possibility that as one gets older and more mature they are conscious of their health and assume positive health responsibility lifestyle. In addition, as age increases, there is tendency for

one to be more conscious of what one consumes. Also, as age increases there is likelihood to be heightening on the self-actualization subscale with increasing desire for fulfilment. Gender had a statistically significant association with physical activity, health responsibility, stress management and HPLP. These results were consistent with the study conducted among university staff in Turkey (16). In most homes, women take on more responsibilities than their male counterparts; they can be overwhelmed by these responsibilities and neglect physical activity because they don't have enough time. Women might also not manage stress well because they are under pressure to keep up the home, progress in their career and live up to the standards of the society.

Statistical significance in the mean value were found between study locations (i.e. where the participants live and work) and interpersonal relations, self-actualization behaviour and HPLP of university staff. There could be several possible explanations for this result, but lifestyles in cities, towns and villages undoubtedly differ from each other. Staff in Study Location A replicate national (Nigerian) identity in that people from a number of different states in the country are represented in the institution. Study Location A is located in a city exposed to business ideas and entrepreneurship. Staff in this location have easy access to health information, health facilities and other social amenities that are relevant and encourage health promotion. The majority of staff in Study Locations B to G, on the other hand, are predominantly from the state where the study location is located in each case. This might account for the significant differences observed across the study samples.

The study revealed that the type of marriage respondents involved have influence on their self-actualization lifestyle behaviour and the HPLP. There is likelihood for an individual in monogamous marriage to have a positive health-promoting lifestyle practices as there could be more cooperation between couples in a monogamous marriage than couples in a polygamous marriage. Marital status showed a significant difference with physical activity lifestyle and HPLP. The findings in this study is contrary to those in the study conducted among Turkish women, which reported that marital status and type of family did not show statistical significance with any of the subscales of HPLP (30). There was a positive relationship between socio-economic status of participants and HPLP, Pirincci et al. reported similar results (16).

According to Pender, the central focus of the health promotion model are the eight beliefs that lead to an individual health-promoting lifestyle behaviour: perceived benefits of action, perceived barriers to action, perceived self-efficacy, activity related affect, interpersonal influences, situational influence, commitment to plan of action, and immediate competing demands (20). Individual characteristics and experiences, which include prior related behaviour and personal factors, and behaviour-specific cognition and affect, which entail the eight beliefs, influence the health-promoting lifestyle behaviour of the university staff. To the best of our knowledge this study was the first to examine HPLP of workers in Nigeria. The Location of staff was considered important in this study as data were gathered across the six geopolitical zones of Nigeria (south-west, south-south, south-east, north-central, north-west and north-east). The sample was representative in terms of designation (job description), average monthly income, age and gender. The limitations in the study which may make the findings of this study difficult to generalise were desirability bias and collection of data from a single federal university. Most previous studies that reported on health-promoting lifestyle behaviour of workers are not within the same countries with this current study due to dearth in existing literature on HPLB of workers in Nigeria. This poses limitation as several factors such as culture, socioeconomic etc may influence health-promoting lifestyle behaviour of an individual. Hence, this study was conducted as a preliminary study to determine the health-promoting lifestyle behaviour of university staff in Nigeria. Also, Further research on health-promoting lifestyle of university staff should include the examination of the eight key beliefs in the health promotion model.

CONCLUSION

The participants in this study practiced health-promoting lifestyle behaviour to a moderate degree. Age, gender, workplace location, religion, form of marriage and socioeconomic status (average monthly income, occupation and highest educational qualification) were factors that statistically influenced HPLP of participants. Engaging in all aspects of a HPLP, especially taking responsibility for one's health, is most desirable to reduce the risk of non-communicable diseases that are notably be on the increase among adults in developing countries. Health information and health education on health-promoting lifestyle practices, with

emphasis on reducing sedentary lifestyle and taking responsibility for one's health, should be the focus of health promotion programmes in the university.

