Original Research Article

Awareness of harmful effects on tobacco smoking among adult male smokers in Sri Lanka: a cross sectional study

Chathurika Udeni[1], Ashani N. Ariyadasa[1], Anjali N. Sathkoralage[1], Imasha T. P. Wimaladasa[1], Hiranya N. Fernando[1], Lahiru S. Galgamuwa[2]*, Prasanna Herath[1], Nishantha Kumarasinghe[3]

[1]Department of Nursing and Midwifery, Faculty of Allied Health Sciences, General Sir John Kotelawala Defence University, Sri Lanka
[2]Department of Parasitology, Faculty of Medicine, Sabaragamuwa University of Sri Lanka
[3]Faculty of Medicine, General Sir John Kotelawala Defense University, Ratmalana, Sri Lanka

*Correspondence:
Dr. Lahiru S. Galgamuwa,
E-mail: lahiruahs@yahoo.com

ABSTRACT

Background: Smoking of tobacco products is the second major cause of morbidity and mortality in worldwide. The objective of this study was to evaluate the awareness of the harmful effects on tobacco smoking among adult male smokers and their spouses in Sri Lanka.
Methods: A cross sectional study was conducted among adult male smokers in Gampaha district was recruited. An interviewer administered questionnaire inquired participants' awareness about diseases caused by smoking.
Results: Majority of participants (95.3%) were aware of the adverse effects of tobacco consumption on health. A total of 93.4% had knowledge that smoking is harmful to others. Majority of male smokers were aware of adverse effects on respiratory, cardiac and circulatory systems. However, the awareness of the association between impotence, infertility, birth defects and premature births with smoking is low in smokers.
Conclusions: Majority of smokers have sufficient knowledge of harmful effects on health from smoking. Community awareness programs of adverse effects must be held targeting all the population including school children. Anti-smoking campaigns must be initiated in a broad manner, specially targeting the smoking population.

Keywords: Health effect, Sri Lanka, Smoking, Tobacco

INTRODUCTION

Smoking is an important risk factor for many cancers of the body, cardiovascular and respiratory diseases, stroke, blindness, osteoporosis, and peripheral vascular disease. Globally 1.1 billion people smoke tobacco products and 6 million people lose their lives each year.[1] Majority of People smoke tobacco products to relief stressful conditions, and they have higher anxiety compare to non-smokers.[2] In addition, loss of productivity and health-care expenditures causes negative impact on the individual, family and society level.[3] Smoking increases the risk of underdevelopment of the foetus and neonatal death as well

as child mental health problems and reduces fertility in both women and men.[4]

Tobacco consumption has fallen substantially over the past 30 years in many industrialized countries as a result of increasing the awareness of the hazards of tobacco usage and the implementation of aggressive and effective tobacco control policies.[4] In contrast, over the same time period, tobacco consumption has been increasing in the developing world.[5] Cigarettes are the most widely consumed tobacco product among Sri Lankan smokers. In addition, Beedis, White Beedis and Black Cigars are also popular, especially among low income groups and people

in rural areas. Information of the awareness of harmful effects of smoking among Sri Lankans was sparse. The aim of the present study was to determine the awareness of adverse effects on health from smoking among adult male smokers.

METHODS

A cross sectional study was conducted in Gampaha district from June to December 2017. The sample size was calculated using the equation of $n=z^2 p (1-p)/d^2$ where n=sample size, z=1.96; Critical value of specified confidence, at 95% confidence interval, p=Probable estimate of proportion of the prevalence percentage of tobacco smoking among males in Sri Lanka (29.9%), 6 d=5% of accepted amount of the absolute error. Minimum sample size of the study was 330. Sample is further increased to allow irresponsive participants and to compensate recording errors. A final sample size of 365 was obtained after a 10% non-response rate. Therefore, 365 adult males were recruited for this study. Preliminary visits were made by the research team to the selected area to select smoking individuals randomly with the help of the regional health officers. Males aged below 18 years, and have cognitive impairments were excluded.

