Prevalence and Determinants of Non-daily Smoking Among Iranian University Students: A Web-based Survey

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Research Article

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Abstract

Background: Compared to non-smokers, non-daily smokers (NDS) experience a higher level of health risks associated to smoking. However, the most of them do not consider themselves as smokers. This study aims to investigate the prevalence of NDS and its predictors among students.

Methods: This web-based study was conducted in Tabriz, Iran, from July to August, 2019. In total, 3666 students were randomly selected from all universities in Tabriz in proportion to the number of students in each university. Data were collected applying an online questionnaire. NDS predictors were assessed using logistic regression model.

Results: A total of 15.7% and 7.8% of the students were daily and NDS, respectively. Compared to the non-smokers, the NDSs were more likely to present high-risk behaviors such as substance abuse (Odds Ratio (OR) = 2.96, Confidence Interval (CI) 95%: 2.12-4.13), alcohol consumption (OR = 2.54, CI 95%: 1.78-3.62), and experience of hookah smoking (OR = 9.30, CI 95%: 6.06-14.25) and its regular use (OR = 24.22, CI 95%: 14.86-39.46). The predictors of NDS were female gender (OR = 6.25, CI 95%: 4.57-10.14), denying of being a smoker (OR = 11.69, CI 95%: 6.86-19.91), not being addicted to nicotine (OR = 10.02, CI 95%: 4.21-23.85), and with no effort to quit smoking in the recent months (OR = 2.27, CI 95%: 1.28-4.04).

Conclusion: NDSs, due to their characteristics such as not considering themselves as smokers, lack of intention to quit smoking, and showing high-risk behaviors, should be paid attention by health policy makers while planning smoking cessation programs.

Background

No clear definition is proposed for Non-Daily Smoking (NDS) [1]. Non-daily smokers are typically called social, occasional, intermittent, and recreational smokers [2]. NDS is often considered to be either a transition to Daily Smoking (DS) or a step towards a gradual reduction in DS [3]. Non-daily smokers are usually younger, more educated, and have higher income than daily smokers [4]. Studies have shown that non-daily smokers often consider themselves as a non-smoker [5, 6]; a belief that might be negatively associated with a person's recent/future attempts to quit smoking [7]. A significant number of non-daily smokers become daily smokers over time. Results of a study conducted in the United States indicated that 18.4% of non-daily smokers became daily smokers after 12 months [8].

Although non-daily smokers have lower levels of health risk perception on their smoking habits [9], it is reported that NDS may increase the risk of morbidity and mortality associated to several diseases, including cardiovascular diseases, various types of cancer, respiratory diseases, and reproductive health problems [10]. Results of a study conducted among the U.S. adult population showed the non-daily smokers with 72% higher levels of mortality risk for the diseases like cancers, cardiovascular and respiratory diseases [11]. Compared to non-smokers, non-daily smokers are twice more likely to develop pulmonary diseases [12]; more prone to depression and suicide attempts [13]; and have higher levels of anxiety [14].

Although the prevalence rate of DS has recently declined in many countries [15], previous studies have shown an increasing trend in the number of non-daily smokers [16, 17]. Results of a study in Mexico indicated that the prevalence of DS decreased by about 50% from 2002 to 2016, while the prevalence of NDS increased by 35% from 2009 to 2016 [18]. In Iran, as developing country, few studies have examined the prevalence of NDS. A study among a sample of Iranian (15-75 years old) population showed the prevalence of NDS to be 1.7% (2.9% and 0.8% among men and women, respectively) [19].

Research on smoking behavior among students is of particular importance, because this behavior among students is a useful indicator of smoking among young people. On the other hand, students, as role models, can be significantly contributed to the increasing and/or decreasing prevalence rate of smoking within a society [20]. A majority of the students who smoke cigarettes do not smoke on a daily basis [21]. NDS is common among students and accounts for more than the two-thirds of smoking modes among students [22]. Previous studies on American students have shown that the prevalence rates of daily smoking and NDS were 7-13% and 16.6-22%, respectively [23-25]. Another study among Irish students reported the prevalence rates of daily smoking and NDS to be 7% and 12%, respectively [26]. All these findings indicate the high prevalence rate of NDS compared to daily consumption among students.

