EFFECTS OF LIFESTYLE CHARACTERISTICS, ANTHROPOMETRIC DETERMINANTS ON MUSCULOSKELETAL SYMPTOMS AND LIFE SATISFACTION AMONG BANK WORKERS

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ABSTRACT

Introduction: Work-related musculoskeletal disorders are one of the most common occupational diseases. The study aimed to determine the effect of lifestyle characteristics, anthropometric determinants on musculoskeletal symptoms and life satisfaction among bank workers.

Materials and method: A cross-sectional study was carried out among the bank employees (n=115) comprised of males (56%) and females (44%) aged between 25-55 years. Lifestyle characteristics, life satisfaction, physical activity and musculoskeletal symptoms were obtained by filling up the questionnaires. Body composition was obtained through bioelectrical impedance and the waist-hip ratio was determined through measuring tape. **Results:** The results showed that 76.52% bank workers were having musculoskeletal symptoms due to work. A significant relationship exists between musculoskeletal symptoms with physical activity, lifestyle characteristics, BMI and life satisfaction. **Conclusion:** The altered body composition, as indicated by fat% and waist-hip ratio, was significantly associated with the prevalence of MSDs among male and female bank workers. The study also suggested that bank workers were generally satisfied with life, and there was a significant relationship between fantastic lifestyle scoring and satisfaction with the life scale.

Keywords: *Musculoskeletal symptoms; Anthropometric determinants; lifestyle characteristics*

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Introduction

As technology advances, the use of electronic data and appliances impacts workers and their working environment. Office modernization has resulted in the incorporation of information technology devices in the workplace. More people use visual display terminals such as computers and related equipment to complete their work (Sulaiman et al. 2015, Moom et al. 2014). They spend the majority of their working time sitting down and are subjected to stressful environments as a result of the objectives to be met and the responsibilities associated with handling large sums of money. They are engaged in long periods of static work, awkward posture, prolonged sitting, and repetitive computer activities. Sedentary work in banking systems has been linked to a variety of issues, including symptoms of musculoskeletal disorders. (Sanchi and Borges 2019).

Musculoskeletal symptoms refer to a combination of inflammatory and degenerative conditions that affect the muscles, tendons, ligaments, joints, peripheral nerves, and surrounding blood vessels resulting in pain, soreness, numbness, or discomfort (Sulaiman et al. 2015). Musculoskeletal disorders affect everyone, regardless of age or gender, and are common in various occupations, including bank workers in the operations section. Tenderness, pain, discomfort, tingling, stiffness, and swelling are some symptoms. (Kibret et. al. 2018).

Patel et al. (2016) theorized that an unhealthy lifestyle can affect your physical and mental health by affecting diet or eating habits, sleep patterns, physical activity, and mental stress. Malnutrition, an unbalanced diet, smoking, alcoholism, drug dependency and stress are all indicators of an unhealthy manner of living that is practiced as a dominant form of living. Whether at work, for fun, or relaxation, modern humans spend most of their time in an unhealthy environment (Nemanja et al., 2019). Unhealthy habits developed during adolescence often persist into adulthood and can increase your risk of developing chronic diseases. It encompasses the people's routine, attitude and decisions in their jobs, hobbies, entertainment and diet (D and Farhud 2015 and Fahmy et al. 2021).

Many studies have shown that leading a healthy lifestyle improves long-term health, enhances the quality of life, and lowers morbidity and mortality. In other words, poor lifestyle choices have been attributed to the development of chronic diseases such as elevated cholesterol, osteoporosis, chronic heart disease, hypertension, colon cancer, and psychosocial health issues (Turkmen et al. 2013). According to the WHO, insufficient physical activity, cigarette smoking, and poor nutrition are among the three major threats to modern health (Jogunola & Awoyemi 2010).

Physical activity is described as the movement of the body caused by skeletal muscle activity that results in energy expenditure. Physical activities include walking, gardening, jogging, climbing stairs, and playing football. Physical inactivity raises the risk of noncommunicable diseases. It has turned into an issue that is worldwide. (Hw et al., 2020). Low physical activity levels may increase the risk of obesity and cardiovascular disease. On the other hand, physical activity has been proposed as a means of decreasing and regulating body fat. Regular physical activity has been shown to effectively reduce various health risk factors, particularly those related to cardiovascular disease and stroke (Zaccagni et al. 2014).

