IJMRP

Original Research Article.

Assessment of Knowledge, Attitude and Smoking-Addiction between Students of Medical Sciences Regarding Electron-Cigarettes

Mazen Almehmadi, Ayman Al-hazmi, Alaa Shafie, Ryan Babukayr, Abdulraheem Althagafi, Amro Alsiddiqi, Wafi Alotaibi, Khalid Alzahrani

Collage of Applied Medical Sciences, Taif University, Taif city, Saudi Arabia.

ABSTRACT

Introduction: E-cigarettes or vaping have increased among the young generation especially between college students, E-cigarettes are electronic products with a small pump and liquid tank who emerged to the public in the past 20 years. E-cigarettes users can be motivated by their urge for their nicotine addiction, trying to stop smoking R-cigarettes, practice smoking in places where R-cigarettes are prohibited, simply pleasures or seeking trying new things.

Objectives: A survey study to assess knowledge, attitude and addiction of E-cigarettes among college of medical sciences students.

Methods: This cross-sectional study of a convenient sample covered 337 students in the four departments nursing, laboratory, radiology and physiotherapy. A web-based questioner was distributed to all students. Data collected included age groups, department and smoking status were collected.

Results: The response was 25% of the total students at the college, data showed only about 26% of all students are smokers, ex-smokers and passive smokers. The findings are curiously different between smokers' groups. R-cigarettes are the preferred choice of most of the students. Whole smokers group believe that E-cigarettes are more addictive than R-cigarettes.

Conclusion: There is a lack of knowledge, also different opinions emerged between the whole smokers and non-smokers groups. Whole smokers believe E-cigarettes are more addictive while non-smokers have contradictory opinion.

Key words: E-Cigarettes Electron Cigarettes, R-Cigarettes Regular-Cigarettes.

*Correspondence to:
Dr Mazen Almehmadi,
Collage of Applied Medical Sciences,
Taif University, Taif city, Saudi Arabia.

Access this article online	
Website: www.ijmrp.com	**Quick Response code**
DOI: 10.21276/ijmrp.2019.5.3.018	

INTRODUCTION

E-cigarettes have been the trend between the young generation in the past few years. These electronic products have been given several names like vape or electronic hookah. They are battery-based devices with a small motor to pump the fume out of liquid tank. The tank is filled by liquid that contains many ingredients like those in the R-cigarettes such as nicotine. Also, to make this product attractive to the young generation it has been mixed with several flavors. Sales of this product has been increasing rapidly in the past few years due to advertisements and using social media, some companies even promoted this product as an alternative healthier choice than R-cigarettes.[1]

Smoking is one of leading cause of many chronic disorders of the human, and it can increase smokers body to many types of infections.[2,3] The effect of smoking on human immunity including weaken ciliary escalatory motion, weaken phagocytic cells function, damage chemotactic ability of cells, lower NK cells number, impairing IFN-γ production, alters the balance between T-helpers and T-suppressor cells[4,5] our recent work identified that smokers in high-altitude cities like Taif have expansion of αβ T-cells and CD8+ γδ T-cells.[6]

According to Camenga et al[7] 2014, the youth smoking habits has shifted to E-cigarettes and this was also stated by center of disease control CDC.[8] The use of E-cigarettes has increase between high-school students in the recent years in USA.[9] Limited research has investigated the usage of E-cigarettes between college students. Studies stated that E-cigarettes are not being used by students as a method of stopping smoking R-cigarettes and that was not the case of adults who often use E-cigarettes as a method of quitting smoking, college students, however, use E-cigarettes as a method of pleasure.[10] This was used by companies to advertise their products especially via social media and it was estimated that manufacturer paid about 18.3 million US dollars between 2011-2012 for advertisements of their products.[9,11] Attracting the youth toward smoking specifically E-cigarettes has concerned and encourage the group to do this study.

This work aims to assess the knowledge and attitude of medical sciences students toward E-cigarettes. This study was approved by the college of medical sciences research committee and Taif University Medical Ethics committee.

MATERIALS AND METHODS
Survey Design
Google forms were used to collect data from participants. The aim of using google forms were to collect data quickly and precisely and to make sure to cover all the questions. Data collection was concluded by distribution google forms link to all the students.

Study Group
This cross-sectional web-based study has covered about 337 participants in the college of medical sciences to study the knowledge of the student toward electron cigarette. The college has four departments nursing, radiology, laboratory and physiotherapy.