The prevalence rate of NDS among Iranian students is unknown, as no study was found with reports on NDS among this population. However, there are studies that show a 4-5% of occasional smoking among Iranian students [27, 28]. Our aims in the present study was to investigate the prevalence rate and determinants of NDS among university students in Tabriz, Iran.

Materials And Methods

Study design and participants

This web-based cross-sectional study was conducted on the students of nine universities in Tabriz, Iran, from July to August, 2019. Stratified-random sampling was employed to recruit the sample in proportion to the number of students in each university. In total, 3775 students completed the online questionnaire, 109 of which were unusable and/or incomplete. Finally, the data on 3666 students were analyzed.

Measure

The questionnaire was designed based on literature review and using the experts' opinions. To ensure content validity, the questionnaire with a response form was sent to three groups of knowledgeable persons (smoking researchers (five experts), research methodology and instrumentation (six experts), and knowledgeable students (five), to comment quantitatively on the questionnaire's relevance and transparency. To assess reliability, the questionnaire was completed by 30 students as a pilot test.

The final questionnaire included the following four categories:

1. ***Demographic characteristics:*** Demographic characteristics included age, gender, marital status, level of education, and field of education. Participants were also asked to answer the following question,

as an underlying factor: “Is there any smoker in your family?” (Response format: Yes/No).

2. ***High-risk health behaviors:*** Alcohol consumption in the past 30 days (Yes/No), hookah use (I have never smoked hookah/I have only tried hookah/I smoke hookah at least once per month), the history of substance abuse (opium / cannabis/ ecstasy/ heroin/ methamphetamine/ crystal/ ritalin/ marijuana/weed), and the history of self-harm (cutting the skin with a blade/burning or sticking a hot object to body/pulling hair/punching the wall/head-banging/cutting or scratching the skin with a sharp object/biting or pinching yourself that causes bruising/none of these). Response format for all items were Yes/No.
3. ***Smoking status:*** Smoking status was assessed using the following single item [29]. : “Which item may best describe your smoking status?”. The items were: 1) I have never smoked cigarette; 2) I have not smoked regularly; 3) I smoked regularly, but now I have quit it; 4) I smoke, but not on a daily basis; and 5) I smoke daily. The participants who chose the items 1, 2, and 3 were classified as “non-smokers”, those who chose item 4 were considered as “non-daily smokers”, and those who chose item 5 were classified as “daily smokers”.
4. ***Psychological factors***: Psychological factors were investigated applying the following five items: 1) Do you consider yourself as a smoker? Response format: Yes/No [7]. 2) How soon do you smoke your first cigarette after you wake up? Answer choices: Within 30 minutes/after 30 minutes. This item was selected from the Fagerström test for nicotine dependence (FTND) [30], which has been shown to be the strongest item in determining nicotine dependence [31]. 3) Do you think that it is difficult for you to quit smoking? Response format: Yes/No, 4) During the last 12 months, how many times have you stopped smoking for a day or longer with the intention to quit?[32] Answer choices: I have made attempts to quit smoking at least once in the last 12 months/I made no attempt, and 5) which of the following items may best describe your intention to quit smoking? [33] a) I never intend to quit, b) I may quit in the future, but not in the next six months, c) I will probably quit in the next 6 months, and d) I will quit in the next month. The answer choices to this question were grouped into two categories while data analysis: “I never intend to quit/I will quit in the coming months”.

Data collection

Revising the items based on the students’ feedbacks, we designed the online questionnaire in Google Drive online platform. All participants were asked to complete the online questionnaire which was provided as a shortened URL. To motivate the students for participation in the study, social media platforms (Telegram and Instagram) were used. For this purpose, we identified the admins of the channels and groups, where the students of Tabriz universities were joined as members. Next, the admins were asked to share the questionnaire link in the channels and/or groups, so that the students be able to easily complete the anonymous online questionnaire. Participation in the study was voluntary. The process of sampling was monitored to ensure that the students were recruited from all universities in proportion to the sample size.

Data analysis

In univariate analysis, Chi-square and one-way analysis of variance (ANOVA) tests were used to assess the associations between qualitative and quantitative independent variables and smoking status, respectively.

