ORIGINAL ARTICLE

Smoking E-Cigarettes an increasing trend among young Saudi Generation: A Questionnaire Survey

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ABSTRACT

Background: Practice of different forms of tobacco has imposed huge and increasing burden on public health.
Aim: To evaluate awareness and knowledge among Saudi community regarding vaping and its possible consequences on general as well as oral health and inadvertently increase their general knowledge.
Methodology: This cross sectional study enrolled 865 participants involving both genders. A self-administered questionnaire related to the awareness and attitudes of vape users was uploaded online. Informed written consent was taken. Unwilling participants were excluded. All collected information was kept confidential. Data analyzed by SPSS 23.0. Frequency and percentage were given for socio-demographic, attitude, knowledge and health status.
Results: There were 84% males while 16% females in present study, majority of vape users were undergraduate students. Around 52.3% of vape consumers reported it as addictive substance. No significant relationship was observed between attitude, knowledge and health status with p-value >0.05.
Conclusion: This study concluded that the Saudi population has a better knowledge and awareness regarding its adverse effects on general as well as oral health. No significant relationship was observed between attitude, knowledge and health status.
Keywords: Vape Users, Awareness, Attitude and Health Status.

INTRODUCTION

Vaping is habit of using e- cigarettes[1]. An electronic cigarette is a battery-powered vaporizer which simulates the feeling of smoking, but without burning tobacco[2]. Their use is commonly called "vaping".[3] Practice of different forms of tobacco has imposed huge and increasing burden on public health worldwide. China invented electronic cigarettes (ECs) in 2003[4].

Its advantage apparently appears to be free of tobacco burn or having varying nicotine concentrations. Instead of cigarette smoke, the user inhales an aerosol, commonly called vapor[3]. Users inhale, or vape, the mist[1]. The liquid usually contains nicotine which is commonly occurring substance in tobacco. It is composed of a mouthpiece, atomizer, cartridge, and battery. The cartridge is a reservoir which is filled by a fluid consisting of a mixture of propylene glycol, vegetable glycerin, nicotine, and flavors. The atomizer heats the liquid ingredients into vapor that is inhaled by the users[5]. They are considered safe as compared to tobacco cigarettes by many indiciduals[6,7] but their use is still unsafe and hazardous to human health[8].

Its use exerts negative respiratory effects due to vapor smoke, with and without nicotine, having a cytotoxic effect on oro-epithelial cell lines and inducing breaks in DNA strands[9]. It produces illnesses with decreased immunity through degrading the body's ability to kill harmful microorganisms[10]. It also produces worst health effects among nonusers, children, pregnant women and individuals having other co-morbidities[11,12].

Literature review has revealed that its use produces many side effects depending on duration of use and frequency. Side effects include mouth irritation, sore throat, dry mouth, and mouth ulcers, and complaints of coughing, throat irritation, severe palatal injuries, respiratory tract burns, periodontitis and dry mouth usually after 06 months prolonged use on regular basis[11,13].

E-cigarettes use and promotion appears in news stories and entertainment media particularly the internet as safer products than regular cigarettes or as medical products and smoking-cessation aids. Literature review showed that in many countries, e-cigarettes have gained popularity in adolescents. Past 30-day e-cigarette use prevalence increased from 1.5% in 2011 to 20.8% in 2018 in United States (US) high school students[14]; and from 5.5% in 2011 to 29.9% in 2014 in Poland high school student[15]. Etter et.al.,2014 reported in his study that 84% users had a perception that it was less toxic than tobacco, 79% showed it as an alternative way to deal with craving for tobacco, 67% had withdrawal symptoms, 77% used it in-order to quit cigarette, 57% had an idea of being its cheap.[1]

As the trend of vaping enhanced in society, many researchers worked on its safety on public health. Due to lack of research data and awareness among general population, we planned present study to evaluate awareness and knowledge among Saudi community regarding vaping and its possible consequences on general as well as oral health and inadvertently increase their general knowledge.

The objective of the study was to evaluate awareness and knowledge among Saudi community regarding vaping and its possible consequences on general as well as oral health and inadvertently increase their general knowledge.

