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Correlates of cigarette smoking, and risks for chronic respiratory illnesses among young male adults, in Qena, Upper Egypt

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ABSTRACT

Background: Despite the known harmful effects of tobacco smoking, it is still a common risk behavior of young adults worldwide. *Aim:* To measure correlates associated with cigarette smoking among young-men residents of Qena, Upper Egypt and subsequent chronic bronchial illness. *Methods:* A total 1000randomly selected men 20-44years old attending the outpatient department (OPD) of Quena University Hospital (QUH) were interviewed, 06/2018 – 05/2019. A predesigned questionnaire, clinical examination and chest x-ray (CXR) were used. *Results:* The mean subjects' age was 32.2±2.3y; 98.2% were single, 50.6% recent graduates, 45% a workforce, and 4.4% were jobless. Further, 66.4% were of middle socioeconomic status (SES). Education-wise, 69.8% subjects had >9 year–and 30.2% had ≤ 9year education. Current smokers accounted 266 (26.6%) of the study population. Middle – and – high SES subjects were at higher risk for smoking (28.8%, 36.7, respectively) than low SES peers (18.8%). Subjects with ≤ 9 year education were at a significantly higher risk for smoking than those more educated [33.1% vs. 23.8%, $\chi^2(1)= 10.2$), p=0.0013]. Manual workers (38.2%) tended to smoke more than "just graduates" (17.8%) and the jobless (9.1%) [$\chi^2(2)= 58.1$, p<0.0001].Respiratory wise, 27.6% of heavy smokers had bronchial asthma-like symptoms and 17.2 chronic bronchitis symptoms, vs. 20.9%, and 4.7% of light smokers, respectively [$\chi^2(9)= 301.8$, p<0.001]. *Conclusions:* Higher SES, low education level, and manual work were significant smoking correlates among participants. The greater the cigarette consumption the higher risk for chronic pulmonary illness. These risks are quite preventable; efforts to minimize them are required.

Keywords: Smoking; respiratory illness; adults; Qena; Egypt

1. INTRODUCTION

Smoking and tobacco use continue to be the largest preventable causes of morbidity and premature mortality globally (Thisted et al., 2019). Despite the fact that such harmful effects of tobacco smoking are undoubtedly well known, it has been the most common health risk behavior of young adults in different parts of the world (Warren, et al., 2000; Salama et al. 2020; Gupte et al. 2020). Evidently, tobacco smoking is the leading cause of preventable disease and death, killing Over 8 million people a year around the world (WHO, 2015a). For instance, it accounts for more than 480,000 deaths every year in the US, or about 1 in 5 deaths (USDHHS, 2014), and in smoking provoking environment to the degree that in every 100 adults aged 18 or older 14 persons are currently smokers (CDC, 2018); as such, over 34 million adults smoke cigarettes, and consequently over 16 million live with a smoking-related disease in the US alone. In Egypt, tobacco use has always been widely prevalent among a wide sector of the population, including the young. For instance, 4% of Egyptians under the age 15 years and 0.6% are under the age 10 were daily smokers (Islam and Johnson, 2007). In 2010, while around 21% of the Egyptian population was within the age range15- to – 24, the increasing prevalence of tobacco use pose threat to this demographic (Assaad and Roudi-Fahimi, 2007). Although the annual population growth in Egypt is around 2%, the number of smokers in Egypt is estimated to increase by 8% each year (Nassar, 2018). Also in 2010, it was estimated that about 22% of Egypt's population smoked (approximately 11,504,500 persons), (Fouda, et al., 2018); the highest rate among men was seen in the age-group 40 – 54; and among women in the age-group 70 and above (WHO, 2015b). The influence of social, family, peers, and occupation upon smoking is prominent, that highly significant ratios were reported for sibling, parent, and peer smoking as risk factors for smoking (Fouda, et al., 2018; Fredinand, et al., 2001). Efforts to control such use are available, but may still be inadequate. For instance, more than half of workers are currently smokers (Fouda, et al., 2018). The reasons given for young adults smoking are similar to those given for abuse of any drug. Peer group behavior is considered the critical factor for initiation and maintenance of tobacco smoking (Fredinand, et al., 2001). Many adolescents have started smoking due to their belief that smoking will boost their social acceptability and image to appear like adults (Secretariat, 2010). Especially parental smoking has also a role, where smoking by one parent doubles the risk for a teenager to smoke; this is increased three to four times if both parents smoke (WHO, 2017).

Although a causal relationship has been established between smoking and many health problems, such as lung cancer, coronary heart diseases (CHD) and chronic obstructive pulmonary disease (COPD), the occurrence of these problems is not prominent among young people. Particularly, most previous surveys examining the relationship between smoking and chronic bronchial dysfunction have been conducted among populations of older adults in whom the effects of smoking have accumulated over many years (CDC, 2018). Young people may importantly be liable to the short-term health effects of smoking that include increased frequency and severity of respiratory illness (CDC, 2010; WHO, 2017). The present work was built on the hypothesis that cigarette smoking constitutes a behavioral problem among young men in Qena, Egypt, leading to the development of chronic respiratory illness. This work aims at identifying and measuring correlates of smoking among young men in Qena, Egypt, and chronic pulmonary illnesses

among smokers. The two principal research questions would be: "what correlates are significantly associated with smoking among young men in Qena, Egypt?"; "is cigarette smoking associated with chronic lung illnesses, namely bronchial asthma-like symptoms, chronic bronchitis, and minor respiratory symptoms?"Determining the effect of risk factors, including demographic and socio-economic traits upon smoking behavior; and the development of chronic respiratory illness among this population category would be explored.

