

Tobacco use and its associated factors among older people: a community-based study in Egypt

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Abstract

Background: Smoking is a major health risk and tobacco use is common in all age groups in Egypt. In older people, tobacco use is considered the primary preventable cause of disability and death. Few studies have considered tobacco use in older people and its associated factors.

Aims: This study aimed to estimate the prevalence and type of tobacco use among older people in Mansoura, Egypt.

Methods: A cross-sectional descriptive population-based study was carried out in Mansoura District (both urban and rural areas). It included 663 older people aged 60 years or over. Data were collected from interviews at participants' homes using a questionnaire covering family sociodemographic details, tobacco smoking history, nicotine addiction scale, and religious commitment inventory.

Results: The prevalence of active current tobacco smoking among participants was 25.3%, passive smoking was 37.1%, while 6.3% were ex-smokers. Among active current smokers nicotine dependence was 42.3%, and 23.3% had failed to quit smoking, while 30.3% had the intention to quit. Logistic regression analysis revealed that being male, having low levels of education and religiosity, and urban residence were the independent predictors of current smoking.

Conclusion: The prevalence of both active and passive tobacco smoking among older people was considered high compared to high-income countries. The most important factors associated with smoking status were sex, education and religiosity. There is an urgent need for anti-tobacco campaigns and smoking cessation interventions specifically targeting older people.

Keywords: smoking, tobacco, nicotine dependence, substance use, Egypt

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Introduction

Tobacco use is recognized as one of the biggest public health threats and the primary cause of noncommunicable diseases and premature death in low and middle-income countries (1). It is estimated that 71% of lung cancers, 42% of chronic respiratory diseases and nearly 10% of cardiovascular diseases are due to tobacco smoking (2), while also increasing the risk of communicable diseases such as tuberculosis and lower tract respiratory infections, and decreasing life expectancy (3,4). According to the Egypt Global Adult Tobacco Survey (2009), Egypt is listed as one of the top ten per capita consumers of tobacco, where nearly 20% of the population use at least one form of tobacco (5), primarily cigarettes (16%), waterpipe (3.3%) and chewing tobacco (2.6%).

Tobacco use among older people is of particular public health concern, noting the high prevalence in Egypt with regard to elderly citizens (6), who are at a greater risk of side effects associated with long-term tobacco use (7). Smoking tobacco is associated with a higher risk of cognitive impairment and dementia in older people (8) and has also been linked to many sensory disabilities (9), as well as loss of function, mobility and independence (10).

Furthermore, it is associated with age-related diseases in older women such as osteoporosis and breast cancer (11). Lastly, quitting smoking tobacco is more difficult with advancing age due to significant and prolonged nicotine dependence (12).

Although many studies have focused on tobacco use among adolescents and adults, the literature is lacking when examining tobacco use in older and retired people. This study aimed to estimate the prevalence and type of tobacco use among older people in Mansoura, Egypt.

Methods

This study was carried out in Mansoura District (both urban and rural areas). Mansoura city is the capital of Dakahlia Governorate in Egypt and is considered the base of the Nile Delta, and home to 6.8% of the total population of the country (13). This cross-sectional descriptive population-based study was conducted between 1 June and 31 August 2017, and targeted the population of older citizens aged 60 years or over.

Sample size was calculated using the Medcalc program (<http://www.medcalc.org>). A pilot study on 50 older persons (not included in the full-scale study)

revealed that 20% were current smokers. Using an alpha error of 0.05, study power of 80% and 5% precision, the sample size was re-calculated to be 430, and then multiplied by 1.5 to compensate for the design effect of the cluster sampling method. Thus, the final sample size was 645.

The sample was distributed proportionally between rural and urban areas (2:1). Lists of all health centres in urban areas ($n=11$) and rural areas ($n=38$) were selected using a simple random sample technique, whereby investigators selected each second and each fourth health centre from urban and rural lists respectively. Older people were selected using a cluster sampling method. The catchment area of each selected health facility was divided into 33 clusters (households), whereby each cluster includes 20 older persons. One or more clusters from each area could be selected depending on the population size and age composition. A total of 692 older people were approached, of which 663 completed the questionnaire (response rate of 95.8%).

Data were collected from interviews at participants' homes at times arranged by nurses affiliated with the local health facility. The study questionnaire covered the socio-demographic data of the older person and associated family, tobacco smoking history, nicotine addiction scale, and religious commitment inventory.