METHODOLOGY

Participants (n=865) involving both genders were included. A self-administered questionnaire related to the awareness and attitudes of vape users was uploaded online and spread through the community targeting vape current and

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previous users through the different social media tools. Willing participants were directed to fill it. All collected information was handled confidentially. The survey ethical approval was requested from the ethics committee of our institution at (PSMCHS). Unwilling participants were excluded. Informed consent was required to submit questionnaire.

Statistical analysis: The data was analyzed by SPSS 23. Frequency and %age were given for socio-demographic, attitude, knowledge and health status. Attitude and knowledge scores were measured by giving 1 mark for each correct/appropriate answer and those who took 50% and above marks were consider as positive attitude and adequate knowledge. Health score were measured by giving 1 mark for no symptom, 2 for sometimes and 3 for often option and those who had 50% and above score were consider as poor health status. Chi square test was applied to see the relationship of the attitude, knowledge with health status. A p-value of ≤0.05 was significant.

RESULTS

There were 84% males while 16% females in present study. Other socio demographic parameters like age, job and gender were shown as frequency and percentage in table-1. Results regarding different levels of awareness for vape useage among subjects was shown as frequency and percentage in table-2. Majority (52.3%) of vape users reported it as addiction in present study. Few symptoms and side effects of vaping were summarized in table-3 that reported 53.4% subjects complained of mouth dryness, 18.6% had nausea, 14.2% had chest pain and 23.8% suffered SOB which alters the quality of life and can impose a serious health risk. Positive attitude was observed in 81.7% participants. Majority of participants had good health (symptom score less than 50%) however only 59.3% participants had adequate knowledge as shown in table-4. Results revealed that no significant relationship was observed between attitude, knowledge and health status as shown in table-5.

Table-1: Socio-Demographic Data Among All Subjects (n=865)

Parameters	Categories	Frequency	%age
Education	Under high school	6	0.7
	High School	166	19.2
	Under graduate	618	71.4
	Post graduate	75	8.7
Age (years)	18- 22	264	30.5
	23-32	342	39.6
	33- 45	247	28.6
	Above 45	12	1.4
Salary	1000- 5000	375	43.4
	5001- 10000	177	20.5
	10001- 20000	219	25.3
	More than 20000	94	10.9
Region	Northern	114	13.2
	Eastern	185	21.4
	Southern	27	3.1
	Western	310	35.8
	Central	229	26.5

Table-2: Assessment Regarding Different Levels of Awareness Among Subjects

Statements	Categories	Frequency	%age
Do you think (Vape) can lead to addiction?	Yes, but less than cigarettes	452	52.3
	No	296	34.2
	I don't know	21	2.4
	Yes, like the cigarettes	96	11.1
Government should organize using (Vape) to whom under 21 years old	Yes	782	90.4
	No	83	9.6
Do you stop smoking (ordinary and electronic) after using Vape?	Yes	626	72.4
	No	138	16.0
	I use just Vape	101	11.7
Compared to other cigarettes, How do you feel satisfy about electronic Vape?	Less	184	21.3
	Equal	201	23.2
	More	410	47.4
	I use just electronic vape	70	8.1
Why did you start using electronic cigarettes (vape)?	more safe than electronic cigarettes	334	38.6
	Cheaper than cigarettes	71	8.2
	More easy to use than cigarettes	34	3.9
	To quit from cigarettes smoking	242	28.0
	Others reasons	184	21.2
How many times do you fill the (Vape) tank?	Less than one time in a week	18	2.1
	Once a week	28	3.2
	Twice a week	49	5.7
	Three times a week	82	9.5
	More than 4 times a week	688	79.5
What is the percentage of nicotine in the juice most often used?	No (0 mg)	21	2.4
	Low (<8 mg)	581	67.2
	Medium (8-16 mg)	72	8.3
	High (>16 mg)	133	15.4
	I don't know	58	6.7
In your opinion what are the medical affect that could be related to using electronic cigarettes (vape)?	Mouth Cancer	69	8.0
	Pulmonary Caner	91	10.5
	Blood circulatory system	33	3.8
	Cerebral thrombosis (stroke)	18	2.1
	Impotence	25	2.9
	Nothing	392	45.3
	I don't know	400	46.2

Table-3: Vape Users Facing Side Effects Of Smoking (n=865)

