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Original Article

Factors associated with Tobacco Use among Female Young Adults 18-24 Years

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Abstract

This study examines the psychosocial determinants of smoking among young females (18-24 years). This research was a cross-sectional study and data were collect during July to September 2015. The sample was extracted globally using an Internet-based Lime survey of 544 smokers. The data were analyzed using binary and multiple logistic regression. The prevalence of smokers was significantly higher than non-smokers (58%>42%). Seven psychosocial determinants showed high significance as predictors that influence smokers. Participants whose mother smoked and had a favorable attitude toward smoking were eight times more prone to be smokers themselves. Participants whose best friend smoked were twelve times more likely to be smokers and those who considered smoking to be cool were nine times more likely to be smokers. The results of this study clearly that mother smoker and best friend smokes influence of smoking among women in early adulthood between the ages of 18-24 years. There need to be more specifically intervention to prevent smoking behavior among women in early adulthood between the ages of 18-24 who had a mother and a close friend smokers.

Keywords: *Psychosocial, Tobacco Use, Young Adult Female, Internet-Based Survey*

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นิพนธ์ต้นฉบับ

การศึกษาตัวแปรที่สัมพันธ์กับการสูบบุหรี่ในกลุ่มผู้หญิงวัยผู้ใหญ่ตอนต้น อายุระหว่าง 18-24 ปี

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บทคัดย่อ

การศึกษาในครั้งนี้มีวัตถุประสงค์เพื่อศึกษาปัจจัยทางด้านจิตสังคมของการสูบบุหรี่ในกลุ่มผู้หญิงวัยผู้ใหญ่ตอนต้นที่มีอายุระหว่าง18-24 ปี การวิจัยนี้ใช้รูปแบบการวิจัยแบบภาคตัดขวาง โดยใช้การสำรวจ Internet-based ดำเนินการเก็บรวบรวมข้อมูลตั้งแต่เดือนกรกฎาคม ถึง เดือนกันยายน 2558 มีจำนวนกลุ่มตัวอย่างจำนวน 544 ราย วิเคราะห์ข้อมูลโดยสถิติถดถอยแบบโลจิสติกส์ผลการศึกษาพบว่ากลุ่มตัวอย่างมากกว่าครึ่งหนึ่งเคยสูบบุหรี่ (58%) มี 7 ปัจจัยที่สามารถทำนายการสูบบุหรี่ในกลุ่มที่มีมารดาสูบบุหรี่และมีทัศนคติที่ดีต่อการสูบบุหรี่จะมีพฤติกรรมสูบบุหรี่มากกว่ากลุ่มที่มารดาไม่สูบบุหรี่และมีทัศนคติที่ไม่ดีต่อการสูบบุหรี่แปดเท่า กลุ่มที่มีเพื่อนสนิทสูบบุหรี่จะมีพฤติกรรมสูบบุหรี่มากกว่ากลุ่มที่ไม่มีเพื่อนสนิทสูบบุหรี่สิบสองเท่า กลุ่มที่มีเห็นว่าการสูบบุหรี่ทำให้รู้สึกสดชื่นจะมีพฤติกรรมสูบบุหรี่มากกว่ากลุ่มที่ไม่เห็นด้วยเก้าเท่า ซึ่งผลการศึกษานี้ชัดเจนว่าปัจจัยทางด้านมารดา และเพื่อนสนิทมีอิทธิพลต่อการสูบบุหรี่ในกลุ่มผู้หญิงวัยผู้ใหญ่ตอนต้นที่มีอายุระหว่าง 18-24 ปี ดังนั้นควรหามาตราการเฉพาะกลุ่มเพื่อการป้องกันไม่ให้กลุ่มผู้หญิงวัยผู้ใหญ่ตอนต้นที่มีอายุระหว่าง 18-24 ปีที่มีมารดาและเพื่อนสนิทสูบบุหรี่มีพฤติกรรมสูบบุหรี่

คำสำคัญ: *จิตสังคม การสูบบุหรี วัยผู้ใหญ่ตอนต้น การสำรวจโดยใช้อินเทอเน็ต*

Introduction and Background

Cigarette smoking harms nearly every organ of the body, causing several diseases and reduces the health of smokers in general. According to a 2014 CDC report, cigarette smoking causes more than 480,000 deaths each year in the United States. A combined toll of deaths caused by AIDS, alcohol and illegal drug use, motor vehicle injuries and firearm-related incidents is less than the mortality caused by cigarette smoking alone (Benowitz et al., 2014).

