Research paper

Cervical cancer screening: knowledge among student workers in a rural area of Mexico

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ABSTRACT

Background In Mexico, there has been a National Cervical Cancer Screening Program (NCCSP) since 1974. Undergraduate medical and nursing students are the most important healthcare providers in rural areas.

Objective To evaluate knowledge about the aetiology and prevention of cervical cancer among undergraduate medical and nursing students during their social service placements in Yucatan, Mexico.

Method A questionnaire survey was carried out which included all the medicine and nursing students who had completed their credits and were doing their social service in a rural community of Yucatan. A 10-item questionnaire, validated previously by other researchers, was used for the evaluation. Each correctly answered item was given a point. The maximum grade was 10 and the

minimum 0, and for optimum analysis the results were classified into three levels of knowledge: low, from 0 to 4 points; medium, from 5 to 7 points; and high, from 8 to 10 points.

Results One hundred and twenty-six subjects were included; the knowledge mean was 7.5 points. The optimum time interval between Pap smear and the ideal age range for Pap smear were the questions with the most incorrect answers. However, 97% of the students recognised Pap smear as the main method of screening to prevent cervical cancer.

Conclusion The students know theoretical concepts about cervical cancer; however, it seems that they do not receive the specific elements about the practice, or, if they did, they are not being adequately assimilated.

Keywords: cervical cancer, Mexico, Pap smear

How this fits in with quality in primary care

What do we know?
Undergraduate medical and nursing students are the most important healthcare providers in rural areas and therefore their knowledge about the aetiology and prevention of cervical cancer is important in improving the quality of cervical screening during their placements with rural communities.

What does this paper add?
Medical students have good knowledge of theoretical concepts about cervical cancer but have less knowledge about practical aspects of cervical screening.

Introduction

Cervical cancer (CC) is an important public health problem worldwide; every year 500 000 new cases and 235 000 deaths are reported.[1] Latin America has a high incidence of CC: 76 000 new cases and 30 000 deaths were reported in the year 2000, which represents 16% and 13%, respectively, of all the cases worldwide.[2]

In Mexico, CC has been the most common malignancy among women during the last few decades, and is the main cause of death in women aged over 35 years. More than 4000 women die from this condition in Mexico every year, and the incidence is one of the highest in the world.[3–5] During the past 25 years, mortality due to CC among the Mexican population has remained stable, with an average age of death of 48 years.[6,7] Studies carried out in Mexico have estimated that women living in rural areas have a higher risk of dying from CC than women living in urban areas. This is related to factors associated with poverty.[8] Cervical cancer is more common in Yucatan, in the southeast of Mexico, since the mortality rate in women over 25 years old from 1997 to 2001 was higher than the national average.[9]

Throughout the world, prevention, control and treatment of CC have been a public health priority. Countries that have effective programmes for the early detection of CC have shown that timely diagnosis offers the possibility of successful treatment at a lower cost, both for patients as well as for the public health system. In Mexico, there has been a National Cervical Cancer Screening Program (NCCSP) since 1974. However, despite the great effort involved in carrying out this programme, the mortality rate for CC has not diminished.[6,7]

The NCCSP is regulated by the Health Ministry:

> The Pap test is offered to women who both belong and do not belong to the social security system. Each medical institution carries out CC detection activities within the available infrastructure and human resources, within each of the 32 states of the Mexican Republic.[10]

The actions of NCCSP are guided by an official technical CC standard. It is complex and involves a large number of elements in order to reach its objective: a reduction in the morbidity and mortality rate from CC. These elements can be divided into three categories: women at risk, healthcare providers, and healthcare service use.[10]

In Mexico, undergraduate students must complete an activity called 'social service'. It is a short-term obligatory activity to consolidate their academic study, practise their acquired knowledge, help them become aware of national health problems (especially in the most unprotected sectors of the country), and to extend to society the benefits of science, technique and culture.[11]

Medical and nursing students work during their social service in rural clinics for one year. Promotion of the NCCSP is one of the most important activities during the year, and in many communities the students are the sole contact with the programme and become the principal healthcare providers. Their work is very important, and their knowledge about CC and of the official technical CC standard is fundamental for an adequate execution of the NCCSP.