To determine the determinants of NDS, two multivariate models were used: The first model was multinomial logistic regression model with backward stepwise method. The level of significance was considered to be 0.1. All variables were first entered into the univariate multinomial logistic regression analysis. Then, the significant variables at the level of 0.2 were entered into the multivariate model. The final model included the following variables: gender, field of education, the presence of a smoker in the family, alcohol consumption in the past 30 days, self-harm, lifetime substance abuse, and hookah use. The second model was binary logistic regression, which was performed using Enter method. For this purpose, the association of independent variables and smoking status (daily and non-daily smokers) were assessed in univariate logistic regression analysis and then the significant variables at the level of 0.2 were entered into the multivariate regression model. All analyses were performed using SPSS-22 software. The alpha level of 0.05 was considered as the statistically significant level in the interpretation of final models.

Table 1. Differences in smoking mode by demographic factors and high-risk behaviors among Iranian university students (N = 3666)

Characteristics	Non-smokers	Daily smokers	Non-daily smokers	p-value
	n (%)	n (%)	n (%)	
Age (mean ± SD)	22.90 ± 3.86	22.80 ±2.85	22.28 ± 3.13	0.032
Gender				<0.001
Male	1284 (63.6)	536 (26.6)	198 (9.8)	
Female	1478 (92.4)	35 (2.2)	86 (5.4)	
Marital status				
Single	2461 (75.8)	523 (16.1)	262 (8.1)	0.003
Married	287 (83.7)	42 (12.2)	14 (4.1)	
Field of education				
Technical & Engineering	675 (67.1)	239 (23.8)	92 (9.1)	0.001
Medical of sciences	711 (85.9)	78 (9.4)	39 (4.7)	
Humanities	440 (76.7)	84 (14.7)	49 (8.6)	
Agriculture	92 (84.4)	10 (9.2)	7 (6.4)	
Fundamental sciences	197 (80.7)	27 (11.1)	20 (8.2)	
Art	116 (61.1)	49 (25.8)	25 (13.2)	
Not responded	548 (80.1)	84 (12.3)	52 (7.6)	
Education level				
Associate	42 (62.7)	15 (22.4)	10 (14.9)	0.002
Undergraduate	1888 (75.1)	421 (16.7)	206 (8.2)	
Postgraduate	424 (81.1)	63 (12.0)	36 (6.9)	
Doctorate (Ph.D. & MD)	404 (80.2)	70 (13.8)	30 (6.0)	
Smoker in the family				
No	1961 (79.2)	334 (13.5)	181 (7.3)	<0.001
Yes	804 (70.5)	234 (20.5)	102 (8.9)	
Alcohol consumption (in the past 30 days)				

Characteristics	Non-smokers	Daily smokers	Non-daily smokers	<0.001
	n (%)	n (%)	n (%)	p-value
No	2652 (82.9)	334 (10.4)	213 (6.7)	
Yes	108 (26.3)	234 (57.1)	68 (16.6)	
Hookah smoking				
Never	1644 (97.6)	16 (0.9)	26 (1.5)	<0.001
Experimenter	996 (65.6)	351 (23.1)	172 (11.3)	
Regular (at least once per month)	130 (31.1)	202 (48.3)	86 (20.6)	
Self-injury				
No	2121 (79.5)	359 (13.5)	189 (7.1)	<0.001
Yes	645 (68.1)	211 (22.3)	91 (9.6)	
Substance abuse				
No	2483 (83.8)	283 (9.5)	198 (6.7)	<0.001
Yes	131 (29.6)	247 (55.9)	64 (14.5)	

Results

The mean age of participants was 22.85 ± 3.6 years (Range: 18–37). More than half of the students were male (55.5%) and only 10.0% were married. The prevalence rates of NDS and DS were 7.8% (Confidence interval (CI) 95%: 7.0- 8.7) and 15.7% (CI 95%: 14.6-16.9), respectively.

The differences in smoking mode by demographic factors and high-risk behaviors are shown in Table 1. Significant differences were found in smoking mode by all demographic characteristics, underlying factors and high-risk health behaviors ($P < 0.05$).

A comparison between daily and non-daily smokers by psychological factors is shown in Table 2. The daily and non-daily smokers were significantly different in terms of considering oneself as a smoker, quit attempts during the last 12 months, intention to quit smoking, nicotine dependence and think that quit of smoking is difficult ($P <0.05$).

