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Correlates of tobacco use and physical activity among Emirati citizens and non-citizens resident in Dubai, UAE

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ABSTRACT

Objective: In 2008, Non-Communicable diseases (NCD) accounted for 67% of deaths in the United Arab Emirates (UAE), 55% of which occurred prior to age 60 years. We examined correlates of smoking and physical activity among citizens and non-citizens in Dubai, UAE.

Method: Data from the 2009 Dubai Health Survey were analysed for this study. For the smoking component, data on 693 eligible individuals (of 5016 who participated in the survey) were analysed using the Pearson's Chi-Squared test. The analysis population for the exercise analysis consisted of 1315 eligible individuals.

Results: Current smoking proportions among male (22%) and female (2.9%) respondents were higher than the national average (15.4% and 1.2%, respectively). Smoking prevalence among Emiratis is almost double the smoking prevalence among non-Emiratis. Of the 1314 participants who reported being involved in work related or non-work related moderate exercise, 242 of 625 Emiratis (38.7%) and 370 of 689 non-Emiratis (53.7%) self-reported sufficient physical activity. Non-Emiratis had a combined median moderate physical activity of 180 minutes per week. Emiratis had a combined median moderate physical activity of 49 minutes per week.

Conclusion: Addressing smoking (particularly among males), and physical inactivity (particularly among females) will facilitate sustainable primary prevention of NCD in UAE

Keywords: Dubai, smoking, physical activity

INTRODUCTION

The 2010 Global burden of disease study estimates that 63% of global deaths are due to non-communicable diseases, and that one in four deaths is currently due to heart disease and stroke. Ischemic heart disease and stroke were the leading causes of years of life lost due to premature mortality in 2010.[1] Tobacco smoking (including passive smoking) and physical inactivity or inadequate physical activity accounted for 31% of disability adjusted life years attributable to ischaemic heart disease.[2] Approximately 3.2 million people die each year due to physical inactivity, and about 2% of total Disability Adjusted Life Years (i.e. 32 million of 1.6 billion DALYs lost in 2009) were attributed to physical inactivity. Almost 6 million people die from tobacco use and exposure each year, accounting for 6% of all female and 12% of all male deaths in the world.[3]

United Arab Emirates (UAE) is a high income nation with a 2009 population of 7.5 million, of which the Emirate of Dubai comprised 1.8 million. Non-communicable diseases (NCD - mainly cardiovascular disease, diabetes, stroke and chronic obstructive pulmonary disease) accounted for 67% of all deaths in UAE during 2008, and 55% of NCD-related deaths occurred before the age of 60%, compared with 44%

of global NCD-related deaths which occurred prior to age 70 in the same year. Behavioural risk factors, particularly smoking and physical inactivity, play important roles in the etiology and pathogenesis of NCD in UAE and globally. In 2008, 15.4% of UAE men and 1.2% of UAE women were regular smokers, while 54.6% of men and 67.5% of women were physically inactive.[4,5]

Although UAE citizens self-report high satisfaction with their health and wellbeing – scores in the self-reported physical health index and wellbeing index of the 2010 Phillips UAE health survey were very high - citizens have high rates of NCD risk factors such as hypertension, tobacco use, physical inactivity, diabetes, obesity and high cholesterol.[6] This is reflected in UAE's age standardised cardiovascular disease and diabetes mortality rates per 100,000 population of 309 for males and 204 for females, compared with 171 for Singaporean males and 109 for Singaporean females.[4] Consistent with physical inactivity among UAE citizens, the prevalence of overweight and obesity exceeds 55% for women and 60% for men since 1990, and diabetes related deaths among Emiratis aged over 20 totaled 1385 in 2013, about 14% of total adult mortality (International Diabetes Federation, 2013).[7] Although tobacco smoking rates among Emirati males fell by about 10% over the past decade, accumulative effects of harmful effects of smoking among current, passive and ex-smokers contribute to make lung cancer the leading cause of cancer deaths among Emiratis, with 83% among males, consistent with the age standardized smoking prevalence by gender.[8]