As reported in Women and Smoking: Report of the Surgeon General (2001), women and girls are in the throes of a tobacco-related epidemic (Satcher, 2001). Smoking is the most basic cause of cancer almost anywhere in the body. Lung cancer risk rose dramatically between 1959 and 2010 (Chapman et al., 2006). One study in Thailand and Malaysia to examine the smoking behavior among youth found that approximately 5% of Thai and Malaysian youngsters were current smokers, while an additional 8.6% of Thais and 8.1% of Malaysians young adults reported initiation of smoking at an early age (Sirirassamee et al., 2011). According to the research findings, the average age of smoking initiation has fallen over the last 25 years. While 20% began smoking as early as the 9th grade, some began as early as 8 or 9 years of age (Riggs et al., 2007). The age of smoking initiation is important for two reasons: First, the younger a person begins smoking, the more likely he or she will be addicted as an adult and, secondly, women who started smoking early in life smoked, on average, 6.8 cigarettes/day more than women who started later (Cosnes, 2004).

Thailand's tobacco use in adults (>15 years old), has been monitored through a regular National Survey by the National Statistical Office since 1976. The survey shows that the number of current smokers has been decreasing continuously. The prevalence of current smoking decreased from 32% to 21% from 1991 to 2005 (Petersen et al., 2005). According to a WHO report, the highest rate of tobacco use is seen between the ages of 18-25 years and is lowest for those above 60 years of age (Dennis et al., 2002; Taha, & Tee, 2015).

Multiple psychosocial forces have been cited as having the potential to predict smoking initiation. Factors associated with early initiation of smoking include early exposure to a smoking environment, parent and sibling smoking, positive attitudes of family members toward smoking, parental approval of smoking, and association with a best friend and peers who smoke (Tyas, & Pederson, 1998). The influence of social pressure, media-fostered beliefs that portray smoking as fun, sexy and mature, lower socioeconomic status, and lower academic achievement have all been found to contribute to early smoking initiation.

Peterson proposed eight "significant indicators of smoking initiation" including curiosity, social norms, lures and/or pressure, enhancement of self-image or looking mature, pleasure and/or reduction of negative affect, preconceived expectations, boredom and desire (Meyers et al., 1997). (Figure 1)

A number of factors have been found to specifically influence girls to begin smoking, and these influences differ from those identified for boys. Studies found that girls were susceptible to tobacco use once experimentation started. Girls became more dependent on lower tobacco consumption than boys and, overall, girls had a poorer self-image, and perceived themselves to have lower of self-confidence, maturity, and social skills than boys. Girls were more secretive about smoking, more vulnerable to be influenced by others' smoking behavior, and were found to smoke in order to "fit in," feel more self-confident, and to cope with feelings (Piko, Wills, & Walker, 2007; Arnett, 2007) more than their male counterparts.

Personality factors are inherent to the individual. They include cognitive processes, values, personality constructs, and psychological well-being. They represent particular dispositions or individual inclinations, such as personal values, knowledge, preferences, or self-efficacy that influence a person's behavior pattern. Personality risk factors for the onset of smoking include cognition and beliefs about the consequences of smoking, the expectation youth have of smoking, that is, functional meanings of smoking to the youth, and the importance of unconventionality to them (Baker, Brandon, & Chassin, 2004).

Behavioral factors reflect internal dispositions, such as the motivation to live a healthy life by refraining from smoking. Active participation in sports is negatively associated with smoking, whereas multiple other activities that can be termed as "leisure" or "fun" are associated positively with tobacco use. A penchant for risk taking or having the intention to smoke are obvious predictors of tobacco use (Sherwood, & Jeffery, 2000).

Smoking in young adults is a major public health

concern. Correlates and determinants of cigarette smoking among young adults have been studied extensively. There is considerable consistency between studies with respect to the most important factors associated with initiation and maintenance of smoking among youth. What may vary among the studies is the relative strength of the association of various factors with smoking behavior, and the extent to which particular factors have a causal link to smoking behavior or may derive from the smoking behavior pattern.

