Evaluation of Risk Factors Associated With Initiation and Changes in Habits Related to Smoking Among Migrant Indian Medical Students in Armenia

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ABSTRACT

BACKGROUND: Tobacco is a risk factor for six of the eight leading causes of deaths worldwide. Health professionals are at the forefront of the war against tobacco. Because of this role tobacco use among health professionals, especially doctors, is a barrier to smoking cessation practices in the community. It is therefore important to target smoking cessation policies among health professionals while they are still in medical school. Migrants are known to change their habits and lifestyles and adapt to the environment of a new country. But changes in smoking practices and risk factors leading to such changes have not been studied among migrant medical students.

OBJECTIVE: This study aims to find the differences in risk factors leading to smoking among medical students in India and Indian medical students in Yerevan, Armenia.

METHODS: A multi-centre cross-sectional study design with self –administered questionnaires given to randomly selected clusters consisting of 213 undergraduate students in Armenia and 133 undergraduate students in India.

RESULTS: Smokers in Armenia were at higher odds of having at least 2 smoker friends (OR=4.65, p=0.016), having female friends (OR=4.63, p=0.045) and never missing family (OR=9.21, p=0.018) compared to non-smokers in Armenia. Smokers in India were at higher odds of having at least 2 smoker friends (OR=6.22, p=0.033), having smoker father (OR=6.78, p=0.010), consuming alcohol (OR=14.28, p<0.005) and never missing family (OR=4.35, p=0.009) compared to non-smokers in India. Smokers in Armenia were more likely to have higher monthly income (OR=9.56, p=0.010), perceiving that cigarettes make girls look more attractive (OR=12.37, p=0.040) and less likely to want to stop smoking now (OR=0.12, p=0.012) compared to smokers in India.

CONCLUSION: Students in Armenia smoke more because of a complex combination of various individual and cultural factors that play a role in modifying lifestyle behaviours associated with the destination country profile.

LIST OF ABBREVIATIONS

WHO   : World Health Organization

YSMU   : Yerevan State Medical University

MD   : Diploma in Medicine

MBBS   : Bachelor of Medicine and Bachelor of Surgery

GYTS   : Global Youth Tobacco Survey

GHPSS   : Global Health Professional Student Survey

INR (Rs.)   : Indian Rupee

USD ($)   : United States Dollar

Please note: 1USD = 47.89 INR on August 2, 2009

1. INTRODUCTION

1.1 Background

Tobacco has been identified to be the cause of 5.4 million deaths annually worldwide. Unless controlled, the number of deaths caused by tobacco could reach eight million annually within the next 20 years. The use of tobacco has been identified as a risk factor for many common diseases, including ischemic heart disease, cerebrovascular diseases and diseases of the respiratory tract [1]. The use of tobacco products varies by country, but cigarette smoking is the most common form of tobacco use worldwide.

Health professionals such as doctors and nurses have a direct role in advising the population on matters relating to general health and lifestyle practices [2]. Various studies have evaluated the impact of counselling by health professionals on smoking cessation rates [3, 4]. One of the major barriers against effective tobacco-use counselling by medical professionals is their own tobacco use[5]. This has prompted the initiation of many studies evaluating the knowledge, attitudes and practices of medical students towards smoking and smoking cessation, such as the Global Health Professional Student Survey (GHPSS) conducted by the World Health Organization (WHO) in 2005 [6]. While medical education on counselling skills for tobacco use has had negligible impact on the prevalence of smoking among those counselled, some studies have found evidence that such education has led to a decline in the number of cigarettes consumed by smokers who received counselling as compared to those smokers who did not receive counselling [7, 8].

The context of this study is related to two countries, namely India and Armenia. Nearly 12% of the world's smokers live in India [1]. The prevalence of smoking among males in India is estimated to be around 29% and that among male medical students in India is estimated to be

around 7% [2]. These numbers are lower than those in Armenia where the prevalence of smoking among Armenian males is estimated to be around 62% and that among Armenian male medical students to be around 53% [9].

Indian students have been coming to Armenia since 1992 to study medicine in the Yerevan State Medical University (YSMU). Their numbers increased dramatically since the start of the YSMU English faculty in the year 2000. Currently, there are about 500 Indian students studying medicine in the YSMU. The first three years after admission into medical university have been identified as a risk factor for medical students to initiate smoking[10]. Other risk factors such as stress, residence away from home, having smoker friends and smokers in the family, socio-economic status and gender have also been identified [11-13]. Behavioural changes in immigrant students related to diet [14], and smoking behavioural changes in general immigrant populations have been observed [15,16]. But, changes in smoking behaviour and practices among migrant medical students have not been previously studied in the published literature. To date, no studies in Armenia have evaluated behavioural changes in smoking among migrant medical student. This will be the first study in its kind to evaluate the changing patterns of smoking among migrant Indian medical students studying in Armenia and whether they are influenced by the factors that are inherent to a country with high smoking rates.

The identification of modifiable risk factors that lead to increased smoking prevalence in migrant medical students may help separate specific risk factors that are responsible for high smoking rates in the country. This may then lead to formulation of future interventional programs in Armenia to decrease smoking in medical professionals and help them to better advise their patients towards the ill effects of tobacco and related products.

1.2 Objectives

This study addressed the following research question:

What are the differences in the modifiable risk factors related to smoking among medical students in India and Indian medical students in Armenia?

2. METHODS

2.1. Study Design

The study design was multi-centre cross-sectional. The study included two study populations. *Study Population 1* consisted of Indian medical students studying in the Yerevan State Medical University in Armenia. *Study Population 2* consisted of medical students studying in India.

2.2. Study Setting

The study took place in two countries: Armenia and India. Students in Armenia were selected from the Yerevan State Medical University. Students in India were selected from three universities in three cities from two Indian states, including a university in the city of Ranchi in the state of Jharkhand, a university in the city of Dhanbad also in Jharkhand, and in Kolkata in West Bengal. Two of these cities (Ranchi and Kolkata) are capital cities for their states, with Kolakata also being one of the four metropolitan centers of India (including New Delhi, Chennai, and Mumbai).

2.3. Study Population

The target population included students studying in medical universities in India and Armenia. Inclusion Criteria for population 1: Indian-national students of the General Medicine faculty of the Yerevan State Medical University who were willing to participate in the study. Inclusion Criteria for population 2: Indian-nationals who were students of the MBBS (Bachelor of Medicine and Bachelor of Surgery) faculty of the three selected medical university in India and who were willing to participate in the study. Exclusion Criteria: Students under 18 years of age and non-fluent in the English language.

2.4. Sample Size

Sample size calculations were based on EpiInfo StatCalc for cross-sectional studies [17]. Assumptions include 95% C.I. with power 80%. The smallest difference in risk factors between comparison groups was chosen for the sample size calculation. Among the Indian medical students at YSMU, it was estimated that 70% believed that smoking impressed girls and that 50% of these are currently smoking. The prevalence of smoking among the 30% who believed that smoking did not impress girls was estimated to be 25%. This sample size calculation produced a sample size of 224 for comparisons within YSMU. With an 80% response rate, the final sample size for the Armenian medical student population was computed to be 280. For the sample size in Indian medical schools, C.I. 95% and power 80% were assumed. A high level of homesickness as a risk factor for smoking was estimated at 30% for those students in India and 45% for those students in Armenia. With the sample size for YSMU medical students fixed at 224, for comparisons between Armenia and India (with a C.I. of 95% and power at 80%), a sample size of 145 was calculated for the number of medical students in India. Likewise,

adjusting for an 80% response rate, the final sample size for Indian medical students in India was computed to be 181.

Sampling Method for Population 1: Indian medical students in Armenia were sampled using systematic random sampling of clusters. A cluster was defined as a student group consisting of 12-14 students that take the same classes together. Students were assigned to these groups randomly by YSMU upon their arrival to Armenia. Students in randomly selected clusters were administered the instrument. Thus cluster effects were expected to be minimal in Population 1.

Sampling Method for Population 2: The study population from India was sampled using systematic random sampling. The numbers of medical students selected from each of the three universities in India were proportionate to the number of medical students studying in that university. The choice of the three universities in India was based on convenience sampling.

2.5. Instrument

The instrument used for this study was a self-administered questionnaire. The items were extracted from the World Health Organization's (WHO) Global Youth Tobacco Survey (GYTS) [18] and the Global Health Professional Students Survey (GHPSS) [6], both of which were validated instruments. Some of the items have been modified according to the study setting. The instrument included questions on demographics, stress related risk factors and general beliefs and perceptions of students towards smoking. Copies of the instruments are provided in Appendices C and D.

2.6. Data Entry and Analysis

The data collected was entered into the SPSS 11.0 statistical package. Data cleaning was conducted after data entry was completed. Univariate and bivariate analyses of demographic variables, including various cross-tabulations between universities in India and the medical university in Armenia, were performed using the same statistical package. Advanced analyses such as bivariate and multivariate logistic regressions were computed using the STATA 10.0 statistical software package. T-test, chi-square and Fisher's exact tests were used for bivariate analyses. Simple and multiple logistic regressions were used to test for confounding and interactions. Log-likelihood ratio tests and Akaike Information Criterion (AIC) were used for variable selection. Goodness-of-fit for the logistic regression models was evaluated by the Hosmer-Lemeshow goodness-of-fit test.

