

Special Article – Tobacco and Smoking Cessation

Knowledge and Attitude Towards Smoking-related Cancers Among Older Greek-Australian : A Mixed-Methods Study

Mohammadnezhad M^{1*}, Wilson C², Ratcliffe J³, Tsourtos G⁴, Ullah Sh⁵ and Ward P⁴

¹Department of Health Education and Promotion, Tehran University of Medical Sciences, Iran

²Flinders Centre for Innovation in Cancer, Flinders University, Australia

³Flinders Health Economics Group, School of Medicine, Flinders University, Australia

⁴Discipline of Public Health, Flinders University, Australia

⁵Flinders Centre for Epidemiology and Biostatistics, Flinders University, Australia

*Corresponding author: Mohammadnezhad M, Department of Health Education and Promotion, Tehran University of Medical Sciences, Tehran, 1414743777, Iran

Received: November 13, 2015; Accepted: December 24, 2015; Published: December 28, 2015

Abstract

Smoking tobacco products presents as one of the highest preventable risk factors for all cancers, especially in older people. Greek people are one of the largest ethnic communities in Australia and have the highest smoking rate. This study aimed to understand knowledge and attitude towards smoking-related cancers among older Greek-Australian (GSs) using a mixed methods design. This study conducted in two stages sequentially. The first stage involved analysing qualitative data that were collected through face-to-face semi-structured interviews with 20 current GSs. The data were analysed using content analysis. This analysis assisted in informing the second stage; a comparison of survey responses collected from 96 GSs and 103 Greek non-smokers (GNSs), using a convenience sampling method. Statistical analysis centred on comparing the attitudes of these 2 groups. Belief on lack of any relationship between smoking and cancers or lack of harmful of smoking, and lack of benefit of quitting smoking formed smokers' knowledge. The results also demonstrated that low level of English skill was the only significant predictor of knowledge among GSs. Low level of education, socio-economic status, and lack of preparation to quit smoking were identified as predictors of positive attitude towards smoking among GSs. This study highlighted the main behavioural correlates of smoking-related behaviour among GSs that need to be considered on smoking cessation intervention.

Keywords: Knowledge; Attitude; Smoking-related cancers; Older Greek-Australian; Mixed methods

Introduction

Smoking in adults was responsible for about 22 percent of all deaths from cancer and for about 11 percent of all cardiovascular disease deaths worldwide [1]. According to the US Surgeon General (2004), numerous cancers and chronic diseases have been recognized as being related to smoking. They include cancers of the stomach, uterus, cervix, pancreas, and kidney; acute myeloid leukaemia; pneumonia; abdominal aortic aneurysm; periodontal disease [2] and cataract [3]. Cancers of the nasal cavities and nasal sinuses, liver, and bone marrow (myeloid leukaemia) have also been linked to smoking [4]. The risk of developing oesophageal cancer is about 7.5 times greater in smokers than in lifetime non-smokers and smokers are two to three times more likely to develop cancer of the bladder and other urinary organs than lifelong non-smokers [5,6]. Lung cancer is the most common form of cancer worldwide [7]. In 2008, about 1.37 million deaths were due to lung cancer worldwide and it is estimated that this figure will continue to increase [8].

The harmful effects of smoking are particularly serious for older people [9,10], and the mortality rate among older people is double that of non-smokers of similar ages [11]. Even in older people smoking has been identified as a major risk factor in eight of the top 16 causes of death [12].

Greek-Australians have a high rate of smoking compared with

other ethnic groups. For instance, a survey in the Greek community of Sydney revealed that smoking among Greek-Australian males was doubled that of the general population (43 percent compared to 23 percent) [13]. The rate of smoking consumption is higher among Greek-born Australians aged 70 and over (approximately 18.4 percent) compared with Australian-born people in the same age group (12 percent) [14].

Health-related knowledge can be an important factor that contributes to disparate views on the relationship between smoking and cancer [15]. The results of previous studies among older smokers show that they have different levels of knowledge and varying perceptions about the harms of smoking and the benefits of smoking cessation [15,16]. Both starting and quitting smoking can be linked to specific predisposing factors and understanding these factors can provide a framework to assist with the design of an appropriate educational intervention tailored to the smokers' characteristics including age, ethnicity, and culture. Greek-Australians are one of the largest ethnic groups in Australia, and it is important to understand attitudes to smoking in this group and how these might be addressed in order to facilitate quit attempts.

Materials and Methods

Stage one: Qualitative study

A qualitative study was conducted to understand knowledge

of the links between smoking and cancer and attitudes to cessation among a sample of older Greek-Australian smokers (GSs). We recruited participants into the study using a snowball sampling. Twenty Greek smokers who were more than 50 years old were interviewed for this study (twelve males and eight females). Face-to-face in-depth interviews were conducted by a trained and experienced researcher with assistance from a translator. Participants were asked about their understanding of the smoking-related cancers and risks (see previously published article; [17]. Manual data analysis started after completing the data collection. The audio-taped interviews were translated and then their a content analysis of the complete dataset was undertaken and emerging themes were identified (see previously published article; [18]. Information of the participants' recruitment, data collection, and data transcription and analysis are available in our previous published articles.

Stage two: Quantitative study

On the basis of the results of the interviews, a survey was developed. In this study, we have hypothesized that factors that been identified in the qualitative component as related to the decision to smoke may differ between older Greek-Australian non-smokers (GNSs) and GSs which need to be answered by a quantitative study.