Research methodology

The study design is an Internet-based survey of health behavior. The target population consists of females, age 18 to 24 years. The population universe for this study is unknown or only approximated. The sample was selected through snow ball sampling. Figure 2 depicts the method of data collection. A total of 612 participants took the survey and 544 completed it. The participants were given an explanation about the study before administering the questionnaire through a note that appears in the beginning. The validity and reliability or response were taken into consideration and the expected error was minimized. The data analysis was carried out using SPSS 21 version. Response to variables was coded as either as an indicator or reference to the outcome behavior. (Figure 2)

Results

This part describes the frequency distribution of different psychosocial factors used in the current study.

- **Socio-demographic factors**

The study included certain socio-demographic characteristics like age, educational level, family income along with what the participant is currently earning and the location as to what part of the world is this internet based survey has been filled. Number and percentage were calculated to indicate the frequency distribution of these socio-demographic characteristics.

The participants show the highest level of education they have achieved before taking this web based survey. The maximum number were of those who took University degree (55.7%) and were more than half of the total participants. About one third of the entire sample were those who completed High School (30.5%). A little more than nine-tenth of the total respondents were those who completed some kind of vocational training (13.8%).

The three categorical outcome showed that the ones who earn below 350$/month (58.1%) were more than half of the entire sample. One third of the participants were earning between 350-750$/month (34.6%). This doesn't necessarily mean this defines the socioeconomic status of the participant.

Family income was taken under consideration. As the web based survey was done without any geographic limitations, the range of the values were high so in order to identify the socioeconomic status median was calculated. The group that presented below 8000 USD/month was marked as low income and the one above 8000 USD/month was placed under the category of high income. There was an even distribution of income level seen in the study. Little more than half of the participants belonged to low income (53.5%) whereas the rest half was from high economic status (46.1%). The family income can also be illustrated using quartile groups. The first quartile was entailing 137 (25.2%) participants, which was less than 1000 USD/month. Similarly in the second quartile (1001-8000 USD/month) third quartile (8001-15000) and the fourth quartile (15001-550000 USD/ month), the distribution of income was seen pretty much even (28.7%, 23.3%, and 22.8% respectively).

The overall mean score of self-efficacy were (mean=109.48, S.D.=10.82). In addition overall self-efficacy as perceived by the nurses was at high level. Similarly optimism and competency and level of education perceived by the nurses was at high level. However Job position and workload was perceived as at moderate level. Mean while nurses are happy with their working shifts and availability of resources.

- **The Environmental Factors**

The environmental factors that are used in accordance to study the tobacco using behavior among young female adult are divided into peer smoking, parental smoking and social support in terms of smoking. It clearly shows that the rate of users in all the four factors is higher than non-tobacco users. Starting from best friend, the respondents show that more than half of them have best friends who smoke. Among the good friends, other pupil in the circle and a general youth perception of tobacco use in the mind of respondents, it indicates that about one fourth of these three categories

are tobacco users. The pupil in the circle of the respondent and other young people in the circle are seen to be very high (above 80%), that is four times higher than those who don't use tobacco.

The parental factor is another important component that is related to the tobacco using behaviors of young female adults. More than half of respondents reported that their mothers were non users. Whereas the rate of the mothers who were tobacco users be it occasional or regular was also high, reported by nearly half of the sample. The rate of tobacco use among fathers, as reported by the participants is about one and half times higher than the non-users.

- **The Behavioral Factors**

Regarding each constructive behaviors found in the young female adults shows that they were carrying out multiple extracurricular activities in their lives. Watching TV or Movies was the most common activity found in this age group. There were four time more (81.6%) involved in this activity than those who did not have this activity 18.4%). Similarly reading and listening to music or singing (56.1% and 58.3% respectively) was higher among this age group as compared to those who did not carry out these activities regularly. For swimming as constructive behavior the respondents showed similar kind of responses. Almost half of the participants reported to have swimming as regular activity (48.3%) and a little more than half presented that they did not go for swimming as a regular activity (51.7%). For sports and games, almost two third of the young females adults were not taking it as a regular activity (62.3%). Whereas about one third were gave affirmative response in terms of sports or games (37.7%). For the activities like snooker or pool games and girl scouting/girl guides, the young female adults showed least of interest. About three fourth of the participants did not take up snooker/pool and guides/scout (83.6% and 84.2% respectively) as routine activity.