2.7. Ethical Considerations

The Institutional Review Board (IRB) within the College of Health Sciences (CHS) at the American University of Armenia (AUA) approved the study proposal. The study was initiated following approval by the IRB. The consent form was read and oral consent was taken from each participant. They were informed about the study objectives and that participation in this study was voluntary and that participants could stop their participation at any time without consequence. It was explained to participants that this study would not benefit them, but that the results from this study might be used to formulate smoking cessation policies and programs among health professionals. This study posed minimal threat to its participants; the only discomfort to the participants was the time spent filling out the questionnaire. No personal identifiers were collected from the participants. All participants were assigned ID numbers. The

paper data forms will be destroyed after six months from the end of the study period to ensure confidentiality and anonymity of participants.

3. RESULTS

Due to constraints the desired sample size was not achieved, with 213 students from Armenia and 133 students from India ultimately being sampled. For the population in Armenia the refusal rate was 2.3% (5/218), the non-contact rate was 3.2% (7/220) and the response rate was 97.7% (213/218). For the population in India, the refusal rate was 13.1% (20/153), non-contact rate was 0.0% and the response rate was 86.9% (133/153).The general demographic characteristics of the study population are presented in Table 1 of Appendix A.

According to this table, the mean age of the student population in India was 22.2 years and in Armenia was 22.7 years. A total of 1.5% (2/133) of the participants in India were females compared to 32.4% (69/213) in Armenia. The majority of participating medical students in India (94.6%) were originally from Jharkhand, Bihar or West Bengal, while in Armenia the Indian medical students came from many different states of India, including New Delhi and Tamil Nadu (16.9% and 19.7% respectively). Almost all the students in India (92.5%) were of the Hindu religion compared to 61.7% of the students in Armenia. The non-Hindu Indian medical students in Armenia were Muslim (19.1%), Christian (12.4%) and Sikhs (5.7%). The Indian medical Students in Armenia had higher levels of monthly family income than their counterparts in India (44.6% with more than Rs. 50,000 compared to 15.0% with more than Rs. 50,000 respectively). Due to the very small number of female students in the study populations, females were excluded from any further analysis. Therefore, the results include only Indian male medical students from the two countries.

Results of cross-tabulation of other important descriptive variables by country of university (India versus Armenia) for males are presented in Table 2 of Appendix A. It shows that 51.5% of the Indian male medical students in India had tried a cigarette at least once compared to 68.8% of the Indian male medical students in Armenia (p=0.004). A total of 22.9% of male medical students in India were current smokers compared to 42.2% in Armenia (p=0.001). A total of 97.7% of students in India had at least one male friend and 22.0% had at least one female friend in India who smoked compared to 80.0% and 12.9% for Indian male medical students in Armenia (p<0.005 and 0.047, respectively). But when computed for students in Armenia only, 85% of the male students had male Indian friends in Armenia who smoked compared to 80% of male students having friends in India who smoked (p=0.246); a total of 24.5% of Indian male medical students in Armenia reportedly had at least one female friend in Armenia who smoked as compared to 12.9% of the male medical students who had female friends in India who smoked (p=0.014). A total of 13.6% of the students in India had no close friends in India who smoked, compared to 34.5% in Armenia (p<0.005); only 13.1% of the Indian male medical students in Armenia did *not* have a close friend who smoked (p<0.005).

Cross-tabulations of some of the key descriptive variable by smoking status and country of university are presented in Table 3, which shows that the students in Armenia are similar to the students in India across the majority of the variables. Cross-tabulations of the variables used to measure medical education as a source of stress among male smokers are presented in Table 4 of Appendix A. A total of 61.8% of the Indian male medical students in Armenia believe that the medical class study material were either the right amount or too little, as compared to 30.3% of their counterparts in India (p<0.005). Table 5 of Appendix A presents results of simple logistic regression with risk factors as outcomes of interest among smokers, assessing if country of

residence has an impact on some of the modifiable risk factors for smoking. This analysis showed a significantly higher odds of perceiving that cigarettes make boys look more attractive and girls are impressed when they see someone smoking for smokers in Armenia (OR=3.42 and 3.40 respectively). It also shows that smokers in Armenia have significantly higher odds of belonging to families with higher income (OR=4.63) and belonging to the last two years of study in medical school, equivalent to *professional year 3* (OR=9.64). Smokers in this study population in Armenia had significantly lower odds of wanting to currently stop smoking (OR=0.32).

Bivariate logistic regression model comparing smokers in Armenia to non-smokers in Armenia for statistically significant risk factors (p<0.005) are presented in Table 6. This table shows that smokers in Armenia are at a significantly higher odds of having a smoker female friend, having two or more roommates who smoke, having at least one closest friend who smokes, never missing their families and having consumed alcohol more than twice in the past week compared to non-smokers in Armenia. Bivariate logistic regression comparing smokers in India to non-smokers in India for statistically significant risk factors (p<0.005) is presented in Table 7. This table shows that smokers in India are at a significantly higher odds of having a smoker female friend, having two or more roommates who smoke, having at least one closest friend who smokes, having a father who smokes, never missing their families and having consumed alcohol even once in the past week compared to non-smokers in India. Bivariate logistic regression models for smokers in Armenia and smokers in India for statistically significant risk factors (p < 0.05) are presented in Table 8. This table shows that students in Armenia studying in the *3rd professional year* were more likely to be smoking compared to their Indian counterparts (OR=10.48, p=0.005). Smokers in Armenia were less likely to *want to stop*

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smoking now when compared to Indian smokers (OR=0.38, p=0.028). Smokers in Armenia were also more likely to agree that girls *smoking cigarettes makes girls look more attractive* (OR=3.30, p=0.103), but less likely to agree that *girls who smoke have more friends* (OR=0.28, p=0.094). Indian male medical student smokers in Armenia also agreed that *it is okay to smoke for a year or two as long as they quit after that* (OR=4.80, p=0.015), as compared to Indian smokers. Smokers in Armenia also listed *extreme changes in weather* as a risk factor that makes them want to smoke (OR=5.21, p=0.012).

Based on these results, three multivariate regression models were developed. Table 9 provides adjusted odds ratios comparing Smokers in Armenia to non-smokers in Armenia. This table shows that compared to non-smokers, smokers in Armenia are at higher odds of having two or more smoker roommates (OR=4.65, p=0.016), having a smoker female friends (OR=4.63, p=0.045), and never missing their family (OR=9.21, p=0.018). Table 10 presents adjusted odds ratios comparing smokers in India to non-smokers in India. This shows that compared to non-smokers, smokers in India are at a higher odds of having two or more smoker roommates (OR=6.22, p=0.033), having a smoker father (OR=6.78, p=0.010), never missing family (OR=4.35, p=0.009) and consuming alcohol even once in the past week (OR=14.28, p<0.005). Based on the results of Table 5 and Table 6, a multivariate logistic model was prepared comparing smokers in Armenia to smoker in India. These results summarized in Table 11 show that, compared to smokers in India, smokers in Armenia were at higher odds of belonging to families with monthly income more than Rs. 30000 (OR=9.56, p=0.010), belonging to the 3rd professional year (OR=21.82, p=0.012) and agreeing that cigarettes make girls look more attractive (OR=12.37, p=0.040). Also, smokers in Armenia were at a lower odds of wanting to stop smoking now (OR=0.12, p=0.012) compared to smokers in India.

To further understand the local dynamics that effect smoking preferences, smokers in Armenia were asked questions about their perceptions of key indicators related to the smoking practices and cultures prevalent in Armenia. These are depicted in the following graphs which are located in Appendix B:

Graph 1 shows the changes in smoking habits among smokers in Armenia when they go home to India for vacation; a total of 79% (49/62) smoke less when they are vacationing in India. Graph 2 shows the perception of Indian male medical students in Armenia when they see an Armenian woman smoking. A total of 65% (38/59) indicated one of the three positive reactions - sophisticated, intelligent or successful- when they see an Armenian woman smoking. Graph 3 shows social perceptions of Indian male medical student smokers in Armenia. A total of 84% (52/62) feel that smokers are more socially accepted in Armenia. Additionally, none feel that smokers are more accepted in India. Graph 4 shows perception of these smokers in Armenia with regards to availability of cigarettes. Approximately 73% (45/62) feel that cigarettes are more easily available in Armenia. Graph 5 shows the wish to quit smoking among Indian male medical student smokers in Armenia. A total of 61% (38/62) want to stop smoking when they become a doctor. Graph 6 presents a comparison of the frequency with which these smokers in Armenia feel the need to hide their smoking status in front of others when they are in Armenia and when they are in India. A total of 63% of all Indian male medical student smokers in Armenia (39/62) indicated that they never have to hide their smoking status when they are in Armenia, whereas only 10% (6/62) said that they never have to hide their smoking status when they are in India. Only 3% of these smokers in Armenia said that they have to hide their smoking status at all times when they are in Armenia, as compared to 48% saying that they have to hide their smoking status all the time when they are in India.