2. METHODS

A cross-sectional study was carried at the outpatient setting of QUH, during the period between June 2018 and May 2019. Male adults 20 - 44y old were screened. As large as one-thousand sample size was targeted in order to ensure adequate representation of young-age male community of Qena governorate. The study was meant to extend over a year period to exercise collecting data in all year seasons. The study's length in a diversity of OPD services enabled obtaining a sample size as large as 1000 recruits, utilizing a systematic sampling technique (Raina, 2015). An initial assessment of the outpatients' visit rate was carried out. Seven individuals, on average, would be randomly selected every day, four 4 days a week. Ultimately, 1400 subjects would be interviewed over 50 weeks of study period (7*4*50). Other than being male of the specified age range and a resident of Qena governorate, no individual would be excluded from the study. The smoked cigarettes consumption could be evaluated based on the smoking pattern. A regular smoking pattern implies smoking on daily basis, at least every few hours (perhaps to maintain significant nicotine level throughout the day. Non-daily smoking involves smoking non-daily basis, either occasionally or intermittently (Sulsky, et al., 2014). Subjects who smoked ≥100 cigarettes during the past year were considered "current smokers" (Those who had smoked ≥100 cigarettes but had not smoked during the past year were considered former smokers and were excluded from the analysis; likewise, passive smoking and hookah smoking were excluded). Nonsmokers were those who reported they had never smoked or smoked <100 cigarettes (lifetime). The quantified smoking status (QSS) has often been determined by the "smoking index" (SI) [=number of cigarettes smoked per day (CPD) × years of tobacco use, and includes nonsmoker, <400, 400–799, and ≥800 SI categories) (Nagata, et al., 2013). In practice, our modified QSS to assess the current smokers' cigarette use would be, "nonsmokers" (0 CPD), "light smoker" (1-9 CPD), "moderate smoker" (10-19 CPD) and "heavy smoker" (≥20 CPD) (Kaleta, et al., 2012). A self-administered questionnaire to help in collecting selected data and reveal the presence of history of bronchial symptoms has been developed. The instrument was based on a questionnaire on bronchial symptoms developed by the International Union against Tuberculosis and Lung Disease (IUATLD) (Burney, et al., 1989), and further validated and modified for the European Community Respiratory Health Survey (ECRHS survey) (Burney, et al., 1994). The study's questionnaire consisted of three main scales: demographic/SES criteria, risk factors of tobacco smoking, and respiratory problems that may be linked to smoking. Essential demographic data include marital status, education (≤9 year education = literate, elementary, preparatory; >9 y-education = secondary, university degree and above), and occupation. Socio-economic data include income, residence, sanitation, crowding index, according to the SES scoring system modified after (Fahmy and El Sherbini, 1983). Tobacco smoking information included CPD, years of smoking (and hence SI calculated), as well as family history (F/H) of smoking. Respiratory health information included questions to which affirmative answers can reflect the presence of: *a)* Asthma- related symptoms, such as inquiring about waking up at night with breathlessness; having attacks of BA, and whether such attacks triggered by exposure to allergens, exercise, cold weather or upper respiratory infection; all within the last 12 months, and also inquiring whether the participant was currently taking any medication for asthma. Studies have demonstrated that these questions accurately identify asthma patients, with strong specificity index (94.6 - 99.7), (Grupo, 1996). *b)* Symptoms of chronic bronchitis, which includes questions, such as the occurrence of cough and/or expectoration for over three consecutive months in the last two years; as well as relevant questions on worsening of symptoms during cold weather, the presence of wheezes, crackling breathing sounds, chest pain or discomfort, cyanosis, and heart failure)(Burney, et al., 1994;Kim and Criner, 2015; Urrutia, et al., 2005). *c)*Minor respiratory symptoms including noticing wheezing at any time, waking up with chest tightness, feeling short of breath at rest, all at any time and during the last 12 months. To be included in this category, subjects had to answer one or more of these questions positively while answering in the negative to questions in the prior questions on bronchial asthma (BA)and chronic bronchitis symptoms (Burney, et al., 1994).Group with no respiratory symptoms include those who responded negatively to all the previous questions. The Arabic language- modified instrument was devised by means of back and forth translation method and validation of the original version in English. A pilot was conducted to assess the questionnaire's reliability. Twenty individuals attending the chest clinic of QUH were given the questionnaire to respond to (response-a). The same questionnaire was re-administered by the same group a week later (response-b). A panel of juries was selected to judge the responses; test-retest reliability calculated to assess the temporal stability of the questionnaire. The Spearman's correlation coefficient (r) for each pair of items (response-a; and response-b) was significant ($p<0.05$) for the examined items, with moderate - strong correlation (r = 0.77 – 0.91).Modifications of the questionnaire items were done based on the pilot testing results. The

questionnaire could be completed in 25 – to – 30 minutes. Completion of 80% of the questionnaire items with valid answers ensured admittance to the analysis. Full clinical examination to check up the participants' general health, perform systemic examination, including vital signs, chest, heart and abdomen examination followed. Chest x-ray [postero-anterior (PA) view] (mass miniature fluoro-radiography) for screening any underlying pathological changes, e.g., tuberculosis (TB), and signs of chronic bronchial and obstructive pulmonary illness were done. The x-ray films were interpreted by both radiologist and chest specialist. Subject found with clinical and radiological findings were referred to their primary care giver; those who had medical records with OPD of QUH were given appointments with the pertinent specialty clinic for further care and follow up. The study participants were informed of the aim of the study, and that their participation was voluntary. They were also reassured that they could opt out of the study without giving reason and without affecting their health privileges with QUH. Further, a written consent to participate in the study was taken from participants prior to enrollment, and who were also assured of the utmost confidentiality of the collected information and that only anonymous group results of the study may be disclosed in scientific settings. Necessary approval to conduct the study was granted from QUH research ethics committee. Responding with at least eighty per cent of the questionnaire items with valid answers allow entering these responses in the analysis. Collected data were coded and entered to a Microsoft program with adequate backup until analyzed. Obtained results would be presented in a tabulated form, as appropriate. Most of the selected risk factors data constituted qualitative variables, such as marital status, residence, and education. The study's outcomes of interest, namely cigarette smoking and the presence of a chronic chest disease were also set to be as a qualitative data (yes, no). Quantitative data, such as the age less likely existed. In the descriptive phase of the analysis, qualitative data could be summarized as counts (%), while quantitative data as the mean ± standard deviation (SD), where appropriate, according to the data normality distribution. In the inferential statistical analysis, selecting statistical techniques depended upon the type of the selected risk variable to be assessed against the study's outcome variable, cigarette smoking. Owing to the abundance of both the qualitative risk variables and the study's outcome variable, chi square test of independence (χ^2 ˝ test), would be widely deployed to determine both the presence of association between the selected risks and the outcome. The "Statistical Package for Social Science" (SPSS) software version 20 was used to undergo statistical analysis of the entered data. Our level for tolerating type I error was $\alpha = 0.05$ and results with p-value <005 was considered statistically significant.

