

## Incidence and prevalence of smoking amongst local medical students

Matthew Pizzuto, Brendan Caruana Montaldo, Tamara Muscat, Matthew Seychell

### BACKGROUND

Smoking is a detrimental addiction associated with various diseases. Locally, in 2016, 20.9% of females and 30.2% of males were smokers.

### METHOD

The methodology used was in the form of a cross sectional retrospective study with 717 questionnaires being distributed to medical students via electronic social media. The questionnaires were based on the MONICA 1998 questionnaire. It enquired about demographics, clinical year of studies and cigarette smoking habits.

### RESULTS

65% of questionnaires were received. From the cohort of students who answered the questionnaire, 68.5% (CI 64.2–72.7%) admitted to having never smoked, 10.8% (CI 8.0–13.6) are current active smokers, 16% (CI 12.7–19.3) are social smokers, 3.7% (CI 2–5.4) were ex-smokers and 1% (CI 1–1.9) vape. Amongst active smokers, 67% smoked 0-5 cigarettes daily. Most social smokers also smoke 0-5. 63.3% of students admitted to unsuccessfully quitting smoking. Ex-smokers stated that health, hypocrisy and sports were important reasons for them quitting smoking. In the non-smoking cohort, health and odour ranked highly as reasons for never having started smoking. Students who vaped admitted to doing so multiple times daily.

Although stress and coping mechanisms were chief reasons why students declared that they smoked, long term smoking increases anxiety and stress. Doctors who smoke are less likely to encourage their patients to quit smoking<sup>10</sup>. Social smokers are students who do not smoke daily and only during stressful situations or social events. Moreover, they frequently smoke more when surrounded by friends, especially whilst drinking alcohol<sup>16</sup>. A significant portion of students are social smokers; most smoke 0-5 cigarettes (97.3%) (CI 94–100). A chi-square test of independence was performed to examine the relation between this study and a similar unpublished study conducted locally in 2008. The relation between these studies was not significant (p-value 0.83). Prevalence of student smoking is the same as it was a decade ago.

### CONCLUSION

Smoking is still common amongst medical students in Malta in 2019. In view of the current local problem and considering that local practices have failed to reduce smoking; counselling should be offered on campus, more emphasis should be placed during the medical student years on the deleterious effects of tobacco<sup>25</sup>

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## INTRODUCTION

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Healthcare professionals play an important role in tobacco prevention<sup>1</sup>. They educate the community by their actions and campaigns against tobacco smoking whilst also influencing key national stake holders. Physicians occupy a unique role in prescribing and leading teams in smoking cessation clinics both in hospital and in the community<sup>1</sup>. Patients who smoke often turn towards their physicians for advice. Physicians' actions (whether s/he is a smoker) have direct implications on the likelihood whether their patients will stop smoking or not. Present medical students will graduate to be doctors in a few years' time and smoking clinicians are less likely to discourage their patients to quit smoking.<sup>2</sup>

Unfortunately, smoking is still prevalent in the national and international medical student population groups and a superior knowledge does not seem to correlate with a lower rate of smoking amongst more senior medical students.<sup>3</sup>

Smoking in medical students is prevalent worldwide and is perceived as an international phenomenon.<sup>4</sup> Medical students continue to smoke despite direct exposure both to the teaching of the harmful effects of cigarettes, as well as to the experience of patients suffering from the effects of continued smoking. Prevalence of smoking amongst medical students, as well as the rationale for the behaviour of medical students with regards to tobacco use has been studied the world over and is the subject of a number of meta-analyses.<sup>4</sup>

In the European region, tobacco is responsible for 16% of adult deaths in 2016 (over 7million deaths). Smoking is attributed to cause 12% of all deaths in the Maltese population.<sup>5</sup>

Prevalence of smoking in Malta will drop to 25% in males and 16% in females by 2025.<sup>6</sup>

The incidence of lung cancer in Malta has increased from 118/100,000 in 2006 to 136/100,000 in 2015 in men and from 28/100,000 in 2006 to 54/100,000 in women in 2015 according to the Trading Economics (an article about smoking prevalence in Malta published in 2016)<sup>7</sup>. 20.9% of all women and 30.2% of all men were smokers in 2016. The total number of deaths attributed to lung cancer in men has risen from 107 in 2004 to 142 in 2014, whilst in the women, it has risen from 16 in 2004 to 28 in 2014. Although the fatalities attributed to lung cancer amongst men were higher than amongst women, a statistical downward trend was seen in the male population, in contrast to a slow uptrend being seen amongst women.<sup>5</sup>

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## METHODS

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All medical students enrolled in the five years of the curriculum of the single medical school in Malta (University of Malta Medical School) in the academic year 2018/2019, either for first or repeated times, were eligible for participation in the study. 465 of 717 eligible students participated in the survey with a response rate of 65% (CI 69.3; 60.7).

This was a cross sectional point prevalence study design, utilising a self-reporting questionnaire. The questionnaire was anonymous, confidential and self-reported. It was formulated in English. The questionnaire was based on the MONICA (Monitoring of Trends and Determinants of Cardiovascular Diseases) study questionnaire but further clarification was sought and supplemental questions were added.