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REFERENCES

1. Peker K., Bermek G. Predictors of health-promoting behaviors among freshman dental students at Istanbul University. *Journal of Dental Education*. 2011;75;3:413-20.
2. Tsai Y., Liu C. Factors and symptoms associated with work stress and health-promoting lifestyles among hospital staff: a pilot study in Taiwan. *BMC health services research*. 2012;12;1:199.
3. Nassar O.S., Shaheen A.M. Health-Promoting Behaviours of University Nursing Students in Jordan. *Health*. 2014;6;19:2756.
4. Bully P., Sánchez Á., Zabaleta-Del-Olmo E., Pombo H., Grandes G. Evidence from interventions based on theoretical models for lifestyle modification (physical activity, diet, alcohol and tobacco use) in primary care settings: A systematic review. *Preventive Medicine*. 2015;76, Supplement:S76-S93.
5. World Health Organisation. Noncommunicable diseases 2017 [27 May 2017]. Available from: <http://www.who.int/mediacentre/factsheets/fs355/en/>.
6. Ding D., Lawson K.D., Kolbe-Alexander T.L., Finkelstein E.A., Katzmarzyk P.T., Van Mechelen W., et al. The economic burden of physical inactivity: a global analysis of major non-communicable diseases. *The Lancet*. 2016;388;10051:1311-24.
7. Muka T., Imo D., Jaspers L., Colpani V., Chaker L., Van Der Lee S.J., et al. The global impact of non-communicable diseases on healthcare spending and national income: a systematic review. *European journal of epidemiology*. 2015;30;4:251-77.
8. Koniak-Griffin D., Brecht M.-L., Takayanagi S., Villegas J., Melendrez M., Balcázar H. A community health worker-led lifestyle behavior intervention for Latina (Hispanic) women: Feasibility and outcomes of a randomized controlled trial. *International Journal of Nursing Studies*. 2015;52;1:75-87.
9. Mehri A., Solhi M., Garmaroudi G., Nadrian H., Sigaldehy S.S. Health promoting lifestyle and its

- determinants among university students in Sabzevar, Iran. *International journal of preventive medicine*. 2016;7.
10. Tol A., Tavassoli E., Shariferad G.R., Shojaezadeh D. Health-promoting lifestyle and quality of life among undergraduate students at school of health, Isfahan university of medical sciences. *Journal of Education and Health Promotion*. 2013;2:11.
 11. Wikström K., Lindström J., Tuomilehto J., Saaristo T.E., Helakorpi S., Korpi-Hyövähti E., et al. National diabetes prevention program (DEHKO): awareness and self-reported lifestyle changes in Finnish middle-aged population. *Public Health*. 2015;129;3:210-7.
 12. Shehu R., Onasanya S., Onigbinde T., Ogunsakin E., Baba D. Lifestyle, Fitness and Health Promotion Initiative of the University of Ilorin, Nigeria: An Educational Media Intervention. *Ethiopian Journal of Environmental Studies and Management*. 2013;6;3:273-9.
 13. Turkmen M., Ozkan A., Murat K., Bozkus T. Investigation of the relationship between physical activity level and healthy life-style behaviors of academic staff. *Educational Research and Reviews*. 2015;10;5:577-81.
 14. Samoisy A.K., Mahomoodally M.F. Ethnopharmacological analysis of medicinal plants used against non-communicable diseases in Rodrigues Island, Indian Ocean. *Journal of ethnopharmacology*. 2015;173:20-38.
 15. Bhandari P., Kim M. Predictors of the Health-Promoting Behaviors of Nepalese Migrant Workers. *The Journal Of Nursing Research: JNR*. 2016;24;3:232-9.
 16. Pirincci E., Rahman S., Durmuş A., Erdem R. Factors affecting health-promoting behaviours in academic staff. *Public health*. 2008;122;11:1261-3.
 17. Schopp L.H., Bike D.H., Clark M.J., Minor M.A. "Act Healthy": Promoting Health Behaviors and Self-Efficacy in the Workplace. *Health Education Research*. 2015;30;4:542-53.
 18. Tucker S.J., Weymiller A.J., Cutshall S.M., Rhudy L.M., Lohse C.M. Stress ratings and health promotion practices among RNs: a case for action. *Journal of Nursing Administration*. 2012;42;5:282-92.
 19. Alligood M. *Nursing Theorist and Their Work*. 8th ed. USA: Mosby Inc.; 2014.
 20. Pender N. *The Health Promotion Model Manual 2011*. Available from: http://research2vrpractice.info/wp-content/uploads/2013/02/HEALTH_PROMOTION_MANUAL_Rev_5-2011.pdf.
 21. Faul F., Erdfelder E., Lang A.-G., Buchner A. G* Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior research methods*. 2007;39;2:175-91.
 22. Zhang S.-C., Wei C.-N., Fukumoto K., Harada K., Ueda K., Minamoto K., et al. A comparative study of health-promoting lifestyles in agricultural and non-agricultural workers in Japan. *Environmental health and preventive medicine*. 2011;16;2:80-9.
 23. Walker S.N., Sechrist K.R., Pender N.J. *Health Promotion Model - Instruments to Measure Health Promoting Lifestyle : HealthPromoting Lifestyle Profile [HPLP II] (Adult Version) 1995 [cited 2015 08 July]*. Available from: <https://deepblue.lib.umich.edu/handle/2027.42/85349>.
 24. Gokyildiz S., Alan S., Elmas E., Bostanci A., Kucuk E. Health-promoting lifestyle behaviours in pregnant women in Turkey. *International Journal of Nursing Practice*. 2014;20;4:390-7.
 25. Şenol V., Ünalın D., Soyuer F., Argün M. The relationship between health promoting behaviors and quality of life in nursing home residents in Kayseri. *Journal of Geriatrics*. 2014;2014:1-9.
 26. Sorour A.S., Kamel W.W., El-Aziz E.M.A., Aboelseoud A. Health promoting lifestyle behaviors and related risk factors among female employees in Zagazig city. *Journal of Nursing Education and Practice*. 2014;4;5:42-51.
 27. Uauy R., Kain J., Mericq V., Rojas J., Corvalán C. Nutrition, child growth, and chronic disease prevention. *Annals of medicine*. 2008;40;1:11-20.
 28. Altman M., Ngandu S. Would halving unemployment contribute to improved household food security for men and women? *Agenda*. 2010;24;86:52-65.
 29. Teutsch F., Gugglberger L., Dür W. School health promotion providers' roles in practice and theory: Results from a case study. *Health Policy*. 2015;119;1:82-7.
 30. Sonmezer H., Cetinkaya F., Nacar M. Healthy lifestyle promoting behaviour in Turkish women aged 18-64. *Asian Pac J Cancer Prev*. 2012;13;4:1241-5

