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Thu, Apr 6, 2023 at 8:35 AM

Reply-To: yubin@upm.edu.my

To: santi-m@fkm.unair.ac.id

06-Apr-2023

Dear Dr. Martini:

Manuscript ID MJMHS-2023-0280 entitled "Belief and Attitude of Primary Healthcare Providers Toward Electronic Cigarettes in Bali, Indonesia" has been submitted to the Malaysian Journal of Medicine & Health Sciences.

I invite you to review this manuscript. The abstract appears at the end of this letter. Please let me know as soon as possible if you will be able to accept my invitation to review. If you are unable to review at this time, I would appreciate you recommending another expert reviewer. Please click the appropriate link at the bottom of the page to automatically register your reply with our online manuscript submission and review system.

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I realize that our expert reviewers greatly contribute to the high standards of the Journal, and I thank you for your present and/or future participation.

Sincerely,

Assoc. Prof. Dr. Yu Bin Ho

Malaysian Journal of Medicine & Health Sciences Associate Editor

yubin@upm.edu.my, yubin@upm.edu.my

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TITLE: Belief and Attitude of Primary Healthcare Providers Toward Electronic Cigarettes in Bali, Indonesia

ABSTRACT: Background: Indonesia faces high burden on health and socio-economic from smoking. Besides conventional cigarettes, there is an increasing use of electronic cigarettes. This study aims to explore primary health professionals' belief and attitude toward electronic cigarettes. Methods: We conducted a cross-sectional survey in Bali, Indonesia between October, and November 2021. A 185 sample of general practitioners (GP) and dentists working at primary health care were invited through consecutive and snowballing technique. Variables collected during the study were sociodemographic and clinical practice characteristics, smoking status, intention to quit smoking and, their belief and attitude toward electronic cigarettes. Data was analyzed descriptively.

Results: The average age of the primary health care providers involved in the study was 37.65 years, 60% of them were female and a GP with median length of professional works 10 years. Only 3 (1.62%) were current smokers and 6 (3.24%) were ex-smokers, while 0.54% reported using electronic cigarettes. The majority of respondents agreed in the negative impacts of electronic cigarettes, however, 11.9% of them agree that electronic cigarettes are less dangerous than conventional cigarettes, 13.4% agree it can be used as smoking cessation and 9.2% agree that it should be recommended as a substitute of smoking.

Conclusion: Primary health care professionals viewed electronic cigarettes as potential risk for health but some of them have neutral and less positive attitude, therefore, it is necessary to provide adequate information based on the growing evidence of negative impacts of electronic cigarettes.

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Electronic Cigarettes in Bali, Indonesia**

Journal:	<i>Malaysian Journal of Medicine & Health Sciences</i>
Manuscript ID	MJMHS-2023-0280
Manuscript Type:	Original Article
Keywords:	electronic cigarettes, smoking, doctors, primary health care, smoking cessation

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3 1 Belief and Attitude of Primary Healthcare Providers Toward Electronic Cigarettes
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ABSTRACT

7 Background: Indonesia faces high burden on health and socio-economic from smoking. Besides
8 conventional cigarettes, there is an increasing use of electronic cigarettes. This study aims to explore
9 primary health professionals' belief and attitude toward electronic cigarettes.

10 Methods: We conducted a cross-sectional survey in Bali, Indonesia between October, and November
11 2021. A 185 sample of general practitioners (GP) and dentists working at primary health care were
12 invited through consecutive and snowballing technique. Variables collected during the study were
13 sociodemographic and clinical practice characteristics, smoking status, intention to quit smoking and,
14 their belief and attitude toward electronic cigarettes. Data was analyzed descriptively.

15 Results: The average age of the primary health care providers involved in the study was 37.65 years,
16 60% of them were female and a GP with median length of professional works 10 years. Only 3
17 (1.62%) were current smokers and 6 (3.24%) were ex-smokers, while 0.54% reported using electronic
18 cigarettes. The majority of respondents agreed in the negative impacts of electronic cigarettes,
19 however, 11.9% of them agree that electronic cigarettes are less dangerous than conventional
20 cigarettes, 13.4% agree it can be used as smoking cessation and 9.2% agree that it should be
21 recommended as a substitute of smoking.

