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RESEARCH ARTICLE

The Assessment of Health Risk Behaviours among the Administrative Staff at an Institution of Higher Education

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Abstract:

Background:

Health risk behaviours can impair an individual's physical and/or mental health. University administrators experience a sedentary lifestyle such as smoking, drinking, unhealthy eating habits, and work-related stress.

Objective:

This study assessed the health risk behaviours of administrators at an institution of higher education in the Western Cape, South Africa.

Methods:

A quantitative, cross-sectional study was conducted among 67 participants using an online questionnaire, focusing on demographics, work-related stress and environment, lifestyle-related behavior, and physical activity levels. SPSS, version 26 (2020), was used to compute the data.

Results

The results of this study report significant mean value for administrative staff. Participants reported that they preferred physical activity as a coping mechanism. Administrators admitted to being stressed in their work situation for two weeks or more consecutively and to feeling overwhelmed by the workload. They reported working standard office hours from 08:30 to 16:30. On most days of the week, administrators reported they ate breakfast with at least one drink of alcohol and tried smoking. They spend hours playing video or computer games, sitting at a desk, and have poor sleep quality.

Conclusion:

Health risk behaviors such as smoking, excessive drinking, and having a sedentary lifestyle can harm job productivity.

Keywords: Health risk behaviors, Administrative staff, Eating habits, Smoking, Alcohol consumption, Sedentary.

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1. INTRODUCTION

Health risk behaviours can be defined as activities that impair an individual's physical and/or mental health [1]. The detrimental effect of health risk behaviour (HRB) on physical and mental health is substantiated by an extensive body of evidence [2 - 5]. Quantitatively, unhealthy behaviours (including smoking, excessive alcohol consumption, inadequate physical activity, and unhealthy eating) are associated with a fourfold increase in mortality in men and women in the general adult population [2, 5]. The rate of diseases and health conditions

(such as cardiovascular disease, diabetes, obesity, and cancer) is rising globally due to unhealthy lifestyle choices [6]. Anteghini et al. believe that these behaviours result from some lifestyle choices and attitudes that impact the health of individuals, leading to a premature risk of morbidity and mortality [1].

Physical inactivity amongst the administration staff can lead to chronic conditions due to their sedentary lifestyles, characterised by low physical activity and increased stress levels at their workplace [7]. During workdays, administrative staff members spent an average of 72% of their time physically inactive [8]. An administrative position consists of prolonged sitting, limited physical activity, and low energy expenditure. The nature and function of an administrative job description limit workplace movement and increase their chances of living

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a sedentary lifestyle [7]. A study by Melin et al. showed a risk that staff in academic workplaces would start using compensatory coping strategies to deal with excessive demands, which might seriously impair their health [9]. The likelihood that administrative staff members participate in more health risk behaviours due to their sedentary work environment is significant [10]. In addition, their long working hours can also lead to work-related stress and excessive alcohol consumption, poor eating habits, and other negative coping mechanisms [10]. Freedman and Rubinstein state that obesity among university employees warrants attention because campus cafeterias may contribute to unhealthy meals for staff, as they tend to offer fast foods rather than typical fruit and vegetable options. Universities need to improve on-campus access to healthy foods [11].

Workplace demands, negative coping mechanisms, and attributional behaviours are associated with high levels of depression and anxiety, leading to low job satisfaction in university employees [12]. Mark and Smith discovered that most of the university employees in their study reported that workplace conditions had caused or made an illness worse, and these employees were twice as likely to complain of stress [12]. According to Sato, Kuroda, and Owan, when considering the various types of stressors in a workplace condition, long working hours are the main cause of mental health problems [13].

Smoking, excessive alcohol consumption, and unhealthy eating are the three types of unhealthy consumables. Excessive drinking is highly prevalent among university employees, possibly due to factors related to the work environment [14]. These consumables are prevalent among university staff members due to different contributing factors [15]. Smoking is reported as one of the most prevalent coping mechanisms for people who experience a high amount of work-related stress [16]. Smoking in the workplace also affects productivity as workers who smoke take frequent smoke breaks [17]. Besides the health risk behaviours, weight gain and the related consequences of sedentary lifestyles remain high among university administration staff. Obesity further influences the association; thus, obese smokers have a high risk of death [18]. Doku stated that senior staff members were more likely to be overweight or obese than junior staff, which can be correlated to their age versus work demands [19].