Table 1: Socio-demographic characteristics of the respondents

Socio-demographic variable	Study location A Freq (%)	Study location B Freq (%)	Study location C Freq (%)	Study location D Freq (%)	Study location E Freq (%)	Study location F Freq (%)	Study location G Freq (%)
Age (years)							
20-29	12 (8.6)	1 (5.3)	3 (10.7)	5 (15.2)	4 (16.7)	4 (22.2)	1 (5.3)
30-39	73 (52.5)	11 (57.9)	11 (39.3)	12 (36.4)	9 (37.5)	6 (33.3)	4 (21.1)
40-49	31 (22.3)	2 (10.5)	10 (35.7)	11 (33.3)	7 (29.2)	4 (22.2)	2 (10.5)
50-59	21 (15.1)	3 (15.8)	3 (10.7)	5 (15.2)	2 (8.3)	3 (16.7)	9 (47.4)
=60	2 (1.5)	2 (10.5)	1 (3.6)	0 (0.0)	2 (8.3)	1 (5.6)	3 (15.8)
Gender							
Male	81 (58.3)	11 (57.9)	18 (64.3)	17 (51.5)	11 (45.8)	11 (61.1)	7 (36.8)
Female	58 (41.7)	8 (42.1)	10 (35.7)	16 (48.5)	13 (54.2)	7 (38.9)	12 (63.2)
Religion							
Christian	122 (87.8)	16 (84.2)	27 (96.4)	33(100.0)	21 (87.5)	12 (66.7)	13 (68.4)
Islam	17 (12.2)	3 (15.8)	1 (3.6)	0 (0.0)	3 (12.5)	6 (33.3)	6 (31.6)
Marital status							
Married	95 (68.3)	17 (89.5)	21 (75.0)	23 (69.5)	18 (75.0)	15 (83.3)	18 (19.4)
Single	44 (31.7)	2 (10.5)	7 (25.0)	10 (30.3)	4 (16.7)	3 (16.7)	1 (5.3)
Type of marriage							
Monogamy	90 (64.7)	17 (89.5)	20 (71.4)	22 (66.7)	17 (70.8)	10 (55.6)	14 (73.7)
Polygamy	6 (4.3)	0 (0.0)	1 (3.6)	1 (3.0)	3 (12.5)	5 (27.8)	4 (21.1)
Single	43 (30.9)	2 (10.5)	7 (25.0)	10 (30.3)	4 (16.7)	3 (16.7)	1 (5.3)
Number of children							
No children	46 (33.1)	5 (26.3)	8 (28.6)	10 (30.3)	6 (25.0)	4 (22.2)	1 (5.3)
1-4 children	81 (58.3)	11 (57.9)	16 (57.1)	14 (42.4)	14 (58.3)	9 (50.0)	10 (52.6)
5 children and above	6 (4.3)	2 (10.5)	3 (10.7)	8 (24.2)	4 (16.7)	5 (27.8)	8 (42.1)
No response	6 (4.3)	1 (5.3)	1 (3.6)	1 (3.1)	0 (0.0)	0 (0.0)	0 (0.0)

