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Vaccination coverage among nursing students in Greece
A cross-sectional assessment

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M. Tseroni,
T. Tsavdaroglou,
P. Galanis,
P. Mangoulia,
V.S. Velonaki,
P. Sourtzi

Department of Nursing, National and Kapodistrian University of Athens, Athens, Greece

Εμβολιαστική κάλυψη φοιτητών Νοσηλευτικής στην Ελλάδα: Μια συγχρονική μελέτη

Περίληψη στο τέλος του άρθρου

OBJECTIVE **To assess the immunity status of nursing students at the National and Kapodistrian University of Athens (NKUA) against vaccine-preventable diseases (VPDs).** METHOD **A cross-sectional anonymous study was conducted between June and July 2024 among nursing students of NKUA. Data were collected through a structured questionnaire specifically designed for this study. Univariate and bivariate analyses were performed, and the Chi-square (x^2) test was used to explore associations between gender, year of study, and vaccination outcomes.** RESULTS **A total of 152 students participated. Full vaccination coverage was 38.8% for hepatitis B, 33.6% for hepatitis A, 55.3% for MMR, 35.5% for varicella, 45.4% for HPV, 75% for COVID-19, and 19.1% for influenza. Only 25.7% had received a diphtheria-tetanus-pertussis booster in the past decade. The hepatitis B antibody test was significantly associated with the year of study (p=0.040), while protective anti-HBs titers (≥10 IU/L) did not differ by gender (p=0.366) or year (p=0.648). HPV vaccination was associated with gender, as expected given that the majority of nursing students were female. COVID-19 vaccination was associated with the year of study, with third-year students showing the highest vaccination rates (p=0.016).** CONCLUSIONS **The findings reveal suboptimal vaccination coverage among nursing students, highlighting the need for a comprehensive vaccination program tailored to healthcare students. Such a program should include targeted training and awareness initiatives, individualized counselling on VPDs, anonymous collection of vaccination data to ensure accurate coverage monitoring, on-site vaccination, and free-of-charge anti-HBs test.**

Key words

Immunization
Nursing students
Preventable diseases
Vaccination

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Vaccines have played a pivotal role in controlling and eradicating communicable diseases, significantly contributing to global health. Despite their undeniable impact, outbreaks of vaccine-preventable diseases (VPDs) persist worldwide, including in healthcare settings, where healthcare providers (HCPs) often remain unvaccinated. Such scenarios pose serious risks to both patients and HCPs, serving as reservoirs for potential transmission.[1]

Healthcare providers are at particularly high risk of occupational exposure to VPDs. Studies highlight several instances of disease transmission from HCPs to patients, exacerbating morbidity and mortality rates and contributing to staff absenteeism.[2] For example, influenza, measles, pertussis, and rubella outbreaks have been linked to unvaccinated healthcare professionals, underscoring the necessity for comprehensive vaccination programs.[1]

The World Health Organization (WHO) has emphasized the role of vaccines in combating antimicrobial resistance (AMR), estimating that widespread use of vaccines could avert up to 543,000 AMR-associated deaths annually.[3] National vaccination guidelines consistently recommend immunization for healthcare workers, yet compliance remains suboptimal due to a variety of factors, including lack of awareness, vaccine hesitancy, and logistical barriers.[3]

A recent study reveals inadequate vaccination coverage among healthcare professionals. For instance, vaccination rates range from 14.0% for influenza, 77.3% for hepatitis B, 23.7% for mumps and 30.9% for measles-rubella.[4] However, recent studies indicate shifts in these trends following the COVID-19 pandemic. Another study highlighted that vaccine hesitancy among healthcare workers remains a significant challenge in Europe, with implications for vaccine

coverage and public health.[5] In Greece, susceptibility rates among HCPs are alarmingly high, with 39.6% for mumps, 34.2% for hepatitis B, and 68.2% for diphtheria-tetanus.[6]

Despite the critical role of nursing students in clinical settings, few studies have explored their vaccination coverage comprehensively. Nursing students, by virtue of their clinical practice, are frequently in direct contact with patients and thus must adhere to vaccination guidelines for healthcare workers. However, limited data exist on the vaccination status and susceptibility rates of nursing students in Greece, highlighting an important research gap.

The present study aimed to estimate full vaccination coverage rates and susceptibility rates against VPDs among nursing students of the Nursing Department of the National and Kapodistrian University of Athens (NKUA), Greece, as of 2024.