4. DISCUSSION

After a review of the literature, no other published study was found that examined the risk factors that play a role in modelling the behaviours related to smoking among migrant medical students. A higher prevalence of smoking was found among male Indian medical students in Armenia than that among male medical students in India. Findings from this study showed that both student groups are similar with respect to the average number of cigarettes they smoke per day, reasons for starting smoking and the number of days in a week where others smoked in their presence (both in places where they live and where they do not live). They were also similar in having smoking roommates or having at least one smoking family member. More students in India had smoking male and female friends in India when compared to the number of smoking friends in India of their counterparts at Yerevan State Medical University, but more students in Armenia had more male and female friends in Armenia who smoked than those students in India had male and female friends in India who smoked. This could be explained by the fact that students generally enter medical school at ages where the risk for starting smoking is the highest [19]. Therefore, they may make more friends who smoke after they enter medical school.

One of the interesting findings of this study was that students in Armenia who smoke experience less stress due to their studies and study environment than comparable medical students in India. This eliminates university curriculum as a source of stress among the study population in Armenia; this is in contrast to what is found in the published literature, that this is one of the major sources of stress among medical students [20-22]. Although the male medical students in Armenia drink at much higher rates than those in India, there was no significant

difference among the drinking levels between the Indian male medical student smokers in the two countries. Both study populations agreed that cigarettes help them relax when they are stressed. Despite the similarities in the risk factors, about 80% of all the immigrant student smokers in Armenia started smoking after arriving in Armenia.

Based on multivariate regression models, we found that smokers and non-smokers in the two countries were comparable in terms of having smoker female friends and smokers roommates. Smokers in both the countries were also more likely to never miss their families compared to non-smokers pointing towards a lower level of attachment to family members. One difference was that smokers in India were more likely to have a smoker father in the family compared to non-smokers. This was insignificant for Armenia, suggesting that in contrast to India, the role of peer pressure from family members was not a risk factor related to higher smoking prevalence in Armenia.

Smokers in Armenia were more likely to perceive that cigarettes make girls look more attractive. Also, about 70% of the students in Armenia perceived a smoking Armenian woman as being intelligent, successful or sophisticated. These point towards cultural issues that may modify the beliefs of the migrant students in relation to perception of the opposite gender and therefore, serving as a tempting factor towards smoking. The study found increased odds of smoking in the 3rd professional year (i.e., the last two years of medical education in Armenia and the last year and a half in India) for Indian male medical students in Armenia. This last factor also points towards issues of adaptability to the new culture: the longer students stay in the new country, the more likely they are to adapt to that culture [23-25].

There was also a significantly higher odds that smoking students in Armenia do not want to currently stop smoking cigarettes when compared to the students in India. Conversely, a

majority of the students in Armenia want to stop smoking cigarettes when they start working as a doctor. These point towards individual factors related to experimenting with cigarettes the initiation itself believed to be temporary. These individual perceptions may also be modelled by the cultural factors stated above. One other factor that may play a role in this concept might be related to family issues. Over 90% of the students in Armenia cited that restrictions by family members and fear of getting caught by family members while smoking played a major role in their smoking less in India (Graph 1). These perceptions of the students in Armenia point towards cultural issues prevalent in their country of migration as well as issues related to freedom from family restrictions once they enter a new country [26].

Other key perceptions of smokers in Armenia were related to acceptability, availability and freedom to smoke. A total of 82% of the smokers in the study group in Armenia perceived smokers to be more socially acceptable in Armenia. About 75% think that cigarettes are more easily available in Armenia as compared to India. A total of 62% believe that they never have to hide their smoking status when they are in Armenia, whereas 48% felt that they have to hide their smoking status all the time in India. These again indicate towards prevalent cultural factors in the country of migration.

5. STUDY LIMITATIONS

Due to low response rates and high refusal rates among females in India, all females were excluded from the study. As such, a complete analysis of both the genders could not be conducted. The sample size was not large enough to do some sub-analyses such as comparing students who started smoking after entering medical school in India and Armenia. This would provide a more comprehensive understanding of the risk factors that lead to smoking in this

context. The sampling methodology for the universities in India was by convenience. Therefore, the results cannot be generalizable for the entire medical student population in India. A shortcoming in the instrument made it impossible to compare the smokers and non-smokers of the two countries for all the key variables. As such, most of the statistically-tested comparisons were made between smokers.

6. CONCLUSION

Despite the noted shortcomings, the results obtained from this study shed important light on the complex interaction of various individual, social and cultural factors that are risk factors for smoking. It seems that cultural factors prevalent in the country of migration play a major role in modelling individual beliefs and practices. Therefore, for effective smoking cessation campaigns it is important to not only focus on the individual factors but also on the social and cultural factors. Policies directed towards reducing smoking prevalence cannot be successful unless they also aim at changing the cultural beliefs and practices of the population. Findings from this study can be used to design similar studies to achieve a more comprehensive understanding of all the risk factors that are associated with changes in smoking behaviours among migrant medical students.

7. RECOMMENDATIONS

Based on the findings and discussion, the following recommendations are given:

1. Integration of smoking cessation counselling and prevention of smoking initiation into the medical curricula.

2. A nationwide policy implementation of interventions focussed on changing the perceptions of smoking in the Republic of Armenia.

3. Developing further studies, both qualitative and quantitative for deeper understanding of the risk factors at the individual, family and cultural levels.

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TABLE 1: General demographic characteristics

VARIABLE		INDIAN UNIVERSITIES % (n/N)	YSMU % (n/N)
Mean Age (years)		22.2	22.7
Gender	Female	1.5 (2/133)	32.4 (69/213)
	Male	98.5 (131/133)	67.6 (144/213)
State	New Delhi	-	16.9 (36/213)
	West Bengal	29.1 (39/133)	1.4 (3/213)
	Bihar	13.4 (18/133)	5.2 (11/213)
	Jharkhand	52.2 (70/133)	1.9 (4/2130
	Tamil Nadu	-	19.7 (42/213)
	Others	5.2 (7/133)	54.9 (117/213)
Religion	Hinduism	92.5 (123/134)	61.7 (131/213)
	Christianity	-	12.4 (27/213)
	Islam	6.0 (8/133)	19.1 (41/213)
	Sikhism	0.8 (1/133)	5.7 (12/213)
	Other	0.8 (1/133)	1.0 (2/213)
Monthly Family Income (Rs.)	1500-5000	7.5 (10/133)	0.5 (1/213)
	5001-10000	10.5 (14/133)	2.3 (5/213)
	10001-30000	44.4 (59/133)	22.5 (48/213)
	30001-50000	22.6 (30/133)	30.1 (64/213)
	More than 50000	15.0 (20/133)	44.6 (95/213)
Professional year	1	28.4 (38/133)	8.5 (18/213)
	2	56.7 (76/133)	24.1 (51/213)
	3	14.9 (20/133)	67.5 (143/213)

TABLE 2: Cross-tabulation of some principal descriptive variables by university

VARIABLE		INDIAN UNIVERSITIES % (n/N)	YSMU % (n/N)	p-value
Ever tried smoking		51.9 (68/131)	68.5 (96/140)	0.004
Current smoker		22.9 (30/131)	42.1 (59/140)	0.001
Having male friends in India who smoke		97.7 (128/131)	80.0 (112/140)	<0.005
Having female friends in India who smoke		22.1 (29/131	12.9 (18/140)	0.047
Number who smoke among 5 closest friends in India	0	13.6 (18/131)	34.5 (48/140)	<0.005
	1	23.5 (31/131)	17.3 (24/140)	
	2	27.3 (36/131)	15.8 (22/140)	
	3 or more	35.6 (47/131)	32.4 (45/140)	
Family members who smoke	None	68.9 (91/131)	68.6 (94/140)	0.140
	Father	22.7 (30/131)	15.3 (21/140)	
	Others	8.3 (11/131)	17.9 (25/140)	

TABLE 3: Cross-tabulation of some key variable by university and smoking status

VARIABLE		INDIAN UNIVERSITIES		YSMU	
		Smokers	Non-Smokers	Smokers	Non-Smokers
Age	18-19 years	3.3	16.3	1.8	11.8
	20-24 years	70.0	69.4	71.9	61.8
	25-30 years	26.7	14.3	26.3	26.3
Income	Less than Rs. 10000	20.0	17.0	1.8	2.7
	Rs. 1000-30000	36.7	43.6	14.5	28.0
	Rs. 30000-50000	33.3	21.3	32.7	24.0
	More than Rs. 50000	10.0	18.1	50.9	45.3
Professional year	1	16.7	31.7	5.1	7.4