Study participants and sites

Any person who self-identified as Greek-Australian, who was aged 50 or over, and who consented to be a participant were considered as inclusion criteria for this study. For the smoking groups they needed to be a current smoker at the time of the survey and who had smoked at least 100 cigarettes during his/her lifetime [19,20]. The survey data were collected from participants who met the study inclusion criteria while attending the Glendi festival (an annual Greek festival) at the Adelaide showground in 2012 and from the Greek Orthodox Community of South Australia (GOCSA).

Sampling and sample size

Convenience sampling was adopted for all participants. As there was no other study relevant to our study setting, we choose to calculate the power based on posterior power analysis from our dataset. The power analysis was based on two primary outcome measures (knowledge and attitude) between two groups (GSs and GNSs). Assuming an alpha error of 0.05 and a beta error of 20%, power analysis indicated that a maximum of 84 participants would be required per group to detect the differences with respective standard deviations at 5% level of significance. A total of 199 participants (103 GNSs, and 96 GSs) were recruited for this survey.

Data collection instrument

A self-administrated questionnaire was developed on the basis of the results of the qualitative study and on the findings of the literature review in relation to the hypotheses. In order to collect information that addresses the objectives of the study, a questionnaire comprised four sections that represented various relevant domains was used.

Participants' demographic information: This component included questions to capture and measure participants' socio-demographic status including information on age, gender, marital status, educational status, employment status, salary, and the number of household members.

Smoking characteristics: This part included questions about the age at which the participant commenced smoking (<19 years, 20-24, 25 and over), the total years he/she had smoked, and the number of cigarettes smoked in the preceding 24 hours [21].

Stage of change in readiness to quit smoking and quit attempts: This part measured readiness-to-quit using the 'stages of change', a key theoretical component of the Trans-theoretical Model (TTM) of health-behaviour change [22]. The stages of change included one 5-stage question. In the first stage (the 'Pre-contemplation' stage), smokers are not planning to quit within the next six months. In the 'Contemplation' stage smokers are seriously thinking about quitting in the next six months. 'Preparation' is the phase in which smokers who have tried to quit in the past year seriously think about quitting in the next month. 'Action' is a period ranging from 0 to 6 months after smokers have commenced the change to quitting, and 'Maintenance' is defined as the period beginning six months after the action has started and continues until smoking has ceased to be a problem" [23]. Because this study focused on smokers who were smokers at the time of the study, only the first three stages of readiness-to-quit were measured.

Knowledge and attitudes to smoking: This section included the items were chosen based on the literature review and also the information from the qualitative study. This part included 15 questions to measure participants' knowledge of smoking and smoking related cancers. Response options of 15 items included "True", "False", and "don't know". The maximum score for the knowledge section was 15 and the lowest possible score was 0.

Fourteen items asked about participants' attitudes to smoking. Response options included Likert-scale items; "strongly agree", "agree", "disagree", "strongly disagree", and "no idea". They were assigned numbers 1-5. In this manner the responses to the various items were quantified and then summed across statements to provide a total score for the individual. For example, for some of the items the response scored 1-5 and for the other statement scored 5-1. The maximum score possible for 'attitude' was 70 and the lowest possible score was 14.

Validity and reliability of the questionnaire

Several components of the questionnaire have been used many times in other validated instruments in previous studies. Before their use in this study, all the measures that were developed in English were translated into Greek and then back-translated through a rigorous process; next they were pilot-tested for cross-cultural validation [24,25]. Smoking-history items were adapted from those which have been used in many national surveys [26,27]. The stage-of-change was also used in previous studies. This questionnaire had been used in previous studies of Greek smokers [28]. To further validate the questionnaire content-validity was applied to this research. The researcher sent the questionnaire to his four academic supervisors who provided guidance and feedback. The content of each item in the questionnaire was then re-evaluated and refined accordingly. Appropriate changes, in accordance to the results of the questionnaire testing, were then made and the revised questionnaire was translated by a nationally-accredited Greek translator. After translation, the questionnaire was checked by four Greek PhD students to ensure the accuracy of the translation.

Data collection

In-principle agreements were gained from the organization's managers to administer the questionnaire at the Glendi Festival and GOCSA. The questionnaire was administered at the Glendi Festival during two days (27th and 28th October 2012) to recruit Greek-Australian. Once informed consent had been received an information sheet (both Greek and English versions) and a letter of introduction (both Greek and English versions) were issued to people who met the inclusion criteria; then the questionnaire was distributed (two versions in Greek and English were offered). A bilingual translator was available for the Greek participants who may have required assistance to complete the questionnaire. It nearly took about 30 minutes to complete the questionnaire. Participants could answer at that time, but if they agreed to complete the questionnaire at a later time they were provided with a pre-paid envelope.

Data analysis

Statistical analysis consisted of descriptive statistics (i.e. frequency distributions and cross-tabulations) and inferential statistics. The χ^2 test was used to compare smokers and non-smokers for the categories of variables. A multiple regression model was used to examine the significance and direction of the linear relationship between the independent (continuous and categorical) variables or predictors with the continuous (knowledge and attitude) dependent or outcome variables. Odds ratios (ORs) with 95 percent confidence intervals (CIs) for each variable were calculated "as an estimate of the likelihood of smoking, and probability values were determined" [29]. Raw data were coded for data entry. In this study the coded and cleaned data were analysed by using SPSS for Windows software (Version 20.0). All significance tests were two-tailed and a p-value <0.05 was considered statistically significant.

Ethical considerations

This study was approved by the Social and Behavioural Research Ethics Committee (SBREC) of Flinders University.

