Original Research Paper

Evaluate College Students' Knowledge, Towards Smoking Effect on Diabetes Consequences

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Abstract: Smoking is a modifiable risk factor for many other diseases, this study aimed to evaluate student's awareness in relation to smoking consequences on diabetes. This is a cross-sectional study involved students who attended al-Safwa university college in Karbala, Iraq. Data were collected within one month (February 2018). The collected data were analysed using the SPSS (version 18.0) software package (SPSS Inc., Chicago, IL). Pearson chi-square test were used to find the association between participants smoking status and their knowledge to its consequences on their health. Seventy-five participants enrolled in the study, their mean age was (22±2.2 years); and their BMI was (24±3.8 kg/m^2). Around 50% of them were smokers; they smoked around 12±16.5 cigarette/day. more than two thirds of the participants were males (69.3%). Participants were either students in the pharmacy department or dentistry department of the college. More than two thirds of them didn't know whether smoking had bad impact on diabetic people or no. However, almost an equal proportion of them believe that smoking can worsen heart disease (range 69%-78% of participants). On the other hand, Pearson chi-square shows a non-significant association (p>0.05) between participant smoking status and their knowledge to its consequences on their health. Knowledge regarding smoking bad effect can increase quitting rates; nerveless if it was combined with counseling it would have double effect. This was one of few studies that investigate college student's knowledge in Iraq, it lightens the way for future researches to be done.

Keyword: Diabetes, Smoking, Student's College Awareness

Introduction

Diabetes mellitus is a chronic disease that continues to increase globally and has become an epidemic that threatens all nations, including those in the developing world. An approximately 51% increment in its prevalence is expected worldwide by 2030, likely due to population growth, aging, obesity and urbanization which are linked to lifestyle changes (e.g. decreased physical activity, dietary habits shifted to the high energy foods) (Whiting *et al*., 2011). According to the International Diabetes Federation (IDF Diabetes Atlas) in 2011, there were 366 million people worldwide with diabetes, a number that is expected to rise to 552 million by 2030. Iraq is one of the 19 countries of IDF MENA region. More than 39 million people with diabetes in the MENA Region; by 2045 this expected to rise to 67 million. There were 1.411.500 cases of diabetes in Iraq in 2017 with (7.5%) prevalence of diabetes in adults

(International Diabetes Federation, 2018). Tobacco smoking is the most preventable cause of premature death in developed countries (Centers for Disease Control Prevention, 2011). The prevalence of tobacco use is similar among people with diabetes and those in the normal population (Wen *et al*., 2006) despite the fact that its complications are not equal. The risk for complications from diabetes among smokers is four times higher than that for non-smokers (Wen *et al*., 2006). Tobacco smoking is thought to be a reason for a worsening of diabetes control, insulin resistance as well as for all-cause mortality (Solberg *et al*., 2004; Adepu and Ari, 2010). Smoking is also an independent risk factor in the development of macro vascular complications (Haire-Joshu *et al*., 1999) and microvascular diseases, especially nephropathy and neuropathy (Ikeda *et al*., 1997; Sands *et al*., 1997). The burden of tobacco smoking among diabetic patients is enormous and health care providers do not deliver

tobacco cessation interventions consistently and comprehensively to this vulnerable population (Kvyls, 2011; Abdul Rahman, 2012). In 2013, World Health Organization released third part of training package to strengthen health system for treating tobacco dependence in primary care (World Health Organization, 2013). Many literatures highlighted the effectiveness of health promotion methods used for smoking prevention as well as investigate knowledge about the health consequences of smoking (Tibbs and Haire-Joshu, 2002, Pierce *et al*., 2012; Shrivastav *et al*., 2012; Mini *et al*., 2014; Nicholson *et al*., 2015; Dawood *et al*., 2016; Golechha, 2016; Center for Disease Control Prevention, 2017; Rojewski *et al*., 2018). To our knowledge, there is currently a lack of information regarding students' knowledge in relation to smoking consequences on health in Iraq. This study aimed to evaluate student's knowledge in relation to smoking consequences on health.

Methods

This was a survey study involving students who studied at Al- Safwa University College in Karbala, Iraq. During one-month period February 2018, all pharmacy and dentistry students were asked to participate in the study, and only 75 of 840 accepted the participation. With a response rate 9.03%; this low rate can be explained by the religious and cultural traditions. Researcher used questionnaire which were adapted from Albaroodi *et al*. (2014), questions that are not related to the study were deleted. Participants were self-administered the questionnaire and answered questions about their age, BMI, smoking status, married status, education level, exercise frequency, having diabetes, their knowledge whether (food, exercise, medication, alcohol, smoking) had an impact on diabetes control. Also about their knowledge whether smoking can worsen (heart attack, stroke, eye problem, kidney problem); and whether physicians asked their patients about their smoking status or no. Participants gave their opinion on what can refrain smokers from stop smoking.