- **Tobacco use**

Tobacco use among the female young adults in this survey was divided into two categorical outcomes, namely non-smoker and smoker as illustrated in Figure 3.

Table 1 illustrates the association between tobacco users and psychosocial variables. Most of the variables have a significant association with tobacco use at the 95% level of confidence (i.e., p-value<.05) for the entire statistical analysis. Those female adults who have low education and low family income were more (5 and 7 times respectively) vulnerable to tobacco use. As for other psychosocial factors, environmental, behavioral and personality factors were significantly associated with smoking.

Multiple regression was conducted (Table 2) to examine the predictive power of these variables on overall tobacco use. Multiple variables show a strong effect on variation in the dependent variable. Female adults who have low education are 3 times (AOR=2.90, CI: 1.06-7.91) more prone to use tobacco. Favorable attitude of parents towards smoking is another significant predictor of smoking (p-value=.015). Mother's favorable attitude yields eight times more risk of smoking in daughters (AOR=8.10, CI:2.01-40.63). Likewise if a mother is a smoker then there is a seven-fold greater risk of her daughter being a smoker (AOR=7.60, 95%CI: 1.53-37.70). Correspondingly, having a best friend who is a smoker is a significant predictor of being a smoker with p-value=.000 with Odds Ratio of 12 (AOR=12.08, 95% CI: 3.16-46.19). Similarly, smoking by members of one's social circle was significant (p-value=.007) with five times (AOR=5.62, 95% CI: 1.59-19.83) greater risk of the respondent being a smoker. Another predictor of smoking is exposure to certain types of music and singing (p-value=.013). Young women had almost four times (AOR=3.82, 95% CI: 1.32-11.05) higher probability of being a smoker if they regularly listened to heavy metal, rap, reggae, or techno types of music with peers. Finally the last predictive risk factor was having a belief that smokers are cool, and this had a significant positive association with regular smoking behavior (p-value=.001). Those females who consider smoking as cool are eight times (AOR=8.71, 95%CI: 2.36-32.16) more at risk to use tobacco.

Discussion

Tobacco use is dramatically increasing among youth. Growing attention has been addressed towards prevalence and possible predictors of smoking. According to this study, prevalence of tobacco use among young female adults is 58% (Figure 3). This finding strengthens the U.S. Surgeon General's Report on Smoking and Health, citing evidence that cigarette smoking among young adult girls has increased (Satcher, 2001). It is observed that an estimated 20% of adult U.S. women aged 18 years or

older are current cigarette smokers. By age group, prevalence of cigarette smoking for women by age are as follows: 18–24 years (24.6%), 25–44 years (22.8%), 45–64 years (21.1%), and 65 years or older (8.6%) (U.S. Office of the Surgeon General, & U.S. Office on Smoking and Health, 2004).

The age at which smoking is started is also crucial. One study found a high prevalence of early smoking initiation among 13–15 year-olds in seven African countries (Sherwood, & Jeffery, 2000). A cross-sectional survey done in five European countries highlighted the tobacco epidemic. A total of 5,000 females participated in that research, 1,000 from each country. The study found that the majority of those who smoked started in their adolescent years (U.S. Office of the Surgeon General, & U.S. Office on Smoking and Health, 2004). Smoking was also seen to be common among those with lower education (Sloan, Smith, & Taylor, 2003).

Several studies have validated the influence of parents and peers on tobacco use by youth (Al-Sadat et al., 2010). The current study endorses the same findings in female young adults. There is a highly significant relationship between tobacco use of a daughter and smoking by her mother and father, more so with only mothers as validated by the current study. Studies also suggest that smoking cessation in parents would reduce the risk of tobacco use among children of an early age (Sloan, Smith, & Taylor, 2003; de Vries et al., 2003). Similarly, peer influence has a huge impact on tobacco use. Almost all the studies agree that smoking among peer group members is a main predictor of smoking among youth.

Another major environmental factor towards tobacco use is the attitude of parents and peers toward smoking. The current study found that a favorable attitude of parents and peers is a predictor of smoking behavior in their child(ren), and many studies of smoking found that the most common reason for a person to initiate smoking is parents' and peers' behavior and attitude (Al-Sadat et al., 2010).

