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Evaluation of Age and Smoking Habit by Verbal Autopsy

Zahra Hesami [1], Hooman Sharifi Milani [1], Ali Ramezankhani [1], Saeed Fallah Tafti [1,2], Babak Sharif-Kashani[1,3], Gholamreza Heydari [1]

[1] Tobacco Prevention and Control Research Center, [2] Department of Internal Medicine , [3] Department of Cardiology, NRITLD, Shahid Beheshti University M.C., TEHRAN-IRAN.

ABSTRACT

Background: *Cigarette smoking is the first preventable cause of morbidity and mortality in the world and can result in various diseases, disability and death. International studies have reported that about half of the smoking-related deaths occur in the middle ages. We decided to assess the age of death among smokers and non-smokers in this study.*

Materials and Methods: *This descriptive cross-sectional study was conducted at Tehran Behesht-e-Zahra Cemetery between September 2005 and March 2006. To estimate the sample size, a pilot study was performed on 112 deaths in March 2005 and based on the results; the sample size was estimated to be 2500. Five days of each month were selected randomly. On these days a physician (co-author) visited the Cemetery office and collected the data with the help of office operator. Information was obtained from first-degree relatives of the deceased after obtaining consent. The under-study variables were age at the time of death and cigarette use. Data were analyzed by SPSS software version 11 and using ANOVA test.*

Results: *A total of 7858 cases were studied out of which 57.3% were males. There were 63.1% (4960) non-smokers, 25.1% (1971) smokers and 11.8% (927) ex-smokers. The mean age of death among total under-study population was 56.8 yrs (55.1 yrs in males and 57.6 yrs in females). The mean age of death was 57.9 yrs among non-smokers, 50.1 yrs among smokers and 56.8 yrs among ex-smokers (p=0.00).*

Conclusion: *Results showed that age of death was lower among smokers but we could not determine a direct correlation between cigarette smoking and death in these patients.* ***(Tanaffos 2008; 7(4): 44-48)***

Key words: *Cigarette, Death, Age, Verbal autopsy*

INTRODUCTION

Tobacco use is among the most common preventable causes of untimely death in the world. There were 4.2 million cases of untimely death in the year 2000 and the rate of these deaths was similar in developing and industrial countries. According to the WHO estimate, there will be 10 million deaths due to smoking per year worldwide by the year 2030 (80% of which will be in developing countries) (1).

Smoking is responsible for 90% of lung cancers,

Correspondence to: Hesami Z
Address: NRITLD, Shaheed Bahonar Ave, Darabad, TEHRAN 19569, P.O:19575/154, IRAN
Email address: Zahra_hessami@yahoo.com
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40% of other forms of cancers, 50% of cardiovascular diseases, 75% of respiratory diseases, 12% of all deaths and 30% of deaths in the age range of 30-50 yrs (2).

Morbidity and mortality vates due to smoking are more than 5 million people per year in the world most of which occurs among both sexes in the developing countries and half of them occur in middle ages (35-69 yrs)(3).

Every year more than 400,000 Americans die as the result of smoking related diseases. In fact, one of every 5 deaths is due to cigarette smoking (4). According to the report of the Iranian Ministry of Health (Health Project) 12.5% of the total population in Iran are smokers (25% of males and 2.5% of females)(5). Based on a study in 2003, 28.9% of Tehran high school students smoked occasionally while 4.4% (1.6% of girls and 6.01% of boys) smoked daily (6).

Numerous studies have been performed on smoking related morbidity and mortality and the relation between tobacco use and death or diseases in the world.

At present, a major health issue is to improve qualitative and quantitative life standards and the role of tobacco control in this regard has always been considered. According to WHO the mean reduction of life expectancy in smokers is 8 years; however, this rate is 22 years for those who die in midlife (35-69 yrs)(7). Since such study has not been performed in our country, we decided to assess the mean age of death among smokers and nonsmokers without consideration of other confounding factors.

MATERIALS AND METHODS

This descriptive cross-sectional study was conducted in Tehran at Behesht-e-Zahra Cemetery during an 8-month period (September 2005-March 2006). To obtain the sample size, a cross-sectional pilot study was conducted on 112 cases of death at Behesht-e-Zahra Cemetery and the sample size was calculated to be 2500.

We evaluated 7858 cases of death during the study period. Sampling method was systematic randomized. Five days of each month were selected and all cases of death on these 5 days were evaluated (questioning was performed on the 5^{th}, 10^{th}, 15^{th}, 20^{th}, and 25^{th} day of each month).

Death was confirmed based on the death certificate. A questionnaire was designed to obtain demographic information, age of death and smoking status (smoker or nonsmoker). Questioning was performed by Behesht-e-Zahra operators from the first degree relatives who visited the cemetery office for finishing the paper work. Questioning was performed under the supervision of the project physician. A smoker was defined as someone who was a smoker when he/she died, ex-smoker was defined as someone who used to smoke but was not a smoker when he/she passed away and non-smoker was defined as someone who never smoked in his/her life time.

Obtained data were analyzed by using SPSS software version 11 and ANOVA test was used to compare the mean age of death in the 3 understudy groups. $P<0.05$ was considered significant.

RESULTS

In this study 7858 cases were evaluated out of which, 4504 (57.3%) were males; 37.3% were single, 57.2% were married and 10.5% were divorced or widowed. Among the total understudy population, 31.2% were under high school diploma, 50.1% had high school diploma and bachelor's degree and 18.8% had master or a higher degree; Smoking status based on marital status and level of education are shown in Table 1. 34.5% were workers, 21% were business men, 21.8% were housewives, 11.4% were university students and 11.4% had other jobs. Causes of death according to the death certificates were

cardiac diseases in 46.9%, respiratory diseases in 31.3%, cancer in 10.5% and others in 11.4%.