MATERIAL AND METHOD

Study design

This was a cross-sectional study with a convenience sample conducted from June to July 2024. Students of the Nursing Department of the NKUA were invited to participate in the study. The students voluntarily and anonymously consented to participate in the study. The study protocol was approved by the ethics committee of the Nursing Department of the NKUA (reference number: 508, date: 18.6.2024). The study was also carried out following the ethical standards set forth in the Declaration of Helsinki.[7]

Tool

The data were collected through a structured, web-based, anonymous, self-reported questionnaire, which was distributed to all students through a Google Forms link. The data collected were gender, year of study, vaccination history and number of doses against measles-mumps-rubella (MMR), varicella, diphtheria-tetanus-pertussis (DTaP), hepatitis A (HAV), hepatitis B (HBV), seasonal influenza (in the last influenza season), COVID-19 and HPV. In addition, participants were asked when the last booster shot for DTaP was as well as if they had undertaken a hepatitis B antibody (anti-HBs) test and if the result was positive or negative. Information about the natural history of measles, mumps, rubella, pertussis and varicella was also collected.

Definitions

Reported vaccination coverage was defined as the participant's statement of whether they have been vaccinated. Full vaccination coverage was defined as the administration of two doses for the MMR, varicella, HAV. For HBV, full coverage required at least three doses, while for HPV, either two or three doses were accepted, depending on age at initiation. Vaccination against tetanus, diphtheria, and pertussis was considered complete if a booster dose had been received within the previous ten years. In addition, full vaccination was defined as receipt of one influenza dose during the last flu season and at least two doses of a COVID-19 vaccine.

Self-reported immunity to measles, mumps, rubella and varicella was based on either a complete vaccination history and or a known history of past infection conferring lasting immunity. Conversely, past infection with pertussis was considered only if it had occurred within the last decade, due to the decline of naturally acquired immunity over time.

Susceptibility to vaccine-preventable diseases (VPDs) was determined by the absence of self-reported immunity or complete vaccination history and calculated using the formula: (1-immunity) *100%.

Susceptibility was not estimated for influenza and COVID-19 due to the need for an annual shot.

Statistical analysis

We present categorical variables as numbers (n) and percentages (%). Since demographic data were not planned to be collected –apart from the students' year of study– the Chi-square (x^2) test was applied to assess associations between variables, with p-value <0.05 considered statistically significant. We used the Statistical Package for Social Sciences (SPSS), version 28.0 (IBM Corp released 2021; IBM SPSS Statistics for Windows, version 28.0; IBM Corp, Armonk, NY) for the analysis.

RESULTS

A total of 152 nursing students (34 male [22.4%], 118 female [77.6%]) distributed in 4 years of study participated in the study (response rate: 17.7%). There were 28 (18.4%) first-year students, 56 second-year students (36.9%), 25 third-year students (16.4%) and 43 fourth-year students (28.4%).

Table 1 presents the reported vaccination coverage of students in the question of whether they have been vaccinated for each disease and the full vaccination rates according to the study definitions. The highest full vaccination rates were against COVID-19 (75.0%), MMR (55.3%), and HPV (45.4%). Overall, 38.8% of students had been fully vaccinated against hepatitis B.

Regarding natural immunity, 11.8% of the students reported a history of measles, 9.2% of mumps, 11.8% of rubella, 12.5% of pertussis, and 26.3% of varicella.

Table 2 shows susceptibility rates against VPDs. Susceptibility rates were estimated as follows: Diphtheria-tetanus 74.3%, hepatitis A 66.4%, hepatitis B 61.2%, measles 38.8%,

Table 1. Rates of reported and full vaccination of nursing students.

Vaccines	Rates of reported vaccination n (%)	Rates of full vaccination n (%)
DTaP vaccination	149 (98.0)	N/A*
Tdap booster ≤10 years	39 (25.7)	39 (25.7)
HAV vaccination	112 (73.7)	51 (33.6)
HBV vaccination	139 (91.4)	59 (38.8)
HPV vaccination	98 (64.5)	69 (45.4)
MMR vaccination	142 (93.4)	84 (55.3)
Varicella vaccination	127 (83.6)	54 (35.5)
COVID-19 vaccination	123 (80.9)	114 (75.0)
Influenza vaccination (last influenza season)	29 (19.1)	29 (19.1)

*N/A: Full vaccination was defined as a booster dose within the previous ten years

Table 2. Susceptibility rates against vaccine-preventable diseases (VPDs) of nursing students.

VPDs	Susceptibility rate
Diphtheria-tetanus	74.3%
Hepatitis A	66.4%
Hepatitis B	61.2%
Measles	38.8%
Mumps	40.1%
Pertussis	69.1%
Rubella	39.5%
Varicella	46.1%

mumps 40.1%, pertussis 69.1% (47 students reported either a booster vaccination or a history of pertussis infection during the last decade), rubella 39.5% and varicella 46.1%.

