Validation of the Global Health Professions Students Survey questionnaire in Italy

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Abstract

Background: The World Health Organization, the U.S. Centers for Disease Control and Prevention (CDC), and the Canadian Public Health Association have developed the Global Health Professions Student Survey (GHPSS) questionnaire in order to collect data on tobacco use and cessation counselling among health-profession students. The aims of the study were to evaluate the reliability and validity of the GHPSS questionnaire in Italy among health-profession students and to examine the prevalence of tobacco use, knowledge and attitudes to it and tobacco cessation training among students attending Italian medical schools using the standardised GHPSS approach.

Methods: Before testing tobacco use prevalence, knowledge and attitudes, and tobacco cessation training, we calculated the Cronbach's alpha to assess the internal validity with the intention of avoiding misleading results. The questionnaire was administered to 100 health-profession students and data were collected in March 2009, during regular class sessions among students of two Italian Schools of Medicine. The original GHPSS instrument was translated into the Italian language and modified by adding three specific questions regarding I) the knowledge about the use of antidepressants, ii) Acetylcholine Receptor Partial Agonists, and iii) counselling techniques used in tobacco cessation programs. Statistical analysis was performed using SPSS 13.0, statistical software for windows.

Results: Cronbach's alpha was higher on 17 items (alpha= 0.872), belonging to section I and IV (respectively: "Tobacco Use Prevalence" and "Behaviour/Cessation"). The addition, also, of only one more of the others items (section)made the alpha value worse. Cronbach's alpha for section VI for all items together (n. 44 items) was 0.815, which implies that the questionnaire had a very satisfactory internal validity. The prevalence of current smokers was 33%, while only 12% of students declared to be tobacco users. Interestingly, students who were tobacco users were 80% less likely to consider that health professionals needed training on smoking cessation techniques in comparison to non tobacco users.

Conclusions: The questionnaire showed excellent reliability properties in the sample studied. In terms of internal consistency and validity, it appears to have an acceptable performance. Given the high prevalence of smokers among medical students, teaching them about the damages related to tobacco use, and how to help them quit smoking or tobacco use, emerged as important issues. Further studies to investigate these important issues, using a standardized method like GHPSS, are needed.
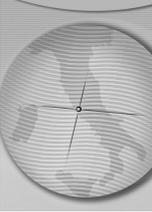
Key words: smoking, tobacco use, Cronbach' s alpha, medical students, health professionals

Introduction

In Italy, the population of current smokers accounts for around 12 million [1]. Since 1975, several laws have been enacted in Italy, aimed at controlling tobacco use. In particular, on the 10th January 2005, Law N° 3 of the 16th January 2003 came into force, banning smoking in all indoor public places. Quite recently too, law N° 75 of the 18th March 2006 has ratified the Framework Convention of the World Health Organization to control and fight tobacco smoking. This Convention can be considered a milestone for the promotion of public health and provides new horizons for international health cooperation [2]. Additionally, in Italy there is a high percentage of smokers among healthcare professionals [3]. This could be attributable to the scarce awareness of their fundamental role in helping people to quit smoking [4,5].

Medical students, that represent future medical practitioners, need to acquire knowledge about smoking related diseases and specific skills necessary for teaching smoking cessation techniques.

The World Health Organization (WHO), the U.S. Centers for Disease Control and Prevention (CDC), and the Canadian Public Health Association (CPHA) have developed the Global Health Professions Student Survey (GHPSS) questionnaire in order to collect data on tobacco use and cessation counselling among health-profession students in all WHO member states. GHPSS is part of the Global Tobacco Surveillance System (GTSS), which collects data through three surveys; the Global Youth Tobacco Survey (GYTS), the Global School Personnel Survey (GSPS), and GHPSS. GHPSS is a school based survey of third-year students pursuing advanced degrees in dentistry, medicine, nursing or pharmacy [6].

