

Original Article

Barriers to implement a smoke free hospital. What action should be taken?

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Abstract

Objective: Tobacco is leading to increased morbidity and mortality. Hospitals have a key role to play in the effective control of tobacco. The aim of this survey was to identify the barriers in implementing a smoke free hospital.

Methods: The tool used was a modified Fagerstrom questionnaire. These questionnaires were distributed to all employees at the main state hospital. The data obtained was analysed using SPSS software using frequency tables, univariate and multivariate analysis.

Results: The response rate was 55.1%. The findings showed that 27.1% of male staff and 24.8% of female staff are active smokers. 22.2% of smokers refrain from smoking in hospital. The highest percentage of smokers was in the youngest age group (18-25 years). The highest prevalence of smoking was found in nurses (23.6%), followed by doctors (10.4%). A positive finding was that 25.7% of current non-smokers were ex-smokers with the greatest incentive to quit being for health reasons. Most members of staff were aware of the adverse effects of smoking and a number had symptoms suggestive of smoking-related pathology.

Conclusion: Hospital staff mirror the general population with respect to smoking prevalence, habits and co morbidities. This indicates that further initiatives are required to decrease the number of health professionals who smoke, as these should ideally be role models for patients, and hence be able to effectively support patients in quitting smoking.

Key words

tobacco, hospital, health professionals

Introduction

It is a known fact that tobacco affects every organ of the body and contributes to a number of major modern-day diseases, not least of which, lung cancer and cardiovascular disease. If current consumption continues, estimates for the numbers of worldwide deaths attributable to smoking will reach ten million by 2020 with 30% of these occurring in the developed countries.¹ The World Health Organisation estimates that globally over one billion people currently smoke tobacco.² In the major part of Europe, tobacco is the leading risk factor for non-communicable diseases.³ Hence tobacco needs to be a priority area for action in all countries due to the fact that consumption rates continue to rise despite the number of effective ways for quitting. These measures include government action

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plans, strategies and legislation on marketing and access, price increases, counter-advertising, treatment for dependence and smoking cessation programmes.

The Preamble of the WHO Framework Convention on Tobacco Control (WHO FCTC) recognizes the role that health professional organizations have in curbing tobacco abuse by reaching a wide spectrum of the population. Such organisations also have the opportunity to help individuals change their behaviour by providing advice, guidance and answers to questions related to the consequences of tobacco use. They also use preventative strategies to forewarn children and adolescents about the dangers of tobacco.

Taking into consideration that smoking prevalence in health care professionals remains high in many countries, ranging from 18-50%,⁴⁻¹⁸ one wonders to what extent, if any, such health care workers include tobacco control in their agenda. Coupled with this is the policy proposed by the WHO to implement a 100% smoke free environment to reduce harm from tobacco.¹⁹ Smoking behaviour among health professionals has been shown to influence smoking cessation advice to patients in practice.²⁰⁻²² Hospitals should thus play an exemplary role in implementing smoke-free policies and enforcing them, whilst developing a culture of well-being. Many European hospitals have already implemented smoke-free hospital policies and have seen a reduction in the prevalence of smoking among hospital staff and a positive change in attitude to smoking.²³⁻³¹

In Malta, health-promoting initiatives in tobacco control are an on-going process and the introduction of a 2004 legislation banning smoking in public places in Malta was a step further in the right direction. There exist a substantial number of smokers who may be willing to stop smoking if adequate help and support is available. However it is evident that one major group of people who have a great influence on tobacco control, namely health care professionals, are still smoking. Although the legislation banned smoking in public places since 2004, the ban was not proven to be as effective in the main state hospital. Hence the need for implementation of a completely smoke-free zone for the hospital had long been felt. At the time the study was carried out, smoking was permitted in a number of designated outside spaces within the hospital, but in the interim, these locations have been reduced to merely three areas located outside the hospital building and away from the public eye. The aim is to eventually ban these smoking zones altogether and thus render the hospital and its outside spaces completely smoke-free.

As part of the planning towards this initiative, the need for more information on the smoking habits of hospital staff and the perceived impact this has on their health and working practice was required. Hence the main aims of the study were to:

Estimate the smoking prevalence among workers in hospital

Evaluate their knowledge and attitudes to tobacco
Assess their willingness to quit and seek assistance
Discern attitudes to the smoke-free hospital initiative

Methods

A cross sectional survey among staff working at the main state hospital was conducted.