Table 2. Comparison Daily and Non-Daily Smokers by Psychological Factors among Iranian university students (N = 3666)

Characteristics	Daily Smokers n (%)	Non-daily Smokers n (%)	p-value
Considering oneself as a smoker			
No	76 (26.6)	210 (73.4)	<0.001
Yes	480 (88.6)	62 (11.4)	
Quit attempts (past 12 months)			
No	269 (64.5)	148 (35.5)	0.010
Yes	280 (72.9)	104 (27.1)	
Intention to quit in future months			
No	174 (61.1)	111 (38.9)	<0.001
Yes	371 (74.5)	127 (25.5)	
Think that quit of smoking is difficult			
No	297 (57.8)	217 (42.2)	<0.001
Yes	257 (86.0)	42 (14.0)	
Smoke within 30 minutes of waking up			
No	300 (56.3)	233 (43.7)	<0.001
Yes	254 (96.6)	9 (3.4)	

Multiple logistic regression showed that being a boy increases the chance of being non-daily and daily smokers by 1.98 times and 12.73 times, respectively (Table 3). Also, being a boy decreases the chance of being a non-daily smoker by 84%; in other words, being a girl increases the chance of being a non-daily smoker by approximately 6.5 times (p <0.001). Medical students had a 39% lower chance of being a non-daily smoker and a 64% lower chance of being a daily smoker compared to technical and engineering students, respectively. Having a smoker in the family increased the chance of being a daily smoker by 79%. Those who drank alcohol during the past 30 days were approximately 2.5-fold and 5-fold more likely to be non-daily and daily smokers, respectively. Having the history of self-injury increased the chance of being a daily smoker by 68%. Compared to non-smokers, the students who experienced hookah smoking, and those who smoked hookah regularly (at least once a month), were approximately 9 and 24 times more likely to be non-daily smokers, respectively (Table 3).

Table 3. Associations between the mode of cigarette smoking, demographic characteristics and risky behaviors among Iranian university students (N = 3666)

Characteristics	Nondaily Smokers vs. Non-smokers ¥			Daily Smokers vs. Non-smokers ¥			Nondaily Smokers vs. Daily smokers ¥¥		
	OR	95% CI*	p-value	OR	95% CI*	p-value	OR	95% CI*	p-value
Gender									
Male (vs. Female)	1.98	(1.48 - 2.66)	<0.001	12.73	(8.67 - 18.70)	<0.001	0.16	(0.10 - 0.24)	<0.001
Field of Education									
Technical & Engineering (referent)	-	-	-	-	-	-	-	-	-
Medical Sciences	0.61	(0.41 - 0.90)	0.038	0.36	(0.26 - 0.52)	<0.001	1.68	(1.08 - 2.60)	0.052
Humanities	0.90	(0.61 - 1.33)	0.669	0.91	(0.65 - 1.27)	0.641	0.99	(0.65 - 1.53)	0.984
Agriculture	1.13	(0.54 - 2.37)	0.787	0.88	(0.41 - 1.86)	0.779	1.28	(0.52 - 3.16)	0.648
Fundamental Sciences	1.30	(0.79 - 2.14)	0.393	0.70	(0.42 - 1.16)	0.247	1.85	(1.02 - 3.38)	0.090
Art	1.69	(1.02 - 2.80)	0.085	1.09	(0.66 - 1.79)	0.777	1.55	(0.91 - 2.66)	0.176
Not responded	0.75	(0.51 - 1.13)	0.249	0.48	(0.33 - 0.69)	0.001	1.58	(1.01 - 2.49)	0.095
Having smoker in the Family									
Yes (vs. No)	1.33	(1.02 - 1.74)	0.078	1.79	(1.40 - 2.27)	<0.001	0.75	(0.56 - 1.00)	0.100
Alcohol consumption (in the past 30 days)									

Yes (vs. No)	2.54	(1.78 - 3.62)	<0.001	5.01	(3.72 - 6.77)	<0.001	0.51	(0.36 - 0.71)	0.001
Self-injury									
Yes (vs. No)	1.27	(0.96 - 1.68)	0.163	1.68	(1.31 - 2.16)	0.001	0.75	(0.56 - 1.02)	0.130
Substance abuse									
Yes (vs. No)	2.96	(2.12 - 4.13)	<0.001	7.08	(5.35 - 9.38)	<0.001	0.42	(0.30 - 0.58)	<0.001
Hookah smoking									
Never (referent)	-	-	-	-	-	-	-	-	-
Experimenter	9.30	(6.06 - 14.25)	<0.001	17.12	(10.59 - 27.69)	<0.001	0.54	(0.29 - 1.02)	0.109
Regular (at least once per month)	24.22	(14.86 - 39.46)	<0.001	33.19	(19.63 - 56.12)	<0.001	0.73	(0.37 - 1.42)	0.436