Data collection

Before implementing the study, written consents were obtained from all the participants. Before implementing the study, the participants were informed of the nature of the study and those who volunteer to participate in the study were provided with an information sheet and an informed consent form. The subjects were given enough time to read and understand about the study and to further clarifications. All participants were informed that the participation was voluntary and have a right to refuse or withdraw any time from the study. After taking their consent, the subjects were recruited for the study. An interviewer administered questionnaire was used to collect the awareness of harmful effects and related diseases on smoking. The questionnaire was initially developed in English and then translated into the native languages of participants (Sinhala and Tamil).

Data collection was carried out with the support of the field research team. The research team was trained prior to the study on all aspects of data collection and their role by a behavioral psychologist. The data was collected from participants at their residencies to allow freedom for them to react. All data were kept confidentially.

Statistical analysis

All questionnaires were numbered and the data that collected were entered the MS Excel 2010. Data was analyzed descriptively and statistically with percentages and 95% confidence interval (CI) were calculated using

SPSS Version 23. Continuous variables were reported as means whereas categorical variables were reported as proportions. Logistic regression was used to determine significant association between socio demographic characteristics with the awareness of harmful effects of smoking. The odds ratio (OR) with 95% CI was used and p value less than 0.05 was considered statistically significant.

Ethical consideration

Ethical approval for the study was obtained from the Ethics Review Committee, Faculty of Medicine, General Sir John Kotelawala Defence University. Permission from both Provincial Director of Health Services and the Regional Director of Health Services at Gampaha district was obtained to conduct the study in Gampaha district. After explaining the aims and objectives of the study and ensuring the confidentiality of responses, informed verbal and written consent was obtained from all participants. Tablet computer-based data entry system was used to gather the information. This made it unnecessary to make a separate data entry process and that minimized wrong entries thus improving the quality of the data. Patients were informed that any payments or financial benefits would not be given to them for participating the study. If the procedure changed, new methods would be explained to the participants and informed consent forms will be obtained again from each participant.

RESULTS

A total of 365 married male smokers (mean 43.3, SD=11.5 years) and their spouses (mean 40.2, SD=11.1 years) were participated in this study. Seventy six percent smokers were regret about starting smoking in their school time and could not stop smoking in school life. More than 90% of individuals were got to know adverse effects of smoking through printed and electronic media. In addition, majority of the study participants have seen health warnings on cigarette packages. Nearly one third of male participants stated that health warnings caused to think about quit smoking.

Among male respondents, majority were aware the tobacco is causing illnesses such as stroke (60.8%), heart attack (86.0%), peripheral vascular diseases (60.5%), lung cancer (96.2%), lung diseases (87.9%), impotence (60.3%), infertility (49.6%), birth defects (47.1%), premature births (45.8%) and respiratory diseases among children (58.4%). Majority of the female participants also were aware about tobacco causes illnesses like stroke (61.9%), heart attack (85.2%), peripheral vascular diseases (58.6%), lung cancer (93.7%), lung diseases (87.7%), impotence (65.5%), infertility (49.0%), birth defects (43.8%), and respiratory diseases among children (55.9%) (Table 1).

Table 1: Adult males and their spouse's awareness of tobacco causing illnesses.

Illness	Male smokers (n=365)		Spouses (n=365)	
	Percentage	95% CI	Percentage	95% CI
Stroke	60.8	56.2-65.5	61.9	56.4-67.1
Heart attack	86.0	82.5-89.9	85.2	81.6-88.8
Peripheral vascular disease	60.5	55.6-65.8	58.6	53.7-63.3
Lung cancer	96.2	94.0-98.1	93.7	91.0-96.2
Lung diseases	87.9	84.4-91.0	87.7	84.1-91.0
Impotence	60.3	55.3-65.2	65.5	61.1-70.7
Infertility	49.6	44.7-54.8	49.0	43.8-54.0
Birth defect	47.1	41.6-52.3	43.8	38.6-49.0
Premature baby birth	45.8	40 0-50.7	43.0	37.8-47.9
Respiratory problems among children	58.4	53.2-63.6	55.9	50.7-61.1
Blindness	26.8	22.2-31.5	26.6	22.2-31.0
Cataract	29.3	24.7-34.0	25.8	21.4-30.1
Yellow teeth	87.4	83.8-90.7	90.4	87.4-93.4
Dark lips	87.9	84.7-91.0	88.8	85.2-92.1
Wrinkles	60.5	55.6-65.5	63.6	58.6-68.5
Bad smell	85.5	81.6-88.8	88.8	85.2-92.1