The aim of this study is to determine correlates of tobacco use and physical activity among citizens and residents of Dubai, UAE, based on data from the Dubai 2009 Health Survey. The study's objectives are to determine the: (1) prevalence of daily smoking and physical inactivity among Emiratis and non-Emiratis resident in Dubai; (2) mean age of smoking among Emirati smokers compared with non-Emirati smokers; (3) review self-reported median moderate physical activity (in minutes per week) for Emiratis and non-Emiratis; (4) Assess contributions of work and non-work activities to achieving adequate moderate physical activities for Emiratis and non-Emiratis.

METHOD AND MATERIALS

The 2009 Dubai Health Survey was initiated by Dubai Health Authority's Policy and Strategy Department. This survey is so far the largest and most representative health survey ever conducted in Dubai. Surveyors randomly selected 5000 households in the Emirate, visited them and administered a self-reported questionnaire to obtain information about demographic and health profiles, household health expenditure, lifestyle factors and risk factors for disease.[9]

Survey participants comprised 2440 Emiratis (1571 males; 869 females) and 2575 non-Emiratis (1290 males; 1285 females) who were randomly selected. Response rate was 98%. The questionnaire content, survey implementation and data analyses were adapted from the methodology used in World Health Surveys.[10] Survey database included basic demographic data such as age, gender and nationality. Other information collected included smoking habits, drinking habits, exercise habits, health conditions in the past year, and health fund coverage. Survey questions related to risk factors were documented in section 3000 of the survey instrument: "Risk Factors and Preventive Health Behaviors".

A total of 5016 individuals completed the survey. With the smoking habits analysis, the analysis population consisted of 693 individuals who provided responses to smoking-related survey questions. We compared the differences in the age group, gender and nationalities amongst the smokers using the Pearson's Chi-Squared test. We also compared the difference in age in smokers amongst nationalities using the Mann-Whitney U-test as it was not normally distributed.

The analysis population for the physical activity section consisted of 1315 individuals after excluding individuals with data entry errors or missing information. We analyzed the amount of moderate exercise individuals were getting. Information about the length of moderate exercise relating to work, and outside of work were collected in this survey. We looked at moderate exercise as 3 measures – combined moderate exercise, work related moderate exercise and non-work related moderate exercise. Any individual who did at least 150 minutes of

exercise in a week is considered as having done sufficient exercise. Similar to the smoking analysis, we compared the differences in age group, gender and nationalities amongst those who have exercise habits information in the 3 measures of exercise (after classifying into the 2 categories – sufficient vs insufficient). The Mann-Whitney U-test is used to compare the difference in the median in the number of hours of exercise in a week amongst the different nationalities and genders. SAS statistical software[11] was utilized in the analysis and R statistical software[12] was used to generate the figures in this paper.

RESULTS

Tobacco

In this population, the current smoking prevalence in total sample (693/5016) was 13.8% compared with 11.3% nationally. Smoking prevalence among Emiratis (437/2440) was 17.9%, while smoking prevalence among non-Emiratis (255/2575) was 9.9%. Current smoking prevalence among Emirati females (43/869) was 4.9%, and 1.6% (20/1285) among non-Emirati females. Smoking prevalence among Emirati males (394/1571) was 25%, compared with (235/1290) 18.2% among non-Emirati males. Smoking rates among Emirati males and females are higher than both those of non-Emiratis as well as the 2008 national average smoking rates for males and females of 15.4% and 1.2% respectively. The median smoking age of Emirati smokers in the sample is younger, with 80.3% aged below 45 years (median age 35.0 years) compared with 70.2% of non-Emirati daily smokers aged below 45 years (median age 36.0 years). (figure 1)