Workers tend to move less in their workplace, and prolonged periods of sitting or sedentary behaviour are associated with deleterious health consequences [7, 20]. A sedentary lifestyle can lead to numerous health problems and unhealthy behaviour [21]. Over the past two decades, sedentary occupations have increased by more than 10% in Western countries [7]. Daneshmandi *et al.* conducted a research study where the Nordic Muscular Questionnaire (NMQ) was used to assess symptoms of musculoskeletal disorders of office workers. Their results showed that long periods of sitting were associated with exhaustion during the workday, hypertension, and musculoskeletal disorder symptoms in the neck, lower back, thighs, and knees of office workers [22].

Administrative jobs are key to any company/institution; thus, staff in those positions are responsible for the day-to-day

operations of the company/institution. It is, therefore, unsurprising to learn about the health risk behaviours experienced by these administrators, as reported in the literature. South African institutions have high student enrollments, and various faculties and departments require at least one or two administrators to deal with departmental affairs. This leads to fairly large workloads on administrators at the universities. It is, therefore, anticipated, as in line with the literature, that administrative staff is prone to live sedentary lifestyles that lead to health risk behaviours. To date, no published evidence has been found in HRB research among employees in higher institutions in South Africa. Given the critical role that administrators play in the daily functioning of higher learning institutions, it would be beneficial if staff embraced a healthier lifestyle instead of having the compromised health status caused by health risk behaviours. Therefore, this study aimed to assess health risk behaviours among the administrative staff at an institution of higher education in the Western Cape province of South Africa.

2. MATERIALS AND METHODS

2.1. Participant Characteristics

The current study followed a quantitative, cross-sectional method, using administrative staff members as participants. The study sample was randomly selected from the institution of higher learning. Participants had to be permanent administrative staff members at the institution of higher learning, aged between 25 to 65 years of age and comprising both men and women. The total population of permanent administrative staff was 253; based on this population size, according to Slovin's formula, the sample size needed to achieve sufficient statistical power is 154 participants, allowing for a 5% margin error, with a 95% confidence level.

2.2. Procedure

The research instrument administered in the study was a modified self-administered questionnaire used in the Behavioral Risk Factor Surveillance System (BRFSS questionnaire) by the CDC [23]. The modified questionnaire was divided into demographic information, work-related stress and the environment, lifestyle-related behaviour and physical activity levels. Section A had five questions related to the demographic information of participants. Section B consisted of seven questions, which focused on work-related stress and the environment with scoring for statements 1-4, 6 were based on a "Yes=1" and "No=2". Statement 5 was scored 1-5 were in 1 = smoking, 2 = unhealthy eating, 3 = physical activity, 4 = alcohol consumption and 5 = other. Statement 7 was scored from 1 - 7, 1 = never tried cigarette smoking, 2 = 8 years or younger, 3 = 9-15 years, 4 = 16-20 years, 5 = 21-30 years, 6 = 31-40 years and 7 = 41 years and older, Section C consisted of 14 questions that focused on lifestyle-related behavior with scoring for statement 1 were based on a "Yes=1" and "No=2". Statement 4 was scored from 1 - 7. 1 = never smoked, 2 = 8years and younger, 3 = 9-15 years, 4 = 16-20 years, 5 = 21-30years, 6 = 31-40 years and 7 = 41 years and older. Statement 3 and 6 were scored from 1-7, 1 = 0 days, 2 = 1 - 2 days, 3 = 3-5days, 4 = 6-9 days, 5 = 10-19 days, 6 = 20-29 days and 7 = all