22 Conclusion: Primary health care professionals viewed electronic cigarettes as potential risk for health
23 but some of them have neutral and less positive attitude, therefore, it is necessary to provide adequate
24 information based on the growing evidence of negative impacts of electronic cigarettes.

25 **Keywords:** electronic cigarettes, smoking, doctors, primary health care, smoking cessation

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28
29 **Introduction**

30 Globally, cigarette smoking is a major contributors to health and socio-economic loss. In 2018, more
31 than 6 million deaths worldwide was due to tobacco use, while around 1 million of them due to

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3 1 secondhand smoke exposures.(1) Indonesia has one of the highest smoking population in the world
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5 2 with around 61,4 million adult smokers. Smoking is particularly high among male, two third of the
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7 3 adult male in Indonesia(2) and one third of the boys aged 13-15 years are smoking(3) While smoking
8
9 4 prevalence among the adult population is relatively constant, the smoking rate among young people
10
11 5 aged 10-18 years is rising significantly from 7.2% in 2013 to 9.1% in 2018.(4, 5) The increasing
12
13 6 smoking rate among young people will lead to socio-economic burden due to chronic disease, loss of
14
15 7 productivity and low human resources capacity.(6)

16
17
18 8 Besides the high smoking rate, there is an increasing trend of the use of electronic cigarettes.
19
20 9 Electronic cigarette use among adult population was increased by tenfold from 0.3% in 2011 to 3.0%
21
22 10 in 2021 (GATS 2011 dan 2021). Among young people aged 10-18, the use of electronic cigarette was
23
24 11 even higher at 10.9% in 2018. (5) These figures imply a potency of double burden to Indonesia from
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26 12 the use of these two variances of product, the conventional and electronic cigarettes. Bali Province is
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28 13 one of the provinces in Indonesia with electronic cigarette use as high as 4.2% which is above the
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30 14 national average of 2.8%.(5) A study in Denpasar, Bali in 2015 found one in five high school students
31
32 15 have tried electronic cigarettes. (7)

33
34
35 16 Electronic cigarette is an electronic nicotine delivery system (ENDS) or more commonly known as
36
37 17 vape is a relatively new product compared to the conventional cigarettes. ENDS is a nicotine delivery
38
39 18 device powered by a battery and produces an aerosol (vapor). The nicotine is delivered in the form of
40
41 19 liquid which consists of several additional substances including propylene glycol, glycerin, water, and
42
43 20 flavoring agents, which can be varied and attractive because of different flavoring. Nicotine has been
44
45 21 well known as an addictive substance that can trigger the central nervous system, elevate heart rates,
46
47 22 and blood pressure. Besides there is evidence that nicotine has negative effect on reproductive health,
48
49 23 reduce baby's weight and brain growth. Studies also showed that the use of electronic cigarettes can
50
51 24 become a gateway to use of conventional cigarettes and other tobacco products among young people.
52
53 25 While some may argue it can be use as smoking cessation support, but there are reports of dual use of
54
55 26 this product after the try to use it for quitting (8-10)

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2
3 1 Supporting smokers to quit is one of the recommended measures by World Health Organization
4
5 2 (WHO) to control tobacco use and its impact.(11) WHO recommend countries to promote smoking
6
7 3 cessation supports to assist smokers to get out of their addiction.⁹ By quitting smoking, smokers will
8
9 4 gain health benefit including reduce risk of disease and also economic benefit from the money that
10
11 5 was spent on cigarettes.(12-14) Smoking cessation program in Indonesia is far from adequate,
12
13 6 however, the government has recommended establishment of smoking cessation services in primary
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15 7 health care services.(15)

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18
19 8 Studies showed there is low utilization of smoking cessation services,⁽¹⁶⁾ some partly due to smokers'
20
21 9 internal motivation to quit,¹³ and encouragement from healthcare providers.(16, 17) Health
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23 10 professionals has an essential role to identify risk and provide advice regarding smoking, they also
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25 11 have opportunities to be in contact with smokers or their family members to provide initial assessment
26
27 12 and supports.¹⁶ Given that opportunity, studies showed that only few of the smokers have ever
28
29 13 received advice from their family healthcare professionals. ^{15 16}