Symptoms	Categories	Frequency	%age
Nausea	No	704	81.4
	Sometimes	148	17.1
	Often	13	1.5
Symptoms of sleep disorder	No	768	88.8
	Sometimes	79	9.1
	Often	18	2.1
Difficulty of breathing during day	No	711	82.2
	Sometimes	136	15.7
	Often	18	2.1
Symptoms of chest pain	No	742	85.8
	Sometimes	107	12.4
	Often	16	1.8
Mouth Dryness	No	403	46.6
	Sometimes	319	36.9
	Often	143	16.5

Table-4: Distribution Of Attitude, Health And Knowledge Among All Subjects (n=865)

Parameters	Categories	Frequency	%age
Attitude	Positive	707	81.7
	Negative	158	18.3
Health	Poor	85	9.8
	Good	780	90.2
Knowledge	Adequate	513	59.3
	Inadequate	352	40.7

Table-5: Relationship Of Attitude And Knowledge With Health

Parameters	Categories	Poor Health	Good Health	P-value
Attitude	Positive	75(10.6%)	632(89.4%)	.102
	Negative	10 (6.3%)	148(93.7%)	
Knowledge	Adequate	42 (8.2%)	471(91.8%)	.051
	Inadequate	43(12.2%)	309(87.8%)	

DISCUSSION

Literature review has revealed that there is a disagreement in promoting and regulating E-cigarette worldwide. Those who are in its favor assume that it has less adverse effects and safe than normal cigarette whereas its opponents argue that too little is known about its impact on health and role in supporting termination of smoking. Although due of the marketing and publicity, the consciousness about smoking the e-cigarettes vape and their potential competitive advantages to the traditional cigarettes has increased as well.[1,6] Present study throws light on the vaping as an increasing social habit among Saudi community.

The study showed that the level of awareness of Saudi vapers towards its possible consequences (94.3%) is similar to another study made by students of Taibah university[16] where the level of awareness in the study was 93.6%. However, it is much higher than the level of awareness found in another study covering 14 countries[17] where the highest level of awareness measured was 66.6% in countries with less restrictive policies. This high level of awareness among Saudi vapers might be attributed to the increased online vape marketing and social media mainly. In present study, majority of participants had positive attitude (81.7%) and adequate knowledge (59.3%).

Our results showed that majority of the vape users were high school students or under-graduates. They almost comprised 90.6% of all enrolled subjects. Similarly, in another previous study done at India in 2018 showed that students including both males and females (vape users) were from high school in comparison to primary school. Hence our findings were similar to his results in this regard[1]. Similar findings were found in another study that showed high school students had more trend of vaping[18].

Our findings reported that majority of subjects (53.4%) had complained of mouth dryness, 18.6% had nausea, 14.2% had chest pain and 23.8% suffered SOB (respiratory involvement) which alters the quality of life and can impose a serious health risk. Paradoxically, in another study, it was observed that majority of vape users in his study had headache (55%), nausea (34%), sleep disturbance (40%), chest pain (62%), coughing (305) and phlegm production (25%)[1]. These observations proved that vaping produced side effects among its users.

In present study, 72.4% reported quitting all other smoking after they started using the electronic vape. Almost 27.6% subjects in present study were of other opinion. Literature review revealed that in one study, only 35% of Americans used e-cigarette to stop smoking[19]. Although, almost 89% stopped any other mean of smoking after switching to vape. Hence our work was in line with above mentioned study.

In current study, survey showed that majority of its users (67%) believe that vape contains low levels of nicotine (<8 mg). This finding was similar to finding in another study that reported 65% vape users had same idea. This means that it is a low nicotine source.[1,4] Our results showed that 90% of vape users fill their vape tank more than twice per week. Paradoxically, in one study, their participants (40%) fill their vape tank more than twice per week. This may be due to an increase in vaping habbit among Saudi youth.

Finally, majority agreed that the use of vape must be monitored and regulated by the government and must be banned to those under the age of 21 years, 30.5% of them were found to be aging 18 to 22 years old.

Limitations: Present study had limitations like time frame and inability to assure that the random sample taken was a true representative of the general population.

CONCLUSION

This study concluded that the Saudi population has a better knowledge and awareness regarding its adverse effects on general as well as oral health. No significant relationship was observed between attitude, knowledge and health status. Although majority believed that it's an helpful tool in quitting cigarettes but has addictive potential as well.

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