30 days. Statement 4 was scored from 1 - 7. 1 = no smoke in past 30 days, 2 = less than 1 cigarette per day, <math>3 = 1 cigaretteper day, 4 = 2-5 cigarettes per day, 5 = 6-10 cigarettes per day, 6 = 11-20 cigarettes per day and 7 = more than 20 cigarettes per day. Statement 5 was scored from 1-7, 1 = 0 days, 2 = 1-2days, 3 = 3-9 days, 4 = 10-19 days, 5 = 20-39 days, 6 = 40-99days and 7 = 100 or more days. Statement 7 scoring was 1-7, 1 =0 days, 2 = 1 day, 3 = 2 days, 4 = 3-5 days, 5 = 6-9 days, 6 = 6-910-19 days and 7 = 20 or more days. Statement 8 scoring was 1-8, 1 = no alcohol in pass 30 days, 2 = 1-2 drinks in pass 7days, 3 = drinks in pass 7 days, 4 = 4 drinks, 5 = 5 drinks, 6 = 6 drinks6-7 drinks, 7 = 8-9 drinks and 8 = 10 or more drinks. Statement 9 -12 scoring was 1-7, 1 = none, 2 = 1-3 times, 3 = 4-6 times, 4= 1 time per day, 5 = 2 per day, 6 = 3 per day and 7 = 4 or more per day. Statement 13 scoring was 1-8, 1 = 0 days, 2 = 1day, 3 = 2 days, 4 = 3days, 5 = 4 days, 6 = 5 days 7 = 6 days and 8=7 days. Statement 14 scoring was 1-7, 1=1 day, 2=2days, 3 = 3 days, 4 = 4 days, 5 = 5 days, 6 = 6 days and 7 = 7days. Section D consisted of seven questions that focused on physical activity levels. Mass communication was sent out to all participants who met the study criteria for recruitment. Two follow-up email reminders were sent to potential participants; however, only 67 participants contacted the researcher and were thus recruited as official participants for this study. The email sent an information sheet to inform the participants about the study. A questionnaire was put together on Google forms, and the results were automatically received as the participants submitted their responses.

2.3. Ethics Considerations

The Human Social Sciences Research Ethics Committee reviewed and approved the study at the University of the Western Cape (Ethics reference number: HS20/5/29). Informed consent was obtained before anyone could participate in the

study. The staff answered the questionnaire anonymously, and the researcher asked them to give consent again before they started with the questionnaire. The researcher informed participants that their participation was purely voluntary and stressed that they could withdraw their participation without any prejudice during data collection. Participants were allocated a unique research number during data coding. The questionnaire did not require personal details, which increased the confidentiality of the participants.

2.4. Statistical Analysis

Responses from the participants were captured online, then exported to an excel sheet document to clean the data code. The data was then transferred to SPSS version 26 for analysis. The study used descriptive statistics to summarise and describe the data using mean and standard deviation. Data were presented using tables, which reported four components, including demographic information, work-related stress and environment, lifestyle-related behaviour, and physical activity levels of participants. The data were assessed for normality using the Kolmogorov Smirnov test. The Mann-Whitney U test compares differences between two independent groups when the dependent variable is either ordinal or continuous but not normally distributed.

3. RESULTS

The findings of this study reported on health risk behaviours among administration staff members within an institution of higher learning in the Western Cape province of South Africa. Due to the low response rate, only 67 participants formed part of this study, which equals 43% of the statistical power. Table 1 shows the demographic data of the participants, Table 2 displays the responses to questions regarding work-related stress and environment, and Table 3 depicts various lifestyle behaviours of the participants.

Table 1. Demographic data of participants in this study

Characteristics	n (%)		
	Age		
25-30 years	5 (7.5)		
31-40 years	23 (34.3)		
41-50 years 51+ years	17 (25.4)		
31. years	22 (32.8)		
Gender			
Male	12 (18.2)		
Female	55 (81.8)		
	Faculty		
Arts Community Health Sciences Dentistry Economic & Management Science Law	5 (7.5)		
	5 (7.5)		
	3 (4.35)		
	13 (19.4)		
Natural Science	4 (6)		
Student Admin Other	7 (10.45)		
	2 (3)		
	28 (41.8)		

(Table 1) contd....