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31
32
33 14 Health professionals in this case doctors and dentists are usually also viewed as role models by their
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35 15 patients regarding health practices. Smoking behaviors among doctors or dentists may influence their
36
37 16 intention to provide advice about smoking(18) With the growing trend of electronic cigarette which
38
39 17 may perceived as having lower risk of disease, patients are likely to consult their doctors for advice.
40
41 18 Advice from the doctors will depend on the perception and attitude of the doctors toward electronic
42
43 19 cigarettes.(18) A Polish study showed 50.2% doctors have moderate knowledge on electronic
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45 20 cigarette and 11.5% of them agree that it can be used for quitting.(19) While smoking cessation
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47 21 intervention is more often offered for patients who are smoking conventional cigarettes than those
48
49 22 using electronic cigarettes.(18)

50
51 23 To date, there is limited study looking at health professional perception and attitude toward electronic
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53 24 cigarettes. Information about these matters is essential since health professionals are important agents
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55 25 to support quitting smoking rationally and effectively. The information regarding health professional
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57 26 belief and attitude around electronic cigarettes will enable us to view the readiness of health
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59 27 professionals to support quitting and whether there is misperception that needs intervention. Based on

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3 1 the above's rational, this study aims to explore primary health professionals smoking behavior and
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5 2 their belief and attitude toward electronic cigarettes.
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7 3

4 **Methods**

5 This was a cross-sectional study conducted in Bali, Indonesia between October, and November 2021.
6 A 185 sample of general practitioners (GP) and dentist working at primary health care selected
7 through consecutive and snowballing sampling participated in this study. The inclusion criteria were
8 GP and dentist working at primary health care services including government owned, private owned
9 and independent practices who consent to participate in the study. Participants were recruited using
10 various strategies, invitation posted on social media, and through professional associations
11 (convenience sampling) and participants forwarded the study invitation to their colleagues
12 (snowballing sampling).
13 Variables collected during the study were sociodemographic and clinical practice characteristics
14 including age, gender, profession, length of professional works, smoking status (current, ex-smoker
15 and never smoker), reason for smoking, history and intention to quit smoking for those who ever
16 smoked, their belief and attitude toward electronic cigarettes, and source of information on electronic
17 cigarettes.
18 Data was collected through a self-administered online questionnaire with Kobotoolbox, which was
19 designed to be completed within 15 – 20 minutes. Participants were provided with the general
20 information of the study and information regarding ethical considerations including voluntary
21 participation, confidentiality of their response and anonymous data and data analysis only for the need
22 of the study. Participants gave online consent before they were filling out the survey. A mobile phone
23 credit voucher or e-money valued at IDR 50.000 (US\$ 3.5) was given to each of the respondents
24 who completed the survey and agreed to be compensated. Data was then analyzed descriptively using
25 STATA v.12 including distribution of sociodemographic and clinical practices characteristics,
26 smoking related behaviors, belief, and attitude toward electronic cigarettes.

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3 1 This study has received an ethical clearance from the Ethical Committee of Faculty of
4
5 2 Medicine, Universitas Udayana and Sanglah Hospital with reference letter No.
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7 3 1997/UN14.2.2.VII.14/LT/2021
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12 6 **Results**

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15 7 The average age of the primary health care providers involved in the study was 37.65 years, 61.6% of
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17 8 them were female with median length of professional works of 10 years. The type of health care
18
19 9 providers was around 40% for government and independent practice (Table 1)

20
21 10 Of the 185 GP and dentists, only 3 (1.62%) were current smokers and 6(3.24%) were ex-smokers.

22
23 11 Among these 9 who currently and ever smoked, the average age of smoking initiation was 20 years,
24
25 12 with the two top reasons was curious to try and to reduce stress, as high as 44.4%, respectively. The
26
27 13 majority (77.78%) of them were a daily smoker who smoke 1-10 cigarettes per day (88.9%) and half
28
29 14 of them took their first cigarette more than 60 minutes after waking up in the morning (55.56%).