The questionnaire consisted of 17 items that covered 5 areas; demographical data,

prevalence of cigarette and tobacco use, smoking habits and attitudes to abstention from smoking and vaping habits.

The questionnaires were all individually sent between February and March 2019. Students were briefed about the survey, where the reason, anonymity and voluntary participation were stressed. The commonest reason for not participating was failure to open the questionnaire (confirmed by the feedback obtained by the platform of social media). Social media was chosen for the dissemination of questionnaires since less students had been attending lectures and it was thought to be a superior method of data collection. The obtained data were processed by Microsoft Excel 2010.

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## RESULTS

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From the 465 students who filled in the questionnaire, most respondents (60%) were females. 68% of all female medical students filled in the questionnaire whilst only 58% of all male medical students filled in the

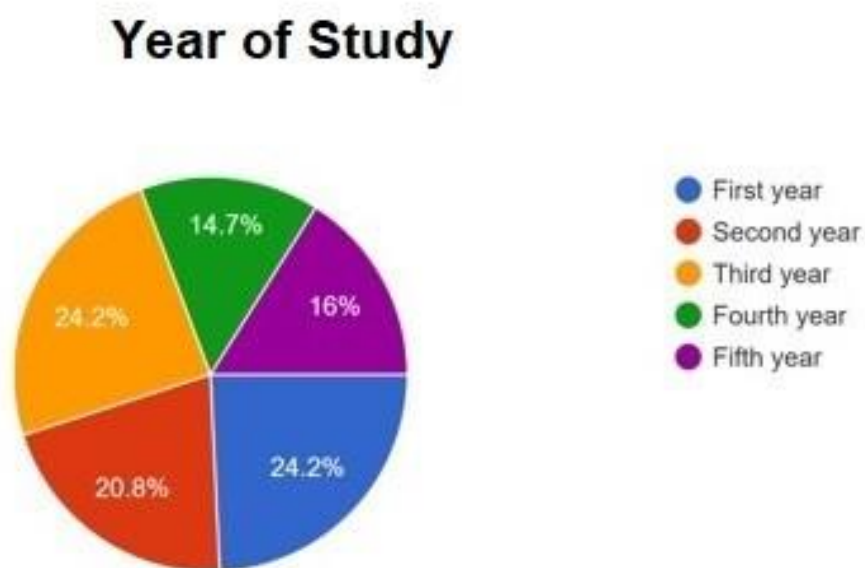
questionnaire. 55% of the cohort was made up of clinical students whilst 45% were pre-clinicals. The responses received showed a significant difference in responses filled between pre-clinical year students and clinical year ones (p-value 0.0036). Pre-clinical students were likelier to answer the questionnaire, figure 1.

The age of the participants varied but the majority were between 21 and 24 years old (45.5%), closely followed by 17 and 20 years old (45%), 25 to 28 years old (7.6%) and the remainder were over 29 years. The social background of the students was not recorded in this study.

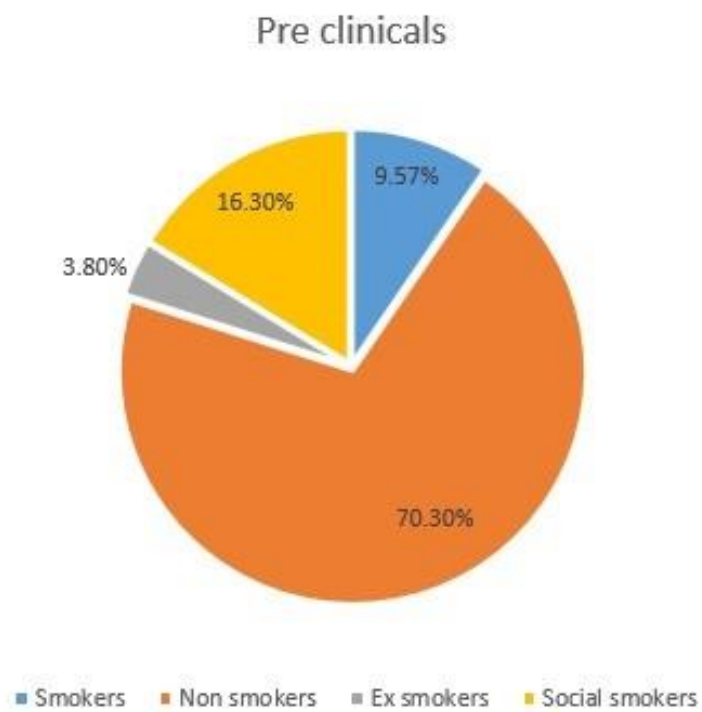
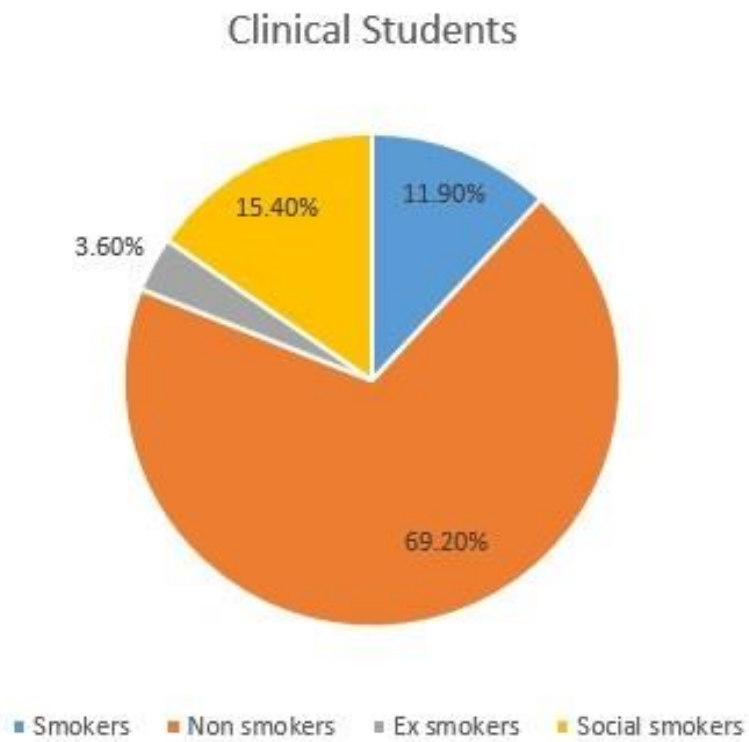
From the cohort of students who answered the questionnaire, 68.5% (CI 64.2–72.7%) admitted to having never smoked, 10.8% (CI 8.0–13.6) are current active smokers, 16% (CI 12.7–19.3) are social smokers, 3.7% (CI 2–5.4) were ex-smokers and 1% (CI 1–1.9) vape. Figures 2A and 2B below show the student tendencies in the pre-clinical and clinical cohort.