Characteristics	n (%)
	Race
Indian Coloured Black/African White Other	1 (1.5)
	51 (76.1)
	7 (10.4)
	7 (10.4)
	1 (1.5)
	Duration to date working
1-3 years 4-7 years 8-12 years 13+ years	11 (16.1)
	14 (21.8)
	22 (31.8)
	20 (30.3)

Table 2. Work-related stress and environment of participants.

Item		St Deviation
Sometimes people feel so stressed about their work that it can influence their actions and emotions		
Ever feel stressed or hopeless almost every day for two weeks or more in a row that you stopped doing some usual activities	2.84	.98
Stress related to work	1.43	.50
Do you feel safe in your work environment	1.28	.45
Do you feel overwhelmed with your workload	1.55	.50
Universities office hours, 08:30 to 16:30	1.39	.49
Coping mechanisms in place to help with work-related stress	1.22	.42
Coping mechanisms include the following: (smoking, unhealthy eating, physical activity, alcohol consumption, and others.)	3.00	1.37

Notes: Response scoring for statements 1-4 and 6 were based on a "Yes=1" and "No=2". Statement 5 was scored 1-5 were in 1 = smoking, 2 = unhealthy eating, 3 = physical activity, 4 = alcohol consumption and 5 = other. Statement 7 was scored from 1 - 7, 1 = never tried cigarette smoking, 2 = 8 years or younger, 3 = 9-15 years, 4 = 16-20 years, 5 = 21-30 years, 6 = 31-40 years and 7 = 41 years and older.

Table 3. Lifestyle-related behaviour.

Item		St deviation
Smoking cigarettes, even if it was one or two puffs	1.33	.473
Your age when you first tried cigarette smoking, even one or two puffs	3.39	1.69
During the past 30 days, days did you smoke cigarettes	2.40	2.52
During the past 30 days, on the days you smoked, how many cigarettes were smoked per day	2.13	1.98
During your life, days have you had at least one drink of alcohol	3.91	2.58
During the past 30 days, days you had at least one drink of alcohol	2.09	1.32
During the past 30 days, had four or more drinks of alcohol in a row	1.72	1.25
During the past 30 days, the largest number of alcoholic drinks you had in a row	2.57	2.04
During the past 7 days, times you ate fruit (Do not count fruit juice.)	3.25	1.51
During the past 7 days, times you ate a green salad	2.12	1.01
During the past 7 days, times you ate vegetables	3.01	.96
During the past 7 days, times you drank a can, bottle, or glass of soda or pop, such as Coke, Pepsi, or Sprite	2.01	1.12
During the past 7 days, days you ate breakfast	5.75	2.78
During the past 7 days, days you bought take-away/ate at a restaurant /bought food on campus cafeteria	2.21	1.49
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Notes: Response scoring for statement 1 were based on a "Yes=1" and "No=2". Statement 4 was scored from 1-7. 1= never smoked, 2=8 years and younger, 3=9-15 years, 4=16-20 years, 5=21-30 years, 6=31-40 years and 7=41 years and older. Statement 3 and 6 were scored from 1-7, 1=0 days, 2=1-2 days, 3=3-5 days, 4=6-9 days, 5=10-19 days, 6=20-29 days and 7= all 30 days. Statement 4 was scored from 1-7. 1= no smoke in past 30 days, 2= less than 1 cigarette per day, 3=1 cigarette per day, 4=2-5 cigarettes per day, 5=6-10 cigarettes per day, 6=11-20 cigarettes per day and 7=100 or more than 20 cigarettes per day. Statement 5 was scored from 1-7, 1=0 days, 2=1-2 days, 3=3-9 days, 4=10-19 days, 5=20-39 days, 6=40-99 days and 7=100 or more days. Statement 7 scoring was 1-7, 1=0 days, 2=1-2 dinks in pass 7 days, 2=1-2 days, 2=

The demographic information of this study includes age, gender, faculty in which the participants work, their race and the duration to date when they started working for the

university. Regarding age, the majority of the participants were aged between 31-40 years (n=23) and the minority aged between 25-30 years (n=5). Most participants were female

(n=55) and male (n=12). Most participants reported working under 'other faculties' (n=28), whereas a minority belonged to the Dentistry faculty (n=3). Regarding race, most participants were coloured (n=51), and Indian and 'other' were the minority (n=1). Most participants had been employed with the university for about 8-12 years (n=22), and only n=11 had been with the university for 1-3 years.