3. RESULTS

Out of 1400 subjects interviewed, 1250 continued with the survey (drop-out =10.7%), 1000 out of whom completed the questionnaire with ≥80 valid answers (response rate 80%). (Table 1 footnote). The subjects' mean age was 32.2 ± 2.3 years, (table 1). The great majority (98.2%) were single, and 55.0 % (n=550) were from rural areas; 50.6% were recent graduates, 45% were manual workers and 4.4% were jobless. Almost two thirds (66.4%) belonged to a middle SES; the remaining either of the low SES (26.7%) or the high one (6.0%), (table 1). Participants with an education more than 9 years accounted 698/1000 (69.8%) [166 (16.6%) university graduates; 532 (53.2%) secondary education or equivalent], while those with ≤9 year education accounted 302/1000 (30.2%) [108 (10.8%) finished prep school, 106 (10.6%) primary school or read and write, 88 (8.8%) illiterates].

Table 1: Demographic criteria of subjects: Age, education, occupation, SES (n=1000)*

Criterion			
Age	Mean: 32.2 ± 2.3 years		
	Category	n	% (total)
Marital status	Married	12	1.2
	Single	982	98.2
Education	≤9y[1]	302	30.2
	>9[1]	698	69.8
Occupation	>Recent graduates	506	50.6
	Manual work	450	45.0
	Jobless	44	4.4
Residence	Urban	450	45.0
	Rural	550	55.0
SES	Low	267	26.7
	Middle	664	66.4
	High	60	6.0

* 1400 Participated: 150 dropout; 1000 valid questionnaire responses.

[1]108 (10.8%) preparatory; 106 (10.6%) primary/literate; 88 (8.8%) illiterate

[1]66 (16.6%) university degree; 532 (53.2%) secondary education

Table 2: Risk factors for smoking (n=1000)

Risk factors	Current smoking*		Total (%)	Test statistic	p-value
	No n (%)	Yes n (%)			
Residence				$\chi^2(1)$= 68.6	<0.0001
Rural (277)	440 (79.4)	114 (20.6)	554 (100)		
Urban (223)	294 (65.9	152 (34.1)	446 (100)		
Social level				$\chi^2(2)$= 13.4	0.0012
Low (138)	224 (81.2)	52 (18.8)	276 (100)		
Middle (332)	472 (71.1)	192 (28.9)	664 (100)		
High (30)	38 (63.3)	22 (36.7)	60 (100)		
Educational level				$\chi^2(1)$= 10.2	0.0013
>9 years (349)	532 (76.2)	166 (23.8)	698 (100)		
<=9 years (151)	202 (66.9)	100 (33.1)	302 (100)		
Occupation				$\chi^2(2)$= 58.1	<0.0001
Graduates (253)	416 (82.2)	90 (17.8)	506 (100)		
Manual (225)	278 (61.8)	172 (38.2)	450 (100)		
Jobless (22)	40 (90.9)	4 (9.1)	44 (100)		

*n current smoking =266 (26.6%; n current non-smoker = 734 (73.4%)

Table 2, and figures 1, 2, 3 display the smoking status of the participants distributed by the selected smoking correlates under investigation. Almost one-third (26.6%, n=266) of subjects were current smokers, (table 2, footnote).