Statistical Analysis
Chi-Square test was used to compare the answers of the questions between smokers' groups, gender and addiction. GNU-PSPP 0.10.1-g1082b8 was used for data analysis. Results are significant when P value < 0.05.

Table 1: Demographic analysis of the study group

|		Whole Smokers			Non-smoker	
		Smoker	Ex-smoker	Passive-smoker		Total
Gender	Males	61	9	6	139	215
		88.41%	81.82%	60%	56.28%	63.80%
		28.37%	4.19%	2.79%	64.65%	100%
	Females	8	2	4	108	122
		11.59%	18.18%	40%	43.72%	36.20%
		6.65%	1.64%	3.28%	88.52%	100%
				100%		
Specialty	Laboratory	29	6	5	62	102
		42.03%	54.55%	50%	25.1%	30.27%
		28.43%	5.88%	4.9%	60.78%	100%
	Radiology	7	2	1	62	72
		10.14%	18.18%	10%	25.1%	21.36%
		9.72%	2.78%	1.39%	86.11%	100%
	Physiotherapy	12	0	1	58	71
		17.39%		10%	23.48%	21.07%
		16.9%		1.41%	81.69%	100%
	Nursing	21	3	3	65	92
		30.43%	27.27%	30%	26.32%	27.3%
		22.83%	3.26%	3.26%	70.65%	100%
				100%		
Asthma	Yes	16	2	2	38	58
		23.19%	18.18%	20%	15.38%	17.215%
		27.59%	3.45%	3.45%	65.52%	100%
	No	53	9	8	209	279
		76.81%	81.82%	80%	84.62%	82.79%
		19%	3.23%	2.87%	74.91%	100%
				100%		
Age group	18-24	53	7	6	228	294
		76.81%	63.64%	60%	92.31%	87.24%
		18.03%	2.38%	2.04%	77.55%	100%
	≥25	16	4	4	19	43
		23.19%	36.36%	40%	7.69%	12.76%
		37.21%	9.3%	9.3%	44.19%	100%
				100%		
City	Taif	54	7	9	202	272
		78.26%	21.74%	90%	81.78%	80.71%
		19.85%	2.57%	3.31%	59.94%	100%
	Not from Taif	15	4	1	45	65
		21.74%	36.36%	10%	18.22	19.29
		23.08%	6.15%	1.54%	69.23%	100%
				100%		
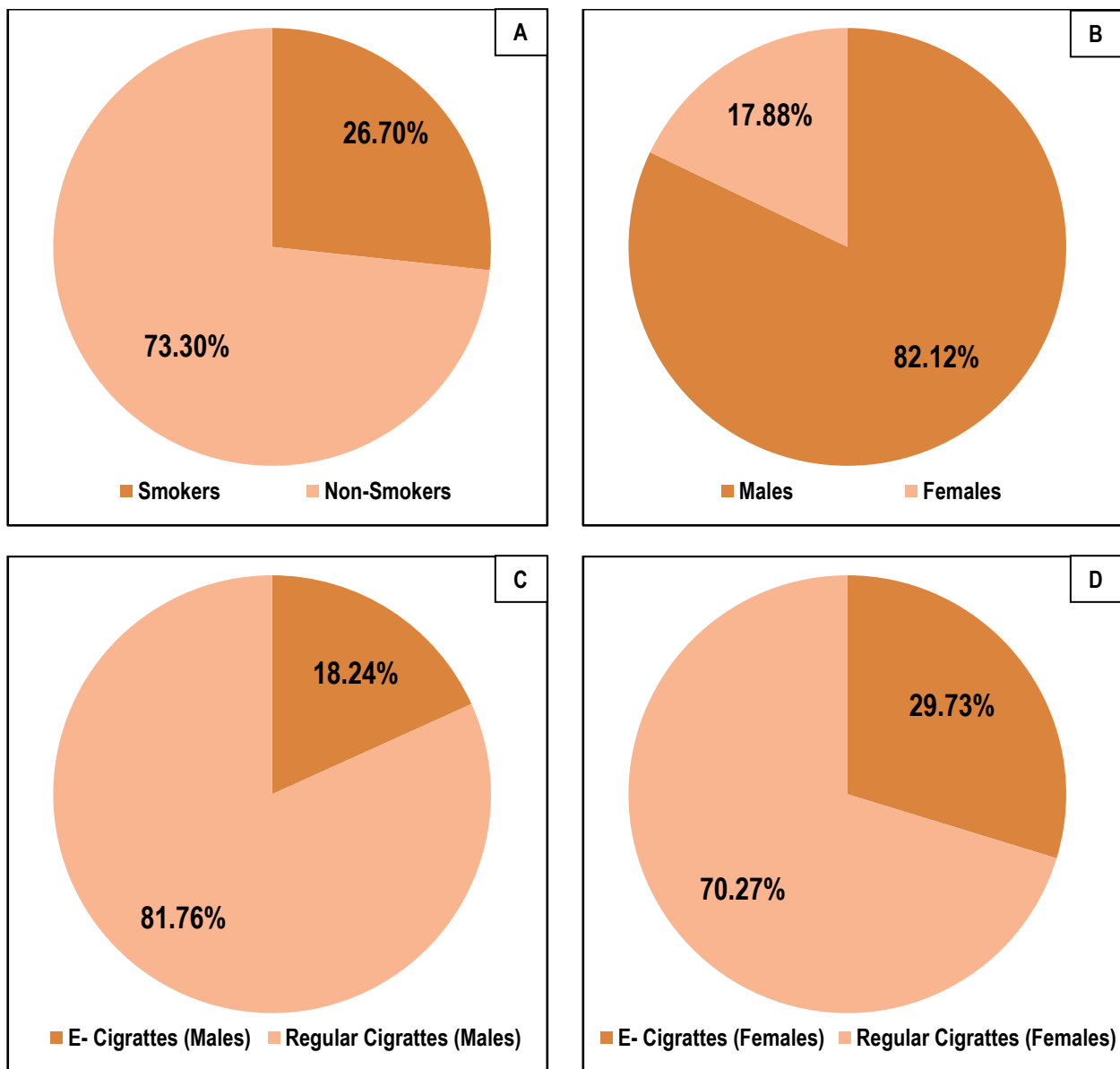
Figure 1: These pie charts show general information about the smoking status of participants. In A, out of the 337 participants only 26.7% (n= 90) are smokers or exposed to cigarettes smoke. In B, most smokers are from male students 82.12%. In C, the most used type of cigarettes between males' students is the R-cigarettes. And in D the most used type of cigarette in females students was the R-cigarettes.