The results from the table above relate to work-related stress and the environment. The results in this study reported a significant mean value of 3.00, meaning that most participants preferred physical activity as a coping mechanism. The results indicate a significant mean value of 2.84, which means that administrators in this study admitted to being stressed or feeling hopeless almost daily from their work for two weeks or more in a row. The mean value for the second statement was 1.43, indicating a significant result that participants reported having stress related to their work. Furthermore, the mean value of 1.55 was reported on the statement about feeling overwhelmed by the workload. The mean value suggests that participants admitted to feeling overwhelmed by their workload. The results in this study report a significant mean value of 1.39 relating to standard office hours. The mean value suggests that participants were admitted to work from 08:30 to 16:30 during office hours at the university.

The results in the above table report on the lifestyle-related behaviour of administrators as participants of this study. The results indicate a mean value of 5.75 on days participants ate breakfast on their previous 7 days. This suggests that participants ate breakfast for almost six out the seven days. The results reported a mean value of 3.91 on having at least one drink of alcohol during the participants' lives. This suggests that participants had over 3-10 days of alcohol to date. The results in this study reported a mean value of 3.39 at the age they tried cigarette smoking. This suggests that participants first tried a cigarette between the ages of 9 and 15. The results on eating fruits reported a mean value of 3.25, which suggests that participants admitted to eating fruits 4-6 times during the past 7 days. The results in this study reported a mean value of 1.72, which indicates that participants admitted having had 1 day wherein, during the last 30 days, they had four or more drinks of alcohol in a row.

Table 4. Physical activity levels of participants in this study.

The result from Table 4 above reports on physical activity levels of participants in this study. The average number of hours watching TV reported a mean value of 3.60, indicating that participants admitted to spending over one hour on TV viewing. The results of this study report a mean value of 2.99 on average hours playing video or computer games. This suggests that participants spent over two hours on their phones/computers unrelated to their work. Furthermore, the results of this study reported a mean value of 2.72 on average hours spent sitting at the work desk. This suggests that participants spent over 2-6 hours at their work desks daily. Results in this study reported a mean value of 1.66 for quality of sleep for the past 30 days. This suggests that participants associated their sleep quality for the past 30 days with being poor. The inferential statistics did not yield any statistically significant difference between the groups.

4. DISCUSSION

The current aim of this study was to assess the health risk behaviours among administrative staff at an institution of higher education. The results were concerning with regard to the health risk behaviours among participants in this study. This study assessed three main domains: work-related stress and the environment, lifestyle-related behaviour and physical activity levels. University administration staff are very important within institutions because they are responsible for all the administration and planning behind the scenes.

The findings of this study revealed that participants admitted to experiencing work-related stress. These findings align with literature stating that work-related stress can negatively affect people's behaviour [12, 24, 25]. This suggests that administrative staff's work and/or part of their personal lives are susceptible because of the impact of the stress related to their work. The reported mechanism of dealing with stress relating to work includes health risk behaviours. Mark and Smith report that some coping mechanisms include negative health behaviours, which are adopted as stress relievers. Negative coping mechanisms used in this study included unhealthy eating, alcohol consumption, smoking, physical inactivity and unhealthy eating habits. Previous research showed that the same coping mechanisms are commonly found amongst university employees [12, 16, 24]. These behaviours can lead to morbidity and mortality [12, 24].