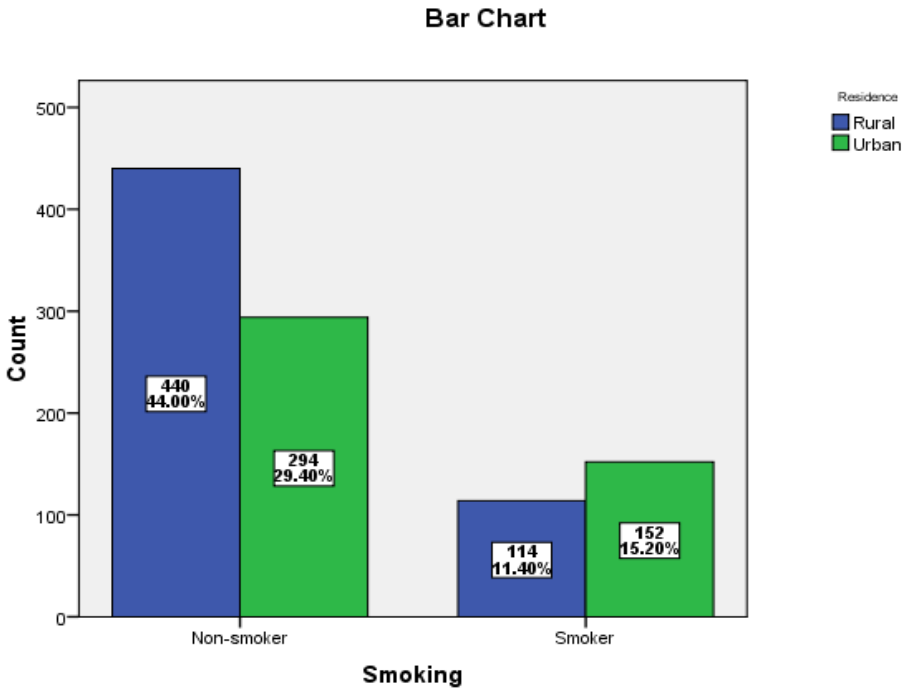

Figure 1: Distribution of the smoking status by residence

Urban residents tended to significantly smoke more fraudulently than rural counterparts 34.1% vs. 20.6%, respectively), [$\chi^2(1)$= 68.6, p<0.0001], (table 2, figure 1).

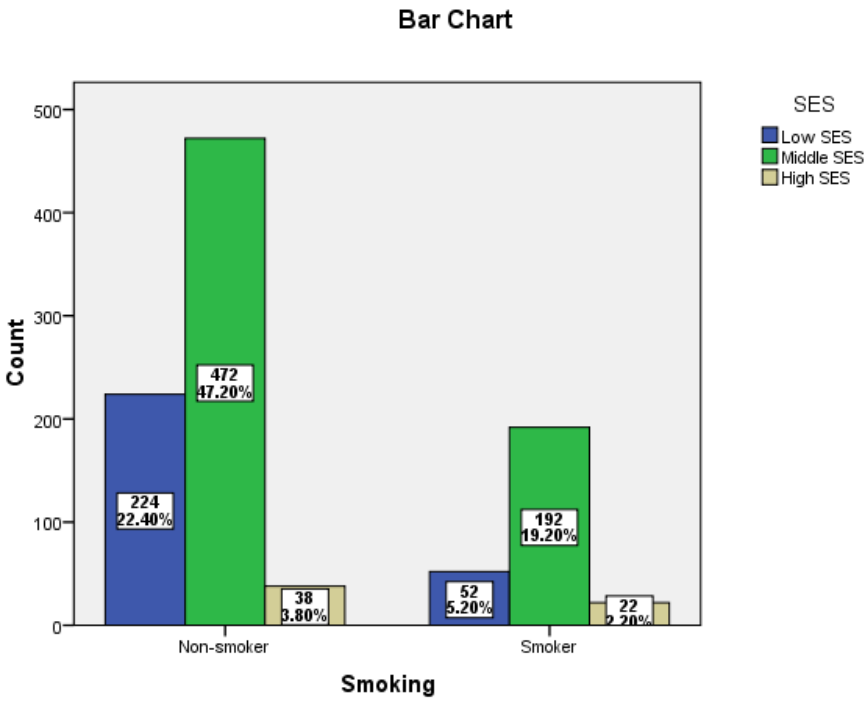

Figure 2: Distribution of the smoking status by the socioeconomic status

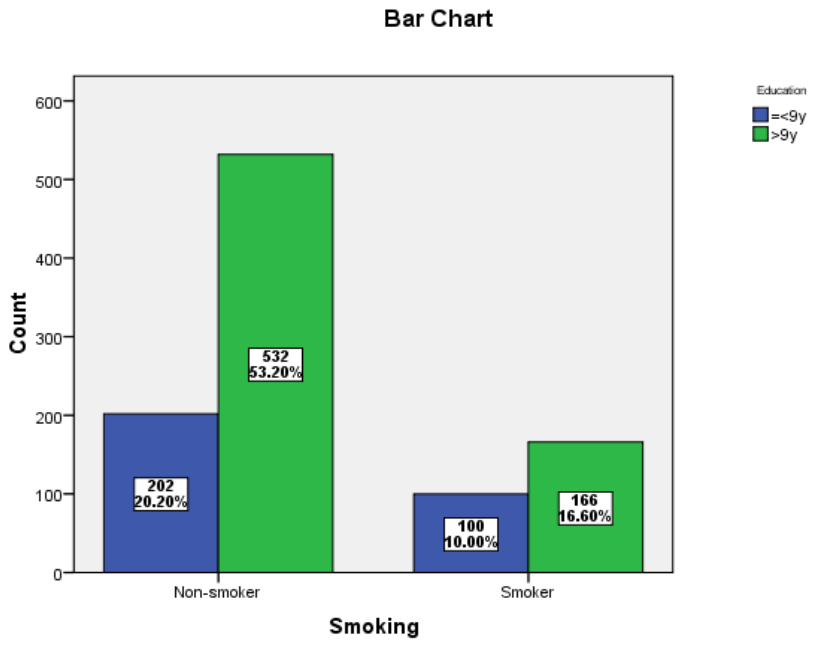

Figure 3: Distribution of the smoking status by education level

Likewise, high SES subjects were at an increased risk of being smokers (36.7%) both than those with low SES (18.8%) and those with the middle one (28.9%) [$\chi^2(2)= 13.4$, $p=0.0012$], (table 2, figure 2). Subjects with low educational level (≤ 9 years) were also at a significantly higher risk for smoking than those with more years of education [33.1% vs. 23.8%, $\chi^2(1)= 10.2$), $p=0.0013$]. Manual workers (38.2%) were more frequent smokers than both graduates (17.8%) and jobless peers (9.1%) [$\chi^2(2)= 58.1$, $p<0.0001$], (table 2, figure 3).