Physical activity has been demonstrated to be inversely related to BMI, waist-to-hip ratio (WHR), and fat percentage (Stefan et al. 2017). All of these variables are included in the body composition analysis. Body composition is the term used to describe the phenomenon of the biological material composition of the body, which is the collection of substances that make up the materially manifest structure of the human body (Nemanja et al. 2019). Body composition is one of the physical abilities associated with health. It describes the proportions of fat, muscle, water, and bone in the human body (Hw et al., 2020). A normal balance of body fat is necessary for good health and longevity. The excess of fat, when compared to lean body mass, is referred to as altered body composition, and it may increase the risk of many ailments, such as MSDs. It could additionally result in strain and progression of musculoskeletal conditions affecting the hips, knees, ankle, foot, lower back, and shoulder, resulting in pain. A significant positive relationship exists between the likelihood of having MSD and altered body composition (Das and Mukhopadhyay (2016).

Physical activity affects both physical and mental health. A good life is reflected in physical well-being. It is a significant social well-being issue related to life satisfaction (An, H. et al., 2019). The degree to which people feel positively or negatively about their lives is defined as life satisfaction. It is a mental or emotional reaction to a job task and the workplace's physical and social conditions. Life satisfaction is defined by Locke (1976) as a pleasurable or positive emotional state resulting from an evaluation of one's job experiences and life-related activities. Life satisfaction has been studied as a result of several personal and work environment characteristics, as well as a predictor of many outcomes. Employees who are more satisfied with their lives are less likely to be absent, less likely to leave, more productive, more likely to demonstrate organizational commitment, and more likely to be satisfied with their lives. In general, physical activity and life satisfaction have a positive relationship. Still, financial institute employees such as bank workers need to be assessed since there is a dearth of literature uncovering lifestyle characteristics (Niharika and Kiran 2014).

On this basis, there is a need to firmly and accurately evaluate the factors affecting the bank workers in order to contribute to their health support. Thus, this study aims to analyze the effect of changing lifestyle characteristics and anthropometric determinants on musculoskeletal symptoms and life satisfaction among bank workers.

METHODOLOGY

2.1 Study design and selection of subjects

The cross-sectional study was registered in the clinical trials registry of India (ICMR-NIMS) under registration number CTRI/2023/01/049026. Ethical clearance was obtained from the institutional ethical committee with reference number NTCC/MPT-Ortho/22-23/November 2022/25 Amity University, Noida. Consent of the participants and their respective working places were sought verbally and using a consent form to obtain written undertaken from the participants.

Out of 130, 115 bank workers were recruited in the study based on inclusion and exclusion criteria. Age between 25-55, Bank worker, Completed graduation degree., Working 8 hours a day and above was included in the study. Any known case of recent fracture, any present illness, any chronic disease, Presence of any metal implant in the body, Pregnant women, any disability

or amputee., Any medication for mental illness was excluded from the study. Convenience sampling was used to select the participants.

2.2 Measures

Questionnaires were used to find out the risk factors. Questionnaires were completed through face-to-face interviews. The height was measured with the help of a stadiometer, and weight was recorded using a body composition analyzer. The waist and hip circumferences were taken by measuring tape. This phase is subdivided into sub-phases viz., (i) lifestyle characteristics assessment, life satisfaction assessment and MSD assessment by filling up the questionnaires. ii) Anthropometric determinants assessment by body composition analyzer.

- Lifestyle characteristics assessment –It was done by using a fantastic lifestyle assessment scale developed by Dr. Wilson. The inventory encompasses the physical, emotional and social health components relevant to morbidity, mortality and quality of life. These questions were divided broadly into 1. Family/Friends 2. Activity 3. Nutrition 4. Tobacco/toxic 5. Alcohol 6. Sleep, seat belt stress, safe sex 7. Type of Behaviour 8. Insight 9. Career. etc., with scoring no point,1 point and 2 points. The overall reliability of FANTASTIC as an index of lifestyle behaviors is 0.88 with the scoring 42 - 50 - Congratulations-You are in control, 35 - 41 - Good Work-You are on the right track, 30 - 34- Fair, 20 - 29 - Somewhat low-you could take more control, 0 - 19 - You are in the danger zone. (Wilson and Ciliska 1984, Gurung and Priyanka 2020).

- Physical activity assessment – It was assessed by an international physical activity questionnaire short form. It consists of seven items. This measure considers the types of the intensity of physical activity and sitting time that people do in their daily lives to estimate total physical activity in MET-min/week and sitting time. IPAQ is a validated instrument with high reliability.The weekly amount of physical activity is represented by MET. Physical activity-related METs were calculated as hours per week (MET-hours/week) using the existing guidelines (IPAQ, 2005). Individuals can be classified into three levels of physical activity based on their self-reported MET, frequency, and intensity (Turkmen et al. 2013).