Item		St Deviation
During the past 7 days, how many days were you physically active for at least 60 minutes per day ? (Add up all the time you spent in any physical activity that increased your heart rate and made you breathe hard sometimes.)	2.67	1.86
On an average day, how many hours watching TV	3.60	1.72
On an average day, hours you play video or computer games or use a computer for something that does not work (Count time spent on things such as Xbox, PlayStation, an iPad or other tablet, a smartphone, texting, YouTube, Instagram, Facebook, or other social media.)		1.82
On average, hours a day spent sitting at a work desk	2.72	.76
What time do you go to bed	2.69	.47
Hours you sleep	1.16	.37
Quality of your sleep from the past 30 days	1.66	.66

Notes: Response scoring for statement 1 were scored from 1-8, 1 = 0 days, 2 = 1 day, 3 = 2 days, 4 = 3 days, 5 = 5 days, 6 = 5 days, 7 = 6 days and 8 = 7 days. Statement 2 and 3 was scored from 1 - 7. 1 = none, 2 = less than 1 hour per day, 3 = 1 hour per day, 4 = 2 hours per day, 5 3 hours per day, 6 = 4 hours per day and 7 = 5 and more hours per day. Statement 4 was scored from 1-4, 1 = 1-3 hours, 2 = 4-6 hours, 3 = 7-9 hours, 4 = 9 or more hours. Statement 5 scoring was 1-3, 1 = before 20:00 o clock, 2 = 20:00-22:00 o clock, 3 = after 22:00 o clock, Statement 6 scoring was 1-2, 1 = less than 8 hours, 2 = more than 8 hours. Statement 7 scoring was 1-4, 1 = bad, 2 = good, 3 = very good, 4 = excellent.

Furthermore, the findings in this study reported that participants admitted to being engaged in lifestyle-related behaviours that can be associated with risk behaviours. The study's findings are aligned and add to the existing body of knowledge. According to a Duthie *et al.* survey, 70% of all men and women reported eating less than the recommended five daily portions of fruit and vegetables. The authors also reported that 62% of both sexes consume fewer than 3 portions of fruits and vegetables each day [26]. Additionally, excessive drinking is highly prevalent among university employees, possibly due to factors related to the work environment [14, 27 - 30]

This study found that the participants were engaging in more non-physical activities such as watching TV, playing phone or computer games, and most importantly, their sleep patterns and quality of sleep were poor. The study results noted that they are not adhering to guidelines as recommended by literature that advocates regular physical activities, according to the ACSM guidelines. The ACSM recommends a minimum of 30 minutes per day of physical activity [31]. A sedentary lifestyle puts one at a higher risk of developing health conditions. Increasing physical activity is a great intervention to help protect against the development of health conditions such as obesity, diabetes and cardiovascular diseases [21].

It is important to note with concern the level of health risk on the administrative staff at the university considering the health risk behaviours recorded in this study. A necessary and appropriate intervention must be considered and developed to mitigate some of the risks and help staff live a healthier lifestyle. The current study adds to the existing literature and lays a good foundation for future research to expand on this topic.

CONCLUSION

The current study is important, especially within the South African context, as it concludes that work-related stress and environment among administrative staff is a cause for concern. The health risk behaviours and coping mechanism of the administrative staff at the institution of higher learning is an additional concern. The study concludes that health risk behaviours such as smoking, excessive drinking and sedentary lifestyles concern administrative staff.

LIST OF ABBREVIATIONS

HRB = Health Risk Behaviour

BRFSS = Behavioral Risk Factor Surveillance System

FUTURE RESEARCH

The study recommends that more studies be needed to expand on this topic and associate and/or correlate the variables to understand the broader context. It may be useful also to explore an understanding of the variables and coping mechanisms thereof.

LIMITATIONS OF THE STUDY

The study could not reach the desired number of participants to complete the survey online. The data obtained

from the HRB's survey was self-reported, subjective data and this information were not verified. Covid-19 possibly also affected the results because the participants' habits and health risk behaviours changed because they worked from home.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

The study was approved by the Human Social Sciences Research Ethics Committee at the University of the Western Cape (Ethics reference number: HS20/5/29).

HUMAN AND ANIMAL RIGHTS

No animals were used for studies that are the basis of this research. All human procedures followed as per the Helsinki Declaration of 1975.