	2	60.0	55.4	20.3	27.2
	3	23.3	12.9	74.6	65.4
No. of days people have smoked in place of living in the past week	0	0.0	19.0	8.5	30.9
	1-4	13.3	33.0	23.7	30.9
	5-7	86.7	48.0	67.8	38.2
No. of days people have smoked other than place of living in the past week	0	0.0	13.0	1.7	19.8
	1-4	13.3	36.0	27.1	38.2
	5-7	86.7	51.0	71.2	42.0
Number of roommates who smoke	0	16.7	51.0	31.0	56.2
	1	10.0	15.0	22.4	22.5
	2	30.0	17.0	20.7	12.5
	More than 2	43.3	17.0	25.9	8.8
Having at least one close smoker friend	No	0.0	17.8	20.3	44.4
	Yes	100.0	82.2	79.7	55.6
Having smoker male friends	No	0.0	3.0	13.6	24.7
	Yes	100.0	97.0	86.4	75.3
Having smoker female friends	No	60.0	83.2	79.7	92.6
	Yes	40.0	16.8	20.3	7.4
Missing family members	All the time	35.7	27.2	19.3	29.1
	Often	42.9	52.2	50.9	44.3
	Seldom	10.7	19.6	15.8	22.8
	Never	10.7	1.1	14.0	3.8
Career choice before admission into medical school	Doctor	56.7	74.3	49.2	61.7
	Other	43.3	25.7	50.8	2.7

TABLE 4: University curriculum as a source of stress

VARIABLE		INDIAN UNIVERSITIES	YSMU	p-value
Career choice before admission into medical school	Doctor	69.7	56.4	0.024
	Other	30.3	43.6	
Class study material given to you is	Too much for you to do	16.7	14.4	<0.005
	Too much but you can do it	53.0	23.7	
	Just the right amount	19.7	41.7	
	Too little	10.6	20.1	
My grades affect the number of cigarettes I smoke	Agree	34.3	37.1	0.967
	Disagree	40.0	38.7	
	Makes no difference to me	25.7	24.2	
In making me want to smoke, Examinations are a	Strong factor	71.4	70.0	0.249
	Weak factor	11.4	21.7	
	Neither strong nor weak	17.1	8.3	

TABLE 5: Assessment of the effect of country of residence on risk factors

VARIABLE		Unadjusted OR	p-value
Year of study	Professional years 1 and 2	1.00	<0.005
	Professional year 3	9.64	
Do you want to stop smoking now?	No	1.00	0.028
	Yes	0.32	
Income	Less than Rs. 30000	1.00	0.002
	More than Rs. 30000	4.63	
I would smoke less if cigarettes were not sold out of the box	Disagree	1.00	0.033
	Agree/No difference	0.37	

Cigarettes make boys look more attractive	Disagree	1.00	0.013
	Agree/No difference	3.52	
Cigarettes make girls look more attractive	Disagree	1.00	0.182
	Agree/No difference	1.85	
How do girls behave when they see someone smoking?	Unimpressed	1.00	0.010
	Impressed/No difference	3.40	

TABLE 6: Simple Logistic Regression (Smokers in Armenia vs. Non-smokers in Armenia)

VARIABLE		Unadjusted OR	p-value
How many of your roommates smoke?	0	1.00	
	1	1.81	0.198
	2	3.00	0.032
	More than 2	5.36	0.002
Having female friends in Armenia who smoke	No	1.00	
	Yes	4.63	0.045
Having at least one smoker among 5 closest friends in India	No	1.00	
	Yes	4.36	0.001
How often do you miss your family	All the time	1.00	
	Often	1.73	0.216
	Seldom	1.05	0.435
	Never	5.57	0.026
How do girls behave when they see someone smoking	No difference	1.00	
	Impressed	0.19	0.487
	Unimpressed	0.36	0.010
How often have you taken alcohol in the past week	0	1.00	
	Once	1.77	0.211
	Twice	1.59	0.412
	More than twice	3.41	0.013

TABLE 7: Simple Logistic Regression (Smokers in India vs. Non-smokers in India)

VARIABLE		Unadjusted OR	p-value
How many of your roommates smoke?	0	1.00	
	1	2.04	0.365
	2	5.40	0.007
	More than 2	7.80	0.001
Having female friends in India who smoke	No	1.00	
	Yes	3.29	0.009
Having at least one smoker among 5 closest friends in India	No	1.00	
	Yes	6.03	<0.005
Having a family member who smokes	No	1.00	
	Father	2.89	0.025
	Other	2.86	0.127
How often do you miss your family	All the time	1.00	
	Often	0.63	0.342
	Seldom	0.42	0.229
	Never	7.50	0.097
What did you want to become	Doctor	1.00	
	Other	2.21	0.068
How easy is it for non-smokers to start conversation with strangers	No difference	1.00	
	Easy	3.05	0.061
	Difficult	1.65	0.493
How do girls behave when they see someone smoking	No difference	1.00	
	Impressed	7.66	0.016
	Unimpressed	2.23	0.224
How often have you taken alcohol in the past week	0	1.00	
	Once	4.47	0.021
	Twice	16.72	<0.005
	More than twice	14.33	0.001
Age		1.29	0.010

TABLE 8: Simple Logistic Regression (Smokers in Armenia vs. Smokers in India)

VARIABLE		Unadjusted OR	p-value
Alcohol intake in the past week	0 times	1.00	
	1 time	1.36	0.632
	2 times	0.52	0.311
	3 times	0.78	0.740
	More than 3 times	2.35	0.320
Year of study	Professional year 1	1.00	
	Professional year 2	1.11	0.898
	Professional year 3	10.48	0.005
Do you want to stop smoking now?	No	1.00	
	Yes	0.32	0.028
Tried to quit smoking in the past year	No	1.00	
	Yes	0.57	0.229
I smoke more when I am bored	No difference	1.00	
	Agree	0.51	0.441
	Disagree	3.00	0.413
I would smoke more if cigarettes were cheaper	No difference	1.00	
	Agree	0.34	0.287
	Disagree	0.90	0.911
I would smoke less if cigarettes were not sold out of the box	No difference	1.00	
	Agree	0.35	0.146
	Disagree	1.33	0.675
Cigarettes make boys look more attractive	No difference	1.00	
	Agree	1.13	0.890
	Disagree	0.31	0.091
Cigarettes make girls look more attractive	No difference	1.00	
	Agree	3.30	0.103
	Disagree	1.11	0.871
Girls who smoke cigarettes have more friends	No difference	1.00	
	Agree	0.28	0.094
	Disagree	1.25	0.666
Boys who smoke cigarettes have more friends	No difference	1.00	
	Agree	1.63	0.439
	Disagree	1.12	0.849
It is okay to smoke for a year or two as long as I quit after that	No difference	1.00	
	Agree	4.80	0.015
	Disagree	1.77	0.384
How strong or weak are the following factors in making you want to smoke?			
1. Extreme changes in climate	Neither strong nor weak	1.00	
	Weak	2.14	0.191
	Strong	5.21	0.012

	Neither strong nor weak	1.00	
2. Changes in food habits	Weak	2.67	0.063
	Strong	5.29	0.033
	Neither strong nor weak	1.00	
3. Being alone	Weak	7.20	0.043
	Strong	2.18	0.238
	Neither strong nor weak	1.00	
4. Problems in family	Weak	1.56	0.473
	Strong	1.71	0.395
	Neither strong nor weak	1.00	
5. Not going home during vacations	Weak	2.79	0.160
	Strong	2.34	0.288
	Neither strong nor weak	1.00	
6. Breaking up with a boyfriend or girlfriend	Weak	1.27	0.740
	Strong	0.36	0.125

TABLE 9: Multiple Logistic Regression (Smokers in Armenia vs. Non-smokers in Armenia)

VARIABLE		Adjusted OR	p-value
	0	1.00	
Number of smoker roommates	1	2.08	0.190
	2	4.65	0.016
	More than 2	7.75	0.003
Having female friends in India who smoke	No	1.00	
	Yes	4.63	0.045
	No difference	1.00	
Behavior of girls towards smokers	Impressed	0.54	0.318
	Unimpressed	0.27	0.006
	All the time	1.00	
Missing family	Often	2.25	0.159
	Seldom	1.27	0.726
	Never	9.21	0.018

TABLE 10: Multiple Logistic Regression (Smokers in India vs. Non-smokers in India)

VARIABLE		Adjusted OR	p-value
Number of smoker roommates	0	1.00	
	1	1.80	0.530
	2	6.22	0.033
	More than 2	4.22	0.072
Alcohol intake in the past week	0 times	1.00	
	At least once	14.28	<0.005
Having smoker family members	None	1.00	
	Father	6.78	0.010
	Others	5.19	0.116
Missing family	All the time	1.00	
	Often	1.79	0.768
	Seldom	1.67	0.449
	Never	4.35	0.009

TABLE 11: Multiple Logistic Regression (Smokers in Armenia vs. Smokers in India)

VARIABLE		Adjusted OR	p-value
Monthly income	Less than Rs. 30000	1.00	
	More than Rs. 30000	9.56	0.010
Want to stop smoking now	No	1.00	
	Yes	0.12	0.012
Professional year	1	1.00	
	2	0.95	0.962
	3	21.82	0.012
Cigarettes make girls look more attractive	No difference	1.00	
	Agree	12.37	0.040
	Disagree	3.29	0.207
Age		0.57	0.020