The GHPSS was pilot tested in each of the six WHO regions during 2005 and in total ten countries (Albania, Argentina, Bangladesh, Croatia, Egypt, the Federation of Bosnia and Herzegovina, India, the Philippines, Republic of Serbia, and Uganda). In May 2005, the WHO, the CDC, the CPHA, and the research coordinators released findings from these pilot studies in commemoration of "World No Tobacco Day". The theme of World No Tobacco Day 2005 was the role of health professionals in tobacco control [7]. On that occasion, the WHO and the CDC convened a meeting in Bangkok to train GHPSS research coordinators, from over 30 countries, how to conduct a GHPSS during 2005-2006 (Algeria, Cote D'Ivoire, Ghana, Mozambique, Brazil, Costa Rica, Mexico, Peru, Iraq, Pakistan, Gaza Strip/West Bank, Saudi Arabia, Sudan, Syria, Armenia, Czech Republic, Lithuania, Russian Federation, Slovakia, Serbia, Bosnia and Herzegovina, Indonesia, Myanmar, Sri Lanka, Nepal, China, Fiji, Japan, South Korea, and Viet Nam).

The aims of this validation study were:
• to test the reliability of the GHPSS in Italy;
• to examine tobacco use/smoking prevalence, knowledge about and attitudes towards tobacco use, and assess the extent of tobacco cessation training among students attending Italian medical schools using the GHPSS approach.

Methods
The GHPSS questionnaire

The GHPSS has a standardized methodology that selects participating schools and classes, and then uniforms data processing procedures in all the participating Countries. The GHPSS uses the original "core" country-approved questions, designed to gather data on five topics: 1) Prevalence of cigarette smoking and other tobacco use among 3rd year healt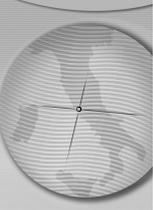h profession students (how many students have experimented with smoking cigarettes or used other forms of tobacco products; how many students currently smoked cigarettes and other forms of tobacco; the age at which students began cigarette smoking); 2) Exposure to second hand or passive smoke (the extent of their exposure to smoking at home and in other places; knowledge of their schools' official smoking policies in school buildings, clinics, and other public areas; perceptions of the enforcement of the schools' smoking policies); 3) Training and knowledge about the health effects of tobacco use (knowledge of the adverse health effects of tobacco use; awareness of nicotine replacement products; cessation counselling training received to help patients quit smoking); 4) Attitudes about tobacco (support for ban on sales of tobacco products to minors; support for ban on smoking in enclosed public places; support for health professionals' role in tobacco control; support for health professionals to receive training in cessation techniques to then use with their patients), 5) Cessation of tobacco use (severity of tobacco dependence; desire to quit smoking).

Support for the GHPSS was provided by the CDC, the CPHA, the WHO, and the American Cancer Society (ACS).

The original instrument was translated from English into the Italian language, by an expert in English-Italian language translation and subsequently modified – to update the questionnaire to the current therapies - by adding three specific questions, on the knowledge of the use of antidepressants (such as bupropion or Zyban™), Acetylcholine Receptor Partial Agonists (such as varenicline or Champix™) and counselling techniques used in tobacco cessation programs- created in time.

The final form of the Italian questionnaire comprised 44 items distributed into 6 sections, as follows:
I. Location and Tobacco Use Prevalence (Questions: 1-10)
II. Exposure to Environmental Tobacco Smoke (i.e. time spent with people who smoked in places other than where you live) (Questions: 11-14).
III. Attitudes (i.e. opinion about no smoking policies and laws and about the role of healthcare professionals in smoking cessation) (Questions: 15-25).
IV. Behaviour/Cessation (i.e. smoking habit, willingness to stop, opinion about healthcare professionals who smoke or used to) (Questions: 26-33).
V. Curriculum/Training (i.e. formal training in

smoking cessation techniques during the medical school courses and knowledge about methods (pharmacologic or counselling techniques) that help to quit smoking. (Questions: 34-44).