CONSENT FOR PUBLICATION

Informed consent was obtained before anyone could participate in the study.

STANDARDS OF REPORTING

STROBE guidelines were followed.

AVAILABILITY OF DATA AND MATERIALS

The data that support the findings of this study are available from the corresponding author [G.S] on reasonable request.

FUNDING

None.

CONFLICT OF INTEREST

The authors declare no conflict of interest, financial or otherwise.

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Declared none

REFERENCES

- Anteghini M, Fonseca H, Ireland M, Blum RW. Health risk behaviors and associated risk and protective factors among Brazilian Adolescents in Santos, Brazil. J Adolesc Health 2001; 28(4): 295-302.
 [http://dx.doi.org/10.1016/S1054-139X(00)00197-X]
 [PMID: 11287247]
- [2] Khaw KT, Wareham N, Bingham S, Welch A, Luben R, Day N. Combined impact of health behaviours and mortality in men and women: the EPIC-Norfolk prospective population study. PLoS Med 2008; 5(1): e12.

[http://dx.doi.org/10.1371/journal.pmed.0050012] [PMID: 18184033]

- [3] Lloyd-Jones DM, Hong Y, Labarthe D, et al. Defining and setting national goals for cardiovascular health promotion and disease reduction: the American Heart Association's strategic Impact Goal through 2020 and beyond. Circulation 2010; 121(4): 586-613. [http://dx.doi.org/10.1161/CIRCULATIONAHA.109.192703] [PMID: 20089546]
- [4] WHO. 2008. Available from: http://www.who.int/nmh/publications/ 9789241597418/en/
- [5] Arsandaux J, Montagni I, Macalli M, Bouteloup V, Tzourio C, Galéra C. Health risk behaviors and self-esteem among college students: Systematic review of quantitative studies. Int J Behav Med 2020; 27(2): 142-59.

 $[http://dx.doi.org/10.1007/s12529-020-09857-w]\ [PMID:\ 32072455]$

- [6] Agaba EI, Akanbi MO, Agaba PA, et al. A survey of noncommunicable diseases and their risk factors among university employees: a single institutional study. Cardiovasc J Afr 2017; 28(6): 377-84.
- [http://dx.doi.org/10.5830/CVJA-2017-021] [PMID: 28820539]
 López-Bueno R, Smith L, Andersen LL, López-Sánchez GF, Casajús JA. Association between physical activity and sickness absenteeism in university workers. Occup Med (Lond) 2020; 70(1): 24-30.
 [http://dx.doi.org/10.1093/occmed/kqz158] [PMID: 31828321]
- [8] Keown MK, Skeaff CM, Perry TL, Haszard JJ, Peddie MC. Device-measured sedentary behavior patterns in office-based university employees. J Occup Environ Med 2018; 60(12): 1150-7. [http://dx.doi.org/10.1097/JOM.000000000001467] [PMID: 30308622]
- [9] Melin M, Astvik W, Bernhard-Oettel C. New work demands in higher education. A study of the relationship between excessive workload, coping strategies and subsequent health among academic staff. Qual High Educ 2014; 20(3): 290-308. [http://dx.doi.org/10.1080/13538322.2014.979547]
- [10] Arslan SS, Alemdaroğlu İ, Karaduman AA, Yilmaz ÖT. The effects of physical activity on sleep quality, job satisfaction, and quality of life in office workers. Work 2019; 63(1): 3-7. [http://dx.doi.org/10.3233/WOR-192902] [PMID: 31033474]
- [11] Freedman MR, Rubinstein RJ. Obesity and food choices among faculty and staff at a large urban university. J Am Coll Health 2010; 59(3): 205-10. [http://dx.doi.org/10.1080/07448481.2010.502203] [PMID: 21186451]
- [12] Mark G, Smith AP. Effects of occupational stress, job characteristics, coping, and attributional style on the mental health and job satisfaction of university employees. Anxiety Stress Coping 2012; 25(1): 63-78. [http://dx.doi.org/10.1080/10615806.2010.548088] [PMID: 21271408]
- [13] Sato K, Kuroda S, Owan H. Mental health effects of long work hours, night and weekend work, and short rest periods. Soc Sci Med 2020; 246: 112774. [http://dx.doi.org/10.1016/j.socscimed.2019.112774] [PMID: 2020227]
- [14] Awoliyi S, Ball D, Parkinson N, Preedy VR. Alcohol misuse among university staff: a cross-sectional study. PLoS One 2014; 9(7): e98134. [http://dx.doi.org/10.1371/journal.pone.0098134] [PMID: 25072628]
- [15] Garg S. Role of work stress and coping strategies of employee's Performance: An Empirical study with reference to private university employees. IARS Int Res J 2017; 7(1): 28200701201703. [http://dx.doi.org/10.51611/iars.irj.v7i1.2017.68]
- [16] Siqueira LM, Rolnitzky LM, Rickert VI. Smoking cessation in adolescents: the role of nicotine dependence, stress, and coping