Note: ¥ reference group = non-smokers, ¥¥ reference group = daily smokers, OR = Odd Ratio

* 95% CI = 95% Confidence Interval for OR

(Insert table 3 here)

After adjusting for other variables, the students who did not consider themselves as a smoker were almost 11.5 times more likely to be non-smokers than those who considered themselves as a smoker (Table 4). The students who did not intend to quit smoking in the coming months were 2.27 times more likely to be a non-daily smoker than those who did intend. The students who were not addicted to nicotine (those who lit their first cigarette 30 minutes after waking up) were almost 10 times more likely to smoke cigarettes on a non-daily basis (Table 4).

Table 4. Binary Logistic regression analysis on the relationships between the mode of smoking and psychological variables

Psychological variables	OR *	95% CI *	p-value
Considering himself/ herself as a smoker			
No (vs. Yes)	11.69	(6.86 - 19.91)	< 0.001
Quit attempts (past 12 months)			
No (vs. Yes)	0.68	(0.40 - 1.18)	0.170
Intention to quit in future month			
No (vs. Yes)	2.27	(1.28 - 4.04)	0.005
Think that quit of smoking is difficult			
No (vs. Yes)	1.16	(0.63 - 2.11)	0.637
Smoke within 30 minute of waking			
No (vs. Yes)	10.02	(4.21 - 23.85)	< 0.001

Note: Reference group is daily smoking

*OR = Adjusted Odds Ratio; 95% CI = 95% Confidence Interval for OR, OR = Odd Ratio

Discussion

Our results showed that among the smoking students 15.7% were daily smokers and 7.8% were non-daily smokers. In a study conducted in North Carolina, the U.S., about 20% of the students were non-daily smokers and only 9% smoked daily [23]. Another study in Minnesota found that 22% and 13% of the students were non-daily and daily smokers, respectively [24]. An Irish study also showed the prevalence rates of non-daily and daily smoking to be 12% and 7%, respectively [26]. These findings are in contrast to those found in the present study, which may be due to the use of different definitions for non-daily smokers. The above-mentioned studies have used the definition “the number of days that an individual smoked in the last month” for non-daily smoking. According to this definition, if a person does not smoke even for 1 day out of the past 30 days, he/she is defined as a non-daily smoker. However, based on the definition used in our study, a non-daily smoker was a person who smokes, but not on a daily basis [29]. Another reason for the dissimilarities could be associated to the claim that NDS is more prevalent in developed countries due to having more preventive policies on DS [34]. A study conducted among Iranian adult population, showed that daily and non-daily smoking prevalence rates were 8.3% and 1.7%, respectively [19]. These results were in line with those found in the present study. However, the differences in the prevalence rates of NDS between these two studies may be due to the difference in the mean age of study participants (23 years in the present study versus 32 years in the associated study). Besides, the

prevalence rate of NDS among students and young individuals is reported to be higher than those among general population [35].

Moving further, male students in our study were more likely to be daily smokers than non-daily smokers, while female students were more likely to be non-daily smokers than daily smokers. Several studies, particularly those conducted in developing countries, have suggested that being male increases the chance of performing many high-risk health behaviors, such as smoking [28, 36]. The results of previous studies among university students in North Carolina [23], Minnesota [24], and Ireland [26] indicated no gender difference in the mode of smoking- being a non-smoker, daily smoker, and non-daily smoker. Such discrepancies between the results found in our study and those found in the previous studies may be due to cultural differences. Compared to women in developed countries, Iranian women have a lower level of social freedom to smoke cigarette, and are faced with a higher level of smoking obscenity [37].

Our results also indicated that medical students were less likely to be daily and/or non-daily smokers than those who study in the field of engineering, which was consistent with those reported in other studies [38]. Compared to the students in other fields, the students in medical and health sciences have higher levels of health literacy, and may have a better understanding on the adverse effects of smoking, which may result in less possibility to smoke [39]. Similar to those found in previous studies [28, 36], [40], the students who had at least one smoker among their family members were more likely to smoke, particularly on a daily basis, and having the history of self-harm increased the students' chance to be a DS.