RESULTS

Demographic Study

The number of students participated in the study was 337 which is about 25% of the total students of the college of applied medical sciences, the number of males was 215 students and females was 122 students. Table 1 illustrates the demographic study data analysis. In figure 1 the analysis of smoking status in the college of applied medical sciences is illustrated.

The highest percentage of participants were from male students, data shows 64.65% of the males' students and 88.52% of females are non-smokers. 17.215% of the total participants have asthma, and about 34.48% of the participants are smokers or passive smokers. Most of the participated students aged between 18-24 years of age. Taif is a high-altitude city and several research has shown this can affect the immune system.[12,13]

Smoking Correlated with Age Groups

The study has found R-cigarettes are significantly used more than E-cigarettes in both age groups, number of R-cigarettes users in 18-24 age group was 131 while in ≥25 was 32. While E-cigarettes users' number was 20 in 18-24 and 22 in ≥25.

Addiction

The study of which type of cigarettes are more additive between the students are illustrated in table 2.

The three groups smokers, ex-smokers and passive smokers have significantly (P value < 0.001) stated E-cigarettes are more addictive than R-cigarettes. While, non-smokers group provided different opinions regarding which type is more addictive as significantly most of the students stated R-cigarettes are more addictive than E-cigarettes.

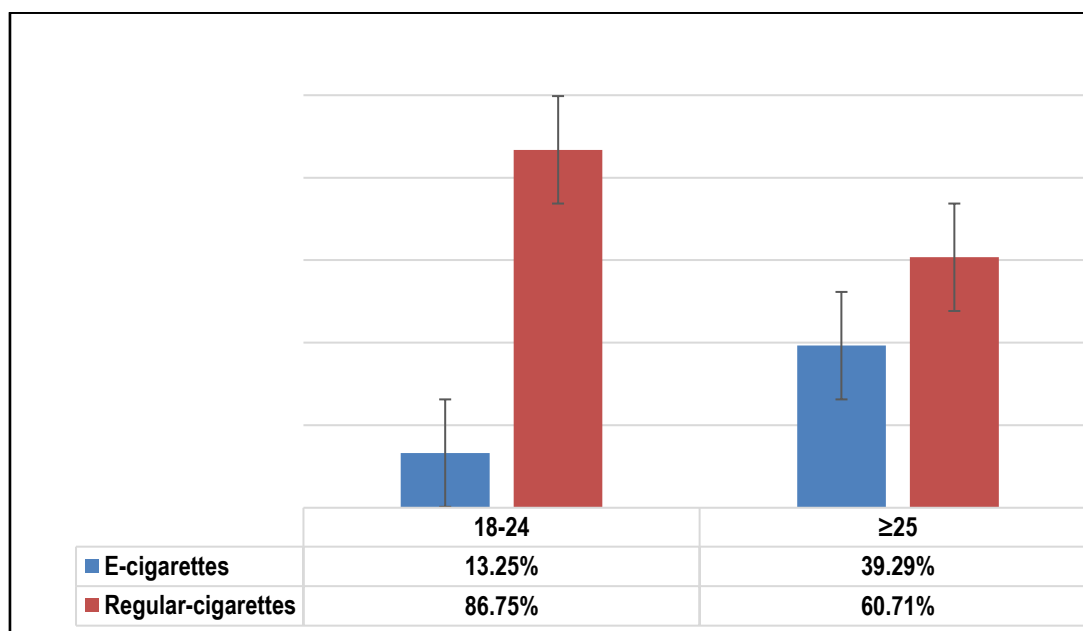|	18-24	≥25
■ E-cigarettes	13.25%	39.29%
■ Regular-cigarettes	86.75%	60.71%

Figure 2: Age groups were compared to the type of cigarettes used, and it has shown significantly both age groups 18-24 and ≥25 prefer R-cigarettes than E-cigarettes (P value 0.001).

Table 2: The whole smoker's groups have stated that R-cigarettes are more addictive than E-cigarettes, while non-smokers have a contradictory opinion (P value < 0.001).

Type of cigarette	Smoking status				Total
	Smoker	Ex-smoker	Passive smoker	Non-smoker	