- Musculoskeletal symptoms assessment- It was done by using a Nordic musculoskeletal questionnaire. It consists of 3 columns. If a participant has a complaint in column 1, then only column 2 and 3 are needed to be answered (Crawford, 2007). The questionnaire had information regarding the location of symptoms in the past one week, past 12 months and whether it interfered with daily activities in the previous 12 months. The questionnaire was employed during a personal interview. NMQ has been widely used as a work-related musculoskeletal system screening tool and has been found to have good reliability and validity (Das and Mukhopadhyay, 2015).

- Life satisfaction assessment- it was done using satisfaction with life scale developed by Diener, Emmnos, Larsen, & Griffin in 1985. A 5-item scale designed to measure global cognitive judgments of one's life satisfaction. Participants indicate how much they agree or disagree with each of the five items using a 7-point scale that ranges from 7 strongly agree to 1 strongly disagree. The SWLS is shown to be a valid and reliable measure of life satisfaction, suited for use with a wide range of age groups and applications, which

makes possible the savings of interview time and resources compared to many measures of life satisfaction. The scoring is as follows 31 - 35 Extremely satisfied, 26 - 30 Satisfied, 21 – 25- Slightly satisfied, 20- Neutral, 15 - 19 Slightly dissatisfied, 10 - 14 Dissatisfied, 5 - 9 Extremely dissatisfied (Diener et al., 1985).

- Anthropometric measurement- Anthropometrics, the measurement of body parts, has been used as a sensitive indicator of human health, maturation, and development in humans at various age categories. It is the most widely applied, cost-effective, and non-invasive technique for determining the measurements and body composition of the human body (Chinedu et al.2013). In the current study, we used the Karada Scan Body Composition Monitor - HBF-375 which measures weight, body fat percentage, visceral fat level, subcutaneous fat and skeletal muscle percentage, RM, and BMI for optimal weight management and a more accurate and precise body composition analysis.

3. RESULTS

Table 3.1 Demographic and occupational characteristics of bank workers

Variables	**N (%)**	**Mean**	**Standard deviation**
Gender Males Females	115 64 (55.65%) 51(44.35%)		
Age (year) Males Females N=115 25-35 36-45 46-55	 61 (53.04%) 40 (34.78%) 14 (12.17%)	 35.51 35.50 35.50	 7.21 7.15 7.15
Height (cm) Males Females N= 115 145-160 161-170 >171	 38 (33.04%) 50 (43.47%) 27 (23.47%)	 165.07 164.9	 7.97 7.94
Weight (kg) Males Females N= 115 45-60 61-75 >76	 12 (10.43%) 54 (46.95%) 49 (42.60%)	 74.24 74.10	 10.66 10.67
BMI			

Males Females N=115 <18.5 18.5-24.9 25-29.9 >30	 1 (0.86%) 21 (18.26%) 78 (67.82%) 15 (13.04%)	27.21 27.18	2.81 2.81
Fat % Males Females		28.23 28.35	6.90 6.87
Waist-hip ratio Males Females		0.90 0.89	0.60 0.05
Fantastic lifestyle scoring		34.73	3.81
Life satisfaction scoring		30.91	3.30

Table 3.2 Prevalence of musculoskeletal symptoms among bank workers.

Musculoskeletal Symptoms	Frequency	Percent
NO	27	22.88%
YES	88	76.52%
Total	115	100.0%

Table 3.3 Relationship between musculoskeletal symptoms with physical activity, lifestyle characteristics and BMI.

Variables	Categories	Number of Participants	Musculoskeletal symptoms	Chi-square	p-value
Physical activity	Low Moderate High	29 49 10	Yes	14.1	0.001*
	Low Moderate High	16 4 7	No		
Lifestyle characteristics	Low Fair Good Very good	14 32 30 12	Yes	14.95	0.002*
	Low Fair	0 6	No		

	Good Very good	20 1			
BMI	Underweight Normal Overweight Obese	1 14 60 13	Yes	23.81	0.001*
	Underweight Normal Overweight Obese	0 17 7 3	No		

*= significant at 0.005 level

In table 3.3, it reveals that musculoskeletal symptoms are significantly related to physical activity, lifestyle characteristics and BMI.

Table 3.4 Correlation between lifestyle characteristics with life satisfaction scoring.