Physical activity

Work is the main source of physical activity for Dubai's resident adults. Out of 689 participants whose life patterns involved work-related moderate activities, 489 individuals (71%) got sufficient exercise form their work. In contrast, of 790 participants whose non-work lives involved non-work related moderate activities, only 153 (19%) got sufficient exercise from non-paid work activities. When stratified by citizenship, of the 689 individuals who reported being involved in work related moderate exercise, 155 out of 252 Emiratis (61.5%) as well as 334 out of 437 non-Emiratis (76.4%) self-reported adequate moderate physical activity. Similar trends were found when sample was stratified by gender. Of 790 respondents, 400 out of 489 males (81.2%) and 237 out of 301 females (78.7%) had insufficient moderate physical activity in their non-work lives. In contrast, of 689 respondents, 105 out of 385 males (27.3%) and 95 out of 304 females (31.3%) self-reported insufficient moderate physical activity in work settings. Out of the 689 individuals who undertook work related activities, 489 (71%) had sufficient moderate exercise based on just work related activities. In contrast, out of the 790 individuals who were involved in non-work related activities, only 153 (19.4%) of these individuals had sufficient moderate exercise based on just non-work related activities.

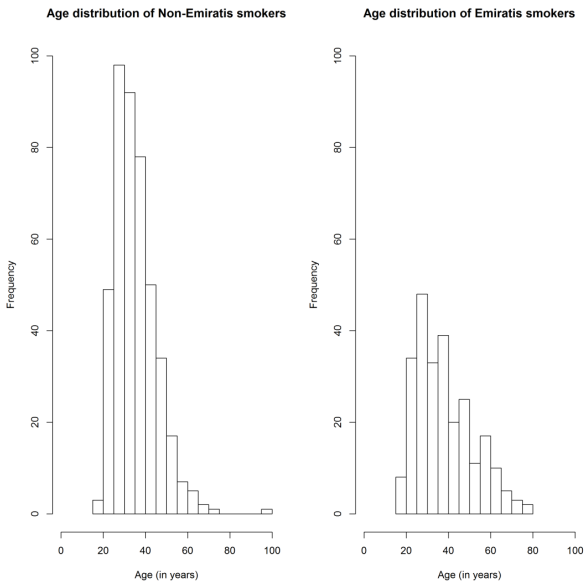

Figure 1: Age-based smoking frequency among Emirati citizens and non-citizens resident in Dubai, 2009.

Non-Emiratis (n = 689) had a combined median moderate physical activity of 180 minutes per week, compared with Emiratis (n=625), who had a combined median moderate physical activity of 49 minutes per week. There is statistically significant relationship between nationality (Emiratis vs non-Emiratis) and whether one get sufficient exercise in a given week considering only work related (p

<0.0001), only non-work related (p = 0.0370) and both work-related and non-work-related activities (p < 0.001). Emiratis spent statistically significant less time on work-related and non-work-related moderate physical activities when compared to non-Emiratis (p<0.0001). Emirati males self-reported more work related moderate exercise than Emirati females, although this difference is only marginally significant (p = 0.0957). (Table 1)

There is no statistically significant relationship between smoking status (current smokers vs non-smokers) and whether respondents self-reported sufficient moderate exercise in a given week (p = 0.6423) considering both work-related and/or non-work-related activities.

Table 1: Work-related and non-work related physical activity among Emiratis and non-Emiratis resident in Dubai, 2009.

Emiratis		N	Q1	Median	Mean	Q3	Max
1	Total combined exercise	625	4.0	49.0	631.7	450.0	8627.0
	Work related exercise	252	90.0	210.0	415.2	498.8	3360.0
	Non-work related exercise	462	3.0	6.0	628.1	54.5	8407.0
0	Total combined exercise	689	5.0	180.0	717.3	840.0	8850.0
	Work related exercise	437	150.0	450.0	705.0	930.0	4200.0
	Non-work related exercise	327	3.0	4.0	569.3	7.5	8407.0