Population sample

It was estimated that there are 3600 people working in the main state hospital. Since the number is relatively small, it was decided that all these people will be included in the population sample. All personnel working regularly within the hospital regardless of employer and job were included as part of the study.

Study instrument

A literature review and analysis of existing questionnaires used for similar studies abroad, was conducted. A questionnaire was then structured having 31 closed-ended questions. The questions included:

- Demographic data on gender, age, type of employment, professional qualification, department and work hours.
- Questions on smoking habits and pattern.
- Questions on symptoms related to smoking.
- Questions on attitudes to quitting.
- Attitudes to the smoke-free policy for hospital.

The questionnaire was set up in English and translated into Maltese. Participants were offered a choice of language. A pilot study was conducted in order to validate the questionnaire.

Approvals

Ethics committee, Data Protection and hospital administration approval were all obtained once the questionnaire was ready and the target population identified.

Fieldwork

Questionnaires were distributed by hospital volunteers and health-care professionals. Help in filling in questionnaires was given when required. More so, a key person within the respective department or ward was identified and queries were dealt with accordingly.

Data input and statistical analysis

Data was inputted electronically onto a database, set up by the health information directorate office and analysed using SPSS 13.0 software for Windows. Descriptive analysis was done using frequency and percentage tables. Pearson Chi-Square Test was used for univariate analysis, and a logistic regression model for

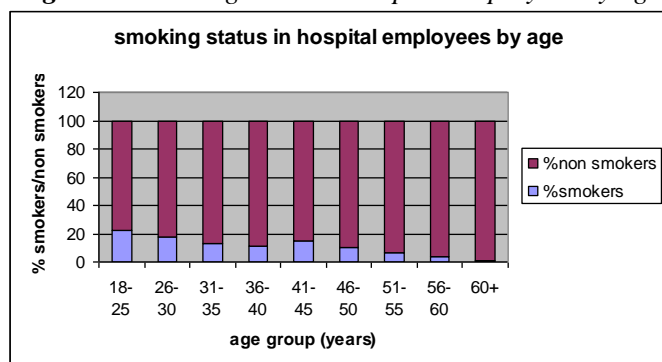
multivariate analysis. The dependent variable referred to the current smoker while other variables referred to covariates. Confidence interval was taken at 95% and significance testing was set at $p \leq 0.05$.

Results

Sociodemographic characteristics

The population studied involved all employees at Mater Dei Hospital, the main state hospital, which included both government and non-government employees. Of the 3600 questionnaires distributed, 1,984 were completed, resulting in a response rate of 55.1%. 17% of these were nurses and 8% doctors. The remaining 75% comprised all other groups of workers within the hospital. There was a predominance of female workers (54%) in the sample population which was reflected in the greater number of female respondents (58.8%) out of the total respondents. The majority of employees belonged to the younger age group (18-25 years), and the numbers in each group decreased with increasing age (Figure 1).

Figure 1: Smoking status in hospital employees by age



Questionnaire reliability/validity

The internal consistency of the questionnaire was within the satisfactory range with overall Cronbach alpha of 0.93 which is much higher than the threshold of 0.7 indicating high validity.

Smoking prevalence

The prevalence of active smokers in this population was 25.4% (95% CI 23.4-27.3) with the greater majority of smokers being male (27.1% v. 24.8%) (95% CI 23.7-30.5%; 22.3-27.3%).

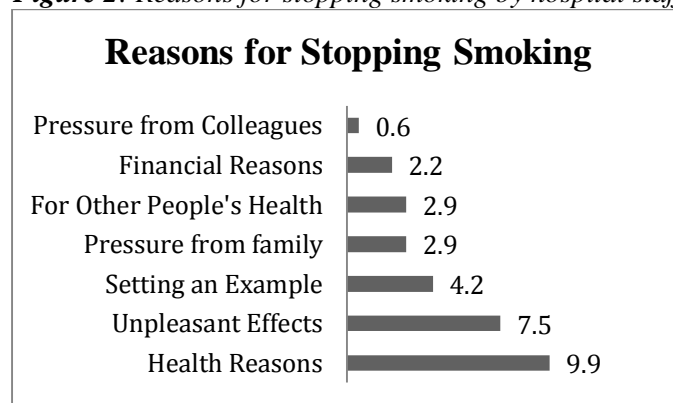
The youngest age group contributed to the highest percentage of smokers at 29.9% (Figure 1). Furthermore, 10.4% of doctors, 23.6% of nurses and 31.2% of the other subgroups were active smokers.