The socioeconomic scale of El-Gilany et al. (2012) was used to assess the socio-economic status of the family (14). This validated scale includes education level and occupation of husband and wife, income adequacy and sources, household possessions, and housing conditions. The quartile values of the total score were used to define the four social status levels.

Tobacco smoking history included age of initiating smoking, smoking duration, type of tobacco (e.g. cigarette, waterpipe, cigar, passive smoking at home and/or work), number of cigarettes (or other) smoked per day, trial to quit, intention to quit, as well as ex-smoking and its duration and reasons. Current smoking is divided into active and passive. Active smoking is defined as the use of any form of tobacco during the past three months on a daily basis. Passive smoking is the exposure to secondhand tobacco at home and/or work, and current exposure was defined as being in the same room with a smoker for at least an hour/ day for 12 consecutive months or more (15).

The smoking index was calculated according to Indryan (2008), which incorporates age of initiating smoking, duration of smoking, type of tobacco use, passive smoking, number of cigarettes (or others) smoked per day, and number of years elapsed since quitting (16). Values less than zero were not considered relevant.

The Arabic Version of the Fagerstrom Test for Nicotine Dependence (FTND), translated and validated by Kassim et al. (2012), was used for measuring nicotine dependence among current tobacco users (17). The test consists of six items with a score ranging from 1 to 10. A score of 5 or more indicates a significant dependence, while a

score of 4 or less shows a low to moderate dependence (Heatherton et al.) (18).

The Religious Commitment Inventory (RCI-10) consists of 10 items answered on a 5-point Likert scale; a full-scale score of ≥ 38 considers a person to be highly religious (19). The English version of RCI-10 was translated to Arabic by two bilingual Egyptian researchers, then back-translated into English by another two translators who were unaware of the English version. The Arabic version was tested during the pilot study and found to be reliable (interclass correlation range 0.72–0.97; Cronbach alpha = 0.73).

Data were analysed using SPSS Version 16. Chi square was used to test the significance in bivariate analysis, and crude odds ratios (COR) and their 95% CI were calculated. Variables significantly associated with smoking in bivariate analysis were entered into a multivariate logistic regression model using forward Wald method. Adjusted OR and their 95% CI were calculated; $P < 0.05$ was considered statistically significant.

Ethical considerations

The study was approved by the Institutional Review Board of the Faculty of Medicine, Mansoura University, Egypt. Verbal consents were obtained from older persons after explanation of the purpose and nature of the study. Confidentiality of data and privacy were assured.

Results

The age of study participants ranged from 60 to 85 years with a mean of 67.3 ± 7.1 years. Table 1 indicates the number and prevalence of active current smoking (168, 25.3%) and passive smoking (246, 37.1%). Among active current smoking, cigarettes smoking is the most prevalent followed by waterpipe smoking. Ex-smokers (not currently passive smokers) totaled 42 (6.3%) participants. Among those current and ex-smokers (ever smokers), the highest calculated smoking index was 20 to < 40 , and the lowest was ≥ 40 . Among active current smokers, significant nicotine dependence was recorded in 71 (42.3%) participants, failed trial-to-quit was recorded in 39 (23.3%) participants, while 51 (30.3%) participants had the intention to quit.

Table 2 illustrates sociodemographic characteristics and their association with tobacco smoking among older people. Being male significantly increases the risk of tobacco smoking [COR (95% CI) = 4.8 (3.3–7.2), $P < 0.001$]. In addition, illiteracy, living in urban areas, low level of religiosity and presence of a family member who smokes tobacco are associated with statistically significant increased risk of tobacco smoking among older people [COR (95% CI) = 2.2 (1.5–3.3), 2.7 (1.9–3.9), 3.0 (2.0–4.4) and 2.1 (1.5–3.0), $P < 0.001$, respectively].

The logistic regression (Table 3) revealed that the most powerful independent predictors were being male and illiterate [AOR = 6.4 (95% CI = 4.0–10.2) and (3.8–10.9), respectively]. Other independent predictors were low religiosity (3.6 times increase compared to high religiosity) and urban residence (1.9 times increase compared to rural residence).