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**Figure 1** Distribution of medical students by clinical year



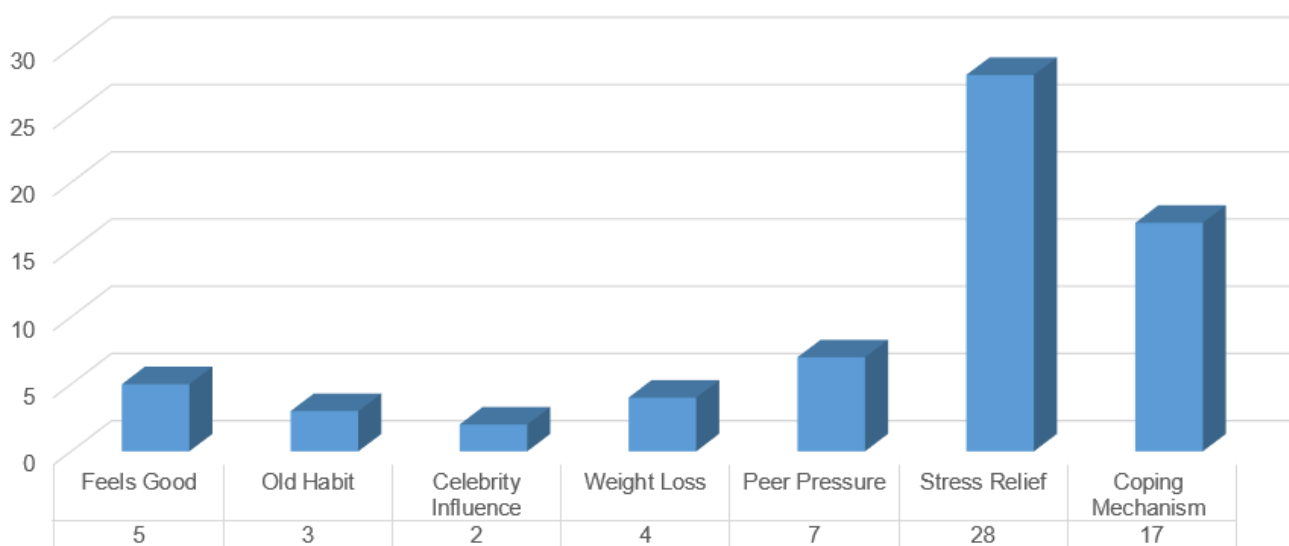
**Figure 2a & 2b** Pre-clinical and clinical medical student's smoking tendencies