There was no significant change in the number of smokers with increasing seniority, across the board for both doctors and nurses ($p=0.85$; $p=0.43$). Night shifts done regularly by 40.5% of the staff population responding the questionnaire did not represent a significant factor in the smoking or non-smoking

populations.

It was found that 25.7% (95% CI 23.4-28.0%) of the current non-smokers had previously smoked. The majority of these had successfully stopped more than ten years prior to the study date, the greatest incentive being for health reasons (Figure 2). Male ex-smokers were more likely to have stopped for health reasons, however this was not statistically significant. The majority (24.6%) were successful in quitting without any help, 4.3% used nicotine replacement methods and 1.1% attended smoking cessation classes.

Figure 2: Reasons for stopping smoking by hospital staff



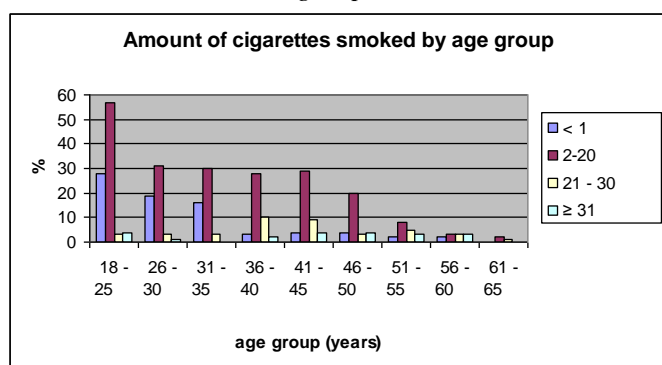
The study also looked at age of starting smoking, with 50.2% of the active smokers having started smoking in the ages between 16 and 20 years, a further 30.2% had started in their early teens. Males were significantly more likely to have started smoking at a younger age ($p=0.001$) than females. Although not statistically significant, the study showed that the earlier one started smoking, the less likely one was to quit. The most common reason given for initiating smoking was curiosity (20.9%), followed by stress relief (15.5%), peer pressure (10.0%) and family influence (3.4%).

The actual number of cigarettes smoked per day varied according to age group. The most commonly smoked number of cigarettes across all age groups was 1-20 cigarettes, followed by less than one cigarette per day (Figure 3).

Attitudes to smoke-free hospital proposal

Almost half (43.8%) of the surveyed population find difficulty in refraining from smoking in forbidden areas and a further 43.3% would find it most difficult to give up their first cigarette of the day. A near quarter of these smokers (23.6%) require their initial cigarette in the first fifteen minutes after waking up. However, 71.2% will refrain from smoking if unwell in bed. No relationship was found between the degree of addiction, as expressed from the need to smoke soon after waking up, and any of the following: smoking if unwell, number of cigarettes smoked, difficulty in omitting the first cigarette of the day, and age at starting smoking.

Figure 3: Number of cigarettes smoked per day by age groups



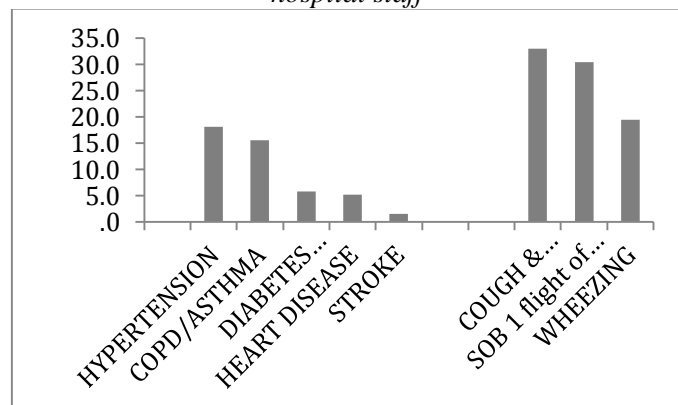
Attitudes to quitting

Willingness to quit smoking appears to be high at 46.2% of the total smoker population, 30.2% having attempted to quit at least once, closely followed by 32.6% who have had two to five attempts. 7.4% have tried to quit more than five times. No significant difference was found between the number of attempts to quit and gender.

Awareness of effects of tobacco

Most members of staff are aware of the potential adverse effects of smoking and a good percentage suffer from chronic illnesses or have symptoms suggestive of smoking-related pathology (Figure 4).