Table 1 Overall pattern of tobacco smoking in 663 older people in Mansoura, Egypt

Characteristic	no. (%)
Current smokers*	
Active smoking (any tobacco form):	168 (25.3)
Cigarettes smoking	143 (21.6)
Waterpipe smoking	54 (8.1)
Cigar/pipe smoking	7 (1.1)
Passive smoking	246 (37.1)
Pure passive smoking	79 (11.9)
Combined (active and passive)	167 (25.2)
Total current smokers**	247 (37.6)
Ex-smokers	42 (6.3)
Smoking index (289)*** (among ever smokers)	
0	62 (21.5)
<20	86 (29.8)
20–40	101 (34.9)
>40	40 (13.8)
Median (min–max)	28.1 (0–73.2)
Significant nicotine dependence****	71 (42.3)
Failed trial-to-quit****	39 (23.2)
Intention to quit****	51 (30.3)
Never active smokers	453 (68.3)

*Categories are not mutually exclusive

**168 active smokers + 79 pure passive smokers = 247

*** % ever smokers (current, ex-smokers)

****% current active smokers

Discussion

Although tobacco smoking among older people is an important and potentially preventable health issue, few epidemiological studies from the Region have assessed the patterns of smoking exposure among this group. In the present study, the overall prevalence of current smoking among participants aged ≥ 60 years was 25.3%; this was similar to rates reported by two Brazilian studies where the overall prevalence of smoking among retired individuals were 26% and 23% among older people (20,21). However, lower rates were reported from other studies. For example, the overall smoking prevalence in older people (≥ 65 years) in Europe was 11.5% (22). In the United States of America, It was estimated in 2005 that 9.1% of adults age 65 years and older were current smokers (6). In Korea, the overall smoking prevalence in older people (≥ 65 years old) was 11.9% (23). In the present study, the prevalence of passive smoking was 37.1%, which is similar to rates reported from other studies; for example, in Italy where 33% of older people (≥ 65 years old) were exposed to indoor passive smoking (24), while a study from China reported a prevalence of passive smoking in the same age group of 30.5% (25).

Nicotine is the major chemical component that is responsible for addiction, which is dependent on nicotine amount, the means of delivery and the rate of absorption (26). In this study, 42.3% of participants were significantly

nicotine dependent based on the FTND score; this is much higher than previous study results from other countries. For example, significant nicotine dependence was 25.9% in older people in Brazil (21), 23% in a European study (22) and 13.4% in Italy (27).

Overall, 23.2% of the current smokers in this study had at least one failed trial-to-quit smoking. This was higher than the rate of failed attempt-to-quit smoking (15.2%) in one study from India (28), and lower compared to the result of a meta-analysis of tobacco smoking in older people where 36.9% had made an attempt to quit tobacco use in the past 1 year (11). However, frequent failed quitting reflects the high rate of significant nicotine dependence and /or the lack of proper counseling, support and even medical help needed during the quitting process.

Tobacco smoking is motivated by a complex relationship between environmental, personal, and psychosocial factors and the biological effects of nicotine (29). Still, 30% of participants in this study had the intention to quit. In other studies, 36% of older people who smoked tobacco had an intention to quit within the following 6 months (30). However, in 2 other studies approximately half of the study sample demonstrated low motivation to stop smoking (7,21).

The majority of reviewed studies noted that the prevalence of smoking in older people decreases as age increases (20,30,31), falling to only 8% among those aged ≥ 75 years (27). In the present study, the prevalence of smoking was almost equal among different age groups, namely 26.5%, 23.4% and 25.5% in individuals aged 60–<70, 70–<80 and ≥ 80 years, respectively. This indicates the weak implementation and /or poor effectiveness of smoking cessation programmes for older people.

On stratifying the prevalence of smoking by sex, this study found that it was significantly higher in males than females (12.3% and 40.5%, respectively) and being male is the strongest risk factor for smoking in older people. This concurs with previous reports from other countries (7,20,22,30). A previous study on the prevalence of tobacco use among adults in Egypt detected higher rates of smoking among males than females (32). The observation of the current study may be due to cultural barriers and the social perception of tobacco use by females, which inhibits smoking or at least hinders the disclosure of the actual smoking practice.

As demonstrated in other research (21), marital status is not associated with current tobacco use among older people. A significant inverse relationship between education level and prevalence of current smoking is observed in the current study, which is supported by other research (25,33). Moreover, a lower educational level is a significant independent predictor for current smoking in older people. In addition, a low level of religiosity is indicated to be a significant independent predictor for smoking among older people and could be attributed to the non-observance of numerous religious edicts that declare smoking to be prohibited in Islam (34).