The bivariate analysis presented in table 3 examines full vaccination coverage by gender and year of study, highlighting proportional differences even when p-values are not statistically significant. For most vaccines (DTaP, HAV, HBV, MMR, varicella, influenza, and COVID-19), female students showed slightly higher vaccination rates than males, although these differences were modest and non-significant (p>0.05). COVID-19 coverage exceeded 60% across all groups, while MMR was around 55.0% and varicella approximately 35.0%. HAV and HBV coverage showed mild variation among study years (ranging from 30% to 40%), and influenza vaccination remained low overall (<25%). The HPV vaccine displayed the most pronounced disparity, with higher coverage among females (56.8%) than males (5.9%), representing the only statistically significant difference associated with gender (p<0.001). This finding was expected, as the majority of nursing students in the sample were women, who are the primary target group for HPV vaccination. COVID-19 vaccination was associated with the year of study, with third-year students showing the highest vaccination rates (p=0.016).

Regarding the anti-HBs test, 28.9% (44/152) of nursing students had been screened, and among them, 75.0% had an anti-HBs titer ≥10 IU/L.

Table 4 demonstrates that anti-HBs testing rates were similar between genders, with males showing a rate of 29.4% and females 28.8% (p=0.552). Testing frequency, however, varied significantly across the years of study, ranging from 7.1% among first-year students to 37.2% among fourth-year students (p=0.04). Among those who were tested, the proportion achieving protective antibody titers (anti-HBs ≥10 IU/L) did not differ significantly by gender (males 80.0% versus females 73.5%; p=0.366). When analyzed by year of study, the proportion with protective titers ranged from 66.7% in the first year to 83.3% in the second year, with corresponding values of 62.5% and 68.7% in the third and fourth years, respectively, showing no significant variation (p=0.648).

DISCUSSION

A cross-sectional survey was conducted to assess full vaccination coverage and susceptibility to VPDs among nursing students of the NKUA, as few studies have assessed vaccination coverage among nursing students. To the best of our knowledge, this is the first study among nursing students of the NKUA to estimate vaccination coverage related to vaccines suggested by the national vaccination program for adults and the national guidelines for the immunization of HCPs. In this study, the vaccination rates between the reported vaccination status and the full vaccination rate are inconsistent. However, we must take into consideration that the students might have filled out the questionnaire without access to their individual vaccination booklets (they had to recall their vaccination status and the number of doses).

According to a current systematic review, the vaccination rate of nursing students for HBV varies from 6.7 to 100%.[8] In our study, 91.4% of the participants had been vaccinated against hepatitis B. However, nearly 39.0% reported being fully vaccinated, and 28.9% had undergone an anti-HBs test. Similarly, a recent study of 1,261 Greek nursing students revealed a gap between the reported vaccination rate against HBV and the full vaccination rate (66.3% and

Table 3. Bivariate associations between full vaccination, gender, and year of study.

Full vaccination		Gender, n (%)		p-value	Year of study, n (%)				p-value
		Male	Female		1st	2nd	3rd	4th	
DTaP	Yes	8 (23.5)	23 (19.5)	0.383	8 (28.6)	10 (17.9)	8 (32.0)	5 (11.6)	0.140
	No	26 (76.5)	95 (80.5)		20 (71.4)	46 (82.1)	17 (68.0)	38 (88.4)	
Booster shot for Tdap	Yes	10 (29.4)	29 (24.6)	0.604	6 (21.4)	14 (25.0)	10 (40.0)	9 (20.9)	0.186
	No	24 (70.6)	89 (75.4)		22 (78.6)	42 (75.0)	15 (60.0)	34 (79.1)	
HAV	Yes	8 (23.5)	43 (36.4)	0.114	10 (35.7)	21 (37.5)	8 (32.0)	12 (27.9)	0.779
	No	26 (76.5)	75 (63.9)		18 (64.3)	35 (62.5)	17 (68.0)	31 (72.1)	
HBV	Yes	12 (35.3)	47 (39.8)	0.393	12 (42.9)	18 (32.1)	11 (44.0)	18 (41.9)	0.638
	No	22 (64.7)	71 (60.2)		16 (57.1)	38 (67.9)	14 (56.0)	25 (58.1)	
HPV	Yes	2 (5.9)	67 (56.8)	<0.001	16 (57.1)	27 (48.2)	9 (36.0)	7 (39.5)	0.778
	No	32 (94.1)	51 (43.2)		12 (42.9)	29 (51.8)	16 (64.0)	26 (60.5)	
MMR	Yes	19 (55.9)	65 (55.1)	0.547	17 (60.7)	27 (48.2)	15 (60.0)	25 (58.1)	0.608
	No	15 (44.1)	53 (44.9)		11 (39.3)	29 (51.8)	10 (40.0)	18 (41.9)	
Varicella	Yes	12 (35.3)	42 (35.6)	0.572	10 (35.7)	20 (35.7)	8 (32.0)	16 (37.2)	0.979
	No	22 (64.7)	76 (64.4)		18 (64.3)	36 (64.3)	17 (68.0)	27 (62.8)	
COVID-19	Yes	25 (73.5)	89 (75.4)	0.843	17 (60.7)	38 (67.8)	23 (92.0)	36 (83.7)	0.016
	No	9 (26.5)	29 (24.6)		11 (39.3)	18 (32.2)	2 (8.0)	7 (16.3)	
Influenza	Yes	9 (26.5)	20 (16.9)	0.159	5 (17.9)	9 (16.1)	6 (24.0)	9 (20.9)	0.839
	No	25 (73.5)	98 (83.1)		23 (82.1)	47 (83.9)	19 (76.0)	34 (80.9)	