Results

Stage one: Qualitative study

Their mean age was 64.6 years (SD=9.96 years). The mean age of smoking commencement was 19 years (SD=3.72 years). The mean years of smoking were 45.5 years (SD=10.8 years), and most of the respondents [11] said that they had smoked for more than 50 years. The mean number of cigarettes smoked each day was 16.5 (SD=9.98 cigarettes). Eleven of the participants mentioned that they had attempted quitting at least twice, with a maximum of 15 times. Most [13] were suffering currently from diseases such as cancer or heart disease.

Knowledge about smoking-related cancers

Of the 13 respondents who suffered from different kinds of diseases, eight had smoking-related diseases such as cancer and had experienced heart attack. When they were asked about the relationship between smoking and their disease, four of them denied any relationship. The other four were uncertain about the relationship.

Eight participants who had signs of disease made judgements about the relationship between smoking and their health condition based on their own or their family's personal experiences rather

than on the medical facts. P14 (a 53-year-old female) believes that her high blood pressure is hereditary and has nothing to do with her smoking. Similarly, her close relatives got cancer, so she believes she will probably get it too, whether or not she smokes:

I have smoked a lot of cigarettes in the past because my father was dying of lung cancer and his younger brother also got lung cancer. I probably am a good candidate [for lung cancer] and I could get it because I used to smoke at one stage a lot but now I don't smoke a lot and so it is not a problem.

Four of the respondents confined their remarks to agreeing that smoking consumption is harmful for their health without describing any effects or supplying further information. However, one of them, in responding to the question 'Is there any relationship between smoking and disease?' (he had bladder cancer and three heart attacks/strokes) denied that there was any relationship.

P5 (a 73-year-old male), started smoking when he was 12. He had an operation following a colonoscopy and cancer diagnosis four years ago. P5 agreed that smoking was harmful and he named some of the symptoms; however, he denied any relationship between his own disease and smoking. He believes that the kind of tobacco he smokes is not harmful and free of side-effects. He also believes that his low consumption of cigarettes protected him from harm. Here P5 explains these perceptions:

Up to now I have never coughed because I have never changed tobacco. I have smoked all the time since 1960. I started off with Drum tobacco and. I have never changed. If you get some from somebody else one cigarette or two days before I want to smoke I stop coughing. With a Dram smoke no cough, no nothing.

Three of the respondents said that while they believed that smoking is harmful, they also thought that quitting smoking has no health benefits. To justify this claim, they referred to people who had died of cancer even when they had never been smokers or they said they knew a lot of doctors who smoked cigarettes.

P2 (a 71-year-old male) maintains smoking is not harmful (positive attitude towards smoking) because he knows many non-smokers who have died of cancer.

Government tries to money to me. Because I can't give up smoking it means I am left with only 33 dollars. I smoke Drum tobacco. [...]. Its cost maybe is two dollars and the government makes 500 percent profit! Want to stop making tobacco it means they make profit from cigarettes and put this advertise on cigarette packets that it makes your health damage, it causes cancer. I don't believe it. There are a lot of people who have never smoked and who get cancer.

Eight of the participants acknowledged that quitting smoking would be advantageous to their health, although they did not identify in what way and their decisions seemed mostly influenced by their own previous experiences of smoking-related diseases.

One of the interviewees, even though he had had three heart attacks, and gall-bladder cancer, only mentioned that quitting smoking improved his lung function, as well as bringing some financial benefit.

Table 1: Demographic characteristics of two groups.

Variable	Greek		Statistic
	Non-smoker (n=103)	Smoker (n=96)	
Gender n (%)			
Female	57 (55.3)	44 (45.8)	p=0.061
Male	46 (44.7)	52 (54.2)	
Mean age in years (SD)	65.1(10.4)	59.2 (6.9)	p<0.0001
Place of birth n (%)			
Australia	20 (19.4)	32 (33.3)	p<0.001
Greece	83 (80.6)	64 (66.7)	
Marital status n (%)			
Single	9 (8.7)	8 (8.3)	P<0.001
Married	72 (69.9)	54 (56.2)	
Divorced	8 (7.8)	21 (21.9)	
Widowed	7 (6.8)	4 (4.2)	
Separated	3 (2.9)	6 (6.2)	
Defacto	4 (3.9)	3 (3.1)	
Annual income n (%)			
Low	38 (36.9)	44 (45.8)	p=0.43
Middle	38 (36.9)	34 (35.4)	
High	8 (7.8)	2 (2.1)	
Don't know	19 (18.4)	16 (16.7)	
Mean household members (SD)	2.26 (1.03)	2.35(1.25)	p=0.17

Table 2: Smoking characteristics of smoker participants.

Variable	Greek-smoker (n=96)
Mean age of start smoking (SD)	17.8 (3.7)
Start age of smoking n (%)	
<19	73 (76.0)
20-24	16 (16.7)
>25	7 (7.3)
Mean age of the total years smoking (SD)	38.9 (8.85)
Mean of smoking in the last 24 Hours (SD)	18.14 (9.85)

Attitude towards smoking

Some had a positive attitude towards smoking. They expressed beliefs such as: *I can't live without smoking*' (P9 and P19) and *I don't believe that I will get cancer from smoking cigarettes*' (P2).

Some of their life events may have influenced participants to adopt a positive attitude towards smoking.