- methods. Arch Pediatr Adolesc Med 2001; 155(4): 489-95. [http://dx.doi.org/10.1001/archpedi.155.4.489] [PMID: 11296077]
- [17] Coles MD. 2019.Impact of Smoking Cessation Education on Workplace Wellness.
- [18] Roos ET, Lallukka T, Lahelma E, Rahkonen O. Joint associations between smoking and obesity as determinants of premature mortality among midlife employees. Eur J Public Health 2017; 27(1): 135-9. [PMID: 28177439]
- [19] Doku DT. Designated by weights: Obesity among university employees. Obes Med 2017; 5: 11-5. [http://dx.doi.org/10.1016/j.obmed.2017.01.001]
- [20] American College of Sports Medicine. 2018.
- [21] Hanna F, Daas RN, El-Shareif TJ, Al-Marridi HH, Al-Rojoub ZM, Adegboye OA. The relationship between sedentary behavior, back pain, and psychosocial correlates among university employees. Front Public Health 2019; 7: 80. [http://dx.doi.org/10.3389/fpubh.2019.00080] [PMID: 31024881]
- [22] Daneshmandi H, Choobineh A, Ghaem H, Karimi M. Adverse effects of prolonged sitting behavior on the general health of office workers. J Lifestyle Med 2017; 7(2): 69-75. [http://dx.doi.org/10.15280/jlm.2017.7.2.69] [PMID: 29026727]
- [23] Centers for Disease Control and Prevention. 2017.
- [24] Abouserie R. Stress, coping strategies and job satisfaction in university academic staff. Educ Psychol 1996; 16(1): 49-56. [http://dx.doi.org/10.1080/0144341960160104]
- [25] Keller M, Bamberg E, Kersten M, Nienhaus A. Instrument for stress-related job analysis for hospital physicians: validation of a short version. J Occup Med Toxicol 2013; 8(1): 10. [http://dx.doi.org/10.1186/1745-6673-8-10] [PMID: 23594798]
- [26] Duthie SJ, Duthie GG, Russell WR, et al. Effect of increasing fruit and vegetable intake by dietary intervention on nutritional biomarkers and attitudes to dietary change: a randomised trial. Eur J Nutr 2018; 57(5): 1855-72. [http://dx.doi.org/10.1007/s00394-017-1469-0] [PMID: 28560503]
- [27] Alcohol Concern. Impact of alcohol problems on the workplace. 2006.
- [28] Adebiyi DR. Occupational stress among academic staff of Ekiti state university, Ado-Ekiti. Eur Sci J 2013; 9(4): 202-08.
- [29] Gillespie NA, Walsh M, Winefield AH, Dua J, Stough C. Occupational stress in universities: Staff perceptions of the causes, consequences and moderators of stress. Work Stress 2001; 15(1): 53-72. [http://dx.doi.org/10.1080/02678370117944]
- [30] Institute of Alcohol Studies. Alcohol and the Workplace 2009.http://www.alcohollearningcentre.org.uk/_library/IAS_workplace Factsheet.pdf
- [31] American College of Sports Medicine. 2021.

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