

The Effects Of Lifestyle And Dietary Intake On Health Outcomes And The Metabolic Syndrome Among Lebanese University Students

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Valorization

Cardiovascular disease (CVD) is the leading cause of death globally and it is estimated that more than three quarters of CVD deaths occur in low- and middle-income countries, a classification to which Lebanon belongs.¹ Outdated statistics have accounted a third of all cause death to be related to heart disease in Lebanon, and more than one third of all Lebanese suffer from the Metabolic syndrome which doubles future risk of developing cardiovascular disease.²

Unfortunately, in Lebanon, heart disease is considered a disease that affects only the elderly and those who are younger are often thought to be protected by their age. Initiatives for screening and prevention are mostly implemented for those who are older³ and screening programs are limited for younger adults, who are below 40 years of age, as they are not considered priority. This is problematic, as empirical evidence suggest that heart disease and its risk factors start early on, as early as childhood, and progress with age.⁴

Fortunately, heart disease is preventable, as many of its risk factors are modifiable. It is estimated that 75% of cardiovascular events can be explained by the presence of such risk factors⁵ and therefore the alteration of the risk factors could prevent CVD. One such causative risk factor is obesity, which Lebanon has witnessed a remarkable rise in, especially in the proportion of youth affected.

In view of the above, this dissertation aimed to collect baseline data about lifestyle, dietary and behavioral habits in an understudied population, that being university students. Furthermore, we associated these factors with weight changes that occurred during the freshman year and calculated the prevalence rate of Metabolic syndrome as a fulminant disease, as well as its individual criteria, necessary for diagnosis.

As suspected, we found that students witnessed an increase in weight over the course of the first year and started out with high stress levels and low quality of sleep. What was unsuspected however was that levels of physical activity and eating habits did not change with time. Furthermore, nutrition knowledge was inadequate at both time points of data collection, which could theoretically prevent students from making wise and healthy food choices.

It was alarming to discover that approximately 90% of students exhibited at least one metabolic abnormality related to the metabolic syndrome. The most common abnormality was low HDL-C (65.0%), followed by elevated waist circumference, which was higher than recommended cut off values suggested for the Middle Eastern populations.

The results described in this thesis demonstrate that university students are a high-risk group, vulnerable to weight gain and suffering significantly from metabolic and anthropometric derangements. Stress levels were not associated with increased risk of weight gain neither in the observational studies nor in the findings of the systematic review that was conducted as a part of this thesis, which revealed non consistent evidence when assessing the relationship between stress and anxiety and weight status of collegians.

Furthermore, we did not find an association between β -amino-isobutyric acid (BAIBA),

a recently identified myokine, and cardiovascular risk nor with level of physical activity, which raises doubts about the efficacy of BAIBA as a potential obesity treatment.

Since the students in our study sample experienced significant weight gain during their freshman year and since a majority of students had developed at least one risk factor for Metabolic syndrome and CVD, the findings of this thesis has several implications.

First and foremost, university boards and university health care providers should be aware that the students are not immune to metabolic derangements and are a high-risk group that should be targeted with appropriate primary prevention programs. Such programs should focus on increasing nutrition knowledge, correcting nutritional myths, teaching stress management techniques and focusing on self-monitoring of weight. Additionally, they should provide access to fitness facilities in order to increase levels of physical activity while students are on campus. The results of this thesis should also be disseminated to students so that they actually do partake in such health initiatives and understand the importance of self-monitoring. The results of this thesis should also be propagated to the ministry of higher education so that they can advise post-secondary institutions to implement basic health courses as a part of their curriculum, provide access to physical activity facilities and make healthy food more accessible.

Secondly, if current health trends continue as predicted, the Lebanese health care systems may become incapable of coping with the burdens of obesity and cardiovascular disease comorbidities, especially in the absence of access to full coverage health, where the patient has to pay for health care from own pocket hence economic productivity will be jeopardized. Therefore, the information presented in this dissertation should also be disseminated to the Lebanese Ministry of Public Health in order to provide primary health care initiatives and free CVD screening to those who are below 40 years of age, since initiatives have so far overlooked the youth. Furthermore, worldwide, effective measures have been undertaken and proved successful in decreasing risk of disease, which include taxation of foods that are high in fat, sugar and salt in order to reduce their consumption.¹ Such laws and policies should be implemented in Lebanon and as a consequence of implementation students may be empowered to make more sound dietary choices.

The results of this dissertation should also be circulated to health care practitioners. The results are essential to highlighting the fact that young adults are at risk of developing heart disease early on in life. Health care practitioners should therefore acknowledge the fact that age alone is not protective against heart disease; accordingly, they should primarily screen younger patients and provide them with appropriate motivational counseling, since most of the heart diseases can be prevented by modifying behavioral risk factors.¹

As for scholars and scientists in the Middle East, the results of this thesis have proved that more research and funding should be invested in the health of university students, since both obesity and CVD are preventable, can start at an early age and progress into adulthood. Additionally qualitative and quantitative studies should be carried out to gain

more understanding of the predictors of these modifiable risks, which can thus aid in designing evidence based public health programs to reduce risk of non-communicable disease. Since an ounce of prevention is worth a pound of cure, targeting students at an early age could reduce risk of disease and lead to a rise of a healthier more productive populations.

References

1. World Health Organization. Cardiovascular diseases fact sheet. 2017. <http://www.who.int/mediacentre/factsheets/fs317/en/>. Accessed 22 April, 2018.
2. Mottillo S, Filion KB, Genest J, et al. The metabolic syndrome and cardiovascular risk a systematic review and meta-analysis. *J Am Coll Cardiol*. 2010;56(14):1113-1132.
3. Yamout WAR. The Initiative of Cardiovascular Service in the PHC Network of Lebanon. Lebanon: Ministry of Public Health.
4. Dahl-Jorgensen K, Larsen JR, Hanssen KF. Atherosclerosis in childhood and adolescent type 1 diabetes: early disease, early treatment? *Diabetologia*. 2005;48(8):1445-1453.
5. Mendis S. Cardiovascular Risk Assessment and Management in Developing Countries. *Vascular Health and Risk Management*. 2005;1(1):15-18.