Correlation	Mean	Std. Deviation	r- value	p-value
Lifestyle characteristics	34.73	3.82	0.244	<0.001*
Life Satisfaction	30.91	3.30		

*Significant at 0.05 level

Table 3.4 shows significant relationship between lifestyle characteristics and life satisfaction.

Table 3.5 Relationship between life satisfaction with the BMI of the workers.

Life Satisfaction	BMI				Chi-square	p-value
	Underweight	Normal	Overweight	obese		
Slightly Satisfied	0	3	17	3	14.46	0.008*
Satisfied	1	6	30	4		
Extremely Satisfied	0	22	20	9		

*= Significant at 0.05 level

Table 3.5 represents the relationship between life satisfaction with BMI. There is a significant relationship between life satisfaction with BMI. A chi-square test was applied and the result was signified at a 0.005 level of significance.

Table 3.6 Relationship between musculoskeletal symptoms with life satisfaction

Life Satisfaction scoring	MUSCULOSKELETAL		Chi-square	p-value
	NO	YES		
Slightly Satisfied	8	15	6.93	0.031*
Satisfied	4	37		
Extremely Satisfied	15	36		

*= Significant at 0.05 level.

Table 3.6 revealed the association of life satisfaction with musculoskeletal symptoms. The Chi-square test was applied as 6.93 and the result was significant at 0.05 level of significance.

4. DISCUSSION

The prevalence of musculoskeletal symptoms is 76.52% in this study. According to Patel et al. (2019), the prevalence of musculoskeletal disorders among bank workers employed in Bhopal is 41.4%, while a survey reported in Kanchipuram district, Tamil Nadu, has a prevalence of 33.8, which is lower than our study. Kibert et al. (2018) determined that the annual prevalence rate of WMSDs in any body part region was 65.5%, as compared to 69.3% in a study done in Dhaka, Bangladesh. which is less extensive but nearly identical to our research. This result is higher than that obtained in Nigeria (71.68%). However, this percentage is lower than in Ghana (83.5%) and Kuwait, where (80%) of bank employees were affected by at least one MSD in the previous 12 months. The discrepancy might be due to differences in study participants' perceptions of pain or discomfort, sample size, work setting, sociocultural factors, and workload, as stated by Etana et al. (2021). Females are more likely than men to experience musculoskeletal symptoms and disability, according to various studies. The study found that the lower back and neck were the most frequently affected regions of the body among bank workers, correlating with the findings of a previous survey conducted across a cross-section of banks in Ethiopia, Kibert et al. (2018) and Sulaiman et al. (2015). The current study found a significant relationship between lifestyle characteristics, musculoskeletal symptoms, anthropometric determinants, and life satisfaction. According to the scoring of the fantastic lifestyle, the average mean for lifestyle characteristics is 34.73, which is nearly the same for both males and females, suggesting that there is a fair to a good lifestyle. According to Turkmen et al. (2013), university students are minimally active in terms of physical activity and have an average score in healthy lifestyle behaviors.

In the present study, it is found that there is no significant correlation between life satisfaction and fat percentage or waist-to-hip ratio. This may suggest that overall life satisfaction is not strongly related to these specific measures of body composition. However, it is essential to note that this study only examined a small sample of bank workers. More research is needed to understand the relationship between life satisfaction and body composition fully. Previous research has suggested that there may be a link between body composition and mental well-being, including life satisfaction. It is compared with a study by Hays et al. (2016) found that higher body fat levels were associated with lower levels of life satisfaction in women. Another study by Inoue et al. (2010) found that a higher waist-to-hip ratio was associated with lower levels of mental well-being in both men and women. Overall, the relationship between body composition and life satisfaction is complex and likely influenced by various factors, such as age, gender, and socioeconomic status. Further research is needed to understand better this relationship and its implications for promoting health and well-being.