Table 3: Distribution of bronchial illness according to quantified current smoking trend

Smoking category (CPD) (%)*	No symptoms n (%)[1]	BA- like symptoms n (%)[1]	Chronic bronchitis symptoms n (%)[1]	Minor symptoms n (%)[1]	Total n (%)	Test statistic	p-value
Nonsmoker (0 CPD) (73.4%)	616 (84.0)	63 (8.6)	7 (0.9)	48 (6.5)	734 (100.0)	$\chi^2(9)=301.8$	<0.001
Light smoker [1](1-9) (8.6%)	36 (41.8)	18 (20.9)	4 (4.7)	28 (32.6)	86(100.0		
Moderate smoker[1](10-19)(12.2%)	41 (33.6)	23 (18.9)	10 (12.2)	48 (39.3)	122(100.0)		
Heavy[1](>20) (5.8%)	7 (12.1)	16 (27.6)	10 (17.2)	25 (43.1)	58 (100)		
Total	700 (70.0)	120 (12.0)	31 (3.1)	149 (14.9)	1000 (100.0)		

* % of all study subjects

[1]Total smokers (266): Light (86 =32.3%), moderate (122=45.9%), heavy (58=21.8%) of total smokers.

[1]Smokers (266): BA (57=21.4%), chronic bronchitis (24=9.0%), minor symptoms (101=38.0%), no symptoms (84=31.6%) of total smokers

In table 3 and figure 4, analysis results of the studied pulmonary complications in relation with the level of smoking are displayed.

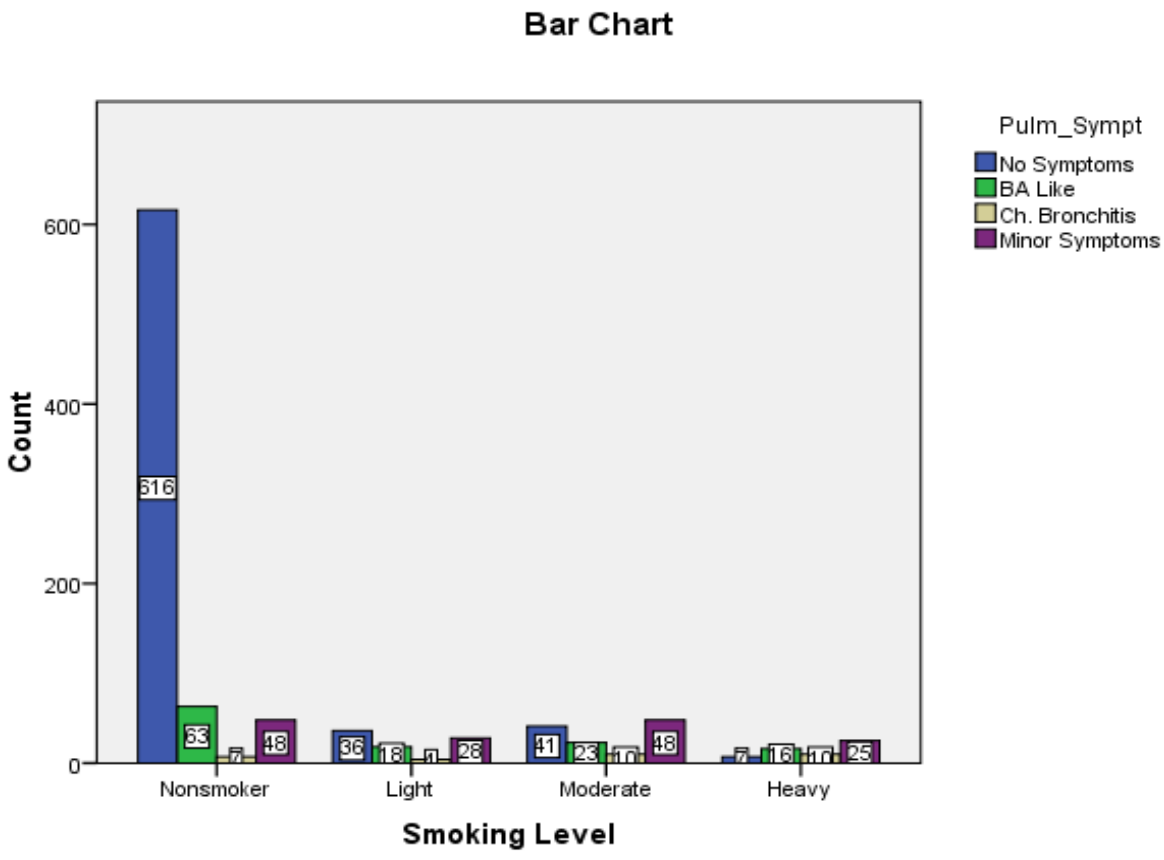

Figure 4: Distribution of pulmonary complications by smoking level

Most (73.4%) individuals were nonsmokers and had no respiratory symptoms. Absence of symptoms declined gradually by increasing smoking consumption. On the other hand, a gradual increase in the frequency of patients suffering symptoms in each respiratory illness category was observed with the gradual increase of the rate of smoked CPD. For instance, 27.6% of heavy smokers had BA-like symptoms, 17.4% had chronic bronchitis, and 43.1% had minor symptoms, compared to 20.9%, 4.7%, and 32.6% of light smokers. A similar tendency was observed among moderate smokers, (table 3, figure 4). The trend of increased reparatory illness frequency in association with increasing CPD was statistically significant [$\chi^2(9)= 301.8$, $p<0.001$].

4. DISCUSSION

Tobacco smoking is a major worldwide public health problem, causing about four million deaths annually. In addition, nicotine has been clearly recognized as addiction drug and its use is considered as one of mental and behavioral disorders (Surgeon General, 2012). Until today, over 1.1 billion people smoke tobacco; far more males than females are so doing. To date, tobacco smoking remains on the rise in the World Health Organization Eastern Mediterranean Region (WHO-EMR) and the African region, in contrast with many other areas of the world (WHO, 2018).