Regular	20	2	1	168	191
	10.47%	1.05%	0.52%	87.86%	100%
	28.57	18.18%	11.11%	68.02%	
Electron	50	9	8	79	146
	34.25%	6.16%	5.48%	54.11%	100%
	71.43%	81.82%	88.89%	31.98%	
Total			100%		
P value			0.001		

Table 3: Whole-smokers group were asked question about their knowledge of e-cigarettes.

QUESTIONS	MALES		FEMALES		P Value
	Yes	No	Yes	No	
Have you used of E-cigarette to help you stop smoking R-cigarettes?	27	49	5	9	0.606
	35.53%	64.47%	35.71%	64.29%	100%
	84.38%	84.48%	15.63%	15.52%	
Do you think E-cigarettes should be regulated like other tobacco products?	48	28	8	6	0.443
	63.16%	36.84%	57.14%	42.86%	100%
	85.71%	82.35%	14.29%	17.65%	
Do you think E-cigarettes are safer choice than regular-cigarettes?	39	37	9	5	0.275
	51.32%	48.68%	64.29%	35.71%	100%
	81.25%	88.10%	18.75%	11.9%	
Do you / did you smoke R-cigarettes as well as using an e-cigarette?	46	30	8	6	0.518
	60.53%	39.47%	57.14%	42.86%	100%
	85.19%	83.33%	14.81%	16.67%	
Do / did you smoke shisha?	55	21	7	7	0.091
	72.37%	27.63%	50%	50%	100%
	88.71%	75%	11.29%	25%	
Total	90				

Table 4: Non-smokers were asked 4 questions, 3 out of the 4 has shown significant results.

Non-Smokers Questions	Males		Females		P value
	Yes	No	Yes	No	
Do have a previous knowledge of E- cigarettes?	91	48	64	44	0.193
	65.47%	34.53%	59.26%	40.74%	100%
	58.71%	52.17%	41.29%	56.28%	
Do you think e-cigarettes are healthy alternative product of R-cigarettes?	50	89	27	81	0.043
	35.97%	64.03%	25%	75%	100%
	64.94%	52.35%	35.06%	47.65%	
Do you believe e-cigarettes can reduce the amount of smoking R-cigarettes?	72	67	36	72	0.003
	51.8%	48.2%	33.33%	66.67%	100%
	66.67%	48.2%	33.33%	51.8%	
Does E-cigarettes have to be regulated like other Tobacco products?	83	56	51	57	0.034
	59.72%	40.29%	47.22%	52.78%	100%
	61.93%	49.56%	38.06%	50.44%	
Total			247		
			100%		

Whole-Smokers Correlated With Gender

The whole-smokers group was asked 5 questions to show their general knowledge regarding E-cigarettes. Males and females students answers were compared by applying chi square, the answers are demonstrated in table 3. There was no significant difference between males and females students.