Figure 4: Comorbidities and symptoms in the smoking hospital staff



Only 22.2% of smokers refrain from smoking at the workplace. However, despite the fact that more than three quarters of smokers admitted to smoking at work, only 21.4% disclosed where they smoke on hospital grounds. Discrepancy was also shown in the time allocated to smoking: 14.7% in official breaks, 9.9% in unofficial cigarette breaks, while the rest (75.4%) did not reply.

As an incentive, it was asked if forbidding smoking on hospital premises would encourage smokers to stop - for 74.1% this would not make any difference. When offered smoking cessation classes, 41.1% were willing

to attend if these were available (41.6% males, 38.0% females).

91.8% of the whole study population agreed that the hospital has a role to play in promoting a healthy lifestyle, with 35% believing that no one should be allowed to smoke within the hospital building. This is confirmed further by 22.8% of members of staff who are bothered by cigarette smoke in hospital - this is highly significant for non-smokers ($p < 0.001$). Ex-smokers were equally as likely to be bothered by this as non-smokers.

Discussion

Despite the ideals held by those who have received medical training and are directly or indirectly exposed to smoking-related illness, the number of hospital staff who are smokers is not dissimilar to that of the general population. In fact, in the European Health Interview Survey³² carried out on the general population in 2008, 25.9% admitted to being daily or occasional smokers. We notice that this is close to the prevalence of 25.4% obtained in our hospital survey. The only difference is that males exceed female smokers by 10% in the general population while in hospital, female smokers only lag behind males by 2.3%. When compared to EU member states however, the rate of daily smoking in Malta is comparatively low, with Malta having the 5th lowest rate after Portugal, Sweden, Finland and Slovakia respectively.³³

This high prevalence rate of smokers in health care workers is also reflected in students. In a study carried out on student health professionals at the University of Malta, 27.1% were regular (daily) smokers.³⁴

Smoking prevalence among health professionals varies between member states. In Italy, the rate of smokers in health professionals is twice the rate of smoking in the general population (44%).¹² A high prevalence rate was also estimated in workers in a Portuguese hospital (40.5%) which contrasts with the low population prevalence of 20.9%.³⁵

This survey revealed that a higher percentage of nurses (23%) were identified as smokers as compared to doctors (10.4%). This pattern is also seen in other countries.^{12,36}

However there was no significant difference in smoking habits among grades of nurses, as well as between the different medical specialties that doctors belonged to. The fact that the highest percentage of smokers belonged to the youngest age group (18-25 years) is of some concern, as this is the generation most exposed to anti-smoking campaigns in schools and tertiary education.

After analysing willingness to attend Smoking Cessation Classes by age group, the older age group (61-65) scored highest at 67%. This could represent a bias in view of the small numbers found in this age group; however, it can also represent more willingness to quit

smoking due to health problems which are likely to be present at this age.

The survey attempted to address the degree of smoking addiction by incorporating some questions from the Fagerström Nicotine Dependence Scale. The fact that almost half find it hard to refrain from smoking in forbidden places or to give up their first cigarette of the day reveals that addiction is certainly present. However we did not find this to correlate with number of cigarettes smoked and age at which smoking was initiated.

The fact that smokers are often granted unofficial cigarette breaks may serve as a deterrent to smoking cessation, in that smokers have more breaks from work than do their non-smoking counterpart. This issue certainly needs to be addressed so as to avoid 'awarding' smokers. Superiors need to be stricter with their smoking staff and abolish unofficial smoking breaks altogether.

With only three available areas for smoking within the hospital grounds, this implies that a not insignificant number of smokers congregate to smoke. There may be a psychological element involved in this practice, in that smokers may view themselves as a rebel clan who may appear to be defying hospital authorities that are attempting to decrease the number of smokers within the hospital.

There were some limitations to this study. The response rate obtained was lower than expected considering that questionnaires were delivered individually by hand, and that respondents were offered help with filling in questionnaires. Besides, collection of data was met with refusals; questionnaires were returned blank, incompletely or incorrectly filled. A postulated theory for this is the unwillingness to have implementation of smoke-free regulations within the hospital, hence presenting bias on the part of smokers. We also felt there may have been suspicion of possible identification of the respondent despite reassurance of anonymity. Another confounding factor was that staff working solely night shifts and especially on reliever basis may not have all been reached since questionnaires could not always be distributed during their shift hours. A web-based survey might have increased the response rate by reaching more workers whilst cutting costs involved in the use of paper questionnaires.

