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Vaccination status of entering the area of the health of a public university

Situação vacinal de ingressantes da área da saúde de uma universidade pública

Situación vacunal de ingresantes de la area de salud en una universidad pública

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This is a descriptive, transversal and quantitative study that aimed at identifying the vaccinal status of students starting their studies in a health related subject at a public university. Data collection was done through the checking of the immunization records, the filling of a self-applied sociodemographic questionnaire, and the registering of the missing vaccines, which were then administered. 124 students participated. Of these, only 39.5% presented a complete immunization record. Of those with an incomplete record (60.5%), 80% updated their records and got vaccinated as they completed their enrollment processes. Most of the students were not adequately vaccinated. The presentation of the immunization records, as well as the vaccination campaign to the students who are just enrolling in health-related courses, are fundamental strategies to prevent them from health problems against which they can be actively immunized.
Descriptors: Students Health Occupations; Disease Prevention; Vaccines; Immunization coverage.

Este é um estudo descritivo, transversal e quantitativo que teve como objetivo identificar a situação vacinal dos ingressantes em graduação da área da saúde de uma instituição ensino superior publica. A coleta de dados foi realizada através da conferência do cartão vacinal, preenchimento de questionário sociodemográfico autoaplicável e levantamento das vacinas administradas. Participaram 124 alunos. Destes, apenas 39,5% apresentavam o cartão vacinal completo. Dos alunos com o cartão vacinal incompleto (60,5%), 80% atualizaram o cartão e foram vacinados na matrícula. A maioria dos alunos não estava adequadamente vacinada e as apresentações do cartão vacinal, bem como, a campanha de vacinação para os ingressantes no momento da matrícula, constituem estratégia fundamental de prevenção de agravos imunopreviníveis na comunidade universitária.
Descritores: Estudantes de Ciências da Saúde; Prevenção de doenças; Vacinas; Cobertura vacinal.

Este es un estudio descriptivo, transversal y cuantitativo que tuvo como objetivo identificar la situación de la vacuna de estudiantes de primer año de graduación en salud de una institución educación superior pública. La recolección de datos se realizó mediante la conferencia del esquema de vacunación y de cuestionarios sociodemográficos auto administrados por los ingresantes. También fueron registradas las vacunas no contenidas en los esquemas de los estudiantes, que se les fueron administradas de pronto. Participaron 124 estudiantes. De estos, el 39,5% tenía el esquema de vacunación completo. De aquellos cuyos esquemas no estaban completos (el 60,5%), el 80% han actualizado la tarjeta y fueron vacunados en el proceso de matrícula. La mayoría de los estudiantes no estaban vacunados adecuadamente, de manera que la presentación de su esquema y la campaña de vacunación para los participantes en el momento de la matrícula, son una importante estrategia para prevención de enfermedades imunoprevenibles en la comunidad universitaria.
Descriptores: Estudiantes del área de la salud; Prevención de enfermedades; Vacunas; Cobertura de vacunación.

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INTRODUCTION

Health professionals can fall victim of several kinds of occupational hazards; but since they are frequently exposed to potentially contaminated organic materials, the biological hazards are the most relevant[1,2]. Undergraduates who study health related subjects and have practical activities as part of their curriculum, as well as health professionals, can be subject to occupational accidents and several types of contamination[1].

Vaccines and the immunization against transmissible diseases their offer are among the greatest advances in the prevention against health grievances. The immunization of both health professionals and undergraduates is a preventive strategy to protect their health[1].

Vaccination is the only way to interrupt the chain transmission of certain immunopreventable diseases, which can only be controlled if the immunization coverage reaches homogeneous levels in every population subgroup, levels low enough to decrease the morbi-mortality of these diseases[3].

The National Immunization Program Brazilian (PNI - Programa Nacional de Imunizações) was created in September 18, 1973, and aims at controlling, eliminating and/or eradicating immunopreventable diseases — especially those that are considered priorities by public health organs in what concerns both Brazilian and international health prevention[3].

In Brazil, it is advocated that every individual should be vaccinated since his or her birth, throughout their infancy, adolescence and adult life. During adolescence and adult life, vaccines against Hepatitis B, tetanus and diphteria or the TD vaccine (against both), MMR (against measles, mumps and rubella), and against the yellow fever are recommended. Healthcare facilities from SUS (Brazilian Unified Health System) offer, without any charges, a form with the individual's immunization record, and all the vaccines which compose the Brazilian Basic Vaccination Schedule[4].