P10 (a 65-year-old female), started smoking when she was about 20 and she smokes about two packets a week. She came from a family with many smokers; her father died of lung cancer. Her uncle had lung cancer. She believes that she is probably a good candidate for developing cancer. She rationalized her continuing smoking by pointing out that in her family the smokers are healthy while some non-smokers have cancer:

In my family all family members who smoke cigarettes are healthy while two of [my wife's] family members who haven't ever smoked have cancer. (P10).

According the results of the qualitative study three hypotheses were grouped up. They include:

- The level of knowledge about smoking-related cancers is different among Greek-Australian older smokers compare with Greek-Australian non-smokers.
- Greek Australian older smokers have a different attitude

towards smoking compare with Greek-Australian non-smokers.

- Predictors of knowledge about smoking-related cancers and attitude towards smoking are different between Greek-Australian smokers and non-smokers.

These hypothesis were examined in the stage two (quantitative study) and the results are reported below:

Stage Two: Quantitative Study

The frequency of female participation was higher in the GNS group (55.3 percent). GNS group had a higher mean age of 65.1 years (SD= 10.4) (p<0.0001). There was a significant difference in marital status between two groups ($\chi^2=41.08, p<0.001$). While the majority of respondents in both groups were married, the frequency of married participants was higher in the non-smoking group (69.9 percent). On the other hand, the frequency of divorced respondents was higher in the smoking group (21.9 percent).

In terms of income, no statistically significant differences were found between groups ($\chi^2=8.99, p=0.43$). Most respondents reported a 'low' household income (less than \$AUD40K) in both GSs (45.8 percent) and GNSs (36.9 percent). Mean household membership was higher among GSs (2.35, SD=1.03) compared with GNSs (2.26, SD=1.03) (Table 1).

The mean age of starting smoking was (17.8, SD=3.7) in the GS group and the majority of smokers (76 percent) commenced smoking before they turned 19. The mean of the total years of smoking was (38.9, SD=8.85) in GSs. The mean of the number of cigarettes smoked in the preceding 24 hours was (18.14, SD=9.85) (Table 2).

All smoker participants attempted to quit smoking. The mean of quitting attempts in the previous year was (1.86, SD=2.35) in the GSs and the mean of their quit attempts during the lifetime was (7.64, SD=7.34). The results of the study showed that 56 (58.3%) were at contemplation stage, 31 (32.3%) were at pre-contemplation stage and only 9 (9.4%) were at preparation stage of change.

The GNS group (9.9, SD=2.5) had a higher mean of knowledge about smoking-related cancers than the GSs (7.9, SD=2.67, P <0.001). The mean of positive attitude to smoking was higher in GS (45.73, SD=4.7) than GNS (31.60, SD=5.80) (Table 3).

Predictors of knowledge about smoking-related cancers

The results of the multivariate regression analysis of the GS group showed that only one factor had a significant association with their knowledge about smoking-related cancers. 'English skill' of GSs as a predictor of knowledge indicated that the odds of having higher knowledge were 0.36 times lower for GSs who could not speak English very well as compared with GSs who spoke English very well (p<.001, 95% CI -1.92 to -0.31). While among GNS group two factors were linked to their knowledge about smoking-related cancers. They were;

Table 3: Means (SD) for knowledge about smoking related cancers and attitude towards smoking in two groups.

Smoking status	Knowledge of smoking-related cancers		Attitude	
	Mean (SD)	P value	Mean (SD)	P value
Non-Smokers	9.9 (2.5)	P <0.001	31.60(5.80)	P <0.001
Smokers	7.9 (2.7)		45.73(4.70)	

Table 4: Multiple regression analysis examining the relationships between predictor variables and knowledge about smoking-related cancers in two groups.

Variables	Greek					
	Non-smoker			Smoker		
	Coefficient	95% CI	P-value	Coefficient	95% CI	P-value
Gender	-0.14	-1.77-0.31	0.17	-0.17	-1.94-0.14	0.09
Age	-0.04	-1.93-1.5	0.81	-0.02	-1.71-1.42	0.86
Marital status	-0.01	-0.51-0.48	0.95	-0.11	-0.88-0.33	0.37
Education Status	0.21	-0.09-1.09	0.1	0.13	-0.31-1.19	0.25
Employment status	0.14	-0.32-0.85	0.38	0.1	-0.38-0.78	0.49
Annual salary	-0.13	-0.78-0.18	0.22	0.03	-0.496-0.65	0.79
Self reported health status	-0.04	-1.41-1.01	0.74	0.08	-0.88-1.54	0.59
Num. of household smoker	-0.3	-3.06- -0.42	0.01	-0.1	-1.16-0.53	0.46
Spouse smoking status	-0.26	-1.38- -0.1	0.02	-0.02	-0.55-0.46	0.85
Preferred Language	0.22	-0.097-1.4	0.09	0.11	-0.41-1.11	0.36
English Skill	-0.02	-0.73-0.63	0.88	-0.36	-1.92- -0.31	0.007
Start age of smoking				-0.08	-1.27-0.55	0.43
Longest time of quitting				-0.2	-0.83-0.08	0.1
Stage of Change				0.04	-0.87-1.22	0.74

GNS: R²= .19; F= 1.89; P=.05

GSs: R²= .32; F=2.68; P=.003

Table 5: Multiple regression analysis examining the relationships between predictor variables and positive attitude towards smoking-related cancers.