Table 2: Awareness of diseases related with tobacco smoking among daily and non-daily smokers.

Awareness	No of participants (%)		P value
Illness	Daily smokers (n=255)	Non daily smokers (n=110)	
Stroke	146 (57.3)	76 (69.1)	0.034
Heart attack	222 (87.1)	92 (83.6)	0.387
Peripheral vascular disease	145 (56.9)	76 (69.1)	0.028
Lung cancer	248 (97.3)	103 (93.6)	0.099
Lung diseases	228 (89.4)	93 (84.5)	0.190
Impotence	155 (60.8)	65 (59.1)	0.306
Infertility	121 (47.5)	60 (54.5)	0.214
Birth defect	116 (45.5)	56 (50.9)	0.341
Premature baby birth	116 (45.5)	51 (46.4)	0.878
Respiratory problems among children	153 (60.0)	60 (54.5)	0.258
Blindness	67 (26.3)	31 (28.2)	0.756
Cataract	75 (29.4)	32 (29.1)	0.951

In the present study, a total of 69.8% males were daily smokers while 30.2% were not daily smokers. Majority of the male smokers (95.3%) were aware that tobacco smoking is injurious to their health. In addition, most of participants (93.4%) were reported that passive smoking is also causes illness to themselves and others. Majority of participants obtained the awareness of adverse effect of smoking from social services and health clinics during past 12 months. More than 90% of individuals were aware of adverse effects of smoking through printed and electronic media. Majority of smokers were aware that tobacco smoking causes diseases such as stroke, heart attack, peripheral vascular diseases, lung cancer, lung diseases, impotence, infertility, birth defects, premature births and respiratory diseases among children. However, the awareness regarding cataract and blindness was low (Table 2).

Seventy six percent smokers were regret about starting smoking in their school time and could not stop smoking in school life. Nearly one third of male participants stated that health warnings caused to think about quit smoking. During past 12 months, 50.1% of participants were trying to quit smoking due to self-awareness of harmful effects and/or the influence from the family, friends or relatives.

Participants aged less than 50 years, and have more than secondary education showed higher awareness than old and low education level people. In addition, employed and high monthly income people have more awareness of harmful effects unemployed and low-income people.

Interestingly, participants who smoked tobacco products first after 18 years old, more than 10 times of smoking per week and the people having more than 10 smoking friends have more awareness of health risk of smoking compared to people who have less than 10 smoking friends and less than 10 smoking times per week (Table 3).

Table 3: Awareness of diseases with socio demographic characteristics (percentages).