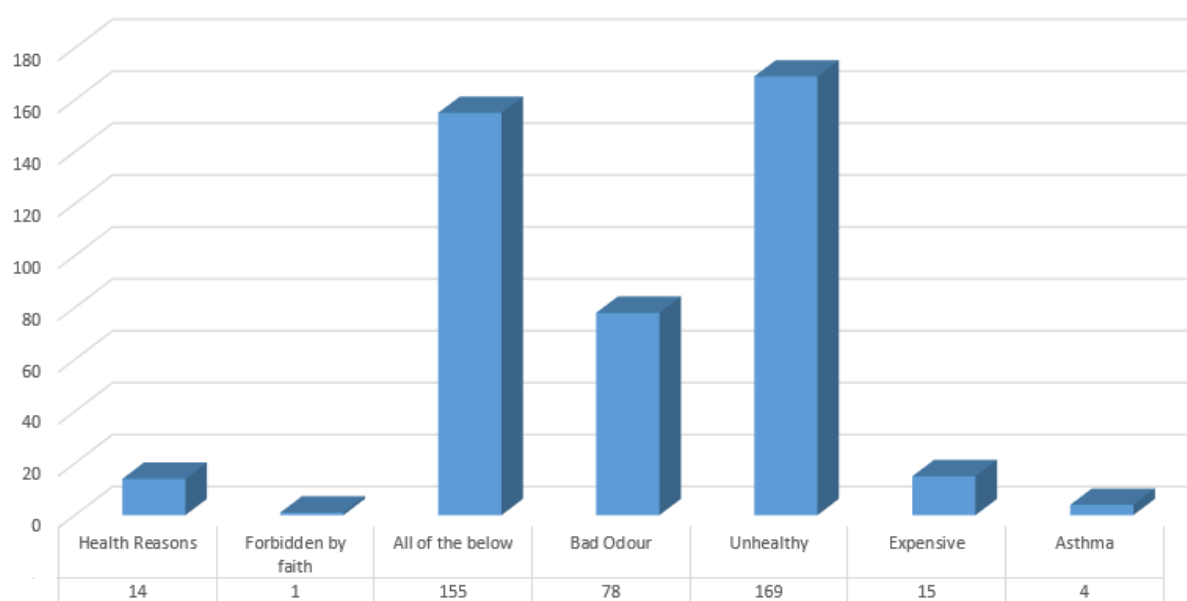
Most medical student smokers were males (55%) (CI 41–69). The most common reasons that smokers gave as to why they smoke can be found in Figure 3 below. 55% of smokers admitted to smoking during stressful situations, 33.3% use smoking as a coping mechanism, 13.7% smoke due to outside peer pressure whilst 7.8% smoke to aid their weight loss.

The vast majority of the smoking cohort, admitted to smoking 0-5 cigarettes per day (67%), whilst a further 17.6% smoked 6-10 cigarettes a day. The remaining 15.7% smoked between 11-20 cigarettes per day. 63.3% of the students admitted to having unsuccessful attempts to quit smoking in the past whilst the remaining 36.7% have never even attempted to stop smoking.

**Figure 3** Reasons why smokers start and continue smoking



**Figure 4** Full list of reasons why medical students do not smoke

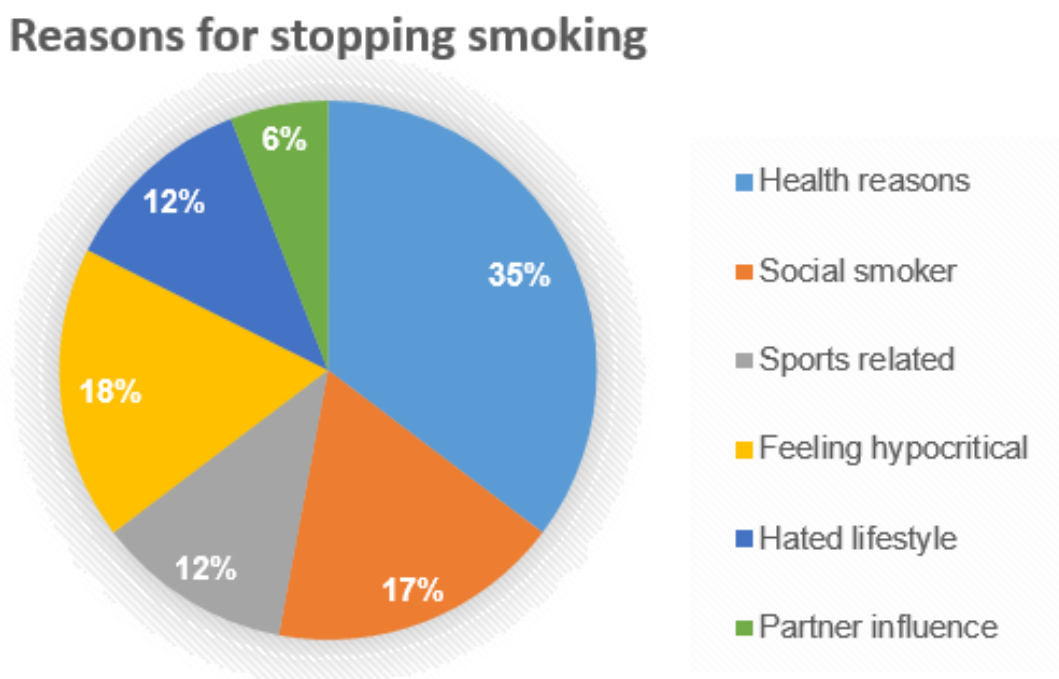


From the cohort of 465 students, 318 students admitted to never smoking; with unhealthy addiction ranking first as the main reason why students never smoked (53.1%). A good proportion of students (48.7%) attributed several factors and reasons as to why they never started smoking. The list of reasons can be found in Figure 4 above.

Some smokers do acknowledge the harm done by tobacco smoking and in fact, 64% admitted to trying to stop smoking but did not manage. Ex-smokers were also asked as to why they had stopped smoking and below one can find the list of reasons given by the 17 students below in Figure 5.