Table 4. Hepatitis B surface antibody testing and protective titers by gender and academic year.

anti-HBs test		Gender n (%)		p-value	Year of study n (%)				p-value
		Male	Female		1st	2nd	3rd	4th	
anti-HBs test performed	Yes	10 (29.4)	34 (28.8)	0.552	2 (7.1)	18 (32.1)	8 (32.0)	16 (37.2)	0.040
	No	24 (70.6)	84 (71.2)		26 (92.9)	38 (67.9)	17 (68.0)	27 (62.8)	
anti-HBs titer ≥10 IU/L*	Yes	8 (80.0)	25 (73.5)	0.366	2 (66.7)	15 (83.3)	5 (62.5)	11 (68.7)	0.648
	No	2 (20.0)	9 (26.5)		0 (0.0)	3 (16.7)	3 (37.5)	5 (31.3)	

*Percentages for titers are among those tested; protective threshold=anti-HBs ≥10 IU/L

27.7%, respectively). Moreover, highlighted that the low full vaccination rate of Greek nursing students against hepatitis B was not related to students' level of knowledge or attitudes; however, the longer year of nursing education was associated with better practices and attitudes towards HBV ($p<0.05$).[9] In addition, in the aforementioned study, only 17.6% of the nursing students had undergone an anti-HBs test.[9]

Besides, another study in 2016 demonstrated that the reported vaccination with two or three doses against hepatitis B in Greek nursing students was 81.4%, but two doses do not mean full vaccination for HBV, and this means that the rate of fully vaccinated nursing students was lower.[10] However, a Greek study conducted in 2013 and collected data directly from the vaccination booklets of healthcare students found that 70.0% of them were fully vaccinated for HBV.[11] On the other hand, a study in 2021 of dental students mentioned that 45.9% of them had been fully vaccinated with the HBV vaccine.[12] Correspondingly, our results showed that the anti-HBs test was related to the year of study. Although in Greece, vaccination against HBV was included in the National Vaccination Program from 1.1.1998, and therefore students should report full vaccination against HBV, the above findings emphasize

the need for more accurate data collection coming either from vaccination booklets of the students even if it is time-consuming or from a national vaccination registry for HCPs and healthcare students, which is necessary to be developed.

Regarding MMR, the rate of fully vaccinated nursing students (55.3%) was similar to that of dental students (56.5%) in a Greek study conducted in 2021.[12] This rate seems low if we consider that the national recommendation for the MMR vaccine was issued more than three decades ago, as well as the campaign for MMR vaccination during the large measles epidemic in Greece in 2017–2018.[13] Similarly, a cross-sectional survey on medical and nursing students in 2025 showed a 41.7% vaccination rate for measles.[14] Moreover, a Greek study on healthcare students conducted in 2013 and collected data directly from the vaccination booklets of healthcare students demonstrated that the measles and mumps vaccination rate was 68.5% and for rubella 79.5%. In our study, susceptibility rates were nearly 40.0% against measles, mumps and rubella.