30
31 15 Regarding places that they were usually smoke, the majority reported outside their house (77.78%)
32
33 16 and at public places (33.33%), while they denied to ever smoke at other venues considered as smoke
34
35 17 free venues (Table 2)

36
37
38 18
39 19 More than 80% of the respondents viewed electronic cigarette have negative impacts on health and
40
41 20 caused addiction and the aerosol are dangerous to others, however, some of them have a neutral view.

42
43 21 Similarly, most of the respondents agreed that electronic cigarette is carcinogenic and increase risk of
44
45 22 cardiovascular and lung disease, but around 16.8% have neutral view about this. While the majority
46
47 23 stated disagree that electronic cigarettes are less dangerous and have lower risk of cardiovascular and
48
49 24 chronic lung disease than conventional cigarettes, but 11.9% of them agree that electronic cigarettes
50
51 25 are less dangerous and 17.3% agree that it has lower risk of cardiovascular and lung disease. (Table 3)

52
53 26
54 27 Regarding doctors and dentist attitude toward use of electronic cigarettes and smoking, the majority
55
56 28 agree that health professionals should become role models for not smoking and healthcare practices
57
58 29 should be 100% smoke free. Most of the respondents perceived electronic cigarettes as gateway to

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3 1 smoking conventional cigarettes, but around a quarter of them (26.5%) disagree and neutral. While
4
5 2 most of them did not agree electronic cigarette as smoking cessation and replacement for smoking,
6
7 3 around 13.4% agree it can be used as smoking cessation and 9.2% agree that it should be
8
9 4 recommended as a substitute for smoking. (Table 3)

10
11 5 The health professionals have several sources of information regarding electronic cigarettes as can be
12
13 6 seen in Table 4. The most common was news in mass media (56.8%), review on social media (52.4%)
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15 7 and article/academic papers (48.1%), whilst more than a quarter got the information from patients
16
17 8 (26.5%). (Table 4)

9 10 **Discussion**

11 Health professionals play essential roles in assessing and supporting smokers to quit smoking; hence,
12 they must have an adequate understanding on smoking cessation and proper methods to support
13 patients to quit. With the growing use and availability of electronic cigarettes, and varied perception
14 on this product, health professionals should be able to provide appropriate advice. In this study, we
15 found the majority of the GPs and dentists have positive beliefs and attitude that electronic cigarettes
16 are harmful and not a proper cessation device, however, some of these health professionals had the
17 opposite views.

18 The harmful impacts of smoking on human health have been well established, due to the high
19 numbers of chemical substances and carcinogens contained in a cigarette and produced during the
20 burning process.(20) As for electronic cigarettes, which was available several decades after
21 conventional cigarettes, the reported health outcomes may be less but we may not be able to compare
22 it with adequate balance with cigarettes due to this time differences. However, there is growing
23 evidence on the negative impacts of electronic cigarettes, a systematic reviews showed that electronic
24 cigarettes cannot be considered as harmless; it contains harmful metals, carcinogenic tobacco-specific
25 nitrosamines, volatile organic compounds, carcinogenic carbonyls.(21) Besides, electronic cigarettes
26 also pose several risks to bystanders who inhale the aerosol produced from the device.(22) Therefore,
27 the harm reduction arguments for those supporting use of electronic cigarettes as device to support