Effect of gender and economic level on smoking tendency:

In a mortality and morbidity weekly report (MMWR) in 2016, the prevalence of current cigarette smoking among adults in the US was 15.5%, (with a significant decline from 20.9% in 2005) (Jamal, et al., 2018). Males and people living below the US federal poverty level, as well as residents of the Midwest and South US regions particularly experience a higher rate of cigarette smoking. In the present study, the percentage of smoking was 26.6% with a significant difference between urban (34.1%) and rural (20.6%) residents. According to the WHO report (2015b), the overall prevalence of tobacco smoking among Egyptians was 22% and was on the rise, with the male tendency for smoking persistently higher than the female's. The difference between the US – and the Egyptian rates may be attributed to the progressive success in the national tobacco control programs in the US. In Saudi Arabia (SA), too, higher trends likewise those in Egypt were reported. For instance, in a study on the university students of King Saud University in Abha, South SA, tobacco smoking reached up to 17.5% (Abolfotouh, et al., 1998), compared to peer students of Riyadh city (capital of SA) who also recorded a significantly higher rate (37.0%). The difference in the two student populations' smoking rate was also explained by the difference in the level of urbanization and the socio-cultural acceptance of smoking between different Saudi provinces (BTCS, 2017). The socio-economic level as a risk factor for smoking may have been a matter of controversy. The prevalence of tobacco smoking among low SES people was explained by the tendency of those young people to express stressful situations via perceiving smoking as an easy escape outlet, compared with those ofa higher SES (Jamal, et al., 2018).In our study, young people of high SES smoke were more liable to a higher smoking rate (36.7%) than the middle (28.9%) and the low SES (18.8%) level. Traditionally, the price of cigarettes may have been playing a role in the difference of smoking prevalence between people of different SES; higher class people can afford the price of tobacco and hence are liable to higher rates of smoking (Fouda, et al., 2018; Townsend, et al., 1994).

Education and smoking:

The role of education in smoking tendency has been elaborately examined. The results of our study indicate that people with higher education tend to be more away from smoking than those with lower education levels. The MMWR report (Jamal, et al., 2018) also associates modest education, e.g., only a General Education Development (GED) certificate, and increased frequency of tobacco use. In agreement with our work, investigating the association between education and lifetime smoking patterns in the United Kingdom (UK) in a birth cohort established in 1959 and followed through adulthood (n = 1311) (Gilman, et al., 2008), the number of pack-years smoked was higher among individuals with less than high school education. The UK study emphasizes the need to reduce any disparity in smoking prevention education, highlighting factors during childhood and adolescence which can enhance tobacco use in adulthood life.

The association between work and occupation:

As regards work and occupation, the present study showed that manual workers smoke at a higher rate (38.2%) than graduated (17.8%) and jobless groups (9.1%).Fouda et al., (2018) reported that paid work is a main risk factor for tobacco use among Egyptians. Further, the WHO mentioned that working boys smoked at a level about twice as high as non-working boys, perhaps due to the availability of money needed to purchase cigarettes (WHO, 2018). Further, those young people are subject to peer influence and their being away from parental supervision is an additional motive for the tobacco use.

Smoking and chronic respiratory illness:

Despite the significant relationship between tobacco smoking and many serious health problems, such as lung cancer, ischemic heart disease (IHD) and COPD; the occurrence of these consequences is not evident among young people as it is in older people with more duration of smoking. However, the most prominent health problems among the young are their increased frequency and severity of respiratory diseases (WHO, 2019).In our survey, a significant association has been found between cigarette smoking and the development of chronic bronchial illnesses. For instance, out of 266 smokers examined, 75 (21.4%), had BA-like symptoms, 24 (9.0%) had chronic bronchitis symptoms, and 101 (38.0%) had minor symptoms. The magnitude of cigarette smoking influenced the frequency of developing a severe respiratory illness, e.g., 17.2% of heavy smokers had chronic bronchitis symptoms and27% had BA-like symptoms, compared to 4.7% and of 20.9% of light smokers, respectively. Studies indicate that chronic bronchitis leads declining pulmonary functions, risk of exacerbations, and impaired quality of life (QOL), as well as raising all-cause mortality among affected individuals (Zock, et al., 2001). Now that the efforts paid to control and prevent tobacco yet to be as effective, the WHO warns that 31% of the world's population on average will be smokers by 2025 (with a range between 63% among males; but almost nil among females)(WHO, 2015b).In coincidence with national and international studies (Secretariat, 2016), the present work shows the significant relationship between tobacco smoking and respiratory illness, including chronic bronchitis and bronchial asthma, where smokers were at greater risk of developing these respiratory problems.

Limitations:

In this study, as well as in many previous studies of the relationship between smoking and chronic bronchial illness, a potential diagnostic labeling bias on BA patients may particularly exist because the clinical decision to label chronic respiratory symptoms as "BA" rather than "chronic bronchitis" is often influenced by knowledge of smoking. Thus, a non-smoker with wheeze and breathlessness is more likely to be labeled as "asthmatic" than a smoker with the same symptoms. Controversially, too, the sensitivity and specificity of questionnaires used for classifying a patient as having BA, due in part to the fact that there is no universally accepted definition of BA in epidemiological studies (Toren, et al., 1993; Pakkanen, 1999). However, the questionnaire our modified and the attempt to delineate the difference between BA-related symptoms and chronic bronchitis has been adequately validated in this study, as well as similar studies (León, et al., 2000). As with all cross-sectional surveys, ours may have not been able to establish a direct causal association between smoking and respiratory symptoms, or determine whether there is any reversibility of these findings. Establishing a time value for the worsening of symptoms was not possible. Pulmonary function tests, such as forced expiratory volume (FEV1) and forced vital capacity (FVC) tests, as well as laboratory tests, e.g., to examine and confirm the degree of deterioration in lung function with the increasing magnitude of smoking were not accessed.