DISCUSSION & CONCLUSION

This study is one of the few cross-sectional research to analyse smoking and physical activity correlates in Dubai, based on Emirate-representative data. Given the socio-economic, demographic, religious, climatic and cultural similarities between Dubai and other UAE Emirates, as well as with other Gulf Cooperation Council (GCC) nations (i.e. Saudi Arabia, Qatar, Bahrain, Oman and Kuwait), our findings have potential implications for other UAE Emirates and GCC nations. It is acknowledged that self-report studies examining lifestyle issues may be subject to validity threats as respondents may, for example provide socially acceptable responses.[13] However, the survey design, crafting of survey questions, and implementation activities minimized cognitive factors (e.g. whether the respondents understand the question and whether they have the knowledge or memory to answer it accurately) and situational issues (e.g. setting of the survey and cultural sensitivity of a given question) which may provide invalid or untruthful responses. Furthermore, smoking and physical activity questions are (unlike questions related to alcohol consumption) not taboo topics, and for most respondents, physical evidence of physical activity correlates with responses.

This study has two noteworthy limitations. First, it is based on data from a cross-sectional study conducted in 2009. It is possible (but unlikely) that significant changes might have taken place in smoking and physical activity patterns since then to

make this study less relevant to contemporary Emirati society. Second, there was a disappointingly high proportion of missing data for the smoking and physical activity components of the dataset, especially for the smoking survey, in which only 693 of approximately 3000 participating adults completed the survey. It was not possible to determine from the data set if the respondents refused to answer the questions or if the survey staff overlooked the questions.

Smoking prevalence among Emirati citizens in Dubai is higher than both national smoking prevalence as well as smoking prevalence among non-Emirati citizens. When compared with an upward trend in smoking prevalence, particularly among women, and findings from the survey that about 67 per cent of non-smoking Dubai residents are regularly exposed to passive smoking at public places, the cumulative impact of tobacco smoking – passive and active – on cardiovascular morbidity and mortality are substantial. As with studies in most nations, the poor and illiterate are more likely to smoke – smoking prevalence in the lowest income level was 18.9 per cent whereas the highest income level is 10 per cent, similarly, prevalence of smoking among the least educated group is 26.9 per cent compared to 12.1 percent among those with a university degree or higher. Thus, taxation policies to substantially raise tobacco prices to over 60% of total cost of cigarettes[14] combined with emirate-wide counseling programs as well as consistently enforced bans on tobacco advertising, promotion and sponsorship[15] are required to reverse tobacco use trends in Dubai.

A 2009/2010 study of physical activity among 478 Emirati women found that adult Emirati women living in urban areas are far less likely to engage in moderate to high levels of physical activity, and that only 41% of Emirati women undertake moderate or high levels of physical activity, compared with 82% of U.S. women. Adult Emirati women from the poorest and wealthiest households have very low levels of moderate to high physical activity. Given that work related physical activities contribute significantly to adequate moderate physical activity among Emirati men and women, it is expected that women, who are under-represented in the workforce, will report inadequate physical activity.[16] Improving physical activity patterns among Emiratis require a multifaceted approach entailing greater workforce participation, particularly among women, and urban redesign initiatives that promote walkability and less reliance on motorized transport.[17] Particularly among Emirati women, highlighting the strong links between health improvement and physical activity will be beneficial, given the findings from self-reported health assessments which generally reveal weak knowledge and belief systems of the links between improving physical activity and non-communicable disease prevention.[18]

It is noteworthy that the Government is currently implemented such multi-faceted approach to improve physical activity through Dubai Pulse-sponsored physical activities and related programs. The physical Activity programs supported by Dubai Sports Council have contributed to raising the proportion of Dubai's resident adults engaged regularly in sporting activities from 34.6% in 2009 to 41.9% in 2013, based on a different survey method. A core goal of the Dubai Pulse initiative is to have 45% of Dubai's residents embracing an active lifestyle by 2015.[19] Similarly, there is strict enforcement of Federal UAE anti-smoking law that came into effect in Dubai on 21 January 2014 following Cabinet Resolution 24. The law bans smoking in vehicles if children less than 12 years old are present, bans tobacco advertising and mandates prominent pictorial health warnings on cigarette packets, are likely to facilitate smoking cessation and abstinence, based on experience from other nations implementing similar legislation.[20]

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