Non-Smokers Correlated With Gender

Non-smokers were asked 4 questions to show their general knowledge regarding E-cigarettes. Males and females students answers were compared by applying chi square, the answers are demonstrated in table 4. There was significant difference between males and females students when they were asked if E-cigarettes are healthy choice and both genders have answered no, also, when they were asked if E-cigarettes can reduce amount of smoking R-cigarettes more male students have answered yes while females have a contradictory opinion. Moreover, when they were asked if E-cigarettes should be regulated like other tobacco products more male students have answered yes while more female has answered no.

DISCUSSION

This study has aimed to assess the knowledge and attitude of college of medical sciences students regarding E-cigarettes. Our results, indicated the whole-smokers group are about 26% out of the total student participated in this study, which is interestingly a good results as other study has detected more smokers in their study group than ours.[9,14] However, E-cigarettes users are higher in both males and females than what other studies have reported[14,15] between youth and college students. Our study participants have reported they do not use E-cigarettes to help them quite smoking (insignificant results), however, other studies have inconsistence results were E-cigarettes smokers use them to assist them to stop smoking and prevent reversion to smoking.[16,17] Also, our finding is consistence with other finding who showed that E-cigarettes users do not use them to assist them to stop smoking.[14] Both age groups have reported they use R-cigarettes more than E-cigarettes. And significantly more usage of E-cigarettes among ≥25 years than 18-24 years.

According to the national institute on drug abuse, addiction to smoking can lead to death of 10 persons every minutes.[18] Nicotine also can reach the human brain in seven seconds after inhalation and R-cigarettes usually contain about 10 mg of nicotine[19] while in E-cigarettes have more than 7760 flavors and range from 11mg to 18 mg per cartridge.[20-23] These has encouraged us to check participants thoughts of which type of cigarettes can lead to addiction than the other. An interesting finding was the whole-smokers group significantly believes E-cigarettes usage can lead to addiction more than R-cigarettes while the non-smokers group has a conflicting opinion where they believe R-cigarettes are addicted more than E-cigarettes. Also, E-cigarettes can attract even non-smokers as they seek to try something new and they do not believe it can lead to addiction.[24]

Higher percentage of participants from the whole-smokers group stated that E-cigarettes must be regulated like other tobacco products, and safer choice than R-cigarettes and they smoke both shisha and E-cigarettes. However, statically comparison has shown insignificant P value, increasing the sample size to cover all the university students is recommended.

Non-smokers were asked four questions, higher percentage of participants revealed they already have knowledge about E-cigarettes however P value show insignificant results. Participants were asked about their opinion if E-cigarettes must be regulated like tobacco products and higher percentages have answered yes. Higher percentage also agreed that E-cigarettes are not safer alternative for R-cigarettes. When they were asked if E-cigarettes can reduce the number of R-cigarettes smoking higher percentage of the male group has answered yes and the females have contradictory opinion as higher percentage answered no, while other studies stated E-cigarettes usage can reduce smoking of R-cigarettes and help in smoking cessation.[25]

Smoking while being asthmatic can lead to several clinical outcomes, a study revealed between three asthmatic patients admitted to emergency department one is a smoker (26). When asthmatic participants answers were correlated with other question insignificant P value were resulted, this was due to the

small samples size of asthmatic E-cigarettes smokers in this study. Moreover, other studies showed that asthmatic patients have positive opinion about E-cigarettes.[26]

CONCLUSION

There is a lack of knowledge, and different opinions between the whole smokers and non-smokers groups. Whole smokers believe E-cigarettes are more addictive than R-cigarettes, Past studies stated that young people are attracted to use E-cigarettes because of curiosity as most the participants have stated they use E-cigarettes because they want to try new inventions[27], other studies found that daily use of E-cigarettes can assist in smoking cessation.[25] Smoking in medical sciences college is not common as only a small proportion of the students are smokers. Addiction to E-cigarettes is higher than R-cigarettes, this can affect the student's levels as smoking addiction can lead to irritability, problem with attention, sleeping and the craving for more smoking. On 2016 FDA distributed laws for regulation of E-cigarettes and the liquid filling.[28]

ACKNOWLEDGEMENT

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