5. CONCLUSION

Tobacco smoking is a common health risk behavior of the young men Qena population. Urban residence, low education level, manual work, and higher economic standard were risks for adopting smoking habit among this population. Smokers are most liable to developing chronic bronchial illnesses, which in turn lead to the aforementioned implications on pulmonary functions, QOL and increased likelihood of premature death.

Many countries have been motivated to develop policies to reduce morbidity and mortality related to tobacco use, such as smoking free environment, restrictions on sales and advertising of tobacco. However, these policies are not always successful in discouraging young people from smoking, a problem which urges for more integrated efforts to combat. Supporting smoking cessation programs can be the most effective way to reduce the risk of future morbidity from chronic respiratory illness among Qena residents, particularly the young. Enhancing the youth's awareness, especially risk groups such as the urban residents and manual workers, of tremendous derangement of respiratory health with smoking may provide an important motivation for young smokers who continue to deny that their persistent smoking will cause future symptoms. Once the candidate is convinced of quitting smoking, the use of various smoking cessation tools such as training on behavior modification can be useful, in collaboration with other programs supporting abstaining and quitting tobacco use. Ultimately, findings from this study can be used to improve such smoking prevention strategies and the management of respiratory such complications linked to smoking in the young adult population subset in Qena. Further clinical research on the impact of smoking on the respiratory health of young adult populations in Qena to include passive smoking and those who were former smokers is warranted. Administering pulmonary function testing to identify the severity of respiratory symptoms in association with the magnitude of smoking is encouraged.

Authors' contributions

Author "RMA" set study design, statistical analysis plan and participated in results display and writing manuscript report. Author "MH" conducted preliminary literature review, participated in manuscript writing, referencing plan, and conducted final report editing. Author "AS" handled data entry; participated in statistical analysis, and data display. Author FAM" handled discussion, participated in literature review and final report editing. Author "SZ" brought research idea, handled collection of data, study approvals, and participated in final report preparation. All authors read and approved the final manuscript."

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Informed consent

Written and oral informed consent was obtained from all individual participants included in the study. Additional informed consent was obtained from all individual participants for whom identifying information is included in this manuscript.

Ethical approval

The study was approved by the Research Ethics Committee of (REC) of Faculty of Medicine, South Valley University. (Ethical approval code: 2018_FOM_112).

Competing interests

The authors of the manuscript declare that they have no competing interests.

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Data and materials availability

All data associated with this study are present in the paper.

Peer-review

External peer-review was done through double-blind method.

REFERENCES AND NOTES

1. Abolfotouh MA, Abdel Aziz M, Alakija W, et al. Smoking habits of King Saud university students in Abha, Saudi Arabia. Ann Saudi Med. 1998; 18(3): 212-216.
2. Assaad R and Roudi-Fahimi F. Youth in the Middle East and North Africa: Demographic opportunity or challenge. Washington DC: Population Reference Bureau; 2007.
3. Bureau of Tobacco Control Statshot (BTCS) Vol. 10, No. 1/Mar 2017: "Youth cigarette Use at All-Time Low, ENDS Use Doubles." https://www.health.ny.gov/prevention/tobacco_control/reports/statshots/volume10/n1_youth_cigarette_and_ends_use.pdf. Accessed 19 September, 2018.
4. Burney PG, Luczyuska C, Chinn S, Javis D. The European Community Respiratory Health Survey. EurRespir J. 1994; 7: 954–60.
5. Burney PG, Laitinen LA, Perdrizet S, et al. Validity and repeatability of the IUATLD (1984) Bronchial Symptoms Questionnaire: an international comparison. EurRespir J. 1989; 2(10):940-5.
6. Centers for Disease Control and Prevention (CDC)."State Tobacco Activities Tracking & Evaluation (STATE) System. Map."https://www.cdc.gov/statesystem/index.html. Accessed 30 March, 2010.
7. Centers for Disease Control and Prevention (CDC).Current Cigarette Smoking Among Adults—United States, 2017. Morbidity and Mortality Weekly Report 2018;67(44):1225-32.
8. Fahmy SI and El Sherbini AF. Determining simple parameters for social classification for health research. Bull High Inst Public Health. 1983; 8(5): 95-107.
9. Fouda S, Kelany M, Moustafa N, et al. Tobacco smoking in Egypt: a scoping literature review of its epidemiology and control measures. East Mediterr Health J. 2018; 24(2):198-215.