Table 2 Prevalence of tobacco smoking and its variation with sociodemographic characteristics

	Total	Smoking no. (%)	P	COR (95% CI)
Overall	663	168 (25.3)		(22.02–28.7)
Age (years)				
60–70	355	94 (26.5)		1(r)
70–80	214	50 (23.4)	0.4	0.8 (0.6–1.3)
>80	94	24 (25.5)	0.9	0.95 (0.6–1.6)
Sex				
Female	357	44(12.3)	£	1(r)
Male	306	124(40.5)		4.8 (3.3–7.2)
Marital status				
Divorced/single	40	6 (15.0)		1(r)
Married	493	136 (27.6)	0.1	2.2 (0.9–5.3)
Widow	130	26 (20.0)	0.5	1.4 (0.5–3.7)
Level of education				
Secondary and above	235	47 (20.0)		1(r)
Less than secondary	178	32 (18.0)	0.6	0.9 (0.5–1.4)
Illiterate	250	89 (35.6)	£	2.2 (1.5–3.3)
Residence				
Rural	443	83 (18.7)		1(r)
Urban	220	85 (38.6)	£	2.7 (1.9–3.9)
Living condition				
Alone	32	10 (31.2)		1(r)
With family	631	158 (25.0)	0.4	0.7 (0.3–1.6)
Religiosity				
High	289	42 (14.5)		1(r)
Low	374	126 (33.7)	£	3.0 (2.0–4.4)
Currently working				
No	619	150 (24.2)		1(r)
Yes	44	18 (40.9)	0.014	2.2 (1.2–4.1)
Income				
Adequate	324	76 (23.5)		1(r)
Not adequate	188	58 (30.9)	0.1	1.5 (0.97–2.2)
More than adequate	151	34 (22.5)	0.5	0.9 (0.6–1.5)
Socioeconomic status				
Very low	150	34 (22.7)		1(r)
Low	151	35 (23.2)	0.9	1.03 (0.6–1.8)
Middle	214	56 (26.2)	0.4	1.2 (0.7–2.0)
High	148	43 (29.1)	0.2	1.4 (0.8–2.4)
Smoking family member				
No	342	64 (18.7)		1(r)
Yes	321	104 (32.4)	£	2.1 (1.5–3.0)

COR=crude odds ratio

CI=Confidence interval

Table 3 Multivariate logistic regression analysis of independent predictors of tobacco smoking

	β	P	AOR (95% CI)
Sex			
Female	–		1(r)
Male	1.9	£	6.4 (4.0–10.2)
Religiosity			
High	–		1(r)
Low	1.3	£	3.6(2.2–6.0)
Residence			
Rural	–		1(r)
Urban	0.6	0.004	1.9 (1.2–2.9)
Education			
Secondary & above	–		1(r)
Less than secondary	0.5	0.09	1.7 (0.9–3.0)
Illiterate	1.9	£	6.4 (3.8–10.9)
Constant	–4.4		
Model χ^2	182.0, ≤ 0.001		
Percent correctly predicted	81.4		

AOR=Adjusted odds ratio

CI=Confidence interval

χ^2 Percent correctly predicted 81.4

Conclusion

According to this study, active and passive smoking among older people is especially prevalent, and rates of nicotine dependence and failure to quit smoking are high. The most important factors associated with smoking status were gender, levels of education and religiosity.

The observed high rates of smoking among older people compared to high-income countries raises the need for anti-tobacco campaigns and smoking cessation interventions targeting older people, especially males and those with lower levels of education, backed up by the religious rulings on smoking. The high rate of passive

smoking is a significant factor that should be studied in depth and lends support to the need for stronger emphasis on anti-smoking laws and smoking cessation strategies in the general population.

Study Limitations

This is a local study within a single district of Egypt and its results cannot be generalized to the whole country. The religious scale employed was not validated for Islamic culture. Some questions related to the smoking index could allow for the possibility of recall bias.

Funding: None.

Competing interests: None declared.

Consommation de tabac et facteurs associés chez les personnes âgées : étude à base communautaire en Égypte

Résumé

Contexte : Le tabagisme constitue un risque majeur pour la santé et la consommation de tabac est répandue dans toutes les groupes d'âge en Égypte. Chez les personnes âgées, le tabagisme est considéré comme la première cause évitable d'incapacité et de décès. Peu d'études ont traité la question de la consommation de tabac chez les personnes âgées et les facteurs qui y sont associés.