Variables	Greek					
	Non-smoker			Smoker		
	Coefficient	95% CI	P-value	Coefficient	95% CI	P-value
Gender	0.03	-1.85-2.48	0.8	0.2	-0.1-3.97	0.06
Age	0.07	-2.75-4.39	0.65	0.08	-2.16-3.97	0.56
Marital status	0.08	-0.59-1.46	0.4	-0.23	-2.16-0.2	0.1
Education Status	-0.26	-2.6- -0.14	0.03	0.29	0.3-3.24	0.02
Employment Status	-0.01	-1.26-1.18	0.94	-0.38	-2.52- -0.24	0.02
Annual Salary	0.37	0.96-2.95	0.001	-0.03	-1.25-0.99	0.82
Self reported health status	-0.06	-3.23-1.79	0.57	0.09	-1.65-3.09	0.55
Num. of household smoker	0.19	-0.22-5.27	0.07	0.23	-0.29-3.01	0.1
Spouse smoking status	0.04	-1.04-1.63	0.66	-0.25	-1.86-0.11	0.08
Preferred Language	-0.19	-2.88-0.23	0.09	0.15	-0.57-2.42	0.22
English Skill	0.09	-0.83-2.1	0.41	-0.01	-1.61-1.55	0.97
Start age of smoking				0.14	-.65-2.91	0.21
Longest time of quitting				-0.18	-1.52-0.27	0.17
Stage of Change				-0.29	-4.38- -0.28	0.03

GNS: R²=0.22; F=2.38; P=0.012

GSs: R²=0.19; F=1.34; P=0.2

the number of household smokers, and spouse's/partner's smoking-status (Table 4).

Predictor of positive attitude towards smoking-related cancers

Among GSs, three factors have been recognized as having associations for GSs' positive attitudes to smoking. The results showed that the odds of having a positive attitude to smoking were 0.29 times higher for GSs who had attained higher education as compared with

GSs who had lower educational levels (p<0.05, 95% CI 0.3 to 3.24). On the other hand, the odds of having a positive attitude to smoking were 0.38 times lower for GSs who did not work full-time as compared with GSs who worked full-time (p<0.05, 95% CI -2.52 to -0.24). With the same power of predicting the results, this highlighted that the odds of having a positive attitude to smoking were 0.29 times lower for GSs who had more readiness to quit smoking as compared with ASs who were not ready to quit (p<0.05, 95% CI -4.38 to -0.28). Two factors were the predictors of GNSs' positive attitudes to smoking,

and they were related to demographic circumstances. They included the educational status of the participants, and their annual salary (Table 5).

Discussion

This study was aimed to understand knowledge and attitude towards smoking-related cancers among Greek-Australian older smokers aged 50 and over in Adelaide metropolitan. The results of the qualitative study revealed that GSS perspectives such as believe in lack of any relationship between smoking and cancers or lack of harmful of smoking, and lack of benefit of quitting smoking formed their knowledge about smoking-related cancers. The results of the quantitative study indicated low level of knowledge about smoking-related cancers and positive attitude towards smoking among GSS. The results of the regression analysis demonstrated that the low level of English skill was the only predictor of low level of knowledge about smoking related-cancers among GSS. On the other hand, a number of factors such as low level of educational, low level of socio-economic status, and lack of preparation to quit smoking were identified as predictors of positive attitude towards smoking among GSS.

Health-related knowledge can be an important factor that contributes to disparate views on smoking-related disease, such as cancer [15]. Smoking-related knowledge can help smokers to understand smoking-related diseases and risks. People with greater smoking-related knowledge also have a higher perception of risks. This point is an important issue which all educators need to consider [30]. It implies that if older smokers are aware of the benefits of smoking cessation and if they receive counselling or advice from health care providers, they are more likely to achieve readiness to quit smoking [31].

The results of previous studies among older smokers show that they have different levels of knowledge and varying perceptions about the harms of smoking and the benefits of smoking cessation [16,32,33]. The previous studies highlighted the point that some predictors of smoking (such as a lack of knowledge) can be serious; moreover there is a widespread lack of awareness even among smokers who suffer from smoking-related diseases. The lack of knowledge could be higher among older patients. Bjurlin et al., (2012) conducted a cross-sectional study of 535 patients from different ethnicities who attended a urology clinic in the USA. This study sought to evaluate smokers' knowledge of smoking as a risk factor for urinary tract disease and lung cancer. In the study, almost half of the participants were aged 60 or older and it was clear that the participants had little knowledge of smoking as a risk factor for urinary tract cancer though 94.0 percent identified smoking as a risk factor for lung cancer. The lack of knowledge of the relationship between smoking and these diseases were more severe (two or three times) amongst particular ethnic groups and amongst smokers [34].

Our results are therefore in agreement with previous studies which found that smokers have a more positive attitude towards smoking than non-smokers and often believe that smoking confers them with benefits [35,36]. Previous studies of migrant groups also agreed with our results that a positive attitude towards smoking consumption is higher among smokers than non-smokers [35,37].

The prevalent community attitude towards smoking can also

help smokers to have a health-based perception about smoking [38]. One of the important factors which can affect migrant perception of smoking is the effect of acculturation in different ethnic groups. For instance, in a study of Chinese and Russian immigrants to America, researchers found that Russian and Chinese groups with different levels of acculturation also differed in their smoking attitudes. The results showed that acculturation effects varied by ethnicity. The Russian participants had a more positive attitude towards smoking than the Chinese and this was linked to English language proficiency as a main predictor. Russians who were more acculturated were more likely to smoke than Russians who were less acculturated ($B=0.69$, $OR=1.99$, $p=0.002$) [39].