This study also assessed the association between eight extracurricular activities of participants and smoking. One research study found that leisure activity, such as listening to certain types of music/singing, increases the risk of cognitive impairment and risk for smoking (Heath, 2000). By contrast, being active in sports was negatively correlated with smoking. Earlier research found a significant relationship between smoking and participation in organized sports, i.e., those who smoke are less likely to participate in sports and other healthy activities (Sherwood, & Jeffery, 2000).

This study assessed the perception of smokers and non-smokers on behavior. Considering that tobacco use can make one appear cool, mature and popular increases risk of smoking. Because intentions are regarded as proximal to action, several studies suggest that intention to smoke is associated with both the onset and continuation of smoking (Sherwood, & Jeffery, 2000). The perception that smoking is cool and that a smoker seems to be more mature and popular shows a desire and intent to smoke. This develops into a belief that smoking is acceptable and that one has to smoke in order to fit in with the group (Sloan, Smith, & Taylor, 2003; Al-Sadat et al., 2010).

Personality factors were analyzed by considering the consequences of smoking. Perceptions of long-term consequences of smoking, e.g., that smoking is unhealthy and causes damage to an unborn child, were not significantly associated with tobacco use. By contrast, perception of the short-term consequences was positively and significantly associated with smoking.

Using multiple logistic regression, seven psychosocial factors in combination with behavioral, environmental and personality factors were predictive of tobacco use among this age group of females. Among the environmental factors, parental and peer influences were seen as major predictors of tobacco use. The strongest association was having a mother or best friend who smokes. These factors have always been major predictors and are generally believed to be a major cause of tobacco use as reported by several studies (de Vries et al., 2003).Along with best friend, the current study also found that if members of a girl's social circle are smokers, then it is five times more likely that she would also smoke. This reflects motivation to belong to a group. Young people, in order to fit in and belong to a group, practice and take up the activities happening within the group (Heath, 2000).

With regard to behavioral factors, this study focused on some extracurricular behaviors and the perception toward those who smoke. Exposure to certain types of music/singing was a predictor of tobacco use. Other studies also found that different types of music, e.g., heavy metal, rap, reggae, electronic dance music are preferred when smoking or using mood-altering substances

with peers (Mulder et al., 2009). Also, perceiving that smoking would make them appear cool is predictive of smoking.

Overall, among environmental, behavioral and personality factors, the environmental factors showed highest significance in association with smoking among this sample of female young adults.

Conclusions and recommendation

The outcomes of this study indicate that tobacco use is prevalent among female young adults. The most importance factors is environment especially mother and close friend influence. This finding is consistent with a cross-sectional survey by NSDUH in 2010 that found that persons age 18 to 25 years have the highest prevalence (22.8%) of current cigarette smoking (Johnston et al., 2011). The goals of comprehensive cigarette smoking prevention and reduction efforts must include preventing youth from starting to use tobacco, helping them to quit using tobacco, reducing exposure to secondhand smoke, identifying and eliminating disparities in tobacco use among population groups, and restricting minors' access to tobacco. These goals may be addressed by implementing policy and regulatory strategies, community participation, establishment of public and private partnerships, strategic use of media, development of local programs and activities, linkage of school-based activities, and the use of data collection and evaluation techniques to monitor the impact of prevention efforts (Hamann & Raymond, 1990). The findings from the current research can be used to better target resources and implement more effective programs.

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Table 1 Binary logistic regression model of psychosocial factors that predict tobacco use among female young adults