A minority of students (74) admitted to social smoking. Social smokers are students who do not smoke daily and only during stressful situations or social events. Moreover, they frequently smoke more when surrounded by friends, especially whilst drinking alcohol.<sup>16</sup> Most of them were already smoking before entering university (66.2%) whilst the remaining 33.8% started to smoke after they entered University. Most social smokers stated that they smoked 0-5 cigarettes (97.3%) whilst the other 2.3% smoked between 6-10 cigarettes a day. A slight majority (51.4%) admitted to having tried quitting smoking in the past whilst the other 48.6% stated that they never tried to stop smoking.

**Figure 5** Reasons why medical students stopped smoking

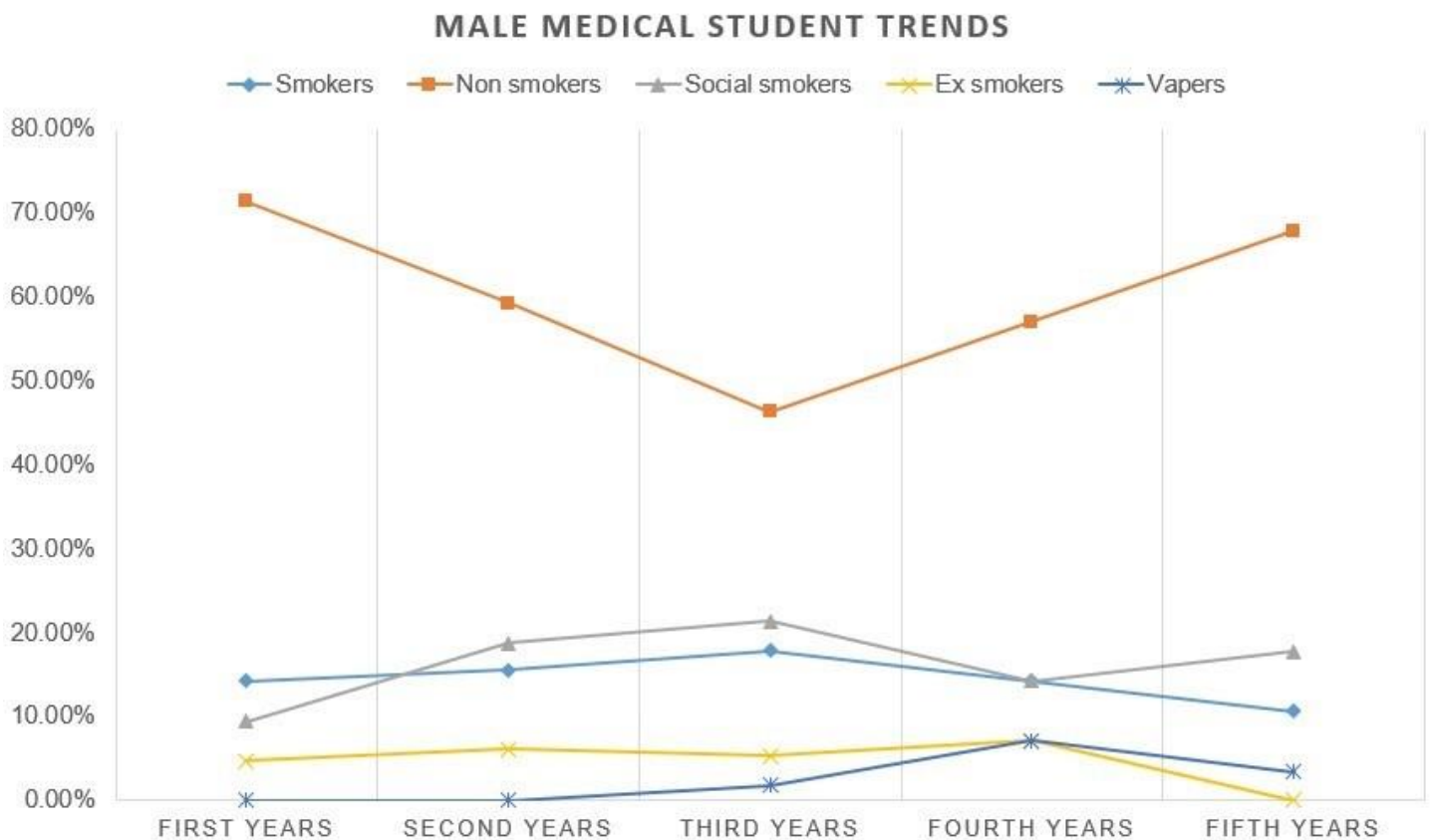


A very small percentage of the students admitted to vaping (5 in total) and all of them started after they entered University. 3 of the 4 participants admitted to vaping more than 5 episodes per day whilst the other student vapes once a day. 80% of the students admitted to never having a wish to stop vaping whilst the other student admitted to trying unsuccessfully to quit vaping.

From the 2018-2019 medical students at the University of Malta, there were 113 first year medical students (71 females and 42 males). From the first year medical student's male

cohort, 71.4% were non-smokers, 14.3% were smokers and 9.5% were social smokers. Comparatively, 67.9% of male fifth year clinical students were non-smokers, 10.7% were smokers and 17.8% were social smokers. Overall, there is a rising trend in number of students smoking from the first years (23.8%; combined value of smokers and social smokers) when compared against the fifth years medical students (28.5%). This is illustrated in Figure 6 below.