Variables	Category	No. of participant	Stroke	Heart attack	Peripheral vascular diseases	Lung cancer	Lung diseases	Impotence	Infertility	Birth defect	Premature baby birth	Respiratory problems	Blindness	Cataract
Age in years	≤50	264	59.8	88.3	62.5	96.6	89	64	51.5	48.5	47	61	30.3	32.6
	>50	101	63.4	80.2	55.4	95	85.1	50.4	44.6	43.6	42.6	50.4	17.8	20.8
Education	upto secondary education	209	58.4	83.7	56.5	94.7	86.1	50.7	42.6	42.6	42.3	54.1	24.4	28.2
	> Secondary education	156	64.1	89.1	66	98.1	90.4	73.1	59	53.2	50.6	63.5	30.1	30.8
Employment	Employed	320	62.2	87.2	63.8	96.6	88.8	62.8	52.5	49.7	48.8	62.2	26.9	29.7
	Unemployed	45	51.1	77.7	37.8	93.3	82.2	42.2	28.9	28.9	24.4	28.9	26.7	26.7
Type of employment	Government	172	68	89.5	72.7	98.2	91.3	65.1	55.2	52.9	50	64	30.2	29.7
	Private	157	56.1	84.7	52.9	94.9	86	61.1	50.3	46.5	47.1	59.2	24.2	30.6
Duration of employment	≤10 years	151	58.3	89.5	58.9	97.4	98.4	64.9	51	51	49	66.2	24.5	28.5
	>10 years	172	65.1	85.5	66.9	96.5	88.4	60.5	53.4	48.3	47.7	57	28.5	30.8
Monthly income	≤50000 SLR	224	59.4	83.9	57.6	96	86.2	56.7	48.7	42.9	42.4	54.5	27.7	30.4
	>50000 SLR	115	68.7	91.3	72.2	98.3	93	74.8	58.3	60.9	59.1	72.2	27	31.3
First exposure	≤18 years old	178	49.4	85.4	53.4	96.1	86.5	65.2	49.4	48.3	43.8	59.6	23.6	27
	>18 years old	187	71.7	86.6	67.4	96.3	98.3	55.6	49.7	46	48	56.7	30	31.6
Current form	Cigarrate	258	63.6	87.6	63.2	97.3	88.8	65.1	53.5	48.8	47.3	58.1	31	32.9
	Other	107	54.2	82.2	51.4	93.4	86	48.6	40.2	43	42.1	57.9	16.8	20.6
No. of smoking per week	≤10 times	227	55.5	84.6	55.1	95.6	86.3	61.7	48.5	41.4	39.2	52	24.7	28.2
	>10 times	138	69.6	88.4	69.6	97.1	90.6	58	51.4	56.5	56.5	68.1	30.4	31.1
No. of smoking friends	≤10	136	62.5	88.2	64	93.4	79.4	47.8	37.5	39	38.2	48.5	25.7	25
	>10	229	59.8	84.7	58.5	97.8	93	67.7	56.8	52	50.2	63.8	27.5	31.9

Table 4: Regression analysis about the awareness of diseases related with smoking.

Variables	Category	OR	95% CI	P value
Stroke	First exposure	3.10	1.85-5.20	<0.001
	No. of smoking per week	2.06	1.19-3.56	0.009
Peripheral	Type of employment	0.39	0.23-0.66	<0.001
Vascular diseases	First exposure	1.78	1.06-2.97	0.028
	No. of smoking per week	2.24	1.29-3.91	0.004
Lung diseases	No. of smoking friends	3.74	1.71-8.18	0.001
Impotence	Education	2.26	1.27-4.02	0.005
	Monthly income	3.12	1.69-5.77	<0.001
	First exposure	0.46	0.27-0.80	0.006
	Current form	0.45	0.24-0.83	0.012
	No. of smoking per week	0.43	0.25-0.77	0.004
	No. of smoking friends	3.63	2.06-6.38	<0.001
Infertility	Education	1.81	1.07-3.06	0.026
	No. of smoking friends	3.08	1.83-5.17	<0.001

Continued.

Variables	Category	OR	95% CI	P value
Birth defects	Monthly income	1.91	1.12-3.27	0.017
	No. of smoking friends	2.04	1.23-3.38	0.005
Premature baby	No. of smoking per week	1.70	1.04-2.80	0.034
birth	No. of smoking friends	1.84	1.11-3.03	0.017
Respiratory	Monthly income	1.78	1.01-3.14	0.046
problems	No. of smoking friends	1.96	1.17-3.29	0.010

Multivariate logistic regression identified that number of smoking friends, number of smoking per week, monthly income and first exposure of smoking were significantly associated with the awareness of health risk of smoking (Table 4).