The results also showed that most of the participants had a low level of perceived risk. In another study of smokers in US households, Ayanian and Cleary (1999) evaluated the smokers' perceptions of their risk of heart disease and cancer. They found that most smokers did not regard themselves at risk of such smoking-related diseases [40]. Another study also confirmed that older smokers thought themselves at elevated risk for lung cancer, regardless of whether they continued or quit smoking [41]. However, having a high level of perceived risk can be considered as a factor to quit smoking, but it is not guaranteed and we need to consider other relevant factors. For example, the results of the study showed that most of the participants had a high level of perceived benefits of smoking consumption and some of them mentioned that smoking is useful for their health status. It is also necessary to say that participants who had cancer or heart attack, tried to quit smoking, but many barriers that have been mentioned in the study led them to start smoking again.

Migrant and ethnic groups often have low English skills and this is a barrier to their understanding of information or advertising about the harmfulness of smoking or the benefits of smoking cessation [33]. These results confirm that after a long period in the adopted country a migrant will have a higher level of acculturation [42] and their English skills will increase commensurately.

The effects of socioeconomic status on smoking status and prevalence have been shown in previous studies [43,44]. Educational status in many studies is regarded as a socioeconomic index. Like other socioeconomic variables, such as income or occupational class, the relationship between education level and smoking consumption has been clearly observed [45]. For instance, in a study in the US, the smoking rate was more than three times higher in people who were educated to high school level or less, and for those with a diploma degree the rate of smoking was almost eight times higher than for those with a college degree [46]. The prevalence of smoking has been repeatedly demonstrated to be substantially higher among the unemployed [47,48] and previous studies have also reported that smoking contributes significantly to differences in mortality based on socioeconomic status [49,50]. An inverse relationship between income and being a smoker can be attributed to several reasons. Smokers from the lower socioeconomic levels have more family members who smoke and also they might have a low level of knowledge about smoking risks. They also spend a large proportion of their income on cigarettes — most of the smokers in our study considered smoking to be an economic burden.

Implications of the Study

The findings of this study have implications for smoking

prevention. Our strong focus on the key psychosocial factors driving smoking behaviours among older Greek-Australian smokers provide some valuable insights for the design of more effective smoking cessation programs for this ethnic group and others. In developing an intervention to support Gs to quit smoking, differences of culture and ethnicity must be considered. We need to accommodate a range of subjective norms, attitudes, and cultural expectation [51]. The Agency for Health Care Policy and Research (2000) state that to increase smokers' motivation to quit, health professionals need to inform smokers about the negative health effects of smoking (for example, heart attack, stroke, lung and other cancers) and highlight the benefits of cessation to health and feelings of self-worth [52].

Migrants are less likely to have effective communication with health care personnel due to the language barrier. They are less able to request information or access information distributed in English [53]. This fact should help us in planning a program to promote smoking cessation and support smokers trying to quit. Clearly, language-specific interventions or services are important and educational programs need to be delivered to Greek older smokers in Greek. Smoking cessation programs should focus on motivating the majority of smokers, for example, those smokers who are in the pre-contemplation or contemplation stages to try to quit smoking. The high numbers of smokers in these two stages also highlights that reasoning, which has also emerged in previous studies [54,55].

Strengths and Limitations of the Study

To our knowledge, it is the first study conducted among older smokers and it targeted one of the biggest ethnic communities in Australia. It also provided a comparison of smoking and non-smoking groups to better understand the knowledge and attitude towards smoking-related cancers.

This thesis had several limitations that should be pointed out. In the qualitative study, sample was not chosen randomly. The quantitative study also had some limitations. First, causality cannot be inferred from this kind of cross-sectional study design [56]. Second, this research was based on a convenience sample, and so we were unable to assess the characteristics of non-respondents [57]. Another limitation is that smoking status was measured by self-reporting and this fact may influence the reliability of this thesis [58]. Finally, selection bias or response bias cannot entirely be ruled out. For example, some potential participants may be self-excluded because of language problems and hence we should hesitate to extend our results to the whole population of Greek migrants in Australia. The questionnaire was, however, available in Greek as well as English, so even Greek migrants with little knowledge of the English language could respond. Further improvement of the research measures relating to knowledge and attitude is needed to refine the quality of the questionnaire.

Conclusion

This study showed that older Greek-Australian smokers' knowledge and attitude towards smoking-related cancers is low and they have been identified as a priority group for smoking cessation interventions in Australia.