**Figure 6** Prevalence of smoking amongst the male medical student cohort

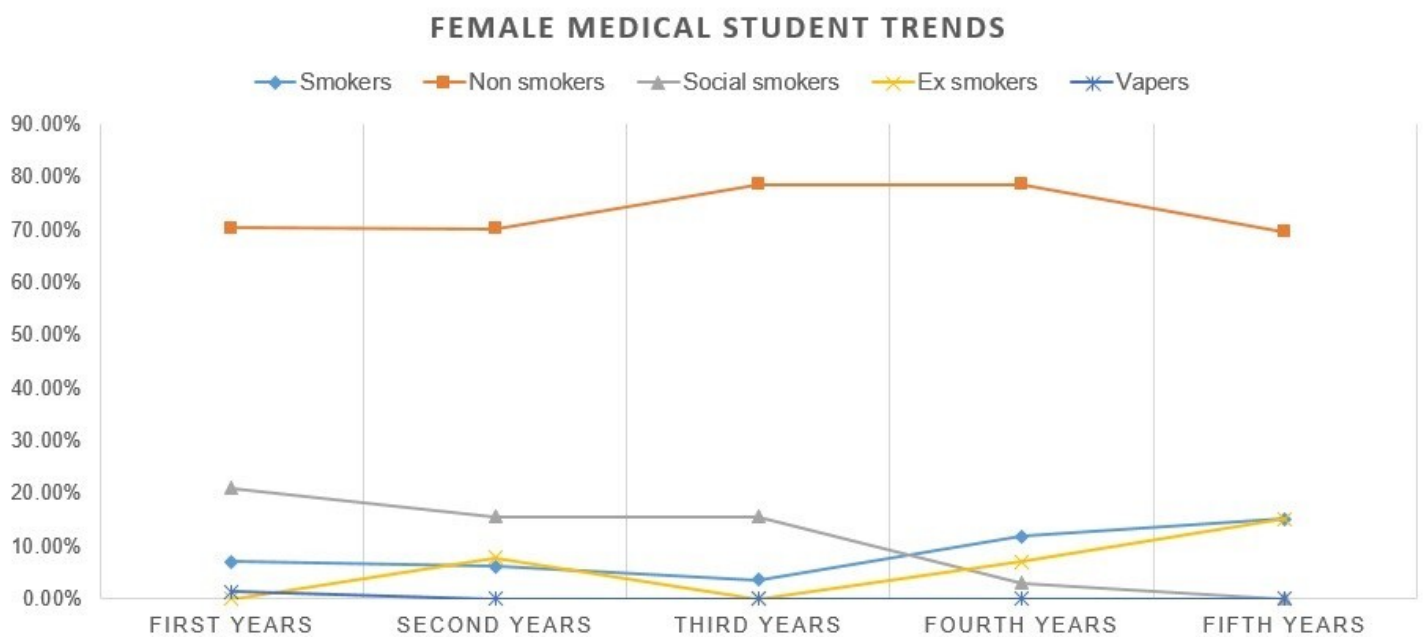


From the female cohort, there were 70.4% who were non-smokers in the first years which decreased to 69.6% in fifth year medical students. There was 7% of the cohort who were smokers in first year, but that figure rises in fifth year medical students (15.2%). 21.1% of female first year medical students were social smokers whilst 15.2% of fifth year medical students were social smokers. Overall, the number of smokers (social and regular smokers) increased from 28.1% in the first

years to 30.4% in fifth years. This is also illustrated in Figure 7 below.

In summary, the pre-clinical cohort was made up of 9.6% active smokers, 16.7% social smokers, 3.8% ex-smokers, 68.9% non-smokers and 0.5% who admitted to vaping whilst the clinical cohort was made up of 11.9% active smokers, 15.5% of social smokers, 3.6% of ex-smokers, 68% non-smokers and 1.6% who admitted to vaping.

**Figure 7** Prevalence of smoking amongst the female medical student cohort



## DISCUSSION

The aim of this research was to study smoking behaviour amongst Maltese medical students. The null hypothesis was that the local medical student population would smoke the same compared to the general population. Two separate Chi squared tests for males and females were performed comparing this sample to the Maltese population in 2016. With a p-

value of <0.0005 in males and a p-value of <0.0005 in females, the null hypothesis is rejected. Therefore both male and female medical students would smoke less than the general population, accepting the alternate hypothesis.

Since unskilled or unemployed workers were more likely to smoke<sup>8</sup>. This would suggest that the fact that they are in training for a health-



related profession would make them less likely to start smoking.<sup>8-9</sup>

Stress relief and smoking as a coping mechanism rank high amongst the reasons as to why students state that they start and continue to smoke. Many smokers have reported and stated that smoking helps them cope with stress and increased their ability to concentrate. However, this appeared to be since when they go for a prolonged period without smoking, they experience nicotine withdrawal symptoms which are relieved by smoking. Long-term smokers who stopped smoking have indeed reported lower levels of stress than when they were smoking and no reduction in ability to concentrate<sup>10-11</sup>.