VI. Demographics (age, gender, course year, location) (Questions: 45-48).

Study population

Two Italian Schools of Medicine ("Sapienza" University of Rome, and Catholic University of the Sacred Heart of Rome) took part in this cross-sectional study. The survey was approved by all the local ethical committees. Students of Medical schools were selected by opportunistic sampling.

Data were collected in March 2009 during regular class sessions and were put in a database created *ad hoc* by using DBIV and then a statistical analysis was performed with SPSS 13.0, statistical software for Windows. Questionnaires were administered in an anonymous, voluntary and self-administered way to third-year students attending medical schools on the day of the survey, according to the protocol developed by WHO Europe and the CDC [8].

Outcome measures

The two considered outcome measures were:

1. "being a current smoker", those who smoked cigarettes on at least 1 day during the 30 days before the survey;

2. "being a tobacco user", those who used chewing tobacco, snuff, beedies, cigars, or pipes on at least 1 day during the 30 days before the survey. (Tables 1 and 2)

Statistical analysis

Two separate types of analyses were planned to validate the questionnaire.

Cronbach's alpha was used as a measure of the internal consistency that refers to the degree of correlation between the items forming a scale. In each domain of the questionnaire, the items should be correlated moderately with each other but should contribute independently to the overall score in that domain. When the Cronbach's alpha is 1, it means that questions are measuring an almost identical construct, resulting redundant. Generally, an alpha value of 0.7 is considered acceptable [9].

In addition to checking whether any item was inconsistent with the rest of the scale, and

Table 1. Attitudes towards tobacco use (Differences between current smokers and non smokers).

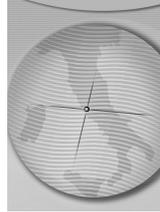| Attitudes towards tobacco use (N=100)	Current Smokers yes (%)	Non Smokers yes (%) (referring group)	OR	95% CI
Do health professionals serve as "role models" for their patients and the public?	62.5	69.7	0.73	0.30-1.76
Should health professionals get specific training on cessation technique?	87.5	92.4	0.57	0.14-2.30
During your (medical, dental, nursing, or pharmacy) school training, were you taught in any of your classes about the dangers of smoking?	65.6	75.8	0.61	0.24-1.54
During your (medical, dental, nursing, or pharmacy) school training, have you ever received any formal training in smoking cessation approaches to use with patients?	15.6	16.4	0.94	0.30-2.96

Table 2. Attitudes towards tobacco use (Differences between tobacco users and non users).

Attitudes towards tobacco use (N=100)	Tobacco users yes (%)	Non tobacco users yes (%) (referring group)	OR	95% CI
Do health professionals serve as "role models" for their patients and the public?	54.5	69.0	0.54	0.15-1.92
Should health professionals get specific training on cessation technique?	72.7	93.1	**0.20**	**0.04-0.94**
During your (medical, dental, nursing, or pharmacy) school training, were you taught in any of your classes about the dangers of smoking?	54.5	74.7	0.41	0.11-1.46
During your (medical, dental, nursing, or pharmacy) school training, have you ever received any formal training in smoking cessation approaches to use with patients?	27.3	14.8	2.16	0.51-9.24
Bold: statistically significant results (p≤0.05)				

could thus be discarded, a reliability analysis was performed. The item-total correlation and the variability of the alpha between items, adding and eliminating items one at a time, was performed (Table 3). The level of significance was set at p≤0.05. The software used to analyse data was SPSS 13.00 for Windows.

Data were analysed using frequencies, percentages, frequency tables for qualitative variables and mean ± standard deviation (SD) and 95% Confidence Intervals (95% CI) for quantitative variables.

A univariate analysis was performed using t-tests and Chi square tests in order to evaluate differences for quantitative and categorical variables, respectively. Results were expressed as Odds Ratios (ORs) with 95% CI. The level of statistical significance was set at p≤0.05 in this analysis too.

Results

A total sample of 100 medical students attending their third year compiled the questionnaire (overall response rate was 100%). Females accounted for 58%. The mean age of the sample was 20.7±1.6.