Statistical Analyses

The collected data were analysed using the SPSS (version 18.0) software package (SPSS Inc., Chicago, IL). Almost all questions were calculated as proportions and percentages because they are categorical variables. Pearson Chi-Square test were used to find the association between participants smoking status and their knowledge whether smoking can worsen (heart attack, stroke, eye problem, kidney problem) or no. The statistical significance was defined as p value ≤0.05.

Results

Seventy-five participants enrolled in the study and all of them were included in the analysis. Mean age for the participants was (22±2.2 years); and their body mass index was (24±3.8 kg/m^2). Around 50% (n=35) of them were smokers; they had mean number of cigarette (12±16.5 cigarette per day). Table 1 shows that more than two thirds of the participants were males (69.3%); and the majority of them were singles. Almost equal numbers of the participants were from pharmacy department and dentistry. It is obvious that small proportion of them was making exercise 3 times or more per week, and the vast majority of them had no diabetes (Table 1).

Table 2 illustrates that majority of the participants know that the food had a great impact on the diabetes control. On the other hand, about two thirds of them don't know whether diabetes control can be affected by exercise, medication, alcohol and smoking.

Table 3 shows that two thirds of participants don't know whether smoking had any impact on diabetes control. About two thirds of them think that smoking can affect heart problem and eye problem. However, not big difference between those who think that smoking can affect their kidney problem and those who don't know.

About half of the participants replied by "never" doctors asked them for any reason about their smoking status; which can affect smokers directly and strongly to consider smoking cessation. The majority of the participants denied the effect of weight gain, stress, depression, craving and relapse on their attempts to stop smoking (Table 4).

Table 1: Demographic characteristics of the study participants

	Frequency (%)
Gender	
Male	52 (69.3)
Female	23 (30.7)
Total	75 (100)
Marital Status	
Married	8 (10.7)
Single	66 (88)
Divorced/widowed	1 (1.3)
Total	75 (100)
Study Course	
Pharmacist	37 (49.3)
Dentist	38 (50.7)
Total	75 (100)
Exercise frequency	
Never	28 (37.3)
Less than 3 times/weak	25 (33.3)
3 times /weak	14 (18.7)
More than 3 times/weak	8 (10.7)
Total	75 (100)
Diabetes type	
Type 1	1 (1.3)
Type 2	2 (2.7)
I don't know	2 (2.7)
No Diabetes	70 (93.3)
Total	75 (100)

Table 5 illustrates the relation between participants smoking status and their knowledge of smoking impact on each of diabetes, heart, eye, kidney problems. There was no significant association between participant knowledge and smoking status (P = 0.691).

Table 2: Participant's knowledge regarding factors affecting diabetes

	Frequency (%)
Food impact on diabetes control	
Yes	61 (81.3)
I don't know	14 (18.7)
Total	75 (100)
Exercise impact on diabetes control	
Yes	30 (40)
No	1 (1.3)
I don't know	44 (58.7)
Total	75 (100)
Medication impact on diabetes control	
Yes	28 (37.3)
I don't know	47 (62.7)
Total	75 (100)
Alcohol impact on diabetes control	
Yes	23 (30.7)
I don't know	52 (69.3)
Total	75 (100)
Smoking impact on diabetes control	
Yes	24 (32)
I don't know	51 (68)
Total	75 (100)

Table 3: Study participant's knowledge on smoking impact on diabetes, heart, eye and kidney problem

	Frequency (%)
Smoking impact on diabetes control	
Yes	24 (32)
I don't know	51 (68)
Total	75 (100)
Smoking worsen heart attack	
Yes	59 (78.7)
I don't know	16 (21.3)
Total	75 (100)
Smoking worsen stroke	
Yes	52 (69.3)
I don't know	23 (30.7)
Total	75 (100)
Smoking worsen eye problem	
Yes	46 (61.3)
I don't know	29 (38.7)
Total	75 (100)
Smoking worsen kidney problem	
Yes	41 (54.7)
I don't know	34 (45.3)
Total	75 (100)