The TD vaccine is indicated for the prevention of tetanus and diphteria for individuals older than seven years of age. It should be administered to anyone who did not receive tetanus and diphteria doses as a child, has incomplete immunization records, or when the schedule indicates the necessity of reinforcement. The basic schedule for this vaccine includes the administering of three doses with a 30-to-60-day interval between each. A reinforce needs to be administered every 10 years. The reinforcement dose should be administered earlier in time in the case of serious wounds or pregnancy, but only if the last dose was taken more than five years before that[4,5].

The MMR vaccine is prevention against measles, mumps and rubella, and should be administered at 12 months and again at 4 years of age. The adolescent who has both doses registered in his immunization records is considered to be vaccinated. In case only one dose is registered, the second one must be administered within 30 days. Women from 20 to 49 and men from 20 to 39 years of age, who cannot produce adequate immunization records for this vaccine, should get one dose[4].

The yellow fever vaccine is administered when the individual is nine months old, and the World's Health Organization deems this dose sufficient to provide life-long immunization[6.] People who live in the Brazilian states of Acre, Amazonas, Amapá, Pará, Rondônia, Roraima, Tocantins, Maranhão, Mato Grosso, Mato Grosso do Sul, Goiás, Distrito Federal, Minas Gerais, or in some cities in the states of Piauí, Bahia, São Paulo, Paraná, Santa Catarina e Rio Grande do Sul[4], are recommended to take an extra dose of the vaccine when 4 years old. If the individual is older than 5 years of age, he or she should take this extra dose 10 years after the first one was taken[6].

Vaccination against Hepatitis B should start, if possible, within 12 hours from the birth of the child, to avoid the vertical transmission of the disease. If not, it should be administered as soon as possible. Regarding the vaccination schedules for teenagers and adults, three doses should be

administered; the first at any point in life, the second and third, respectively, 30 and 180 days after the first dose[4]. The increase of life quality and expectancy, coupled with the fact that the elderly — a group of people very resistant to the use of preventive strategies — have increased their frequency of sexual practices, lead to a population-wide recommendation of the vaccine, regardless of age and presence of vulnerable conditions[7].

The regulatory norm nº 32 (NR-32), introduced by the Ministry of Labor in Brazil, defines the basic guidelines to implement measures for promoting the safety of health professionals. It establishes that every health professional should be provided, without being charged, with active immunization against tetanus, diphteria, hepatitis B and all the others established in the Occupational Health and Medical Control Program (PCMSO in the Brazilian-Portuguese acronym). If the worker is or can be exposed, in his or her line of duty, to any other biological agents against which there are efficient vaccines, his or her employer must provide those vaccines gratuitously[8].

Higher education institutions (IES) are very important in preventing and controlling immunopreventable illnesses, since essential related concepts and knowledge are acquired through academic studies[1].

Students should update their immunization records before getting in touch with patients, in order to eschew any unnecessary risks. To avoid those hazards, this update should be done alongside universal biosecurity and health education measures[2].

Verifying the vaccinal status of students who are starting health-related courses in an IES is an essential strategy to protect them from immunopreventable diseases, as it offers important information about each students' immunization records and allows the identification of the incomplete ones. The cases in which an update is needed are therefore identified and addressed, and immunization coverage is increased as a result, helping to prevent and control these diseases. For all those reasons, the aim of this study was to identify the vaccinal situation of students entering a public higher education institution to study any health science.

METHOD

This is a descriptive, transversal and quantitative study, conducted with students starting undergraduation programs in sciences of health, at a federal higher education institution.

This research was carried through in the Universidade Federal do Triângulo Mineiro (UFTM - Triângulo Mineiro Federal University), in Uberaba, Minas Gerais. UFTM offers seven undergraduation programs in Health sciences: Biomedicine, Physical Education, Nursing, Physical Therapy, Medicine, Nutrition and Occupational Therapy, leading to the enrollment of 210 students every semester.

In UFTM, students' assistance is conducted through the NAES (Center of Health Assistance for Students), which is part of the PROACE (Rectory for Community and Student Related Subjects), as indicated by the PNAES (Students' Assistance National Program)[9].

In the public notice which divulges the rules for the enrollment in the institution, UFTM established the immunization records as part of the required documentation. During enrollment, the Nursing Service from NAES checks the students' immunization records and, right there and then, offers to administer to them all the vaccines indicated by the Ministry of Health[4].

The population of this study was constituted of the students approved in their tests to start an undergraduate program in a science of health, and who were summoned to the first enrollment opportunity, in February 2012. 67 (32%) of the students did not show up for enrollment, and of those who did, there was a loss of 19 (13%), being that the total number of participants in this study was 124.