Factors	Non-user		User		COR	95%CI		P-value
	N	%	N	%		Low	High	
Socio demographic factors								
Less than high school	77	51.7	89	22.5	5.53	3.70	8.24	<0.001
Lower family income	114	76.5	179	45.3	7.32	4.93	10.88	<0.001
Psychosocial factors								
Smoker are cool	11	7.4	296	74.9	51.55	30.72	86.49	<0.001
Smoker are mature	14	9.4	257	65.1	22.42	14.08	35.71	<0.001
Smoker are popular	20	13.4	211	53.4	6.75	4.40	9.82	<0.001
Smoker are NOT silly	62	41.6	335	84.8	7.47	4.83	11.56	<0.001
Personality Factors								
Not fell sick	140	94.0	105	26.6	16.17	10.57	24.74	<0.001
NOT less fit	16	10.7	274	69.4	11.9	7.91	17.90	<0.001
Do not cause cancer	23	15.4	304	77.0	13.72	9.03	20.84	<0.001
No heart disease	16	10.7	274	69.4	11.9	7.91	17.9	<0.001
Do not cough a lot	17	11.4	257	65.1	10.33	6.89	15.49	<0.001
No bad breath	10	6.7	239	60.5	15.61	9.91	24.56	<0.001
Do not damage teeth	15	10.1	237	60.0	13.97	8.99	21.72	<0.001
Lose weight	109	73.2	215	54.4	1.62	1.14	2.31	<0.001
No fingers stain	32	21.5	281	71.1	7.11	4.85	10.42	<0.001
Observe warning sign	117	78.5	369	93.4	2.88	1.62	5.1	<0.001
Environmental factors								
Mother Smoking	6	2.0	245	62.0	41.94	23.44	75.03	<0.001
Father smoking	35	23.5	292	73.9	17.36	11.26	26.75	<0.001
Best friend smoking	18	12.2	323	81.8	24.73	15.46	39.55	<0.001
Good friend smoking	47	31.5	359	90.9	42.71	20.96	87.06	<0.001
Members of one's social circle smoke	66	44.3	373	94.4	81.7	25.45	262.28	<0.001
Other Youth smoking	95	63.8	374	94.7	26.78	10.59	67.68	<0.001
Mother 's attitude	5	1.7	165	41.8	16.03	8.78	29.27	<0.001
Father's Attitude	8	5.4	161	40.8	11.88	6.91	20.42	<0.001

Table 1 Binary logistic regression model of psychosocial factors that predict tobacco use among female young adults (cont.)

Factors	Non-user		User		COR	95%CI		P-value
	N	%	N	%		Low	High	
Environmental factors (cont.)								
Best friends attitude	21	14.1	337	85.3	34.76	20.52	58.87	<0.001
Good friends Attitude	31	20.8	313	79.2	14.65	9.52	22.53	<0.001
Co-Student Attitude	29	19.5	159	40.3	2.64	1.8	3.87	<0.001
Behavioral Factors								
No swimming	102	68.5	179	54.3	3.82	2.66	5.50	<0.001
No sport games	78	32.3	261	66.1	1.61	1.13	2.28	0.008
Exposure to type of music /singing	72	48.3	155	39.2	1.47	1.04	2.08	0.027
Guides/scouts	6	4.9	80	20.3	3.87	2.18	6.86	<0.001
Snooker/pool	8	5.4	81	20.5	4.45	2.48	8.00	<0.001
Computer games	45	30.2	181	45.8	1.65	1.16	2.34	0.005

Table 2 Multiple logistic regression model of psychosocial factors that predict tobacco use among young female adult

Factors	Tobacco Use			
	AOR	95% CI		P-Value
		Low	High	
Less thanhigh school education	2.90	1.06	7.91	**.037**
Mother's favorable attitude to smoking	8.10	2.01	40.63	**.015**
Mother is a smoker	7.60	1.53	37.70	**.013**
Best friend smokes	12.08	3.16	46.19	**<.001**
Members of one's social circle smoke	5.62	1.59	19.83	**.007**
Exposure to certain types of music/singing with peers	3.82	1.32	11.05	**.013**
Smokers are cool	8.71	2.36	32.16	**.001**

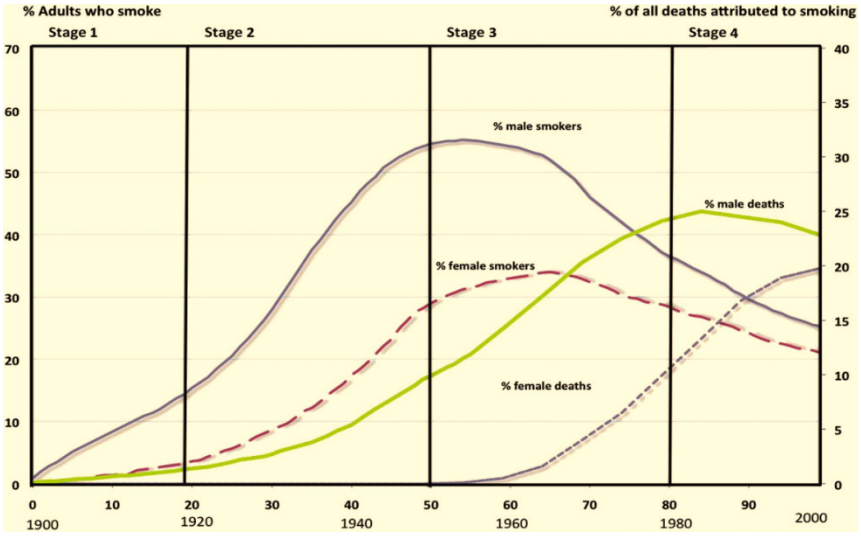

Figure 1 Stages of the Tobacco Epidemic (Graham, 2012; Thun et al., 2012)