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3 1 smoking cessation can be argued as problematic, since it may introduce other potential harms to
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5 2 smokers.
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7 3 Around 13.4% of health professionals in our study agreed that electronic cigarettes can be used as
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9 4 smoking cessation and 9.2% agreed that it should be recommended as a substitute for smoking. This
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11 5 fact showed that not all health professionals have adequate understanding and probably access to
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13 6 proper information and evidence around this relatively new product with evolving evidence on its
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15 7 health consequences. Therefore, it is important for the health professional's organization in
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17 8 collaboration with academics and public health experts to conduct regular updates on this matter since
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19 9 health professionals are potential resource persons for their patients who seek advice. Based on the
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21 10 frequently accessed source of information accessed by these health professionals including news in
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23 11 mass media, review on social media and academic papers, these avenues can become appropriate
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25 12 channels to convey progressing evidence around the health impacts of electronic cigarettes.
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27 13 It is also necessary for the government to regulate this product. Over 30 countries in the world have
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29 14 banned the use of electronic cigarettes, some regulated it differently. WHO recommended
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31 15 governments to take necessary action including to prevent promotion of electronic cigarettes and its
32
33 16 uptake especially by non-smokers, youth and pregnant women, minimize potential health risks to
34
35 17 users and non-users, prohibit unproven health claims about electronic cigarettes and protect tobacco
36
37 18 control efforts from the tobacco industry interest (23)
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39 19 Currently, tobacco control regulation in Indonesia, the Government Regulation No 109/2012 do not
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41 20 provide explicit provision around electronic cigarettes. The regulation itself is considered inadequate
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43 21 to control and reduce smoking rate in Indonesia(24) and to protect young people from exposure to
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45 22 cigarette advertising.(25) The Indonesian government must urgently strengthen this regulation to
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47 23 provide adequate measures as recommended by WHO on the "MPOWER" strategies. It is also
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49 24 important for the governments to address barriers to strengthening tobacco control measures in
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51 25 Indonesia (26) by adopting several strategies such as strengthening sub-national tobacco control
52
53 26 efforts and addressing tobacco industry interference on policy making and implementation(27)
54
55 27 In this study, the proportion of health professionals who were smoking was small, 1.6% for current
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57 28 smokers and all of them have tried to quit for health reasons but fail because of stress and

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3 1 environmental triggers. National health research data also showed around 60% of smokers have
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5 2 intention to quit smoking(2) which signify the urgency to improve smoking cessation supports at both
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7 3 government and private health facilities. The ABC cessation approaches stand for “Ask”, “Brief
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9 4 Advise” and Cessation supports” is potential to be adopted and integrated to existing programs.(28)
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11 5 In this study, we cannot provide an association between health professional smoking status and their
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13 6 views around electronic cigarettes since the number of those who were smoking is small. There is also
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15 7 potency of selection bias due to convenience approaches to respondents hence it may not represent
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17 8 those who are smoking. Future study should consider the adequate proportion of health professionals
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19 9 who are smoking in the sample. There is also possibility of social desirability bias due to self-report,
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21 10 but it has been tried to minimize with anonymous responses.

22 11 **Conclusion**

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24 12 Primary health care professionals view electronic cigarettes as a potential risk for health but some of
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26 13 them have neutral and less positive attitude. Some of the health professionals also agree that
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28 14 electronic cigarettes can be used as smoking cessation devices and agree to recommend it use for
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30 15 substituting cigarette smoking.

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32 16 Based on this finding, it is necessary to provide adequate information based on the growing evidence
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34 17 of negative impacts of electronic cigarettes through several channels frequently accessed by health
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36 18 professionals. Improving smoking cessation services and other tobacco control measures are also
37
38 19 necessary to prevent double burden from cigarettes and electronic cigarettes.

39
40 20 **Acknowledgement:** The authors would like to thank the study participants for their valuable
41
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43
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45
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47
48 24 grant

49
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51
52 26 **Author contribution:** PASA designed the study and wrote the first draft of manuscript,
53
54 27 NMDK designed the study, supervised data collection, and analysed the data, IWGAE,
55
56
57
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59
60

- 1 KHM, KS, IMKD, IGST supported data collection, analysis and editing the manuscript,
 2 AADP supported study preparation and data collection.