Data collection consisted of the following steps: enrolling students were explained the research, told of the objectives of the study, and advised that participation was voluntary. A consent form was signed by

the student and, if he was younger than 18 years of age, his legal tutor was required to sign a consent form as well. After that, the immunization records were checked, and the student was invited to fill in a self-applied sociodemographic survey. Students with outdated immunization records were told of the importance of vaccination and directed to the NAES Nursing Service, in order to update their records. After the last day of enrollment had ended, researchers registered the number and type of vaccines administered to the new students.

The data was managed through Microsoft Excel ® 2007 and analyzed using the software SPSS (Statiscal Package for Social Sciences), version 17.0. Exploratory data analyses were conducted, which started by defining the absolute frequencies, and the percentage of categorical variables, the central tendency, and the statistical dispersion of the continuous variables. For all the analyses, a significance level of 5% ($p<0,05$) was assumed.

It is important to note that this research was conducted according to the Resolution 466/12 of the National Health Council[10], and was approved by the Research Ethics Committee at UFTM, under the protocol number 1986/2011.

RESULTS

124 new students of undergraduation programs. The age of the students varied between 17 and 40 years (with an average of 18,87 years and sd of 2,81 years). Table one shows that most students were female (71.8%), between 17 and 19 years of age (78.2%), single (97.6%) and white (81.5%). 50.8% came from the state of São Paulo and 39.5% from Minas Gerais, Brazil. The program from which the greatest number of students participated on the research was Physical Therapy (18.6%).

Table 1. Sociodemographic data of students entering undergraduation programs sciences of health through the 2012 entrance examinations. Universidade Federal do Triângulo Mineiro, Uberaba/MG.

Variables	N	%
Gender		
Male	35	28.2
Female	89	71.8
Age group		
17 to 19 years old	97	78.2
20 to 24 years old	25	20.2
Over 25 years old	2	1.6
Marital Status		
Single	121	97.6
Married/lives with a partner	3	2.4
Skin color		
White	101	81.5
Black	5	4.0
Olive	3	2.4
Brown	15	12,1
Origin		
Goiás	7	5.7
Minas Gerais	49	39.5
Rio De Janeiro	1	0.8
São Paulo	63	50.8
Did not reply	4	3.2
Starting program		
Biomedicine	9	7.3
Physical Education	19	15.3
Nursing	20	16.1
Physical Therapy	23	18.6
Medicine	22	17.7
Nutrition	17	13.7
Occupational therapy	14	11.3
Total	124	100.0

Regarding the students' immunization records, most of them had their records completed for the TD (82.3%), Hepatitis B (80.6%), Yellow Fever (75%) and MMR (59.7%) vaccines. However, only 39.5% of the students had a complete immunization record.

60.5% of the students had an incomplete immunization record, if we take into account the vaccines for TD, Hepatitis B, Yellow Fever, and MMR, which, according to the Basic Vaccination Schedules for the Adult and Adolescent, are recommended by the Health Ministry of Brazil4.

22.9% of the men and 46.1% of the women had an updated record, highlighting a statistically meaningful association between the completion of the records and the gender of the students (p=0,017). Other meaningful connections were found between the completion of the records and the variables age group (p=0,038) and origin (p= 0,006). No correlation was found between the records and the marital status or the chosen undergraduate program (Table 2).

Table 2. Students enrolling in health-related undergraduate programs through the 2012 selective process, according to their immunization records. Universidade Federal do Triângulo Mineiro, Uberaba/MG.

Variables	Immunization records				p*
	Complete		Incomplete		
	n	%	N	%	
Gender					
Male	8	22.9	27	77.1	0,017
Female	41	46.1	48	53.9	
Age group					
17 to 19 years old	43	44.3	54	55.7	0,038
Over 25 years old	6	22.2	21	77.8	
Marital Status					
Single	48	39.7	73	60.3	0,825
Lives with a partner	1	33.3	2	66.7	
Origin					
Minas Gerais	26	53.1	23	46.9	0,006
Other states	20	28.2	51	71.8	
Starting program					
Nursing and Medicine	17	40.5	25	59.5	0,876
Other health-related courses	32	39.0	50	61.0	

From the 75 students with an incomplete immunization records, 80% updated it and got vaccinated right there and then, by the NAES nursing service.

DISCUSSION

All vaccines recommended by the Health Ministry are gratuitously available at all health services. In spite of that, the adult and adolescent records are much less carefully maintained than those of the children, that are maintained by their legal tutors[11,12].

The inadequate immunization coverage can be due to the lack of educational campaigns directed at this public, and their small involvement with vaccination related actions. The best moment for the health professionals and students to be vaccinated is right before they acquire their degree, specifically before they start internships, as this is the part of their study where the contamination risk is greater — greater even than it is to experienced professionals[13].