There were 4690 (63.1%) nonsmokers, 1971 (25.1%) smokers and 927 (11.8%) ex-smokers. The mean age of death was 55.8± 19.06 yrs in total, 55.1±10.8 yrs in men and 56.7±31.2 yrs in women (Table 1). The mean age of death was 57.9±21.3 yrs among nonsmokers, 50±15.4 yrs among smokers and 56.8±6.1 yrs among ex-smokers (p=0.00).

Figure 1 shows the mean age of death based on sex and smoking status.

Ninety percent of those in the age group of under 20 and 80.9% of those in the age group of over 60 were nonsmokers; 79.2% of those in the age group of 20-40 yrs and 23.5% of those in the age group of 40-60 yrs were smokers. The highest rate of ex-smokers (39.7%) was in the age group of 40-60 yrs.

Table 1. Smoking status based on marital status and level of education

	Nonsmoker	Smoker	Ex-smoker
Single	67.7%	31.5%	8%
Married	65.5%	14.6%	19.5%
Divorced/widowed	36%	62.4%	1.3%
Under diploma	60.5%	3.2%	36.2%
Diploma, BS degree	80.8%	18.1%	1%
MS degree and higher	20.1%	79.9%	0%

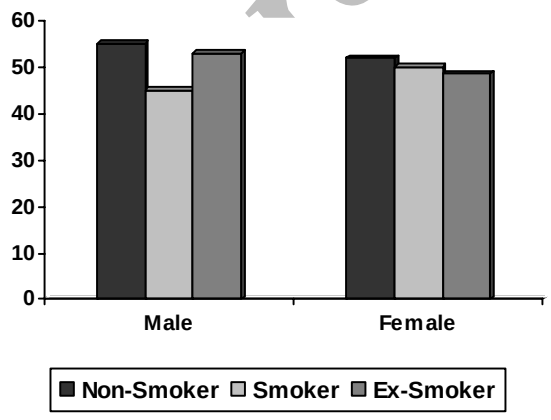

Figure 1. The mean age of death based on sex and smoking status.

DISCUSSION

This was a descriptive study. To find out possible correlations, analytical studies are required. Prevalence of smoking was 25.1% in our understudy population (37.6% of men and 8.3% of women were smokers). However, according to the latest reports by Ministry of Health's health project, prevalence of smoking was 12.5% in total population and 25% of men and 2.5% of women were smokers (5).

The main finding in our study was the mean age of death to be 50.1 yrs among smokers which was 8 years younger than that of non-smokers. According to statistical analyses, the mean age of death in smokers was significantly lower than that of non-smokers and ex-smokers. These findings are similar to those of international studies on smoking and related morbidity and mortality. According to these studies, smokers die 8-10 years younger than non-smokers. For example, in a prospective study conducted by Richard Doll and colleagues in the UK from 1951to 2001, English male physicians born during 1900-1930 and smoked all their lives were observed for 50 years and it was seen that they died averagely 10 years younger than those who did not smoke. Also it was seen that smoking cessation in the ages of 30, 40, 50 and 60 increased the life expectancy about 10, 9, 6 and 3 years, respectively (8).

Retrospective studies in this regard have been performed based on the precise statistics of morbidity and mortality and the registered causes of death and reliable information; among which is a study conducted in Hong Kong. In this study all cases of death over 35 years registered in the death registry books were evaluated. The control group consisted of first degree relatives of the deceased subjects that were evaluated in terms of smoking and the number

of cigarettes smoked daily. The results indicated that morbidity and mortality correlated with smoking and number of cigarettes smoked in both age groups of 35-69 yrs and over 71 yrs (9).

Another study conducted by the London Bristol University Socio-medical Department on life expectancy among male smokers and non-smokers concluded that life expectancy was less among smokers compared to non-smokers. Only 42% of smokers who had started smoking at the age of 20 and were smokers all life long were alive at age 73. This rate was 78% among non-smokers who had never smoked (10).

Anthonisen and colleagues conducted a clinical trial on the effect of smoking cessation on mortality in the United States and Canada in 2005. A group of people underwent intervention smoking cessation were followed for 14.5 years and compared with controls. During 5 years, 21.7% of the intervention group quit smoking. After 14.5 years follow-up, cause of death was lung cancer in 33%, cardiac diseases in 22%, respiratory diseases in 7.8% and unknown in 2.3%. Total rate of morbidity and mortality was significantly lower in the intervention group compared to controls (11).

In this study, we only evaluated the mean age of death in smokers which was lower than that of non-smokers (50.1 yrs versus 58 yrs) and this difference was statistically significant ($p<0.05$). But for justifying this difference and confirming the effect of smoking, we have to find out the main cause of death and also have precise information on the smoking pattern of the subjects. Therefore, this study may be an introduction for commencement of prospective studies in this regard.

Mortality is a multifactor process influenced by a lot of factors. In this study we only evaluated cigarette smoking. Obtained results regardless of other confounding factors indicated that smoking expedites the mortality process.

The difference between the mean age of death among smoker and non-smoker women was 2 years while this difference was 10 years in men which may be due to less addiction and less use of cigarettes by women. Another reason may be the lack of information on smoking by the women because most women conceal their smoking habit due to cultural issues.

In a conclusion, the present study showed that the age of death was lower among smokers compared to non-smokers.

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