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Table 1. Socio-Demographic and clinical practice of primary healthcare providers

Characteristics (N=185)	f	%
Age (mean, SD)		37.65 (7.66)
Min- Max		25-58
Sex		
Male	71	38.38
Female	114	61.62
Profession		
Dentist	75	40.54
General Practitioner	110	59.46
Place of		
Government health facilities	74	40.00
Independent practice	73	39.46
Private health facilities	38	20.54
Length of professional work in years (median, IQR)		10 (12)
Min- Max		1 - 35

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Table 2. Smoking behaviors among primary healthcare providers

Smoking behaviors (n= 185)	f	%
Smoking status		
Current smoker	3	1.62
Ex-smoker	6	3.24
Never smoker	176	95.14
Current and Ex-smokers only (n=9)		
Age of smoking initiation (Mean, SD)		20 (2.89)
Min Max		17-26
Smoking frequency (n=9)		
Every day	2	77.78
Several times a week	0	
Occasionally	7	22.22
Time to smoke after waking up in the morning		
<= 5 minutes	0	0.00
6-30 minutes	2	22.22
31-60 minutes	2	22.22
>60 minutes	5	55.56
Average of cigarette consumed per day		
1-10 sticks	8	88.90
11-20 sticks	1	11.10
Reason for the first smoking initiation*		
Offer from a friend	2	22.20
Parent/adult smoking	1	11.10
Curious to try	4	44.40
Reduce stress	4	44.40
Improve moods	4	22.20
Place usually/ever smoking (n=9) *		
Inside the house	1	11.11
Outside the house	7	77.78
At public place	3	33.33
Current smokers only (n= 3)		
Number of cigarettes consumed during compares to before COVID-19 pandemic		
The same amount	1	33.33
Reduced	2	66.67
Intention to quit smoking	3	100
Intention to quit smoking due to pandemic	3	100
Ever tried to quit smoking	3	100
Reasons of relapse		
Stress	2	66.67
Seeing others smoking	1	33.33
Reason of quitting (ex-smoker, n=6) *		
Harmful to health	4	66.67
Others	3	33.33
Use of alternative tobacco products/nicotine delivery system (ecig/vape, juul, sisha, iqos, snuz) (n = 18)	1	0.54

*) more than one answer

Table 3. Belief and attitude toward electronic cigarettes

No	Question(n=185)	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
		n (%)	n (%)	n (%)	n (%)	n (%)
Belief						
1.	Use of e-cig will have negative impacts on health	0 (0)	0 (0)	21 (11.4)	89 (48.1)	75 (40.5)
2.	E-cig can cause addiction to its users	0 (0)	2 (1.1)	26 (14.1)	85 (45.9)	72 (38.9)
3.	Aerosol coming from e-cig is dangerous for others around them	0 (0)	0 (0)	26 (14.1)	85 (45.9)	74 (40.0)
4.	E-cig not as dangerous as conventional cigarettes.	51 (27.6)	83 (44.9)	29 (15.7)	21 (11.4)	1 (0.5)
5.	E-cig is carcinogenic	0 (0)	2 (1.1)	31 (16.8)	103 (55.7)	49 (26.5)
6.	Use of e-cig increase risk of cardiovascular and chronic obstructive lung disease	0 (0)	0 (0)	27 (14.6)	108 (58.4)	50 (27.0)
7.	Risk of cardiovascular and chronic obstructive lung disease is lower than conventional cigarettes.	45 (24.3)	65 (35.1)	43 (23.2)	31 (16.8)	1 (0.5)
Attitude						
1	In my view, doctors should be role model for not smoking	0(0)	1 (0.5)	7 (3.8)	43(23.2)	134 (72.4)
2	Health facilities should be a 100% smoke free area	0(0)	0(0)	1 (0.5)	19 (10.3)	165 (89.2)
3	In my view, e-cig can be a gateway to smoking	7 (3.8)	8 (4.3)	34 (18.4)	66 (35.7)	70 (37.8)
4	In my view, e-cig can be recommended as smoking cessation device	71 (38.4)	67 (36.2)	22 (11.9)	24 (12.9)	1 (0.5)
5	In my view, smokers who don't want to quit, should be offered e-cig as substitution	65 (35.4)	74 (40.0)	29 (15.7)	15 (8.1)	2 (1.1)

Table 4. Source of information on e-cigarettes among health providers

Aspects	f	%
Source of information on e-cigarette* (n=150)		
Colleagues	49	26.5
News in mass media	105	56.8
Review on social media	97	52.4
Advertising in mass media	27	14.6
Article and academic papers	89	48.1
Patients	49	26.5
Family member	39	21.1

* More than one response.

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