APPENDIX B

GRAPH 1: Changes in smoking practices when vacationing in India
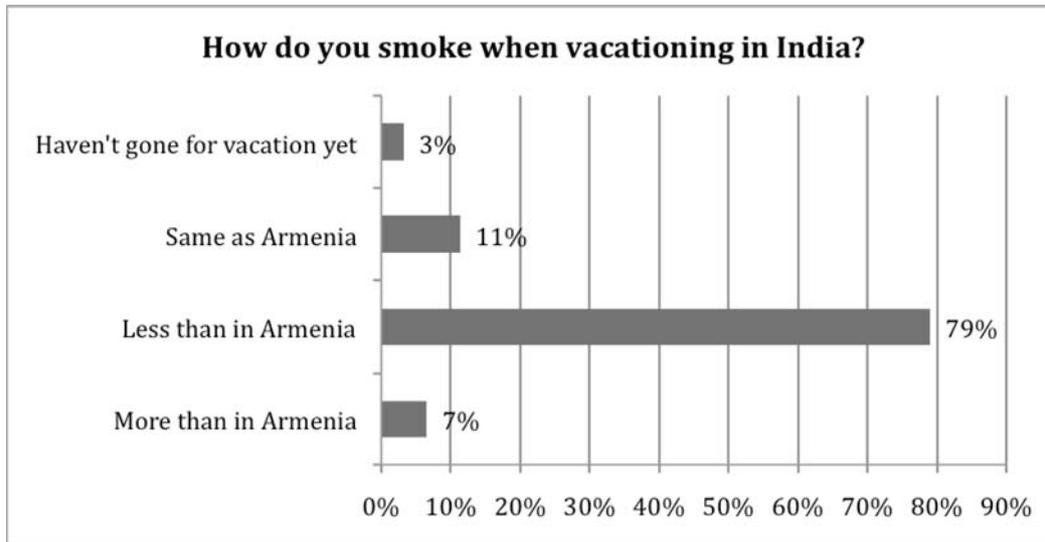
GRAPH 2: Perception towards smoking Armenian women
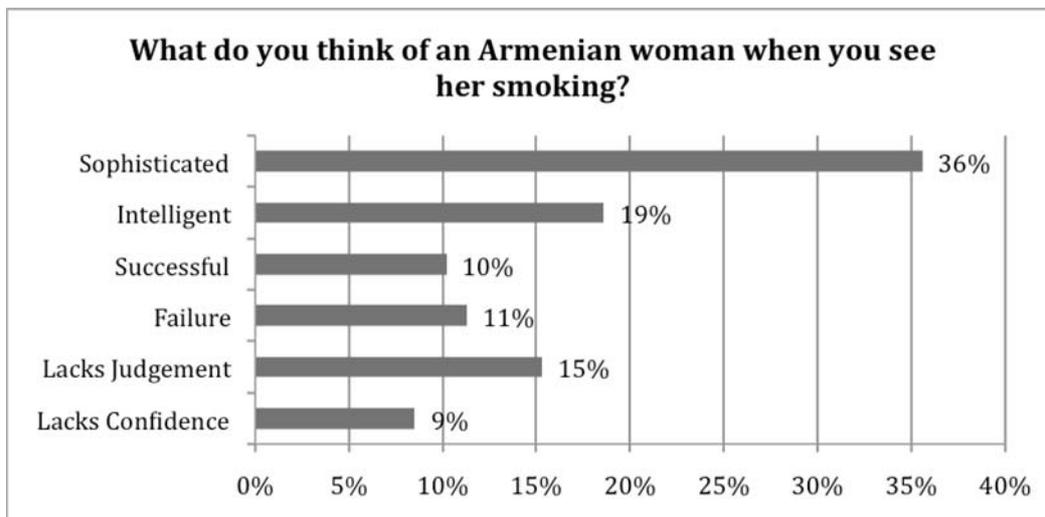
GRAPH 3: Social perception of smokers in Armenia

In which country do you think smokers are more accepted?

Category	Percentage
Not accepted in any of the countries	10%
Accepted equally in both the countries	6%
Armenia	84%
India	0%
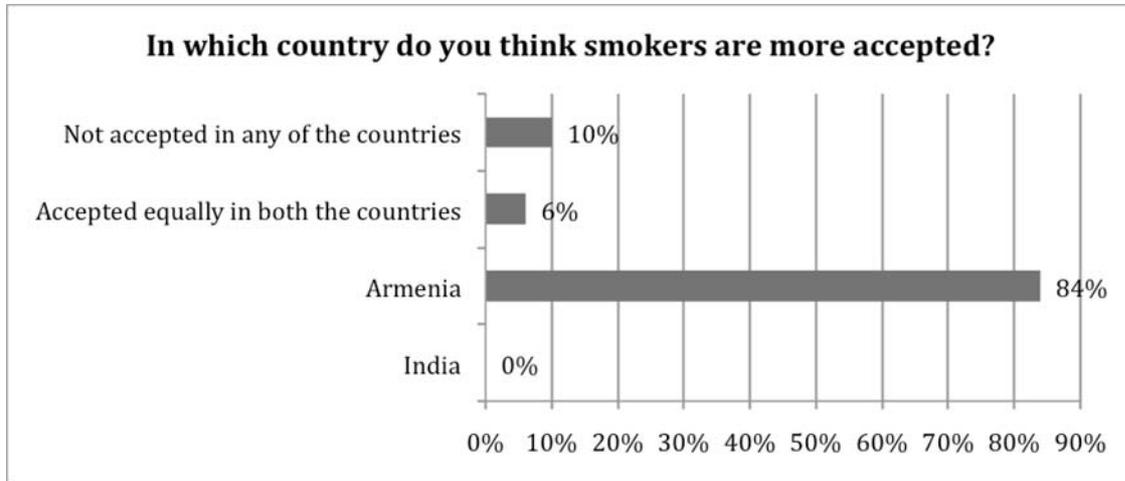
GRAPH 4: Perception of smokers in Armenia related to availability of cigarettes

In which country do you think cigarettes are more easily available?

Category	Percentage
Same in both the countries	25%
Armenia	73%
India	2%
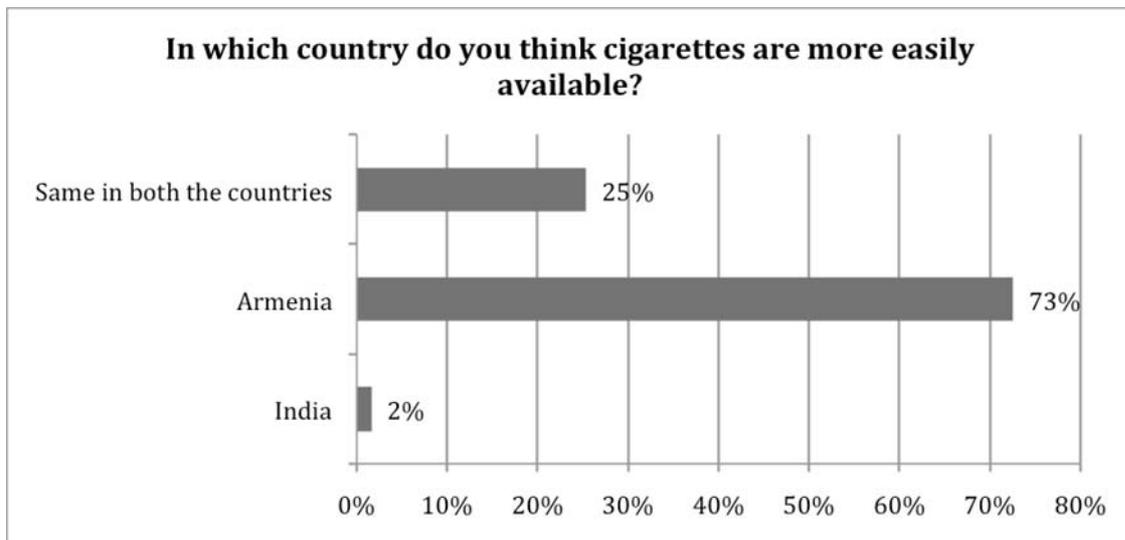
GRAPH 5: Perceived want to quit smoking of the smokers in Armenia after entering into professional career.

Do you want to stop smoking when you become a doctor?