Another possible bias may be due to the fact that smoking status was self-reported. Respondents may have found it difficult to declare their smoking habits as questionnaires may have been distributed by healthcare professionals working in the same area.

This study is the first representative study done to estimate the prevalence of smoking at the main state hospital. The fact that the rate is similar to that of the general population indicates the need for targeted interventions to these particular groups. It is well known that health professionals who smoke may not be as

effective in counselling patients on quitting compared to their non smoking colleagues. Consequently, their own smoking behaviour may impact negatively upon that of their patients. This is of great concern as health professionals are of key importance in tobacco control at population level. With the introduction of the smoke-free hospital policy for the main state hospital, it is expected that health care professionals will take alternative measures. Needless to say, a number of these will continue to smoke during their breaks by exiting the hospital premises. It is hoped that a good proportion of the current smokers will take up the recently set up smoking cessation programmes being provided during working hours in the main state hospital itself.

It is essential to take initiatives to instil a non smoking culture amongst health professionals who ought to serve as role models and a source of encouragement to smoking patients.

What this paper adds

- The smoking prevalence amongst health professionals in Malta is equivalent to that of the general population hence further initiatives are needed to assist them to stop smoking, apart from general prevention measures.
- Training at undergraduate and as CPD on tobacco needs to be ongoing.
- The majority of health professionals are supportive of the main state hospital being smoke free and health-promoting. Hence this opens a window of opportunity to further tobacco control measures to ensure implementation.

Acknowledgments

We thank all the hospital staff who participated in this study and the hospital management for coordinating the fieldwork.

Competing interests

Non declared.

Funding

None

References

1. World Health Organisation [Internet]. Regional Office for Africa: c2009-2012 [updated year mth day; cited 2014 Jan 8]. Available from: <http://www.afro.who.int/en/rdo/messages-and-press-statements/295-world-no-tobacco-day-31-may-2006-.html>.
2. WHO Report on the global tobacco epidemic. Geneva: World Health Organisation; 2011.
3. WHO European tobacco control report. Geneva: World Health Organisation; 2007.
4. O'Donovan G. Smoking prevalence among qualified nurses in the Republic of Ireland and their role in smoking cessation. *Int Nurs Rev.* 2009;56:230-6.