This present study suggests that bank workers are satisfied with life. The mean for life satisfaction is 30.91. Based on the survey by Niharika and Kiran (2014), it is reported that personal satisfaction also had a highly significant positive relationship with economic, marital, social, and job satisfaction. A highly significant positive relationship also was seen between financial satisfaction with marital happiness, social satisfaction and job satisfaction among bank workers. Life satisfaction among bank employees significantly differs according to the type of bank. It was also found to have a relationship with work experience and hierarchy. Employment stability is found to be the primary reason for better life satisfaction among all parameters in nationalized bank employees compared to private bank employees. However, in our study, most

participants were recruited from private banks. Only one government bank is involved, so we can't say anything about the comparison. The current study found a significant relationship between fantastic lifestyle scoring and satisfaction with the life scale. It is found that people having musculoskeletal symptoms, altered body composition and inactive lifestyles are less satisfied with life as compared with other bank workers

5. CONCLUSION

It is concluded that there is a high prevalence of musculoskeletal symptoms among bank workers. There is a significant relationship between BMI and IPAQ scoring, with higher BMI categories (overweight and obese) being related with lower IPAQ scores. Overall, the findings of this study suggest that efforts should be made to promote physical activity among bank workers, particularly those who are overweight or obese, to reduce the prevalence of musculoskeletal symptoms and improve overall health and well-being. Lifestyle characteristics, such as physical activity and healthy lifestyle behaviors, were significantly associated with musculoskeletal symptoms, anthropometric determinants, and life satisfaction. Additionally, the study revealed that bank workers' mean BMI exceeded the normal limit of WHO and Indian standards. The alteration in body composition, as indicated by fat% and waist-hip ratio, was significantly associated with the prevalence of MSDs among male and female bank workers. The study also suggested that bank workers were generally satisfied with life, and there was a significant relationship between fantastic lifestyle scoring and satisfaction with the life scale.

REFERENCES

1. An, H. Y., Chen, W., Wang, C. W., Yang, H. F., Huang, W. T., & Fan, S. Y. (2020). The relationships between physical activity and life satisfaction and happiness among young, middle-aged, and older adults. *International journal of environmental research and public health*, *17*(13), 4817
2. Balboa-Castillo, T., León-Muñoz, L. M., Graciani, A., Rodríguez-Artalejo, F., & Guallar-Castillón, P. (2011). Longitudinal association of physical activity and sedentary behavior during leisure time with health-related quality of life in community-dwelling older adults. *Health and quality of life outcomes*, *9*(1), 1-10
3. Bauman, A., Bull, F., Chey, T., Craig, C. L., Ainsworth, B. E., Sallis, J. F., ... & Pratt, M. (2009). The international prevalence study on physical activity: results from 20 countries. *International journal of behavioral nutrition and physical activity*, *6*(1), 1-11.
4. Bozo, D., Pano, G., & Çitozi, R. (2013). Assessment of physical activity level in office employee's groups in Albania.
5. Catenacci, V. A., Ogden, L. G., Stuht, J., Phelan, S., Wing, R. R., Hill, J. O., & Wyatt, H. R. (2008). Physical activity patterns in the national weight control registry. *Obesity*, *16*(1), 153-161.
6. Chinedu, S. N., Ogunlana, O. O., Azuh, D. E., Iweala, E. E., Afolabi, I. S., Uhuegbu, C. C., ... & Osamor, V. C. (2013). Correlation between body mass index and waist circumference in Nigerian adults: implication as indicators of health status. *Journal of Public Health Research*, *2*(2), jphr-2013.
7. Craig, C., Marshall, A., Sjostrom, M., Bauman, A., Lee, P., Macfarlane, D., ... & Stewart, S. (2017). International physical activity questionnaire-short form. *J Am Coll Health*, *65*(7), 492-501.