It is also commonly thought that smokers with mental health problems are using cigarettes to 'self-medicate' or treat their psychological symptoms<sup>12</sup>. According to a joint report issued in 2013 by the Royal College of Physicians and Psychiatry<sup>13</sup>, neither nicotine nor smoking improved psychological symptoms and people with serious mental health disorders who stop smoking do not experience a worsening of mental health. Indeed, these patients do indeed fare better and there is a marked improvement in their mental health disorder and improvement in their quality of life. Smokers who stop show reduced levels of stress and mood disorder than those who continue. They also report higher levels of happiness and life satisfaction than those who continue<sup>10</sup>.

The percentage of active smokers amongst local medical students remains considerably high. The literature suggests that medical students who smoke may become doctors who may not be as effective as other non-smoking doctors in advising and succeeding in getting

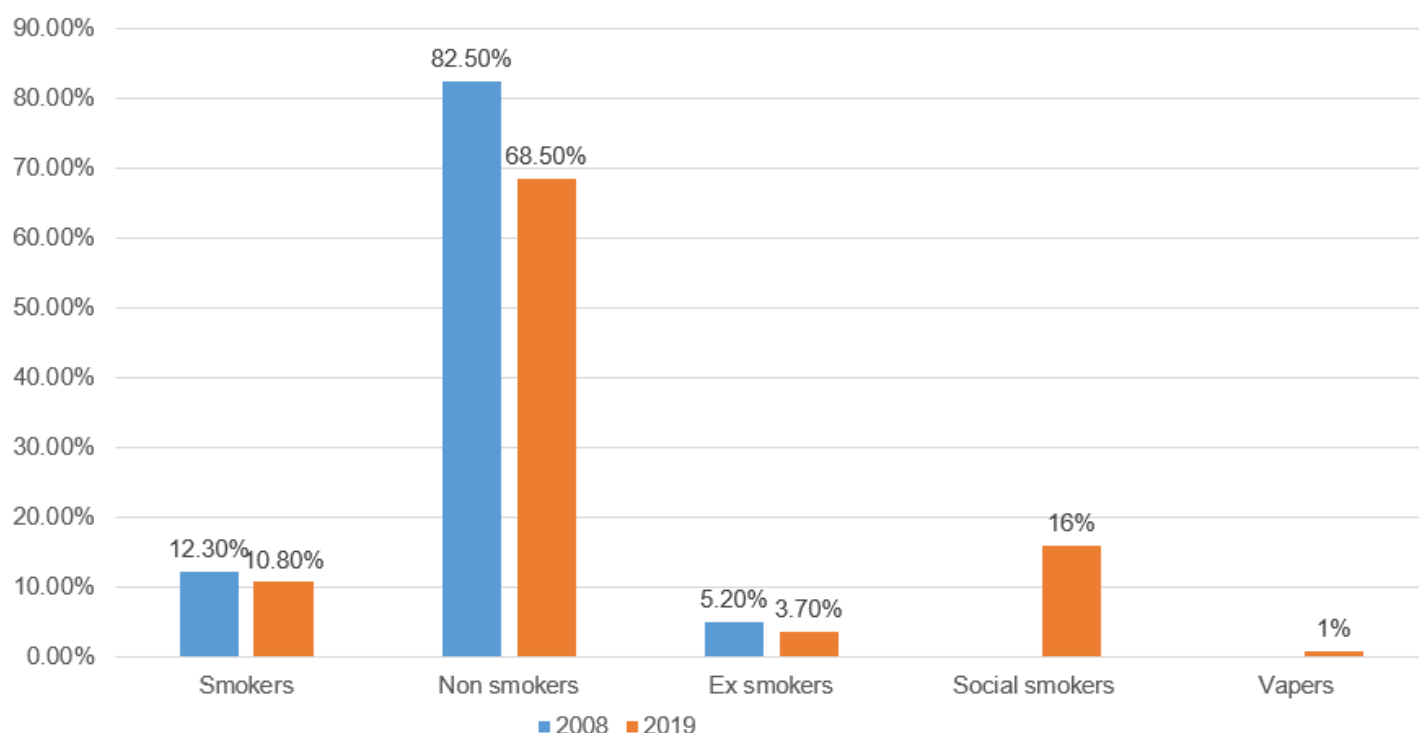
their patients to quit smoking by failing to be proactive in promoting smoking cessation and not motivating their patients to quit.<sup>14 15 16</sup>.

In 2005, international smoking rates amongst medical students were highly variable, ranging from 4% in America to 58% in Japan. A 10.8% smoking rate amongst Maltese medical students is a comparatively low rate when taking into account those in a number of European countries, including Slovakia (21%), Germany (24%), Spain (37%) and Greece (41%); all in 2005. However, Malta followed a general international trend in seeing the medical student population of a country enjoying a lower smoking rate than the national rate of that country<sup>4</sup>. However, some countries (such as Slovakia) are seeing a trend in increasing rates of medical student smoking<sup>17</sup>.

Moreover, results from this study were compared to a similar local unpublished study done in 2008<sup>18</sup>. This study conducted locally in 2007-2008 had a cohort of 288 medical students (145 pre-clinical and 143 clinical students) and showed that the prevalence of smoking was that of 12.3%. The study did not explore the possibility of social smokers. An important note, social smokers might label themselves as non-smokers due to them not perceiving social smoking as smoking; in fact, half of social smokers do not believe that they are smokers<sup>19</sup>. This might have resulted in social smokers identifying themselves as non-smokers in the above-mentioned questionnaire. Comparison to the current study can be found in Figure 8 below.