References

- Ezzati M, Lopez AD. Estimates of global mortality attributable to smoking in 2000. *Lancet*. 2003; 362: 847-852.
- USDHHS. The health consequences of smoking: a report of the Surgeon General. Washington, US Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health. 2004.
- Cumming RG, Mitchell P, Leeder SR. Use of inhaled corticosteroids and the risk of cataracts. *N Engl J Med*. 1997; 337: 8-14.
- IARC. IARC Monographs on the Evaluation of Carcinogenic Risks to Humans, Volume 83, Tobacco Smoke and Involuntary Smoking: This Publication Represents the Views and Expert Opinions of an IARC Working Group on the Evaluation of Carcinogenic Risks to Humans, which Met in Lyon, 11-18 June 2002: IARC; 2004.
- Wald NJ, Hackshaw AK. Cigarette smoking: an epidemiological overview. *Br Med Bull*. 1996; 52: 3-11.
- Doll R, Peto R, Wheatley K, Gray R, Sutherland I. Mortality in relation to smoking: 40 years' observations on male British doctors. *BMJ*. 1994; 309: 901-911.
- Sasco AJ, Secretan MB, Straif K. Tobacco smoking and cancer: a brief review of recent epidemiological evidence. *Lung Cancer*. 2004; 45 Suppl 2: S3-9.
- WHO. Cancer. 2013.
- Rowa-Dewar N, Ritchie D. Smoking cessation for older people: neither too little nor too late. *Br J Community Nurs*. 2010; 15: 578-582.
- Byles JE, Gallienne L, Blyth FM, Banks E. Relationship of age and gender to the prevalence and correlates of psychological distress in later life. *International Psychogeriatrics*. 2012; 24: 1009-1018.
- Donzé J, Ruffieux C, Cornuz J. Determinants of smoking and cessation in older women. *Age Ageing*. 2007; 36: 53-57.
- Rimer BK, Orleans CT, Keintz MK, Cristinzio S, Fleisher L. The older smoker. Status, challenges and opportunities for intervention. *Chest*. 1990; 97: 547-553.
- Culpin A, Gleeson S, Thomas M, Bekiaris J. Evaluation of the 'Good Heart, Good Life' project: a three-year campaign to reduce smoking among the Greek community of Sydney's inner west. *Health promotion journal of Australia: official journal of Australian Association of Health Promotion Professionals*. 1996; 6: 44.
- Kouris-Blazos A. Morbidity mortality paradox of 1st generation Greek Australians. *Asia Pac J Clin Nutr*. 2002; 11 Suppl 3: S569-575.
- Baranowski T, Cullen KW, Nicklas T, Thompson D, Baranowski J. Are current health behavioral change models helpful in guiding prevention of weight gain efforts? *Obesity Research*. 2003; 11: 23S-43S.
- Courneya KS, Jones LW, Mackey JR, Fairey AS. Exercise Beliefs of Breast Cancer Survivors Before and After Participation in a Randomized Controlled Trial. *International Journal of Behavioral Medicine*. 2006; 13: 259-264.
- Mohammadnezhad M, Tsourtos G, Wilson C, Ratcliffe J, Ward P. "I have never experienced any problem with my health. So far, it hasn't been harmful": older Greek-Australian smokers' views on smoking: a qualitative study. *BMC public health*. 2015; 15: 304.
- Mohammadnezhad M, Tsourtos G, Wilson C, Ratcliffe J, Ward P. Understanding socio-cultural influences on smoking among older Greek-Australian smokers aged 50 and over: facilitators or barriers? A qualitative study. *Int J Environ Res Public Health*. 2015; 12: 2718-2734.
- Arday DR, Lapin P, Chin J, Preston JA. Smoking patterns among seniors and the medicare stop smoking program. *J Am Geriatr Soc*. 2002; 50: 1689-1697.
- Liu Y, Croft JB, Anderson LA, Wheaton AG, Presley-Cantrell LR, Ford ES. The association of chronic obstructive pulmonary disease, disability, engagement in social activities, and mortality among US adults aged 70 years or older, 1994-2006. *Int J Chron Obstruct Pulmon Dis*. 2014; 9: 75-83.