Validation of the questionnaire

Interestingly, Cronbach's alpha on section VI for all items together (n. 44 items) was 0.815 which meant that the questionnaire had a very satisfactory internal validity.

A higher Cronbach's alpha value resulted on 17 items (alpha= 0.872), belonging to section I and IV (respectively: "Tobacco Use Prevalence" and "Behaviour/Cessation").

The addition, also, of only one more of the others items made the alpha value worse (Tables 1 and 2): when we added the section VI items (Demographics) to the section I and IV ones, the Cronbach's alpha value worsened (alpha= 0.867 on 20 items) and even when we subsequently added the items from section III (Attitudes), the alpha value worsened also (alpha= 0.841, items 31). It worsened too with the addition of the section II items (Exposure to Environmental Tobacco Smoke) (alpha= 0.831, items: 35). Item-
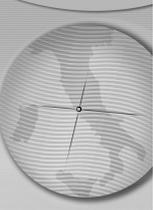
Table 3. Item-Total Statistics. Item-total correlation and variability of Cronbach's alpha, if one item was deleted.

Item-Total Statistics	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
1	53.46	117.197	0.761	0.805
2	52.57	106.589	0.520	0.805
3	53.30	107.722	0.649	0.798
4	53.04	117.999	0.374	0.811
5	52.91	112.274	0.618	0.802
6	53.57	117.608	0.742	0.806
7	53.76	121.318	0.295	0.814
8	53.11	109.799	0.766	0.797
9	53.07	108.674	0.804	0.795
10	53.43	110.136	0.653	0.799
11	53.52	115.198	0.787	0.803
12	53.22	107.308	0.730	0.795
13	53.22	108.893	0.480	0.807
14	53.33	110.491	0.789	0.797
15	53.30	112.439	0.575	0.803
16	52.89	117.006	0.206	0.822
17	51.94	113.374	0.300	0.818
18	52.02	124.886	0.161	0.817
19	53.28	127.563	-0.190	0.823
20	53.19	125.286	0.033	0.819
21	53.30	126.741	-0.112	0.822
22	53.02	124.924	0.154	0.817
23	53.06	123.789	0.291	0.816
24	53.06	124.167	0.233	0.816
25	53.06	123.789	0.291	0.816
26	53.33	126.377	-0.077	0.821
27	53.02	125.415	0.059	0.818
28	53.07	125.089	0.082	0.818
29	53.06	124.544	0.175	0.817
30	53.26	124.120	0.140	0.817
31	53.37	126.690	-.104	.822
32	53.31	126.559	-.094	.821
33	53.43	123.268	.201	.816
34	53.78	124.969	.074	.818
35	53.31	124.069	.137	.817
36	53.91	124.387	.258	.816
37	53.72	124.582	.104	.818
38	53.09	126.916	-.165	.821
39	53.80	125.939	-.037	.820
40	53.81	125.776	-.017	.819
41	53.50	127.274	-.155	.823
42	33.13	127.058	-.101	.831
43	53.43	129.532	-.350	.826
44	51.46	129.951	-.316	.83

total correlation and variability of Cronbach's alpha, if one item was deleted, is shown in Table 3.

The prevalence of current smokers was 33%, while only 12% of students declared to be tobacco users, without statistically significant differences between Universities (p=0.95 and p=0.64, respectively). Conversely, for gender, statistically significant differences were found: males were more likely to smoke cigarettes and use tobacco than their female colleagues (p=0.03 and p<0.001, respectively). Concerning the variable of age, there were no statistically significant differences for both outcome measures - current smokers and tobacco users: (respectively p= 0.48 p= 0.36)

Almost 70% of students (N=68) had tried to smoke cigarettes (at least one or two puffs) and 35% smoked their first cigarette between 11 and 15 years old. Only 6 students confessed they had smoked in the School building. Additionally, 82% of subjects agreed with the ban to sell tobacco to teenagers and the majority (around 93%) were in accordance with the law (the so called *Sirchia law*) banning smoking in all indoor public places, such as restaurants, discos and pubs.