Objectifs : La présente étude avait pour objectif d'estimer la prévalence et le type de consommation du tabac chez les personnes âgées à Mansoura (Égypte).

Méthodes : Une étude transversale descriptive en population a été menée dans le district de Mansoura (dans les zones urbaines et rurales). Celle-ci comprenait 663 personnes âgées de 60 ans et plus. Les données ont été collectées à partir d'entretiens réalisés au domicile des participants au moyen d'un questionnaire couvrant les informations socio-démographiques sur la famille, les antécédents de tabagisme, une échelle de dépendance à la nicotine et un inventaire en matière de religiosité.

Résultats : La prévalence de la consommation de tabac au moment de l'étude parmi les participants était de 25,3 % et celle du tabagisme passif était de 37,1 %, tandis que 6,3 % étaient d'anciens fumeurs. Parmi les fumeurs au moment de l'étude, la dépendance à la nicotine était de 42,3 %, et 23,3 % n'étaient pas parvenus à arrêter de fumer, tandis que 30,3 % en avaient l'intention. L'analyse de régression logistique a montré que le fait d'être de sexe masculin, d'avoir un faible niveau d'éducation et de religiosité et l'habitat en milieu urbain constituaient les facteurs prédictifs indépendants du tabagisme au moment de l'étude.

Conclusion : La prévalence du tabagisme à la fois actif et passif chez les personnes âgées était considérée comme élevée comparativement aux pays à haut revenu. Les facteurs les plus importants associés au statut tabagique étaient le sexe, l'éducation et la religiosité. Il est urgent de mettre en œuvre des campagnes antitabac et des interventions de sevrage tabagique visant spécifiquement les personnes âgées.

تعاطي التبغ والعوامل المصاحبة له في صفوف كبار السن: دراسة مجتمعية في مصر

دعاء عبد الهادي، عبد الهادي الجليلاني

الخلاصة

الخلفية: يمثل التدخين خطراً كبيراً على الصحة، وبتنشر تعاطي التبغ بين جميع الفئات العمرية في مصر. ويعد تعاطي التبغ السبب الرئيسي الذي يمكن تفاديه للإعاقة والوفاة بين كبار السن. وتناولت دراسات قليلة تعاطي كبار السن للتبغ والعوامل المصاحبة لذلك.

الأهداف: تهدف هذه الدراسة إلى تقدير معدل انتشار تعاطي التبغ ونوعه بين كبار السن في المنصورة، بمصر.

طرق البحث: أجريت دراسة سكانية وصفية شاملة لعدة قطاعات في مقاطعة المنصورة (في كل من المناطق الحضرية والريفية). وشملت الدراسة 663 شخصاً من كبار السن تبلغ أعمارهم 60 عاماً أو أكبر. وجمعت البيانات من المقابلات التي أجريت في بيوت المشاركين باستخدام استبيان يغطي التفاصيل الاجتماعية والسكانية للأسرة، وتاريخ تدخين التبغ، ومقياس إدمان النيكوتين، وبيان الالتزام الديني.

النتائج: كان معدل انتشار التدخين الفعلي للتبغ في الوقت الحالي بين المشاركين 25,3 %، وكان معدل انتشار التدخين السلبي 37,1 %، بينما كانت نسبة المدخنين السابقين 6,3 %، وبين المدخنين الفعليين الحاليين، كان معدل إدمان النيكوتين 42,3 %، وكان معدل الذين أخفقوا في الإقلاع عن

التدخين ٣، ٢٣٪، بينما أعرب ٣، ٣٠٪ عن نيتهم في الإقلاع عن التدخين. وكشف تحليل الانحدار اللوجستي أن مؤشرات التنبؤ المستقلة للتدخين الحالي تتمثل في كون الفرد ذكراً، وانخفاض مستوى التعليم ودرجة التدخين لديه، والإقامة بالخضر.

الاستنتاج: يعد معدل انتشار تدخين التبغ الفعلي أو السلبي بين كبار السن معدلاً مرتفعاً مقارنةً بالبلدان ذات الدخل المرتفع. وكانت أهم العوامل المرتبطة بوضع التدخين هي الجنس والتعليم ودرجة التدخين. وهناك ضرورة ملحة لحملة مكافحة التدخين وتدخلات الإقلاع عن التدخين الموجهة تحديداً لكبار السن.

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