Don't Know	24%
Yes	61%
No	15%
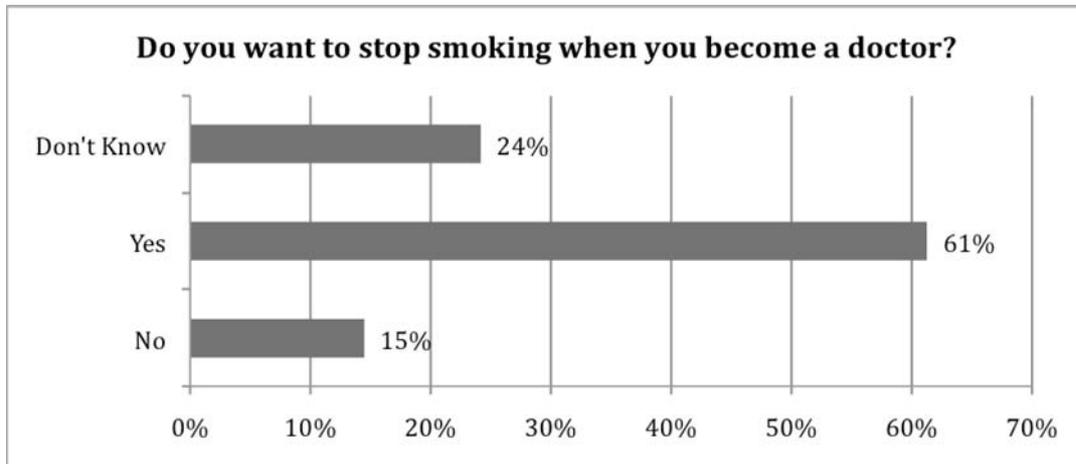
GRAPH 6: Perception of the need to hide smoking status in India and Armenia

- How often do you need to hide your smoking status in India
- How often do you need to hide your smoking status in Armenia

	India	Armenia
Never	10%	63%
Seldom	15%	23%
Most of the time	27%	11%
All the time	48%	3%
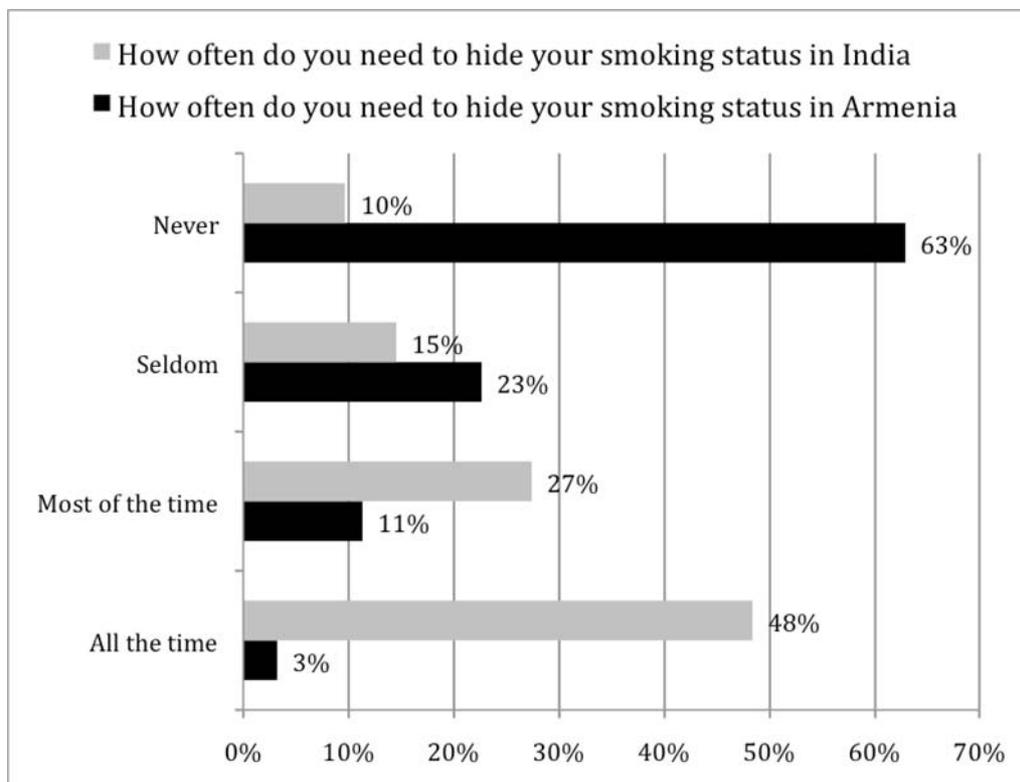
ID: _____

QUESTIONNAIRE FOR INDIA

*Dear Participants, you are being asked to participate in a study to evaluate the risk factors responsible for smoking habits among medical students. Results obtained from this study will be used to formulate smoking cessation policies among health professionals. It is your wish to participate in this study. You can leave this study any time you want to. Filling out this form will take about 20 minutes of your time. The questionnaire does not ask you for any personal information. All the information that you provide will not be given to anyone outside this study. You are requested to circle only **ONE** response. Questions requiring more than one response will tell you to do so. Your co-operation is highly appreciated and the researcher thanks you for your help.*

1. Do you ever think of smoking cigarettes?
    a. Yes
    b. No
    c. Don't know

2. Have you ever tried or experimented with cigarette smoking, even one or two puffs?
    a. Yes
    b. No   *Please skip to question 9 if you answered "NO"*

3. How old were you when you *first* tried a cigarette?
    a. Age 10 or younger
    b. Age 11-15
    c. Age 16-17
    d. Age 18-19
    e. Age 20-24
    f. Age 25-29
    g. Age 30 or older

4. What type of tobacco do you usually smoke?
    a. Cigarettes
    b. Cigars
    c. Pipes
    d. Bidi
    e. Other (please specify)_____

5. Do you regularly smoke cigarettes? (At least 1 cigarette per day for at least 1 month)
    a. Yes
    b. No   *Please skip to question 9 if you answered "NO"*

6. During the past 30 days (one month), on how many days did you smoke cigarettes?
    a. 1 or 2 days

b. 3 to 5 days
c. 6 to 9 days
d. 10 to 19 days
e. 20 to 29 days
f. All 30 days

7. On average, how many cigarettes do you smoke per day?
    a. 1-5
    b. 6-10
    c. 11-20
    d. More than 20

8. In your opinion, why did you **_start_** smoking cigarettes?
    a. I was curious
    b. With my friends
    c. I thought it was cool
    d. I was impressed by the advertisements
    e. I was depressed
    f. Other _____

9. During the past 7 days, on how many days have people smoked at least 1 cigarette where you live, in your presence?
    a. 0 days
    b. 1 to 2 days
    c. 3 to 4 days
    d. 5 to 6 days
    e. All 7 days

10. During the past 7 days, on how many days have people smoked at least 1 cigarette in your presence, in places other than where you live?
    a. 0 days
    b. 1 to 2 days
    c. 3 to 4 days
    d. 5 to 6 days
    e. All 7 days

11. With how many other people do you live?
    a. 0
    b. 1
    c. 2
    d. 3
    e. More than 3

12. Among all the people whom you live with, how many smoke cigarettes?
    a. 0

b. 1
c. 2
d. 3
e. Other (please specify) _____

13. Do you have male friends in India who smoke?
        a. Yes
        b. No

14. Do you have female friends in India who smoke?
        a. Yes
        b. No

15. Among your 5 closest friends in India, how many smoke cigarettes?
        a. 0
        b. 1
        c. 2
        d. 3
        e. More than 3

16. Does anyone in your family smoke cigarettes? (Check all that apply)
        a. No one
        b. Father
        c. Mother
        d. At least one brother
        e. At least one sister
        f. Other (please specify)_____

17. Do you currently live with your family?
        a. Yes   *Please skip to question 21 if you answered "YES"*
        b. No

18. How often do you miss your family?
        a. All the time
        b. Often
        c. Seldom
        d. Never

19. When do you miss your family the most?
        a. When I am under stress
        b. During the exams
        c. When I am sick
        d. Other (please specify) _____
        e. I never miss my family

20. Since your admission into medical school, how many times have you visited your family in the past year?
  a. Once
  b. Twice
  c. More that twice
  d. I haven't been home in the past year

21. Before your admission into medical school, what did you want to become?
  a. Architect
  b. Engineer
  c. Lawyer
  d. Doctor
  e. Other (please specify) _____

22. Do you think that the amount of class study material given to you to learn is
  a. Too much for you to do
  b. Too much but you can do it
  c. Just the right amount
  d. Too little

23. How easy do you think it is for **_smokers_** to start a conversation with a stranger?
  a. Very easy
  b. Easy
  c. No difference
  d. Difficult
  e. Very difficult

24. How easy do you think it is for **_non-smokers_** to start a conversation with a stranger?
  a. Very easy
  b. Easy
  c. No difference
  d. Difficult
  e. Very difficult

25. How do you think girls behave when they see someone who smokes?
  a. Highly impressed
  b. Impressed
  c. No difference
  d. Unimpressed
  e. Highly unimpressed

26. During the past week, how often have you taken alcohol (including beer, vodka, wine, whiskey and tea, coffee and cocktails with alcohol)?
  a. I haven't
  b. Once
  c. Twice

d. Thrice

e. More than three times

27. During the past month, how many times have you visited a bar, disco or a club?

a. 0

b. 1

c. 2

d. 3

e. More than 3 times

The following questions are meant for smokers or ex-smokers only. Non-smokers, please skip to question 39