Table 2: Socio-economic status of the respondents

SEV	SLA Freq (%)	SLB Freq (%)	SLC Freq (%)	SLD Freq (%)	SLE Freq (%)	SLF Freq (%)	SLG Freq (%)
Educational qualification							
PSC	0 (0.0)	2 (10.4)	1 (3.6)	5 (15.2)	1 (4.2)	3 (16.7)	4 (21.1)
JSSC	1 (0.7)	1 (5.3)	2 (7.1)	0 (0.0)	3 (12.5)	2 (11.1)	2 (10.5)
SSSC	21(15.1)	3 (15.8)	5 (17.9)	6 (18.2)	7 (29.2)	4 (22.2)	3 (15.8)
OND	10 (7.2)	1 (5.3)	2 (7.1)	3 (9.1)	2 (8.2)	1 (5.6)	1 (5.3)
HND	11 (7.9)	1 (5.3)	2 (7.1)	5 (15.2)	0 (0.0)	0 (0.0)	1 (5.3)
1 st degree	45(32.4)	3 (15.8)	9 (32.1)	8 (24.1)	7 (29.2)	6 (33.3)	6 (31.6)
2 nd degree	37(26.6)	5 (26.3)	6 (21.5)	5 (15.2)	3 (12.5)	2 (11.1)	1 (5.3)
PhD	14(10.1)	3 (15.8)	1 (3.6)	1 (3.0)	1 (4.2)	0 (0.0)	1 (5.3)
Occupation							
Acad. staff	24(17.3)	2 (10.5)	2 (7.1)	0 (0.0)	1 (4.2)	0 (0.0)	1 (5.2)
SNAS	75(54.0)	9 (47.4)	15 (53.6)	15 (45.5)	11(45.8)	10(55.6)	9 (47.4)
JNAS	34(24.5)	7 (36.8)	11 (39.3)	18 (54.5)	12 (50.0)	8 (44.4)	9 (47.4)
No response	6 (4.2)	1 (5.3)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
AMI							
Low income	50(36.0)	10(52.6)	17 (60.7)	23 (69.7)	15 (62.5)	11(61.1)	12(63.2)
Mid income	72(51.8)	7 (36.8)	10 (35.7)	8 (24.2)	8 (33.3)	5 (27.8)	5 (26.3)
High income	17(12.2)	2 (10.6)	1 (3.6)	2 (6.1)	1 (4.2)	2 (10.1)	2 (10.5)

NOTE: Socio-economic variable (SEV); Study location A (SLA); Study location B (SLB); Study location C (SLC); study location D (SLD); Study location E (SLE); Study location F (SLF); Study location G (DLG); Academic staff (Acad. Staff); Senior non-academic staff (SNAS); Junior non-academic staff (JNAS); Middle income (mid income); Average monthly income (AMI); Primary School Certificate (PSC); Junior Secondary School Certificate (JSSC); Senior Secondary School Certificate (SSSC); Ordinary National Diploma (OND); Higher National Diploma (OND); Low income (less than N100,000); Middle income (N101,000-N200,000); High income (N201,000 and above)

Table 3: Health promoting lifestyle behaviour of respondents (N=280)

HPLP	Not practicing HPL %	Practicing HPL %	Number of items	Mean score	Standard deviation
Nutrition	22.2	77.8	19	2.81	0.48
Physical Activity	71.7	28.3	8	2.21	0.64
Health Responsibility	73.9	26.1	10	2.19	0.62
Stress Management	39.6	60.4	10	2.72	0.62
Interpersonal Relation	23.2	76.8	9	2.94	0.65
Self-Actualization	9.3	90.7	9	3.35	0.65
HPLP	16.8	83.2	65	2.74	0.46

NOTE: Mean score is the mean of all the test items in each subscale and is on a scale ranging between 1 and 4; HPL (health-promoting lifestyle)

Table 4: Sociodemographic characteristics and health promoting lifestyle behaviour of respondents