8. Crawford, J. O. (2007). The Nordic musculoskeletal questionnaire. *Occupational medicine*, *57*(4), 300-301.
9. Das, S. K., & Mukhopadhyay, S. (2016). Effect of altered body composition on musculoskeletal disorders in medical practitioners. *Int J Res Eng Tech*, *5*.
10. Diener, E. D., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of personality assessment*, *49*(1), 71-75.
11. Farhud DD. Impact of Lifestyle on Health. Iran J Public Health. 2015 Nov;44(11):1442-4. PMID: 26744700; PMCID: PMC4703222
12. Gallagher, D., Visser, M., Sepulveda, D., Pierson, R. N., Harris, T., & Heymsfield, S. B. (1996). How useful is body mass index for comparison of body fatness across age, sex, and ethnic groups? *American journal of epidemiology*, *143*(3), 228-239.
13. Gupta, S. R. N. (2014). Body composition analysis of staff members of college using bioelectrical impedance analysis method. *International Journal of Chemical Engineering and Applications*, *5*(3), 259.
14. Jogunola, O. O., & Awoyemi, A. O. (2010). Prevalence of sedentary lifestyle among bankers in Ilorin metropolis. *Nigerian Journal of Medical Rehabilitation*, 44-50.
15. Karmacharya, P., Shrestha, G. L., Singh, S., & Shrestha, O. K. (2019). Relation of Waist Hip Ratio and BMI with the Vital Capacity. *Journal of Chitwan Medical College*, *9*(3), 51-55.
16. Kasaw Kibret, A., Fisseha Gebremeskel, B., Embaye Gezae, K., & Solomon Tsegay, G. (2020). Work-related musculoskeletal disorders and associated factors among bankers in Ethiopia, 2018. *Pain Research and Management*, *2020*.
17. Li, Y., Schoufour, J., Wang, D. D., Dhana, K., Pan, A., Liu, X., ... & Hu, F. B. (2020). Healthy lifestyle and life expectancy free of cancer, cardiovascular disease, and type 2 diabetes: prospective cohort study. *bmj*, *368*.
18. MOHAMED, M. N. A., FAHMY, A. A., MOHAMED, A. E. S. E. H., & HAMED, O. K. (2021). Study of Health Behaviours and Lifestyle Characterstics among Medical Students at Al-Azhar University, Assuit Branch. *The Medical Journal of Cairo University*, *89*(December), 2555-2569.
19. Montazerifar, F., Karajibani, M., Abbasi, M., & Bolouri, A. (2019). Prevalence of obesity and hypertension and related factors among bank employees in zahedan, 2017. *Epidemiology and Health System Journal*, *6*(4), 164-170.
20. Moom, R. K., Singh, L. P., & Singh, H. (2014). Impact of personal and work related factors on prevalence of musculoskeletal disorder-a case study among bank employees in Punjab (India).
21. Nemanja, Ć., Marina, Đ. N., Miloš, M., & Milivoj, D. (2019). Relation between Lifestyle and Body Composition among Young Females in Serbia of 18–29 Years of Age. In *Cardiorespiratory Fitness*. IntechOpen.
22. Niharika, U. V. (2014). Life satisfaction among bank employees. *Work*, *855*(1).
23. Organization The World Health Report 2002: Reducing Risks, Promoting Healthy Life. Geneva, Switzerland: World Health Organization; 2002.
24. PATEL P.H., MALGAONKAR A.A. and KARTIKEYAN S.: Cross-sectional descriptive study of lifestyle patterns of undergraduate medical students in a metropolitan Medical College. Int. J. Community Med. Public Health, 3 (10): 2866-2873, 2016

25. Patel, S., Nair, A. R., Kushwah, S., Verma, S., & Sawlani, H. (2019). A study of musculo skeletal disorders among bank workers employed in and around Arera Hills Bhopal. *Int J Contemp Med Res*, *6*, 70-27
26. Sanchi, G. R., & Borges, L. R. (2019). Lifestyle and nutritional status of employees of a chain of banks in Pelotas, Rio Grande do Sul, Brazil. *Revista Brasileira de Medicina do Trabalho*, *17*(1), 45.
27. Štefan, L., Čule, M., Milinović, I., Juranko, D., & Sporiš, G. (2017). The relationship between lifestyle factors and body compositionin young adults. *International journal of environmental research and public health*, *14*(8), 893.
28. Sulaiman, S. K., Kamalanathan, P., Ibrahim, A. A., & Nuhu, J. M. (2015). Musculoskeletal disorders and associated disabilities among bank workers. *Int J Res Med Sci*, *3*(5), 1153-1158
29. Troiano, R. P., Berrigan, D., Dodd, K. W., Masse, L. C., Tilert, T., & McDowell, M. (2008). Physical activity in the United States measured by accelerometer. *Medicine and science in sports and exercise*, *40*(1), 181.
30. Türkmen, M., Kul, M., Ocalan, M., Ozkan, A., & Bozkus, T. (2013). Determination of the relationship between physical activity levels and healthy lifestyle behaviors of university students.
31. Warburton, D. E., Nicol, C. W., & Bredin, S. S. (2006). Health benefits of physical activity: the evidence. *Cmaj*, *174*(6), 801-809.
32. Wilson, D. M., & Ciliska, D. (1984). Lifestyle assessment. *Canadian Family Physician*, *30*, 1527.
33. You, H. W., Tan, P. L., & AF, M. L. (2020). The relationship between physical activity, body mass index and body composition among students at a pre-university centre in Malaysia. *IIUM Medical Journal Malaysia*, *19*(2)
34. Zaccagni, L., Barbieri, D., & Gualdi-Russo, E. (2014). Body composition and physical activity in Italian university students. *Journal of Translational Medicine*, *12*(1), 1-9