5. Nelson DE, Giovino GA, Emont SL, Brackbill R, Cameron L, Peddicort J, et al. Trends in cigarettes smoking among US physicians and nurses. *JAMA*. 1994;271:1273-5.
6. Hodgetts G, Broers T, Godwin M. Smoking behaviour, knowledge and attitudes among family medicines physicians and nurses in Bosnia and Herzegovina. *BMC Fam Pract*. 2004;5:12.
7. Melani AS, Verponziani E, Boccoli GL, Trianni GL, Federici A, Amerini R, Vichi MG, Sestini P. Tobacco smoking habits, attitudes and beliefs among nurses and medical students in Tuscany. *European Journal of Epidemiology*. 2000;16:607-11.
8. Kenneth O, Ballard J. Attitudes of patients toward smoking by health professionals. *Pub health reports*. 1992;107:335-9.
9. Bener A, Gomes J, Anderson JAD, Abdullah S. Smoking among health professionals. *Medical Education*. 2009;28:151-7.
10. Ohida T, Osaki Y, Kobayahi, Masato Sekiyama, Minowa M. Smoking prevalence of female nurses in the national hospitals in Japan. *Tobacco Control*. 1999;8:192-5.
11. Ferguson P, Small WP. Further study of the smoking habits of hospital nurses. *Health Bull*. 1985;43:13-8.
12. Ficcaro MG, Gualano MR, Capizzi S, Siliquini R, Liguori G, Manzoli L et al. Tobacco use, prevalence, knowledge and attitudes among Italian hospital health professionals. *European Journal of Public Health*. 2011;21:29-34.
13. Behbehani N, Hamadeh R, Macklai N. Knowledge of and attitudes towards tobacco control among smoking and non-smoking physicians in 2 gulf Arab states. *Saudi Med J*. 2004;25:585-91.
14. Jones TE, Williams J. Smoking prevalence and perspectives on smoking on campus by employees in Australian teaching hospitals. *Intern Med J*. 2012;42:311-6.
15. Olsen AD, Fugleholm AM, Rasmussen S, Backer V, Jorgensen SJ, Tonnesen H. Smoking behaviour and exposure to passive smoking among hospital employees 1992-1999. *Ugeskr Laeger*. 2000;162-5623-7.
16. Smith DR, Leggat PA. An international review of tobacco smoking in the medical profession 1974-2004. *BMC Public Health*. 2007;7:115.
17. Bello S, Soto M. A national survey on smoking habit among health care workers in Chile. *Rev Med Chile*. 2004;134:223-32.
18. El-Khushman HM, Sharara AM, Al-Laham YM, Hijazi MA. Cigarette smoking among health care workers at King Hussein Medical Center. *J Hosp Med*. 2008;3:281-4.
19. WHO Report on the Global Tobacco Epidemic: Implementing smoke-free environments. Geneva: World Health Organisation; 2009.
20. Willasing I, Ladelund S. Smoking behaviour among hospital staff still influences attitudes and counselling on smoking. *Nicotine Tob Res*. 2004;6:369-75.
21. Nardini S, Bertoletti R, Rastelli V, Donner CF. The influence of personal tobacco smoking on the clinical practice of Italian chest physicians. *European Respiratory Journal*. 1998;12:1450-3.
22. Slater P, McElwee G, Fleming P, McKenna H. Nurses' smoking behaviour related to cessation practice. *Nurs Times*. 2006;102:32-7.
23. Ratchen E, Britton J, Mc Neil A. Smoke-free hospitals – the English experience: results from a survey, interviews, and site visits. *BMC Health Serv Res*. 2008;8:41-9.
24. Vardavas CI, Bouloukaki I, Linardakis MK, Tzilepi P, Tzanakis N, Kafatos AG. Smoke-free hospitals in Greece: Personnel perceptions, compliance and smoking habit. *Tobacco Induced Diseases*. 2009;5:8-11.
25. Joseph AM, Knapp JM, Nicholl KL, Phyllis PL. Determinants of compliance with national smoke-free hospital standard. *JAMA* 1995;274:491-4.
26. Hyland A, Higbee C, Borland R, Travers M, Hastings G, Fong GT, et al. Attitudes and beliefs about second-hand smoke and smoke-free policies in four countries: Findings of the international tobacco four country survey. *Nicotine Tab Res*. 2009;11:642-9.
27. Shipley M, Allcock R. Achieving a smoke-free hospital: Reported enforcement of smoke-free regulations by NHS health care staff. *J Public Health*. 2008;30:2-7.
28. Batlle E, Boixet M, Agudo A, Almirall J, Salvador T. Tobacco prevention in hospitals: Long term follow-up of a smoking control programme. *British Journal of Addiction* 1991; 86(6):709-717.
29. Williams SC, Hafner JM, Morton DJ, Holm AL, Milberger SM, Koss RG, et al. The adoption of smoke-free hospital campuses in the United States. *Tobacco Control*. 2009;18:451-8.
30. Martinez C, Fu M, Martinez-Sanchez JM, Ballbe M, Puig M, Garcia M, et al. Tobacco control policies in hospitals before and after the implementation of a national ban in Catalonia, Spain. *BMC Public Health*. 2009;9:160.
31. Longo DR, Brownson RC, Kruse RL. Smoking bans in US hospitals: Results of a national survey. *JAMA*. 1995;274:488-91.
32. European Health Interview Survey: Department of Health Information and Research Strategy & Sustainability Division, Secretariat for Health Ministry for Health, the Elderly and Community, 2008.
33. WHO Health For All Database [Internet]. Denmark: World Health Organisation Regional Office for Europe; 2008. [cited 2014 Feb 15]. Available from: <http://www.euro.who.int/en/data-and-evidence/databases/european-health-for-all-database-hfa-db>.
34. Cauchi D, Mamo J. Smoking health professional student: an attitudinal challenge for health promotion? *Int J Environ Res. Public Health*. 2012;9:2550-61.
35. Ravara SB, Calherios JM, Aguiar P, Barata LT. Smoking behaviours predicts tobacco control attitudes in a high smoking prevalence hospital: A cross sectional study in a Portuguese teaching hospital prior to the national smoking ban. *BMC Public Health*. 2011;11:720
36. Nardini S, Carrozzi L, Bertoletti R, et al. [The AIPO target project "No smoking hospitals": Results of the first epidemiological phase]. *Rassegna di Patologia dell'Apparato Respiratorio* 2001;16:261-72. Italian.