A deficient immunization coverage had already been reported[11,13]. A study

conducted at the Federal University of Paraíba (UFPR) has shown that most of its students (88.2%) had an incomplete immunization record, and argued that this coverage is made more difficult because there are no specific vaccination guidelines for higher education institutions and their students of sciences of health[11].

The Ministry of Health, through Decree nº 597, April 8, 2004, Article 5º, paragraph 2º, made compulsory the presentation of an updated immunization record for enrollment in nurseries, pre-school classes, and basic and secondary schools, as well as in universities[11]. However, Decree nº 1,602 revoked this decision, on July 17, 2006[14]. After that, Decree nº 3318, on October 28, 2010, which aims at erradicating immunopreventable diseases in order to guarantee public health, revoked Decree 1,602 from July 17, 2006, and instituted in the entire country the Basic Vaccination Schedule for Children, Adolescents, Adults and Elders[15]. All the vaccinations are compulsory, and in order for an individual to prove that he or she has taken them, he or she must provide up-to-date vaccination records, or certificates issued by public or private health services[4].

A study conducted with students in a Specialization Course in Family Healthcare, at Piauí, among which there were nurses, physicians and dental surgeons, verified that these professionals were not adequately vaccinated. Immunization coverage varied according to the vaccine; the greatest coverage was against Hepatitis B (81.3%), followed by Yellow Fever (76%), Tetanus and Diphteria (65.1%) and then MMR (49.1%)[13].

In this study, the immunization situation of the students was similar regarding the vaccines for Hepatitis B (80.6%) and Yellow Fever (75%); however, more students were vaccinated for TD (82.3%) and MMR (59.7%). This can be accounted for when we couple students' age average (18,87 years of age) with other important facts, such as: the TD vaccine is applied when the individual is 15 years old, the MMR is applied during the childhood, and also, there was a nation-wide Vaccination Campaign against Rubella in 2008, whose target were men and women in fertile age, and registered a coverage of 95.79%[4,16].

Apart from that, the deficient immunization coverage of students and health professionals can be attributed to the lack of a basic vaccination schedule specific to this group, as well as to the poor access to the technical recommendations regarding immunization, which are spread in several documents[13].

A statistically meaningful association was found between the immunization records and the variables gender, age group and origin. This data also differs from the results obtained by a vaccination survey conducted with medicine and nursing students of a city in the state of São Paulo, in which no statistical meaningful differences were observed concerning the gender variable[18], and from those of a study conducted in 2011 by Granville-Garcia et al., in which there was no connection at all between the records and the immunization coverage[11]. Moreover, most of the students alleged not having updated their immunization records because of "lack of time" (27%)[11].

Presenting any document that can prove which vaccines they have taken is an important way to secure that the students are properly immunized and, consequently, protected against the occupational hazards that students, especially those in the health sciences, can be exposed to[2].

The evaluation and regularization of students' immunization records as they enter university can help identifying flaws in their own immunization. Also, the implementation of vaccination campaigns targeted at the students can help locating and solving immunization coverage problems[2].

Vaccination campaigns, as well as routine vaccination, result in an elevated immunization coverage and can eradicate or diminish the incidence of immunopreventable diseases[19].

A study conducted to verify the role that higher education institutions in the state of Goiás, Brazil, had in the prevention against immunopreventable diseases, found that

among the 19 institutions, only one was actually checking if the students had an updated immunization record and, in case of a negative answer, asked them to update their records and bring them back for further analysis. All the other 18 institutions recommended that the students updated their records before the practical activities had been started, but did not check those records after that, and only three of them offered the vaccines. In all the others, the student had to go to the basic health centers in the city[1].

It is also believed that the universities' role goes beyond the scope of the institution itself, and should contemplate questions which are inherent to the lives of its students. As an example, a research about possible influences to the sexuality of health sciences students, found that both the consumption of alcoholic beverages (96.6%) and the enrollment in the university itself (50.4%) stimulated sexuality[20], indicating that this kind of outlook is important if we are to approach health in a holistic manner. The vaccination of the students, of course, should be seen under the same light.

CONCLUSION

Most of the students enrolling in health sciences undergraduate programs were not adequately vaccinated, and it was concluded that the presentation of their immunization records, as well as a vaccination campaign targeted at them and conducted at the moment of their enrollment, are essential strategies in order for them to get access to the vaccines they need, and to contribute for the prevention against immunopreventable diseases. The scarce number of both participants and relevant sources for this study were its limitations.

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