As shown in Table 1, current smokers (in comparison to non smokers) were less likely to think that healthcare professionals were behavioural role models for citizens and patients, or that these needed specific training for smoking cessation. However, these results were not statistically significant (respectively: OR=0.73, CI95%: 0.30-1.76 and OR=0.57, CI95%: 0.14-2.30)

A small percentage of responders had received smoking cessation training during their medical school years (Table 2), without statistically significant differences between current smokers and non smokers.

As far as concerns attitudes towards tobacco use among healthcare professionals are concerned, students who were tobacco users (in comparison to non tobacco users) seemed to have an 80% lower risk of considering that health professionals needed training on smoking cessation techniques (OR=0.20; CI95%:0.04-0.94, in comparison to non tobacco users) (see Table 2). Paradoxically, tobacco users had a 116% higher risk of having received a formal specific training on tobacco cessation counselling, even if this result was not statistically significant (Table 2).

Regarding methods used in tobacco cessation programs, almost 90% had knowledge of Nicotine patches or gum, 57% had knowledge of counselling techniques, 22% of antidepressants and 21 % about Acetylcholine Receptor Partial Agonists (such as varenicline or Champix™).

Discussion

In the present research, two main results were achieved.

Firstly, as far as concerns the reliability of the GHPSS instrument in the Italian context, the internal consistency of the questionnaire, measured through Cronbach's alpha, was very high, suggesting that it may be a reliable tool in the Italian context.

Secondly, this study was conducted in order to investigate the prevalence of current smokers and tobacco users among medical students in two big Schools of Medicine in Italy. Our results showed that 33% were current smokers and 12% were tobacco users, without statistically significant differences between Universities. These percentages appear very high, especially if we consider that, in Italy, smokers among the general population account for around 19% [1].
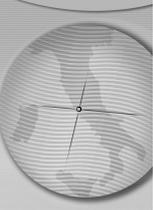
As a consequence, in order to teach medical students about the damages related to tobacco use and to help smokers quit tobacco use, important issues emerged that have to be introduced in the medical schools' curricula [10]. In addition, our study showed that most of students did not receive any formal training in smoking cessation approaches which could subsequently be used with patients (Tables 1 and 2).

Also, we assessed the attitudes of Italian medical students towards smoking habits. Interestingly, the majority of students were in accordance with the laws banning smoking in public places and only few students declared they had smoked inside the school building.

Regarding the differences between current smokers/tobacco users and non smokers/non tobacco users, only a statistically significant difference was found: students who were tobacco users seemed to have an 80% lower risk of considering that health professionals needed training on smoking cessation techniques in comparison to non tobacco users (Table 2). This lack of awareness highlights the strong need to implement training programs among these students, in view of their future roles as healthcare professionals.

Our research was the first Italian study conducted with a standardized methodology like that of the GHPSS. In fact, other studies [11-18] do not refer to any standardized methods.

In this context, arguments such as the relationship between tobacco smoking and pathologies, such as age-related maculopathy [19] and acne [20], need to be addressed, since they are very frequent in the general population and could represent useful drivers for discouraging people from becoming smokers in a more efficient way.

Some limitations of this study should be acknowledged. First of all, there are several limits related to the cross sectional study design, such as self-reported data that could lead to under-reporting and recall bias. Additionally, as GHPSS methods include only medical students attending the third year, in theory we should consider the possibility that students receive specific training in smoking cessation techniques perhaps during the latter years of medical school. Regarding this limit, however, it must be stressed that the GHPSS research coordinators found that students, in the majority of the countries where GHPSS survey was carried out, did not receive any formal training at any time [21].

In conclusion, our study addresses the critical issue of tobacco use among medical students and, based on these results, it would be of great interest to carry out surveys in several other Italian Schools of Medicine. Surely, the high prevalence of tobacco use that was found among medical students here suggests that the design and implementation programs of smoking cessation counselling techniques are an ethical issue to be tackled within the Schools of Medicine.

Acknowledgements

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