IV	NUT M&S	PA M&S	HR M&S	SM M&S	IR M&S	SA M&S	HPLP M&S
Age							
20-29	2.73±0.52	2.37±0.62	2.17±0.59	2.67±0.55	2.87±0.63	3.23±0.73	2.80±0.41
30-39	2.79±0.48	2.27±0.70	2.12±0.60	2.74±0.65	2.92±0.63	3.25±0.63	2.84±0.45
40-49	2.81±0.47	2.06±0.55	2.13±0.65	2.60±0.61	2.84±0.64	3.30±0.68	2.87±0.42
50-59	2.89±0.43	2.22±0.63	2.48±0.62	2.70±0.70	3.09±0.55	3.70±0.51	2.96±0.05
≥60	2.91±0.54	2.00±0.45	2.18±0.41	2.55±0.69	3.09±0.70	3.55±0.69	2.82±0.41
F-value	0.72	1.97	3.15*	0.68	1.38	4.71*	0.85
X²-value	8.74	13.81	16.12	8.26	7.07	26.03*	4.32
Gender							
Male	2.78±0.50	2.33±0.65	2.17±0.62	2.76±0.67	2.96±0.64	3.33±0.67	2.89±0.45
Female	2.85±0.44	2.06±0.60	2.21±0.62	2.58±0.57	2.89±0.60	3.37±0.63	2.82±0.38
F-value	1.54	12.04*	0.24	5.77*	0.98	0.31	1.83
X²-value	2.25	11.64*	11.87*	9.91*	1.66	1.03	6.58*
Study location							
SLA	2.83±0.48	2.14±0.57	2.26±0.66	2.65±0.64	2.95±0.62	3.44±0.66	2.89±0.41
SLB	2.74±0.56	2.21±0.63	2.21±0.54	2.53±0.51	2.74±0.56	3.21±0.79	2.79±0.42
SLC	2.93±0.38	2.29±0.76	2.07±0.54	2.68±0.67	2.86±0.71	3.18±0.61	2.93±0.38
SLD	2.76±0.56	2.42±0.71	2.18±0.64	2.67±0.65	3.12±0.55	3.45±0.56	2.94±0.35
SLE	2.63±0.50	2.42±0.72	1.96±0.55	2.67±0.57	2.75±0.68	3.13±0.54	2.58±0.50
SLF	2.89±0.32	2.00±0.69	2.11±0.58	3.00±0.69	3.28±0.58	3.61±0.50	2.94±0.42
SLG	2.74±0.45	2.21±0.63	2.21±0.54	2.84±0.69	2.63±0.50	2.89±0.66	2.74±0.45
F-value	1.25	1.75	1.08	1.22	3.02*	3.72*	2.76*
X²-value	14.49	24.37	9.54	14.63	20.65	32.39*	17.19
Religion							
Christianity	2.82±0.47	2.23±0.65	2.20±0.62	2.70±0.63	2.92±0.63	3.39±0.62	2.88±0.42
Islam	2.69±0.53	2.06±0.58	2.14±0.59	2.56±0.65	2.97±0.61	3.06±0.79	2.75±0.44
F-value	2.31	2.43	0.27	1.64	0.20	8.38*	2.87
X²-value	8.33*	2.57	1.06	3.66	0.33	13.66*	2.99
MS							
Married	2.78±0.48	2.16±0.62	2.21±0.60	2.65±0.62	2.92±0.61	3.33±0.67	2.83±0.42
Single	2.88±0.47	2.36±0.67	2.14±0.67	2.78±0.67	2.96±0.66	3.38±0.62	2.95±0.41
F-value	2.11	5.16*	0.70	2.39	0.23	0.32	4.01*
X²-value	2.70	6.20	2.54	4.04	0.76	0.90	4.50
TOM							
Monogamy	2.79±0.47	2.16±0.63	2.22±0.61	2.65±0.62	2.94±0.60	3.37±0.63	2.85±0.41
Polygamy	2.65±0.59	2.15±0.59	2.05±0.51	2.60±0.60	2.75±0.79	3.00±0.92	2.60±0.50
NA	2.90±0.46	2.36±0.68	2.16±0.67	2.80±0.67	2.96±0.68	3.39±0.62	2.96±0.40
F-value	2.57	2.47	0.77	1.66	0.91	3.08*	1.89*
X²-value	17.02*	6.43	3.25	5.23	7.76	20.30*	12.47*
No of children							
1-4 children	2.82±0.46	2.19±0.63	2.21±0.58	2.65±0.62	2.90±0.61	3.39±0.64	2.86±0.40

NOTE: * (p < 0.05); independent variable (IV); Nutrition Mean and Standard deviation (NUT M&S); Physical Activity Nutrition Mean and Standard deviation (PA M&S); Health Responsibility Mean and Standard deviation (HR M&S); Stress Management Mean and Standard deviation (SM M&S); Interpersonal Relation Mean and Standard deviation (IR M&S); Self Actualization Mean and Standard deviation (SA M&S); health-promoting lifestyle profile (HPLP M&S); Study location A (SLA); Study location B (SLB); Study location C (SLC); Study location D (SLD); Study location E (SLE); Study location F (SLF); Study location G (SLG); Marital status (MS); Types of marriage (TOM) and Not in any form of marriage (NA)