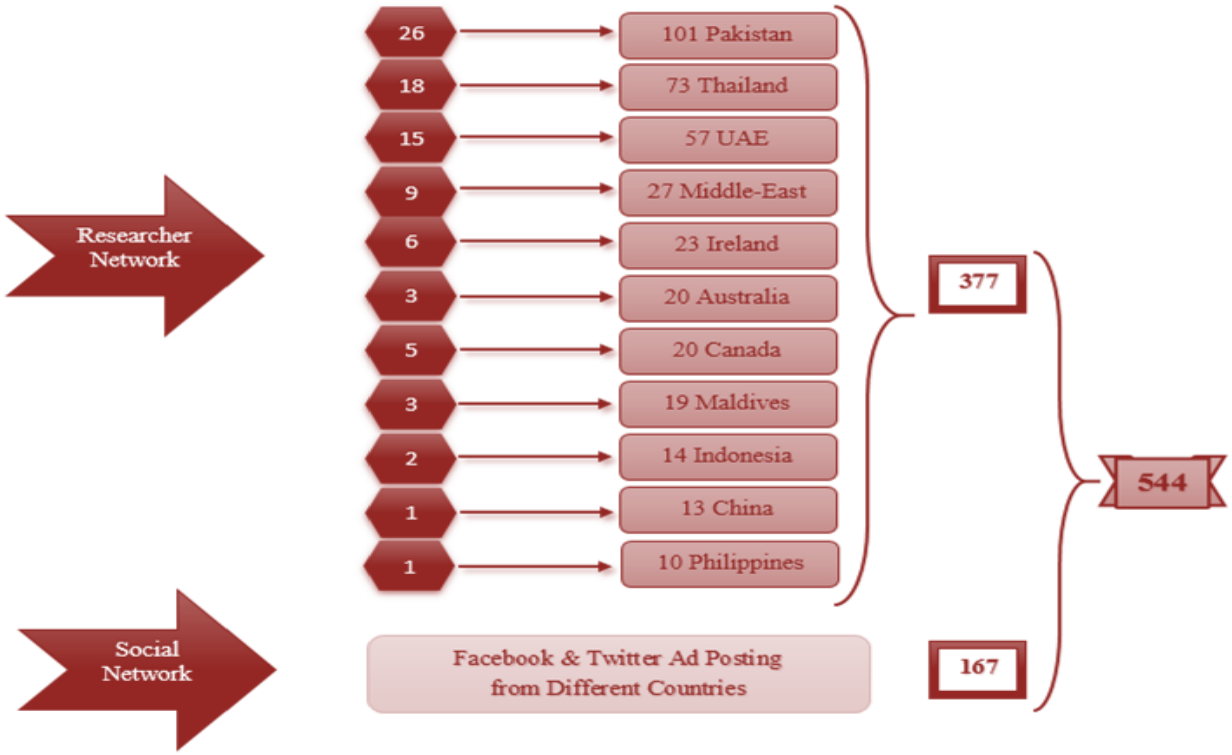

Figure 2 Application of snowball sampling

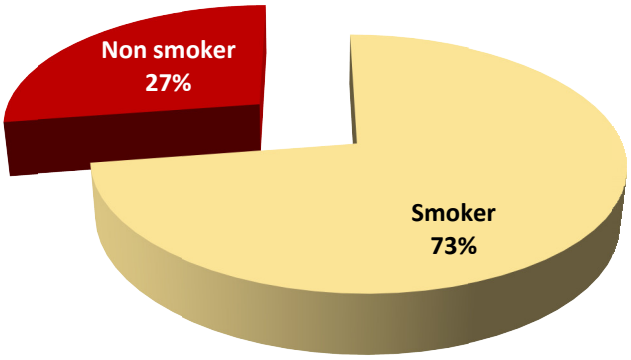

Figure 3 Tobacco use status among young female adults