In that context, the aim of this study was to evaluate knowledge about aetiology and prevention of CC among undergraduate medical and nursing students during their social service in Yucatan, Mexico.

Methods

From August 2003 to July 2004, a questionnaire survey was carried out that included all the medical and nursing students who had completed their credits and were undertaking their social service in a rural community of Yucatan. One hundred and four medical students and 22 nursing students were included. The students had been studying at three different universities: 77% at the Universidad Autonoma de Yucatan (UADY), which is the public university of the state of Yucatan, 8.7% at the Universidad Autonoma de Mexico (UNAM), which is the largest public university in Mexico and is located in Mexico City, and 9.5% from the Universidad del Mayab, a private university found in the city of Merida, in Yucatan, Mexico.

A 10-item questionnaire, validated and used previously by other researchers, was used for the evaluation (see Table 1).[12] Each correctly answered item was given a point, so that the maximum grade was 10 and the minimum 0. For optimum analysis, the results were classified into three levels of knowledge: low, from 0 to 4 points; medium, from 5 to 7 points; and high, from 8 to 10 points.[12]

Prior permission was sought and granted from the schools and corresponding public health authorities, as well as from the participating students. The questionnaire was applied and the following complementary data gathered: sex, age, and home university. This activity was carried out during the monthly meetings for students in specific locations designated by the supervisors of each area.

Data were entered and analysed using EPI version 6.0. Univariate analysis and χ^2 test were done to compare high levels of knowledge between males and females, private and public university students, and medical and nursing students.

Table 1 Questions included in the questionnaire and correct responses

Questions		Number (%) of correct responses
1	Name the five main health problems in Mexico	74 (58.7)
2	Describe the five main potential causes of death that can be prevented in Mexican women	103 (81.7)
3	What is the main aetiological agent of CC?	115 (91.3)
4	What is the main method of diagnosis of CC?	122 (96.8)
5	What is the ideal time interval between Pap smear tests according to the NCCSP?	29 (23.0)
6	What is the appropriate age range for the Pap smear test according to the NCCSP?	31 (24.6)
7	Name at least one nomenclature used in gynaecological cytology	79 (62.7)
8	What are the main factors that could interfere in the sampling of the Pap smear test?	80 (63.5)
9	What are the options for conservative treatment that are presently used when a precancerous cervical lesion is diagnosed? (Include at least one)	60 (47.6)
10	What would you do if a patient comes to your health centre with a positive cytological diagnosis of HPV without a precancerous cervical lesion?	63 (50.0)

Results

All the students agreed to participate in the study and responded to the questionnaire. Most of the participants were male medical students of a public university (see Table 2).

From the 126 subjects queried, the knowledge mean was 7.5 points out of a maximum grade of 10. Thirty-three students (26.2%) were classified as having a low level of knowledge, 67 (53.2%) had a medium level, and 26 (20.6%) had a high level.

With regard to sex, 51/126 (40.5%) were female and 75/126 (59.5%) were male. The level of knowledge among both groups was very similar: 23% of females and 19% of males had high level, 51% of females and 54% of males had a medium score, while 26% of females and 27% of males had a low level. A high level of knowledge was most different between the groups, but this was not significant by χ^2 test ($P = 0.50$).

Medical students obtained higher scores than those studying nursing. Twenty-two percent of medical students and 14% of nursing students had high knowledge scores (8–10 points); 36% of nursing students and 24% of medical students had a low score, 0–4 points ($P = 0.28$).

With regard to university attended, 111/126 (88%) studied in a public university and 15/126 (12%) in a private university. All nursing students were from public universities. The levels of knowledge were high in 22.5% and 7% of students from public and private universities, respectively, medium in 52.2% and 60%, and low 25.2% and 33% ($P = 0.13$).