21. Ossip-Klein DJ, McIntosh S, Utman C, Burton K, Spada J, Guido J. Smokers ages 50+: who gets physician advice to quit? *Prev Med.* 2000; 31: 364-369.
22. Prochaska JO, DiClemente CC, Norcross JC. In search of how people change. Applications to addictive behaviors. *Am Psychol.* 1992; 47: 1102-1114.
23. Prochaska JO, Velicer WF, Rossi JS, Goldstein MG, Marcus BH, Rakowski W, et al. Stages of change and decisional balance for 12 problem behaviors. *Health psychology.* 1994; 13: 39-46.
24. Kim SS. Predictors of short-term smoking cessation among Korean American men. *Public Health Nurs.* 2008; 25: 516-525.
25. Kim SS, Kim SH, Gulick EE. Cross-cultural validation of a smoking abstinence self-efficacy scale in Korean American men. *Issues Ment Health Nurs.* 2009; 30: 122-130.
26. Tait RJ, Hulse GK, Waterreus A, Flicker L, Lautenschlager NT, Jamrozik K, et al. Effectiveness of a smoking cessation intervention in older adults. *Addiction.* 2007; 102: 148-155.
27. Rimer B, Orleans C, Fleisher L, Cristinzio S, Resch N, Telepchak J, et al. Does tailoring matter? The impact of a tailored guide on ratings and short-term smoking-related outcomes for older smokers. *Health Education Research.* 1994; 9: 69-84.
28. Beletsioti-Stika P, Scriven A. Smoking among Greek nurses and their readiness to quit. *Int Nurs Rev.* 2006; 53: 150-156.
29. Jarallah JS, al-Rubeaan KA, al-Nuaim AR, al-Ruhaily AA, Kalantan KA. Prevalence and determinants of smoking in three regions of Saudi Arabia. *Tob Control.* 1999; 8: 53-56.
30. Oncken C, McKee S, Krishnan-Sarin S, O'Malley S, Mazure CM. Knowledge and perceived risk of smoking-related conditions: a survey of cigarette smokers. *Prev Med.* 2005; 40: 779-784.
31. Haas AL, Eng C, Dowling G, Schmitt E, Hall SM. The relationship between smoking history and current functioning in disabled community-living older adults. *Annals of Behavioral Medicine.* 2005; 29: 166-173.
32. Webb MS, Francis J, Hines BC, Quarles FB. Health disparities and culturally specific treatment: perspectives and expectancies of African American smokers. *J Clin Psychol.* 2007; 63: 1247-1263.
33. Fu SS, Burgess D, van Ryn M, Hatsukami DK, Solomon J, Joseph AM. Views on smoking cessation methods in ethnic minority communities: a qualitative investigation. *Prev Med.* 2007; 44: 235-240.
34. Bjurlin MA, Cohn MR, Freeman VL, Lombardo LM, Hurley SD, Hollowell CM. Ethnicity and smoking status are associated with awareness of smoking related genitourinary diseases. *J Urol.* 2012; 188: 724-728.
35. Ma GX, Fang CY, Tan Y, Feeley RM. Perceptions of risks of smoking among Asian Americans. *Prev Med.* 2003; 37: 349-355.
36. Ma GX, Shive SE, Tan Y, Toubbeh JI, Fang CY, Edwards RL. Tobacco use, secondhand smoke exposure and their related knowledge, attitudes and behaviors among Asian Americans. *Addict Behav.* 2005; 30: 725-740.
37. Shankar S, Gutierrez-Mohamed ML, Alberg AJ. Cigarette smoking among immigrant Salvadoreans in Washington, DC: behaviors, attitudes, and beliefs. *Addict Behav.* 2000; 25: 275-281.
38. Medbø A, Melbye H, Rudebeck CE. "I did not intend to stop. I just could not stand cigarettes anymore." A qualitative interview study of smoking cessation among the elderly. *BMC family practice.* 2011; 12: 1-10.
39. Sussman NM, Truong N. "Please extinguish all cigarettes": The effects of acculturation and gender on smoking attitudes and smoking prevalence of Chinese and Russian immigrants. *International Journal of Intercultural Relations.* 2011; 35: 163-178.
40. Ayanian JZ, Cleary PD. Perceived risks of heart disease and cancer among cigarette smokers. *JAMA.* 1999; 281: 1019-1021.
41. Lyna P, McBride C, Samsa G, Pollak KI. Exploring the association between perceived risks of smoking and benefits to quitting: who does not see the link? *Addict Behav.* 2002; 27: 293-307.
42. Vollebergh WA, Iedema J, Raaijmakers QA. Intergenerational transmission and the formation of cultural orientations in adolescence and young adulthood. *Journal of Marriage and Family.* 2001; 63: 1185-1198.
43. CCHS. Smoking in Canada: A statistical snapshot of Canadian smokers, 2005. Ottawa: Physicians for a Smoke-free Canada. 2005.
44. White V, Hill D, Siahpush M, Bobevski I. How has the prevalence of cigarette smoking changed among Australian adults? Trends in smoking prevalence between 1980 and 2001. *Tobacco Control.* 2003; 12: ii67-ii74.
45. Jarvis MJ, Wardle J. Social patterning of individual health behaviours: the case of cigarette smoking. Marmot, M and Wilkinson, RG: *Social Determinants of Health* Oxford University Press: Oxford. 2005: 240-255.
46. Barbeau EM, Krieger N, Soobader MJ. Working class matters: socioeconomic disadvantage, race/ethnicity, gender, and smoking in NHIS 2000. *Am J Public Health.* 2004; 94: 269-278.
47. Grayson JP. Health, physical activity level, and employment status in Canada. *Int J Health Serv.* 1993; 23: 743-761.
48. Bungum TJ. The impact of unemployment on mental and physical health, access to health care and health risk behaviors. *ISRN Public Health.* 2011; 2012: 1-7.
49. Siahpush M, English D, Powles J. The contribution of smoking to socioeconomic differentials in mortality: results from the Melbourne Collaborative Cohort Study, Australia. *J Epidemiol Community Health.* 2006; 60: 1077-1079.
50. Hiscock R, Bauld L, Amos A, Fidler JA, Munafò M. Socioeconomic status and smoking: a review. *Ann N Y Acad Sci.* 2012; 1248: 107-123.
51. Nevid JS. Smoking cessation with ethnic minorities: Themes and approaches. *Journal of Social Distress and the Homeless.* 1996; 5: 39-54.
52. Fiore MC. A clinical practice guideline for treating tobacco use and dependence: a US Public Health Service report. *JAMA: Journal of the American Medical Association.* 2000; 283: 3244-3254.
53. Jirojwong S, MacLennan R. Health beliefs, perceived self-efficacy, and breast self-examination among Thai migrants in Brisbane. *J Adv Nurs.* 2003; 41: 241-249.
54. Fava JL, Velicer WF, Prochaska JO. Applying the transtheoretical model to a representative sample of smokers. *Addict Behav.* 1995; 20: 189-203.
55. Kaplan RM, Pierce JP, Gilpin EA, Johnson M, Bal DG. Stages of smoking cessation: the 1990 California Tobacco Survey. *Tobacco Control.* 1993; 2: 139.
56. Passey ME, D'Este CA, Sanson-Fisher RW. Knowledge, attitudes and other factors associated with assessment of tobacco smoking among pregnant Aboriginal women by health care providers: a cross-sectional survey. *BMC public health.* 2012; 12: 165.
57. Meghea CI, Rus D, Rus IA, Summers Holtrop J, Roman L. Smoking during pregnancy and associated risk factors in a sample of Romanian women. *Eur J Public Health.* 2012; 22: 229-233.
58. Bush T, Levine MD, Beebe LA, Cerutti B, Deprey M, McAfee T, et al. Addressing weight gain in smoking cessation treatment: A randomized controlled trial. *American Journal of Health Promotion.* 2012; 27: 94-102.