The study done in 2008 was compared to this study and there was no significant difference in the findings in smokers, non-smokers or ex-smokers (p-value 0.83).

**Figure 8** Comparing the unpublished study results of 2008 with the current study



Since smoking is a known detrimental addiction, several people do try and quit smoking. Social stigma against female smokers still exists, however literature has suggested that females are less likely to quit than males<sup>20</sup>. This was not reflected in this study since 71% of the female smoking cohort has tried to quit smoking in the past compared to the much lower 42.3% of the equivalent male cohort. However the latter statistics were also shown to be true in a local 2008 study whereas 78% of ex-smokers were females.

The total prevalence of smokers (social and regular smokers) was noted to have increased from first year to fifth year in both males and females.

Another interesting emerging phenomenon is that of social smoking. Social smokers are students who smoke more frequently when surrounded by fellow friends, especially whilst drinking alcohol<sup>21 22</sup>. Social smoking tended to start before university. Social smoking usually started when an individual gets exposed to

cigarettes during events and parties and this is usually around the mid-teens. Furthermore, females tended to be more of social smokers in this study<sup>23</sup>. This result is echoed by a 2015 US survey<sup>24</sup> which enquired as to what were the reasons for women to smoke and the majority (62.4%) of them admitted to being social smokers<sup>24</sup>.

Social smokers smoked less during the week than active smokers, a result which was found also in this study<sup>21</sup>. Social smokers are less dependent on smoking and are more readily able to quit smoking if the need arises (due to health risks)<sup>25</sup>. The US Department in 1994<sup>26</sup> also noted that the less cigarettes smoked during adolescence, the higher the likelihood that they will not be smoking within 5 years' time.

Another important aspect that should be addressed is the fact that 57.5% of students who do not smoke cite 'Unhealthy and Health reasons' as being their motivator for abstention suggests that there is an

appreciation amongst medical students for the deleterious effects of tobacco products. Despite this, there may still be a role for further emphasis on tobacco and smoking cessation in the curriculum - cessation both for future patients as well as for the students themselves.<sup>27</sup>

The statistics produced in a similar local study done more than a decade ago and the current statistics do not differ by much. That is, despite the number of local awareness campaigns having improved tremendously, both on a University level via the increased number of campaigns done by the Malta Medical Students' Association and on a national level done by several NGOs. The Malta Medical Students' Association, has a standing committee on public health that regularly organises anti-smoking and health awareness campaigns for the general public, showing that there is an interest among local medical students to take up the role of smoking cessation advisors.

Ideally, we may be able to decrease smoking amongst medical students by having anti-smoking programs made available to medical students while in training.<sup>28</sup> This is not currently available at the University of Malta Medical School. Some improvements have been made since 2008; smoking is prohibited on most areas of the local hospital grounds. Challenging local health beliefs remains a formidable task.<sup>29</sup>

This study raises a number of important questions; whether medical students smoke more or less than their non-medic counterparts at the University of Malta, whether medical students report their smoking status and patterns accurately, and whether they would be responsive to a more aggressive anti-smoking attitude in the course curriculum. A repeat of this study in the future

may take these issues into account and monitor whether there have been any changes in smoking prevalence to match any national trends. The current trend indicates that current methods and awareness campaigns are not producing statistically significant results in reducing the number of active smokers within the medical student cohort.

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## CONCLUSION

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In conclusion, our study confirms that smoking amongst local medical students is as prevalent as it was a decade ago. This study furthers the knowledge on local medical student's smoking habits, tendencies and adds habits and tendencies of social smoking and vaping as well. Females were more likely to be social smokers than males whilst males were more likely to be active smokers. Females were also less likely to smoke in general. Females were more likely to have tried stopping smoking. A small group of students admitted to vaping as well. Smoking is still a major issue amongst local medical students and current practises to stop students smoking have not yielded any benefits.

The above data should enable better development of antismoking campaigns and groups to be formed and be more effective. We recommend that greater emphasis is placed upon the deleterious effects of tobacco during the medical course as well as opportunities for free smoking cessation counselling sessions to be made available to students. (Khan et al., 2005) These conclusions reflect and consolidate the studies in which there needs to be a better framework and structure towards combating smoking amongst medical students as well as smoking cessation programmes readily available for those who wish to quit (Khan et al., 2005). Moreover, smoking should be banned from all

hospital grounds and premises in order to further decrease smoking areas available and hence decrease smoking. The relevant health and education authorities would do well to recognize and tackle this issue so that all future doctors can become role models for their patients.

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### SUMMARY BOX

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- Healthcare providers are the most important link in convincing patients to stop smoking.
- Most people start smoking in their teens, however they usually enter medical school at the age of 18 by which time they may already be established smokers.
- Smoking in medical students is less prevalent than in the general population.
- Mortality from lung cancer continues to increase locally.

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### LEARNING POINTS

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- Smoking in medical students is less than the national average.
- Smoking amongst medical students has remained virtually unchanged compared to a prior audit done a decade previously.
- Female medical students were more likely to be social smokers and more likely to try to quit.
- Medical students have started to vape similar to the general population.

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