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Cardiovascular Diseases in Qatar: Smoking, Food Habits and Physical Activities Perspectives

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Abstract. Cardiovascular diseases (CVDs) trigger a high number of deaths across the world. In this study, we investigate the food, drinking, smoking, and lifestyle-related habits for a Qatari CVD cohort to understand the implication of these factors on CVD. Statistical analysis shows that the CVD group is consuming a lower amount of fast foods, soft drinks, snacks, and meats compared to the control group. Alarmingly, the level of smoking is still higher in the CVD group, and the consumption level of healthy items (e.g., cereal, cornflakes) in breakfast is relatively lower compared to the control group. Interestingly, the CVD cohort is spending more time walking and avoiding heavy sports, compared to the control group, but their involvement in moderate physical activities is lower than the control group. Overall, we conclude that the Qatari CVD cohort is following most of the standard guidelines related to food items and heavy sports; however, the cohort should reduce smoking habits, and may modify the moderate level of physical activity based on physician guidelines.

Keywords: Cardiovascular diseases (CVD); Fast food; Smoking; Physical activities; Qatar Biobank (QBB)

1. Introduction

Cardiovascular diseases (CVD) are among the leading causes of mortality across the world [1] and stroke and ischemic heart disease are ranked among the top ten factors of death in the Middle East region [2]. The prolonged hyperglycemia associated with CVD can be related to the long-term impairment and failure of multiple organs. To mitigate such health-related problems, cohort based studies are established in different parts of the world to pinpoint the complex interaction of health and lifestyle-related factors that may cause diseases like CVD. The Qatar Biobank (QBB) is the largest repository for cohort based studies specific to the population of Qatar and, in this study, we considered a Qatari CVD cohort based on QBB resources. It has been shown that maintaining a healthy lifestyle and food habit may reduce the susceptibility for CVD [3]. But we could not find any research work that mainly focused on the dietary habit and lifestyle-related factors of the CVD cohort from Qatar. To fill this gap, in this study, we compared a Qatari CVD cohort against a control group considering their food and drinking habits, smoking habits, and other daily life physical activities.

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2. Materials and Methods

2.1 Cohort Description and Questionnaire Dataset preparation for this study

In this study, we considered a cohort consisting of 500 subjects from QBB, among which 250 subjects were for the CVD group and the remaining 250 subjects were forming the control (without CVD) group. All procedures were approved by the Institutional Review Board (IRB) of Hamad Medical Corporation, Qatar and only de-identified data were collected from QBB. Each subject, based upon their approval, when they arrived into QBB for participation, were asked multiple questions by the clinicians to collect valuable information about their background, dietary habit, and lifestyle-related factors. The details of the questionnaire can be found in [4, 5]. All subjects included in the study were Qatari nationals. Both the CVD and the control group contained ~50% male and ~50% female participants. All the responses from the participants were encoded numerically in such a way that a higher number represents more frequent events. For example, for the question "How often did you eat soft drinks, soda in the last year?" we encoded the responses as 0 ("never or rarely"), 1 ("1-3 times per month"), 2 ("1-3 times per week"), 3 ("4-6 times per week"), 4 ("once per day"), 5 ("2 or more times per day"). Any question, having more than 50% missing values was discarded. For the remaining cases, we replaced each missing value by the median value of corresponding metrics calculated from the respective group.

2.2 Statistical Significance of the variables

We used the Anderson-Darling test [6] to check if the variables were normally distributed. For normally distributed variables, we used the student's t-test [7] to determine the significance level for each variable when comparing against the control group. For other variables, we applied a Mann-Whitney [8] test for the same purpose. We only considered statistically significant variables (p-value<0.05).

3. Results & Discussions

We observed that the CVD group was consuming a smaller amount of fast food (e.g., French fries, potato chips, fried chicken, burgers, hotdogs, pizzas etc.) than the control group (Table 1). This indicates that after the onset of the disease, the CVD group was more cautious about consuming such kind of food compared to the control group.

Table 1. Summary of fast food consumption for CVD versus Control group

Fast Food Items Consumption	Mean (CVD)	Mean (Control)	p-value
Chicken shawarma	1.920	2.112	0.021
Middle-eastern style fast food	1.652	1.964	<0.001
French fries	2.192	2.572	<0.001
Potato chips	2.076	2.336	0.003
Burgers, Hotdogs	1.848	2.300	<0.001
Pizza	1.916	2.272	<0.001
Fried chicken	1.720	2.032	<0.001

We also observed that the CVD group was consuming a lesser amount of soft drinks/soda, diet soft drinks/soda, and labneh than the control group (Table 2). Also, the CVD group was consuming a lower amount of caffeine (coffee, cappuccino) (Table 2). We also observed that the CVD group was consuming less snacks or desserts (e.g., cake, doughnut, ice cream) than the control group (Table 2). We also found that the CVD group was consuming a lower amount of cornflakes and cereals as part of their breakfast and consuming more dates than the control group. Moreover, we observed that the CVD group was consuming less meat-oriented dishes (e.g., chicken curry, kofta, meat kebab, chicken kebab, etc.), pasta and starters (sausage, meat, fish starters) than the control group (Table 2).