In line with previous studies, our study showed that both daily and non-daily smokers were more likely than non-smokers to engage in high-risk behaviors such as alcohol use in the past 30 days, substance abuse, and regular hookah use which was in line with those assumed the problem behavior theory (PBT). According to PBT, problematic behaviors co-occur in individuals, and engaging in one high-risk behavior increases the likelihood of experiencing other high-risk behaviors [41]. In the present study, two high-risk behaviors, alcohol use in the past 30 days and substance abuse, were less common among non-daily smokers than daily smokers. These findings confirm the theoretical basis of PBT and are similar to those reported in previous studies [23, 24, 32].

We also found that the non-daily smokers, unlike daily smokers, did not consider themselves as smokers. Many studies conducted on students and general population have confirmed this finding and suggested that non-daily smokers, despite acknowledging their smoking, consider themselves as non-smokers [5, 7]. Consistent with other studies, our results showed that non-daily smokers, unlike daily smokers, had very low nicotine dependence, so that they were very unlikely to smoke their first cigarette soon after waking up [42, 43]. It was also found that the non-daily smokers, unlike daily smokers, did not intend to quit smoking in the coming months. A high proportion of daily smokers (73%) had attempts to quit smoking at least once during the past year, however only 27% of non-daily smokers had such attempts. Evidence show that a majority of non-daily smokers underestimate the health risks of NDS [9], and do not consider themselves as smokers, so they pay less attention to the advice of health professionals and do not feel

the need for smoking cessation counseling [44]. Therefore, they may not have the intention to quit their occasional smoking [7, 44, 45]. On the other hand, there is a claim that non-daily smokers are more likely than daily smokers to quit smoking in the coming months [32]. There is a group of non-daily smokers called “converted nondaily smokers”. These are the individuals who used to be daily smokers and, then, became non-daily smokers. These individuals are more likely to decide to quit smoking in the coming months and attempt to quit [46]. Therefore, in the studies that used the definition of “the number of days people smoked in the last month”, there is a higher possibility for “converted non-daily smokers” in their sample. Among participants of the present study, the non-daily smokers were much less nicotine dependent than daily smokers. Given the close association between nicotine dependence and the decision to quit [32, 47], the non-daily smokers were less likely to quit smoking in the coming months- due to less nicotine dependence.

Limitations

The present study had some limitations. Low response rate is a major concern in web-based studies [48], and our study may have such limitation, as well. However, as we did not know the number of students who received the questionnaire link, we cannot calculate the response rate. Another possible limitation for our study, as a web-based survey, is participation bias [49], which may distort the results of our study. In other words, only certain individuals who have had access to the Internet and a social media account, and a desire to participate in the study may have answered the questionnaire. Moreover, the results of present study are based on self-reported data, so the accuracy of the collected data depends on the honesty of the respondents. Another limitation is the cross-sectional nature of the study. So, any cause-effect inferences from the results are warranted.

Conclusion

Among Iranian university students participated in our study, daily smoking was more prevalent than non-daily smoking. However, the non-daily smokers, just like daily smokers, were involved in high-risk health behaviors such as hookah use, alcohol consumption, and substance abuse, which can pose a greater threat to their health. The non-daily smokers did not consider themselves as smokers, were less nicotine dependent, and were less likely to decide to quit. These behavioral characteristics might put them at a greater risk to health damage and may even turn them into daily smoking in the future. These characteristics should be considered as core categories while designing smoking cessation interventions among young non-daily smokers. Therefore, besides paying attention to daily smokers, health policy makers and health professionals should consider the educational needs of non-daily smokers while planning for smoking cessation programs among young populations.

Abbreviations

NDS: Non-daily smokers

DS: Daily smoking

CI: Confidence interval

PBT: Problem behavior theory

Declarations

Ethics approval

The study protocol and designed questionnaire were approved by Ethics Committee of Tabriz University of Medical Sciences with reference code IR.TBZMED.REC.1398.190 and the necessary permissions was obtained to conduct the study.

Consent for publication

Not applicable.

Availability of data and materials

The datasets used and analyzed during the current study are available from the corresponding author on reasonable request

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

FS, MAJ and AM led on study design, data preparation, participated in the data analysis. HA, MAJ, AM participated in the interpretation of results. FS prepared the first draft and HA participated in preparing the later drafts of the article. AM, MAJ and HN participated in the critical review and correction of the article. All authors have seen and approved the final version.

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