10. Fredinand RF, Blum M, Verhults FC. Psychopathology in adolescence predicts substance use in young adulthood. Addiction. 2001; 96(6): 861-70.
11. Gilman SE, Martin LT, Abrams DB, et al. Educational attainment and cigarette smoking: a causal association?. Inter J Epidemiol. 2008; 37(3):615–624.
12. Grupo Españoldel Estudio Europeo del Asma Estudio Europeo del Asma. Prevalencia de hiperreactividadbronq uialasma en adultosjóvenes de cincoáreasespañolas. European Study on Asthma (The prevalence of bronchial hyperreactivity and asthma in young adults in five Spanish regions). Med Clin.1996; 106: 761–7.
13. Gupte M, Jadhav U, Ghewade B, Sherekar D, Gandhasiri D, Jadhav U. To study the incidence of lung cancer in patients of newly and previously diagnosed Chronic Obstructive Pulmonary Disease at AVBRH. Med Sci., 2020, 24(102), 658-663
14. Islam SM and Johnson CA. Western media's influence on Egyptian adolescents' smoking behavior: the mediating role of positive beliefs about smoking. Nicotine Tob Res. 2007;9(1):57
15. Jamal A, Phillips E,Gentzke AS, et al. Current Cigarette Smoking Among Adults- United States, 2016.MMWR Morb Mortal Wkly Rep. 2018; 67(2): 53–59.
16. Kaleta D, Makowiec-Dąbrowska T, Dziankowska-Zaborszczyk E, Fronczak A. Determinants of heavy smoking: Results from the global adult tobacco survey in Poland (2009–2010). Int J Occup Med Environ Health. 2012; 25(1):66–79.
17. Kim V and Criner GJ.The chronic bronchitis phenotype in chronic obstructive pulmonary disease: features and implications. CurrOpinPulm Med. 2015;21(2):133-41.
18. León M, De Diego A, Perpiña M. Utilidad del cuestionario de síntomasrespiratorios IUATLD para el diagnósticodiferencial del asmabronquial y la bronquitiscrónica (Usefulness of the IUATLD respiratory symptoms questionnaire for the differential diagnosis of bronchial asthma and chronic bronchitis). Arch Bronconeumol.2000; 36:441–9.
19. Nagata N, Niikura R, Shimbo T, et al. Alcohol and smoking affect risk of uncomplicated colonic diverticulosis in Japan. PLoS One. 2013; 8(12):e81137.
20. Nassar H. The economics of tobacco in Egypt: a new analysis of demand. Tobacco Control.2003. http://siteresources.worldbank.org/HEALTHNUTRITIONANDPOPULATION/Resources/281627-1095698140167/Nassar-TheEconomics-whole.pdf Accessed 12 July, 2018.
21. Pekkanen J, Pearce N. Defining asthma in epidemiological studies. EurRespir J. 1999; 14:951–7.
22. Raina SK. Conducting systematic sampling. Indian J Occup Environ Med. 2015; 19(1): 68.
23. Salama BMM, Abukanna AMA, Hegazy AMS. Risk factors associated with chronic obstructive pulmonary disease in Arar, Saudi Arabia: A case-control study. Med Sci. 2020, 24(104), 2487-2493
24. Secretariat to the Conference of the Parties of the Framework Convention on Tobacco Control. "Global progress report on the implementation of the WHO Framework Convention on Tobacco Control" Geneva; WHO, 2010. http://www.who.int/fctc/reporting/summaryreport.pdf. Accessed 18 March, 2018.
25. Secretariat to the Conference of the Parties of the Framework Convention on Tobacco Control."Impact assessment of the WHO FCTC (2016)." Report by the Expert Group. http://www.who.int/fctc/cop/cop7/FCTC_COP_7_6_EN.pdf. Accessed 23 May, 2018.
26. Sulsky SI, Fuller WG, Van Landingham C, Ogden MW, Swauger JE, Curtin GM. Evaluating the association between menthol cigarette use and the likelihood of being a former versus current smoker. RegulToxicolPharmacol. 2014; 70(1):231-41.
27. Surgeon General Report. Preventing Tobacco Use Among Youth and Young Adults: "A Report of the Surgeon General." National Center for Chronic Disease Prevention and Health Promotion (US) Office on Smoking and Health. Atlanta (GA). Centers for Disease Control and Prevention (US); 2012. https://www.ncbi.nlm.nih.gov/sites/books/NBK99237/ Accessed 17 March, 2019.
28. Thisted T, Biesova Z, Walmacq C, Stone E, Rodnick-Smith M, Ahmed SS. Optimization of a nicotine degrading enzyme for potential use in treatment of nicotine addiction.BMC Biotechnol. 2019;19(1):56.
29. Toren K, Brisman J, Jarvolm B. Asthma and asthma-like symptoms in adults assessed by questionnaires: A literature review.Chest 1993; 104:600–8.
30. Townsend J, Roderick P, Cooper P. Cigarette smoking by socioeconomic group, sex and age: effect of price and income. BMJ.1994; 309: 923-7.
31. U.S. Department of Health and Human Services (USDHHS).The Health Consequences of Smoking-50 Years of Progress: A Report of the Surgeon General. Atlanta: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention (CDC), National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2014.
32. Urrutia I, Capelastegui A, Quintana JM, Muñiozguren N, Basagana X, Sunyer J. Smoking, respiratory symptoms and lung function in young adults. Eur J Public Health. 2005; 15(2):160-5.
33. Warren CW, Riley LA, Asma S, et al. Tobacco use by youth: a surveillance report from global youth tobacco survey project. Bull WHO. 2000; 78(7): 868-76.
34. World Health Organization (WHO). (2017). "Best buys" and other recommended interventions for the prevention and control of noncommunicable diseases. Appendix 3." In:

Global action plan for the prevention and control of noncommunicable diseases 2013–2020. Geneva: World Health Organization; 2017. http://www.who.int/ncds/management/WHO_Appendix_BestBuys.pdf. Accessed 22 April, 2018.

35. World Health Organization (WHO). (2018). "Prevalence of tobacco smoking." Geneva: World Health Organization; 2018. https://www.who.int/gho/tobacco/use/en/ Accessed June 12, 2018.
36. World Health Organization (WHO).(2015a). "Tobacco. Overview."Geneva: World Health Organization; 2015. https://www.who.int/health-topics/tobacco#tab=tab_1. Accessed 12 December, 2019.
37. World Health Organization (WHO).(2015b). "WHO global report on trends in prevalence of tobacco smoking." Geneva: World Health Organization; 2015. https://apps.who.int/iris/bitstream/handle/10665/156262/9789241564922_eng.pdf?sequence=1. Accessed 25 July, 2018.
38. World Health Organization (WHO).(2019). "WHO report on the global tobacco epidemic 2017. "Geneva: World Health Organization. 2019. http://www.who.int/tobacco/global_report/en/Accessed 25 January 24, 2020.
39. Zock JP, Sunyer J, Kogevinas M., et al. Occupation, chronic bronchitis and lung function in young adults. An international study. Am J RespirCrit Care Med. 2001; 163(7):1572–7.