Table 2. Summary of snacks, drinks, and cereal (in breakfast) consumption for CVD versus Control group

Drinks and Sugar Consumption	Mean (CVD)	Mean (Control)	p-value
Dates	3.304	2.804	<0.001
Soft drinks, sodas	2.044	2.476	<0.001
Diet soft drinks, sodas	1.424	1.788	<0.001
Labneh	2.132	2.340	0.047
Filter coffee, cappuccino	2.724	3.012	0.039
Cold milk with cappuccino	2.368	2.596	0.021
Desserts and Snacks			
Cake, Doughnuts	2.140	2.344	0.046
Ice cream	2.308	2.480	0.05
Breakfast			
Cornflakes and cereals	1.692	1.844	0.045
Main Meal			
Light meat (chicken, duck)	3.392	3.624	0.022
Chicken curry	1.904	2.060	0.047
Kofta	1.776	1.924	0.045
Chicken, meat, or sausage starters	2.144	2.464	<0.001
Fish and seafood starters	1.968	2.112	0.05
Italian-style pasta, lasagna	2.108	2.416	<0.001

We also analyzed the amount of sedentary time, the cohort was spending in front of electronic devices. From Table 3, we can observe that the CVD group spent a lower amount of sedentary life (though the difference was not statistically significant at the level of p-value < 0.05), both on weekdays and weekends, with electronic devices like computers, TV, DVDs, and mobile phones. We also compared the amount of time spent on different types of sports, physical activities, and walking for the CVD and control group. Although the difference in physical activities was not statistically significant, we found that, on average, the CVD group was walking more than the control group and avoided heavy sports (weight lifting, football, running, aerobics, fast bicycling) more than the control group (Table 3). But the CVD group was spending less time on a moderate level of physical activities (bicycling at a regular pace, swimming, gym, and yoga) (Table 3).

Table 3. Time spent on different types of physical activities for CVD versus Control group

Days with electronic devices (in sitting position)	Mean (CVD)	Mean (Control)	p-value
Weekdays using computers	1.320	1.508	0.123
Weekends using computers	0.980	1.176	0.094
Weekdays using TV, DVDs, mobile phone, i-pad etc.	2.556	2.544	0.936
Weekends using TV, DVDs, mobile phone, i-pad etc.	2.528	2.516	0.939

Physical Activities (in minutes)			
Heavy sports activities (running, fast bicycling, fast swimming, singles tennis, football, weight lifting, aerobics)	3.392	4.228	0.144
Moderate physical activities (swimming, bicycling at a regular pace, double tennis, yoga, gym)	3.872	4.788	0.319
Average walking time per day	12.144	10.636	0.346

Alarmingly, we observed that patients in the CVD cohort still continued their smoking habit compared to the control group (Table 4) and found it difficult to quit after 20 years of smoking. Our work also found that for passive smoking, when the CVD patients were aware of their surrounding smoking area, they tried to avoid shisha smokers, but were exposed to passive smoking from cigarettes. More effort is required from the ministry of health and media to encourage people to stop smoking and avoid smoking areas.

Table 4. Smoking habits for CVD versus Control group

Active smoking	**Mean (CVD)**	**Mean (Control)**	**p-value**
Number of cigarettes/cigars/pipes per day when you were 20 years old	19.329	14.747	0.004
Number of cigarettes/cigars/pipes per day	17.367	1.176	0.094
Time (minutes) spent in water pipe (shisha)	67.769	63.333	0.328
Passive Smoking			
Time (hour) per day spent in a room while other people are smoking (cigarettes, cigars).	1.024	0.944	0.792
Time (hour) per week exposed to other people are smoking (water pipes (shisha)).	0.480	0.508	0.499

4. Conclusions

Based on our analysis, we observed that the CVD group in Qatar is generally following the standard guidelines suggested by physicians in terms of food habits, walking, and heavy sports. More effort is needed to encourage individuals to follow instructions from physicians for breakfast menus, reduce their smoking habits, and increase the moderate level of physical activity based on proper physician guidelines.

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