Table 4: Factors refrain participants from quitting smoking

	Frequency (%)
Doctor asks about smoking status	
Very often	12 (16)
Often	15 (20)
Sometimes	10 (13.3)
Rarely	4 (5.3)
Never	34 (45.3)
Total	75 (100)
Weight gain refrain you from quitting smoking	
Yes	4 (5.3)
No	71 (94.7)
Total	75 (100)
Craving refrain you from quitting smoking	
Yes	2 (2.7)
No	73 (97.3)
Total	75 (100)
Stress refrain you from quitting smoking	
Yes	23 (30.7)
No	52 (69.3)
Total	75 (100)
Depression refrain you from quitting smoking	
Yes	8 (10.7)
No	67 (89.3)
Total	75 (100)
Relapse refrain you from quitting smoking	
Yes	3 (4)
No	72 (96)
Total	75 (100)

Table 5: Association between participant knowledge and their smoking status

		Smoking impact on the control of diabetes		
		Yes	I don't know	χ^{2*}
Smoking Status	Yes	12	23	0.691***
	No	12	28	
Total		24	51	
		Smoking worsen heart attack		
		Yes	I don't know	
Smoking Status	Yes	26	9	0.386***
	No	33	7	
Total		59	16	
		Smoking worsen stroke		
		Yes	I don't know	
Smoking Status	Yes	25	10	0.713***
	No	27	13	
Total		52	23	
		Smoking worsen eye problem		
		Yes	I don't know	
Smoking Status	Yes	25	10	0.093***
	No	21	19	
Total		46	29	
		Smoking worsen kidney problem		
		Yes	I don't know	
Smoking Status	Yes	21	14	0.385***
	No	20	20	
Total		41	34	

* Pearson Chi-Square= χ^2
 **P<0.05 Significant
***P>0.05 Non-Significant

Discussion

This study considered as a corner stone in the area of diabetes mellitus and smoking knowledge research in Iraq. To our knowledge it is one of few studies that investigate college student's knowledge in Iraq.

This study shows no association between participants smoking status and their knowledge regarding smoking impact on diabetes, heart problem, eye problem, and kidney problem. However, Kim J.H. and colleagues study suggested that smoking status, was associated with a higher prevalence of diabetes, especially in populations with less education (Kim *et al*., 2017). Also another study in India showed that increasing the knowledge of persons with diabetes about the risks of developing severe complications if they continue smoking leads to significantly higher quit rates (Mini *et al*., 2014). On the other hand, Nicholson and colleagues study among of Aboriginal and Torres Strait Islander people by state or territory and remoteness found that although participants had good knowledge regarding smoking causes lung cancer and heart disease but The main gap in knowledge, concerned the role of smoking in exacerbating diabetes (Nicholson *et al*., 2015).

However, in our study there was good knowledge on smoking bad effect on heart attack, stroke and eyes problem. That need to raise consciousness about the consequences of tobacco use will help spread the message that tobacco users suffer from more than just cancer. This anti-tobacco message would reach a wide cross-section of the population. Raise the importance of physicians addressing advices on smoking status and smoking cessation which was poor, as reported by the participants in this study. Majority of the study participants report other factors than stress, depression, weight gain, craving and relapse that refrain them from smoking cessation. That may relate to other factors not mentioned by the participants which would be for future researches. In closing, let us note that knowledge alone yields a significant effect on quitting rates. Knowledge with greater understanding through counseling in which patients are invited to ask questions and receive motivational interviewing has double the effect. As it was obvious from this study that participants had poor knowledge on the impact of medication alone to reduce blood glucose; or the impact of exercise, smoking or alcohol use on the diabetes control.

Although it had some limitations in the information that provided and the only one College that was carried on but still it gives us an idea regarding students' knowledge in Iraq. Further researches need to be done in the future to give a good vision for the health care providers and lighten the way for future programs among people aiming to increase their knowledge and improve their sedentary life

Conclusion

Knowledge regarding smoking bad effect can increase quitting rates among smokers and if that knowledge was among health care providers it can improve their future health service to their patients. Nerveless if it was combined with counseling it would have double effect. It was obvious that about two thirds of participants don't know whether smoking had an impact on diabetes control and about two thirds of them think that smoking can affect heart problem and eye problem; these results spots a light on important matter which is the knowledge of future health care providers regarding smoking effect on health.

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Author's Contributions

Albaroodi K.A.I. set the study design, data collection, data analyses, reporting results and preparing the manuscript.

Ethics

College permission to carry the study inside.

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