---

28. Does smoking make you comfortable at the places mentioned in (27)?

a. Definitely yes

b. Yes

c. Makes no difference

d. No

e. Definitely no

f. I don't smoke, but I think it would make some people comfortable

g. I don't smoke

29. Do you feel that smoking helps you socialize better with other people?

a. Yes

b. No

30. How soon after you awake do you smoke your first cigarette?

a. I do not currently smoke cigarettes

b. Less than 10 minutes

c. 10-30 minutes

d. 31-60 minutes

e. After 60 minutes

31. Do you want to stop smoking cigarettes now?

a. I do not smoke now

b. Yes

c. No

32. During the past year, have you ever tried to stop smoking cigarettes?

a. I did not smoke during the past year

b. Yes

c. No

33. How long ago did you stop smoking cigarettes?

a. I have not stopped smoking cigarettes

b. Less than 1 month

c. 1-5 months

d. 6 – 11 months

e. One year or more

34. Please fill in the boxes below *(mark only one box for each item)*

	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE	NO OPINION
a) My grades affect the number of cigarettes I smoke					
b) I smoke more when I am bored					
c) I would smoke more if cigarettes were cheaper					
d) I would smoke less if cigarettes were not sold out of the box					
e) Cigarettes help me relax when I am stressed					
f) Cigarettes make boys look more attractive					
g) Cigarettes make girls look more attractive					
h) Smoking cigarettes makes people more comfortable at celebrations, parties and other social gatherings					
i) Boys who smoke cigarettes have more friends					
j) Girls who smoke cigarettes have more friends					
k) It is okay to smoke for a year or two as long as I quit after that					

35. How strongly do the following factors make you **want to smoke**? Please mark them on a scale of 1 to 5 with1 being least strongly and 5 being most strongly. *(**Please check only one response for each item**)*

	1	2	3	4	5
a) Extreme changes in climate (e.g., too hot or too cold)					
b) Changes in food habits					
c) Examinations					
d) When you are alone					

e) Getting into a fight with someone					
f) Problems in the family					
g) Not going home during vacations					
h) Feeling of boredom					
i) Breaking up with a boyfriend or a girlfriend					
j) Being around **Indian** medical students who smoke					
h) Being around medical students of **other nationality** who smoke					

36. On average, how many cigarettes did you smoke just before your admission into medical college?
    a. 0
    b. 1-5
    c. 6-10
    d. 11-20
    e. More than 20

37. On average, how many cigarettes did you smoke just after your admission into medical college?
    a. 0
    b. 1-5
    c. 6-10
    d. 11-20
    e. More than 20

38. On average, how many cigarettes do you smoke now?
    a. 0
    b. 1-5
    c. 6-10
    d. 11-20
    e. More than 20

39. In your opinion, how likely are **physicians** who smoke, to advise patients to stop smoking?
    a. Less likely
    b. More likely
    c. Smoking status of physician does not make a difference

40. What is your age in years, as of March 15, 2009? _____

41. What is your gender?

    a. Female
    b. Male

42. Which city are you from? _____

43. To what religion do you belong?
        a. Hinduism
        b. Christianity
        c. Islam
        d. Sikhism
        e. Jainism
        f. Buddhism
        g. Other (please specify)_____

44. How many earning members are there in your family? (Please include only immediate family members such as mother, father, brothers and sisters)
_____

45. What is your *__monthly__* family income in India? (As of last month)
        a. Less than Rs. 1,500
        b. Rs. 1,500 to Rs. 5,000
        c. Rs. 5,001 to Rs. 10,000
        d. Rs. 10,001 to Rs. 30,000
        e. Rs. 30,001 to Rs. 50,000
        f. More than Rs. 50,000

46. Which medical college/university are you currently a student?
_____

47. What is your course year in medical school?
        a. First year
        b. Second year
        c. Third year
        d. Fourth year
        e. Fifth year
        f. Sixth year
        g. Seventh year

Dear Participant, we have reached the end of our questionnaire. Thank you for your time!

QUESTIONNAIRE FOR ARMENIA

*Dear Participants, you are being asked to participate in a study to evaluate the risk factors responsible for smoking habits among medical students. Results obtained from this study will be used to formulate smoking cessation policies among health professionals. It is your wish to participate in this study. You can leave this study any time you want to. Filling out this form will take about 20 minutes of your time. The questionnaire does not ask you for any personal information. All the information that you provide will not be given to anyone outside this study. You are requested to circle only **ONE** response. Questions requiring more than one response will tell you to do so. Your co-operation is highly appreciated and the researcher thanks you for your help.*

1. Do you ever think of smoking cigarettes?
   a. Yes
   b. No
   c. Don't know

2. Have you ever tried or experimented with cigarette smoking, even one or two puffs?
   a. Yes
   b. No   **PLEASE SKIP TO QUESTION *9* IF YOU ANSWERED "NO"**

3. How old were you when you ***first*** tried a cigarette?
   a. Age10 or younger
   b. Age 11-15
   c. Age 16-17
   d. Age 18-19
   e. Age 20-24
   f. Age 25-29
   g. Age 30 or older

4. What type of tobacco do you usually smoke?
   a. Cigarettes
   b. Cigars
   c. Pipes
   d. Bidi
   e. Other (please specify)_____

5. Do you regularly smoke cigarettes? (At least 1 cigarette per day for at least 1 month)
   a. Yes
   b. No   **PLEASE SKIP TO QUESTION *9* IF YOU ANSWERED "NO"**

6. During the past 30 days (one month), on how many days did you smoke cigarettes?
   a. 1 or 2 days
   b. 3 to 5 days
   c. 6 to 9 days
   d. 10 to 19 days
   e. 20 to 29 days
   f. All 30 days

7. On average, how many cigarettes do you smoke per day?
   a. 1-5
   b. 6-10
   c. 11-20
   d. More than 20

8. In your opinion, why did you ***start*** smoking cigarettes?
   a. I was curious
   b. With my friends
   c. I thought it was cool

d. I was impressed by the advertisements

e. I was depressed

f. Other _____

9. During the past 7 days, on how many days have people smoked at least 1 cigarette where you live, in your presence?

    a. 0 days

    b. 1 to 2 days

    c. 3 to 4 days

    d. 5 to 6 days

    e. All 7 days

10. During the past 7 days, on how many days have people smoked at least 1 cigarette in your presence, in places other than where you live?

    a. 0 days

    b. 1 to 2 days

    c. 3 to 4 days

    d. 5 to 6 days

    e. All 7 days

11. With how many other people do you live? _____

12. Among all the people whom you live with, how many smoke cigarettes?

_____

13. Do you have male friends in India who smoke?

    f. Yes

    g. No

14. Do you have female friends in India who smoke?

    a. Yes

    b. No

15. Among your 5 closest friends in India, how many smoke cigarettes?

_____

16. Does anyone in your family smoke cigarettes? (Check all that apply)

    a. No one

    b. Father

    c. Mother

    d. At least one brother

    e. At least one sister

    f. Other (please specify)_____

17. Do you currently live with your family?

    a. Yes   **_PLEASE SKIP TO QUESTION 21 IF YOU ANSWERED YES"_**

    b. No

18. How often do you miss your family?

    a. All the time

    b. Often

    c. Seldom

    d. Never

19. When do you miss your family the most?

    a. When I am under stress

    b. During the exams

    c. When I am sick

    d. Other (please specify) _____

    e. I never miss my family

20. Since your admission into medical school, how many times have you visited your family in the past year?

    a. Once

    b. Twice

    c. More that twice

    d. I haven't been home in the past year

21. Before your admission into medical school, what did you want to become?

a. Architect
b. Engineer
c. Lawyer
d. Doctor
e. Other (please specify) _____

22. Do you think that the amount of class study material given to you to learn is
a. Too much for you to do
b. Too much but you can do it
c. Just the right amount
d. Too little

23. How easy do you think it is for *__smokers__* to start a conversation with a stranger?
a. Very easy
b. Easy
c. No difference
d. Difficult
e. Very difficult

24. How easy do you think it is for *__non-smokers__* to start a conversation with a stranger?
a. Very easy
b. Easy
c. No difference
d. Difficult
e. Very difficult

25. How do you think girls behave when they see someone who smokes?
a. Highly impressed
b. Impressed
c. No difference
d. Unimpressed
e. Highly unimpressed

26. During the past week, how often have you taken alcohol (including beer, vodka, wine, whiskey and tea, coffee and cocktails with alcohol)?
a. I haven't
b. Once
c. Twice
d. Thrice
e. More than three times

27. During the past month, how many times have you visited a bar, disco or a club?
a. 0
b. 1
c. 2
d. 3
e. More than 3 times

___THE FOLLOWING QUESTIONS ARE MEANT FOR SMOKERS OR EX-SMOKERS ONLY. NON-SMOKERS, PLEASE SKIP TO QUESTION 36___

28. Does smoking make you comfortable at the above-mentioned places?
a. Definitely yes
b. Yes
c. Makes no difference
d. No
e. Definitely no
f. I don't smoke, but I think it would make some people comfortable
g. I don't smoke

29. Do you feel that smoking helps you socialize better with other people?
a. Yes
b. No

30. How soon after you awake do you smoke your first cigarette?
   - a. I do not currently smoke cigarettes
   - b. Less than 10 minutes
   - c. 10-30 minutes
   - d. 31-60 minutes
   - e. After 60 minutes