With regard to the knowledge of each item included in the questionnaire, only 58.7% identified CC as an important health problem in Mexico; however, 81.7% identified CC as a preventable cause of deaths among

Table 2 Characteristics of the respondents

Characteristic	Number (%)
Male	75 (59.5)
Female	51 (40.5)
Medical students	104 (82.5)
Nursing students	22 (17.5)
Private university students	15 (12)
Public university students	111 (88)

Mexican women. Human papillomavirus (HPV) was recognised as the main aetiological agent for CC by 91.3% of the students; 96.8% mentioned the Pap smear as the main method of diagnosis of CC.

The last five items on the questionnaire related to the NCCSP. The results were as follows: less than 25% of all the students knew the time interval between Pap smear tests and the appropriate age range for Pap smears, and only 50% knew what to do with women who were HPV positive, without a precancerous cervical lesion. The factors that could interfere with sampling of a Pap smear was the item with the most correct answers (63.5%).

Discussion

Doctors and nurses working in rural areas are fundamental to successful reduction in mortality from CC, since when living in the communities, their work as health educators and promoters of the NCCSP is well received. This was why we considered it important to carry out an evaluation of the knowledge of CC and its prevention in medical and nursing students.

This work was realised with the collaboration of one of the medical students during his social service. He personally explained and asked his peers for their collaboration which could explain the 100% response rate in our study, higher than that reported by other authors. Aldrich *et al* completed a study among Mexican general practitioners (GPs) and obstetrician-gynaecologists, reporting a 76% response rate.[13]

CC was recognised as an important health problem by most of the students interviewed (58.2%), a rate which is similar to that reported by Lazcano-Ponce *et al*.[12]

For decades, the Pap smear has been used as the principal tool for CC screening in many countries around the world. That the Pap smear is the main method for early CC diagnosis was the answer of 96.8% of the interviewers in our study. Many studies in Mexico, Nigeria, Australia and Uganda reported similar results.[12,14–16]

The majority of respondents in our study correctly identified HPV infection as the main aetiological factor, whereas other authors have evaluated knowledge about HPV and CC among graduated doctors and nurses to be lower.[12,14–16]

The official technical CC standard is not included in either medical or nursing school programmes. Students are introduced to the NCCSP during a conference they receive before initiating their social service programme, which is reflected in the results of this study. The first four items, referring to knowledge acquired in the classroom, were appropriately assimilated; however, this did not occur with information that was acquired outside the context of a curricular course, meaning that the concepts related to the NCCSP were less well known. These results can be explained in light of learning theories, including conductive and cognitive theories. The conductive theory indicates that any behaviour is guided by stimulus–answer relations and is justified by its immediate consequences. According to the cognitive theory, the behaviour is the result of mental processes for which a value is assigned to the consequences of an action, and hence the probability that the action would produce the expected results.[17]

In this study we can clearly observe that when the acquisition of knowledge is framed in a stimulus–answer system (acquisition of knowledge equals good grades), there was a positive response on the part of the students. Furthermore, knowledge provided outside a curricular programme, in which learning did not represent an immediate benefit for students was not assimilated properly.

More than five decades ago, academics of the Department of Health Behaviour and Health Education of The University North Carolina at Chapel Hill, concerned about health education, presented a model of health beliefs to explain the participation and adhesion to disease-prevention programmes. According to the model, the concurrence of the following factors promotes positive behaviours for health prevention: the belief or perception that a certain problem is sufficiently serious to be worthy of consideration; the belief or perception that one is vulnerable to that problem; and the belief or perception that the action taken will produce a personal benefit.[17,18]

Although the Health Belief Model was originally thought to describe health education in the general population, it can also be applied to acquisition of knowledge and behaviour among healthcare workers. It is necessary to work hard with this group of health professionals to make them conscious that their function in rural communities was much more than just attending patients. Their real role lies in health promotion, and in this context they must be instructed clearly and efficiently not only about NCCSP, but also in all the other primary health programmes that can improve the health of the most vulnerable individuals.

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CONFLICTS OF INTEREST

None.

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