DISCUSSION

The majority of smokers believed that smoking causes cardiovascular disorders, lung cancer and lung illnesses caused by smoking. Tobacco is an addictive substance and response to increased prices will occur more slowly than for non-addictive goods. Tobacco smoke contains carbon monoxide (CO). It displaces oxygen from hemoglobin molecules and lead to hypoxia. The nicotine in tobacco smoke cause to increase the risk of cardiovascular disease.[7] Gene mutations and changes of genetic and molecular materials were induced by exposure to tobacco smoke.

Majority of smokers have a good awareness about diseases. Similarly, several studies have reported that smokers were more aware health effects from smoking such as cancers and cardiovascular diseases.[5,8] However, considerable numbers of participants have no idea of the association to cataract and blindness. Awareness regarding heart disease, peripheral vascular disease and infertility was low. Similarly, several studies in South Asia reported that most of the tobacco users (>80%) were aware of the hazardous effects of tobacco.[5,9] More than 75% of smokers in South Asian countries have higher awareness regarding, cardiovascular disorders, lung cancer and lung diseases.[5,9]

In Sri Lankan profile, 29.9% of male population is smokers.[10] Majority of participants were aware that smoking has harmful effect to both the smokers as well as the people around them. Exposure to second-hand smoke carries a significant risk for both children and women.[11-13] Thus, non-smokers who are exposed to a smoky environment have an increased risk of lung cancer, ischemic heart disease, and asthma.[14] Similarly, studies in several countries revealed that more than 80% adults agreed that active smoking and exposure to secondhand smoke causes serious illness.[15-17] No proper guidance and less approachable tobacco cessation programs on smokers were major causes for passive smoking. Therefore, smokers should be advocated about the adverse effect of passive smoking and instruct them not to smoke in front of nonsmokers.

Majority of respondents had known the adverse effects of tobacco smoking through television, radio, internet, posters, newspapers, magazines and movies. Another study in Sri Lanka reported that 87.9% of smokers in North Central region noticed anti-smoking massages during past six months through telecommunication.6 Although all of the smokers were seen the warning signs of cigarette packages, majority of them were not much considered about the meanings of those pictorial warnings.18 Therefore, government legislation of warning signs on cigarette packages (80% from the cigarette package) was not very much affected by the reduction of tobacco smoking.[19]

Chemical agents of cigarette smoking negatively effect on spermatogenesis thus finally reduces human fertility.[20,21] Smoking reduces estrogen level and causes menstrual irregularities and attains early menopause of women.[22] The smoke adversely effects on foetus when mothers expose cigarrate smokes during pregnancy resulting premature birth, low birth weight and ectopic pregnancy.[23]

Smoking cessation improves quality of life and drastically reduces the risk of cardiovascular and lung diseases as well as cancers in various organs.[24,25] Educating schoolchildren about the adverse effects of smoking can be achieved the reduction of prevalence of smoking in their adult age. In the present study, large numbers of smokers were not aware of the harmful effects of smoking in their school life. Awareness programs of adverse effects on smoking should be implemented more for school children to provide opportunities with linkages among teachers and health professionals and to encourage them to quit smoking and to maintain an optimal health.[26] It will helpful to reduce the prevalence of smoking among adolescence and young adults. In addition, lower socio-economic people should be educated more about the adverse effect of active and passive smoking.

In Sri Lanka, primary health care workers play a significant role in informing the public of the dangers of cigarette smoking although when designing the anti-smoking campaigns to the public it should be scientifically credible and the facts should be consisting in a more understandable manner. We suggest that all the primary health care workers take individual assessment regarding client's smoking behavior.

CONCLUSION

The knowledge of harmful effects and disease conditions related to tobacco smoking in adult males was in a good level. Community awareness programs must be held

targeting all the population in rural and urban areas and making them aware about the harmful effect and disease conditions of tobacco use. Anti-smoking campaigns must be initiated in a broad manner, specially targeting the smoking population. This will be provided a positive impact on public awareness in harmful effect and socioeconomic factors which is associated with tobacco smoking in Sri Lanka. Individual counseling might help in achieving the purpose of reducing the tobacco use.

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