31. Do you want to stop smoking cigarettes now?
   - a. I do not smoke now
   - b. Yes
   - c. No

32. During the past year, have you ever tried to stop smoking cigarettes?
   - a. I did not smoke during the past year
   - b. Yes
   - c. No

33. How long ago did you stop smoking cigarettes?
   - a. I have not stopped smoking cigarettes
   - b. Less than 1 month
   - c. 1-5 months
   - d. 6 – 11 months
   - e. One year or more

34. Please fill in the boxes below (*mark only one box for each item*)

	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE	NO OPINION
a) My grades affect the number of cigarettes I smoke					
b) I smoke more when I am bored					
c) I would smoke more if cigarettes were cheaper					
d) I would smoke less if cigarettes were not sold out of the box					
e) Cigarettes help me relax when I am stressed					
f) Cigarettes makes boys look more attractive					
g) Cigarettes makes girls look more attractive					
h) Smoking cigarettes makes people more comfortable at celebrations, parties and other social gatherings					
i) Boys who smoke cigarettes have more friends					
j) Girls who smoke cigarettes have more friends					
k) It is okay to smoke for a year or two as long as I quit after that					

35. How strongly do the following factors make you **want to smoke**? Please mark them on a scale of 1 to 5 with *1 being least strongly and 5 being most strongly*. (*Please check only one response for each item*)

	1	2	3	4	5
a) Extreme changes in climate (e.g., too hot or too cold)					
b) Changes in food habits					

c) Examinations					
d) When you are alone					
e) Getting into a fight with someone					
f) Problems in the family					
g) Not going home during vacations					
h) Feeling of boredom					
i) Breaking up with a boyfriend or a girlfriend					
j) Being around **Indian** medical students smoke					
h) Being around medical students of **other nationality** who smoke					

36. Where did you first smoke a cigarette?
    a. In India
    b. In Armenia
    c. I have never smoked a cigarette
    d. Other (please specify) _____

NON-SMOKERS, PLEASE SKIP TO QUESTION 41

37. In which country did you start smoking cigarettes regularly?
    a. India
    b. Armenia
    c. Other_____
38. On an average, how many cigarettes did you smoke before coming to Armenia?
    a. 0
    b. 1-5
    c. 6-10
    d. 11-20
    e. More than 20
39. On an average, how many cigarettes did you smoke just after coming to Armenia (when you *__first came__* to Armenia)?
    a. 0
    b. 1-5
    c. 6-10
    d. 11-20
    e. More than 20
40. On an average, how many cigarettes do you smoke now?
    a. 0
    b. 1-5
    c. 6-10
    d. 11-20
    e. More than 20
41. Do you have male friends in Armenia who smoke?
    a. Yes
    b. No
42. Do you have female friends in Armenia who smoke?
    a. Yes
    b. No
43. Among your 5 closest **Indian friends** in Armenia, how many smoke cigarettes (please exclude your roommates) _____
44. How many of your Armenian friends smoke cigarettes?
    a. _____ (Fill in a number)
    b. I do not have Armenian friends

45. When you see an Armenian man smoking, what do you think of him?
    a. Lacks confidence
    b. Stupid
    c. Loser
    d. Successful
    e. Intelligent
    f. Macho
46. When you see an Armenian woman smoking, what do you think of her?
    a. Lacks confidence
    b. Stupid
    c. Loser
    d. Successful
    e. Intelligent
    f. Sophisticated
47. Do your smoking habits change when you go to India for vacation?
    a. Yes
    b. No
    c. I haven't gone for a vacation to India yet
48. When you are on a vacation to India, do you find yourself
    a. Smoking more than in Armenia
    b. Smoking the same as in Armenia
    c. Smoking less than in Armenia
49. State the reason(s) for your response in (48)
    _____
    _____
50. Do your parents approve of your smoking?
    a. Yes
    b. No
    c. They don't know
    d. Other (please specify) _____
51. In which country do you think smokers are more socially accepted?
    a. India
    b. Armenia
    c. It is the same in both the countries
    d. Smokers are not socially accepted in either of the two countries
52. In which country do you think cigarettes are more easily available?
    a. India
    b. Armenia
    c. No difference
53. When in Armenia, how often do you find yourself in a situation when you need to hide your smoking status?
    a. All the time
    b. Most of the time
    c. Seldom
    d. Never
54. When in India, how often do you find yourself in a situation when you need to hide your smoking status?
    a. All the time
    b. Most of the time
    c. Seldom
    d. Never

55. Do you plan to stop smoking when you start working as a doctor?
    a. Yes
    b. No

       c.   Don't know

56. Do you think you can smoke as freely in India as in Armenia?
       a.   Yes
       b.   No

57. State the reason(s) for your response in (56)
    _____
    _____

58. In your opinion, how likely are **physicians** who smoke, to advise patients to stop smoking?
       a.   Less likely
       b.   More likely
       c.   Smoking status of physician does not make a difference

59. What is your age in years, as of March 15, 2009? _____

60. What is your gender?
       a.   Female
       b.   Male

61. Which city and state in India are you from? _____   _____

62. To what religion do you belong?
       a.   Hinduism
       b.   Christianity
       c.   Islam
       d.   Sikhism
       e.   Jainism
       f.   Buddhism
       g.   Other (please specify)_____

63. How many earning members are there in your family? (Please include only immediate family members such as mother, father, brothers and sisters)
    _____

64. What is your _**monthly**_ family income in India? (As of last month)
       a.   Less than Rs. 1,500
       b.   Rs. 1,500 to Rs. 5,000
       c.   Rs. 5,001 to Rs. 10,000
       d.   Rs. 10,001 to Rs. 30,000
       e.   Rs. 30,001 to Rs. 50,000
       f.   More than Rs. 50,000

65. Which medical college/university are you currently a student?
    _____

66. What is your course _**year**_ in medical school?
       a.   First year
       b.   Second year
       c.   Third year
       d.   Fourth year
       e.   Fifth year
       f.   Sixth year
       g.   Seventh year

Dear Participant, we have reached the end of our questionnaire. Thank you for your time!

APPENDIX E

CONSENT FORM OF INDIAN MEDICAL STUDENTS OF THE YEREVAN STATE MEDICAL UNIVERSITY

Dear Participant:

The American University of Armenia is studying the changes in smoking behaviors and the risk factors associated with them among the Indian medical students attending Yerevan State Medical University of Armenia. Your group numbers have been obtained from the Foreign Students' Department and Dean's Office of Foreign Students. Information for the study will be collected through the use of the questionnaire, which should take approximately 20 minutes to complete. There are no other requirements other than completion of the questionnaire. Your participation is highly valuable for this project. It is possible that your answers may lead to smoking cessation programs, which could benefit all health professionals. The information on the questionnaire is neither sensitive nor personally embarrassing. Although your name is not required on the questionnaire, all the other information that you provide will be kept confidential. Only group or aggregate data will be used in any written or oral reports about the findings

You have the right to decline participation anytime during the study. It is your right to decide whether or not to complete the questionnaire. If you decide not to participate, there will be no reprisal or negative effects. Your participation will not further affect your grading, academic performance; participation in the university activities and no administrative measures will be taken. Additionally, university authorities including your dean and instructors will not be reported about your participation in the study.

You may ask me any questions about this study. I can be contacted at the following telephone number (10 56 45 60) or (93 52 85 79). If you believe that your questions have not been satisfactorily addressed or you have not been treated fairly, you may contact Dr. Yelena Amirkhanyan at the AUA at (374 1) 51 25 68.

APPENDIX F

CONSENT FORM FOR MEDICAL STUDENTS IN INDIA

Dear Participant:

The American University of Armenia is studying smoking behaviors and the risk factors associated with them among Indian medical students. Information for the study will be collected through the use of the questionnaire, which should take approximately 20 minutes to complete. There are no other requirements other than completion of the questionnaire. Your participation is highly valuable for this project. It is possible that your answers may lead to smoking cessation programs, which could benefit all health professionals. The information on the questionnaire is neither sensitive nor personally embarrassing. Although your name is not required on the questionnaire, all the other information that you provide will be kept confidential. Only group or aggregate data will be used in any written or oral reports about the findings. Only the researcher will have access to the questionnaire. After data input, the questionnaires will be maintained in sealed boxes in a locked cabinet for a period of 6 months. After that time, they will be destroyed. You have the right to decline participation anytime during the study. It is your right to decide whether or not to complete the questionnaire. If you decide not to participate, there will be no reprisal or negative effects. Your participation will not further affect your grading, academic performance; participation in the university activities and no administrative measures will be taken. Additionally, university authorities including your dean and instructors will not be reported about your participation in the study.

You may ask the researcher any questions about this study. He can be contacted at the following telephone number (374 93) 52 85 79. If you believe that your questions have not been satisfactorily addressed or you have not been treated fairly, you may contact Dr. Yelena Amirkhanyan at the American University of Armenia at (374 1) 51 25 68.