The susceptibility rate of nurse students against varicella was 46.1%, comparable with the susceptibility rate (32.3%) of a study in dental students in Greece in 2021.[12] In contrast, Karageorgou et al, based on vaccination booklets and disease history, found that 15.7% of healthcare students to be susceptible to varicella.[11]

The vaccination rate against HAV in our study was 33.6%, even though the vaccine for hepatitis A has been included in the National Vaccination Program since 2007. Two similar studies on dental and healthcare students found HAV vaccination rates of 44.1% and 46.3%, respectively.[11,12]

In addition, it is concerning that only 25.7% of nursing students have received a booster shot for DTaP during the last ten years. A 2019 study demonstrated that the Tdap booster shot rate among medical students was 39.2%.[15] Maltezou et al mentioned that 63.2% of dental students had received a booster shot for tetanus-diphtheria but fewer for pertussis (47.8%) while Karageorgou et al showed that the booster shot for diphtheria-tetanus was 80.2%.[11,12] In addition, in the United States of America, a 2018 survey of 21 states reported an overall 47.2% self-reported vaccination rate against diphtheria-tetanus. The highest percentage was among doctors (66.8%).[16] Furthermore, a study conducted in 2019 in Hungary and Germany in medical students showed that only 50.0% had received a booster shot for pertussis.[17] In our study, the susceptibility for pertussis was 69.1%, which raises concern considering that pertussis is a reemerging threat.[18]

In this study, a high percentage of students had been vaccinated against COVID-19 with at least two doses (75.0%). A study conducted in Greece in 2021 in dental students demonstrated that vaccination against COVID-19 was 87.7%.[12] According to the literature review, nursing students seem to be afraid or hesitant to be vaccinated with the COVID-19 vaccine, with the most prevalent reason being fear of side effects.[19–21] Greece was one of the countries where COVID-19 vaccination became mandatory for HCPs, so unvaccinated healthcare students could not attend clinical practice.[22] Moreover, it has been reported that as the year of study increases, the intention to receive the COVID-19 vaccine also rises, which is consistent with our findings.[23]

As regards influenza vaccination, only 19.1% of nursing students were vaccinated. Statiri et al suggested that nursing students' vaccine knowledge significantly influenced their attitudes towards vaccination and subsequent uptake.[24] Moreover, social responsibility and the intention to protect family members from influenza emerged as a primary motivation for those who did choose to vaccinate. A campaign in the university before the start of influenza vaccination season could probably be helpful.[25]

Finally, the HPV vaccine has been included in pediatric and adult vaccination programs since 2008 for girls and women. In 2022, this program also included boys aged 9–11 years old. According to WHO, the primary target of vaccination is girls aged 9–14, before the start of sexual activity. The vaccination of secondary targets such as boys and older females is recommended where feasible and affordable.[26] In our study, 56.8% of female students were vaccinated against HPV. In a study of college students in China in 2021, the overall vaccination rate was 3.13%.[27] In a Greek study on higher education students in 2012, the vaccination rate against HPV was 25.8%.[28] A recent Greek study found that the HPV vaccination rate in Greece is 40.0% for women. In the same study, it is mentioned that a small proportion of the participants ignore the existence of HPV and that 24.1% of males and 23.4% of females believed that condom use may provide absolute immunity to HPV, and only 51.6% of males and 60.4% of females were aware of the high prevalence of HPV in the general population.[29]

The discrepancy between the rates of reported vaccination and rates of full vaccination is significant in several cases and warrants further explanation. For many students, the reported vaccination rates reflect their recall of receiving a vaccine, which may not correspond to the full vaccination as defined by receiving the complete series of doses required for effective immunity. This difference could also be attributed to gaps in knowledge about vac-

cination schedules, limited access to vaccination records, or incomplete adherence to booster dose recommendations. These findings underscore the need for improved education, better access to vaccination records, and targeted interventions to ensure full vaccination coverage among nursing students.

The susceptibility rates against VPDs of nursing students raise concern. Approximately, one out of three is susceptible to measles, mumps or rubella. The susceptibility rate against hepatitis A and B was also high, and about 50% are susceptible to varicella. In addition, a major issue is the Tdap booster shot. These findings indicate the suboptimal full vaccination rates against VPDs, which result in the re-emergence of such diseases in the post-vaccination era.[30] Very few students had a natural history of measles, mumps or rubella. On the other hand, Karageorgou et al found that susceptibility rates were lower (20.5% for measles, 26.4% for mumps, 13.9% rubella, 15.7% varicella).[11] The rise of susceptibility rates over the decade should be underlined as it indicates that healthcare providers are vulnerable to diseases which had serious morbidity and mortality during adulthood. It has been reported that on-site vaccination and campaigns that provide updated knowledge towards VPDs can increase awareness and compliance with the national vaccination program for adults and HCPs.[31–33]

Our study had several limitations. Initially, this study was not multicenter and took place only in one department of nursing schools in Greece. In addition, the response rate was 17.7%, which seems low, but it is similar to studies conducted in Greece in the past decade and consisted of participants from all academic years.[10,11] Furthermore, the use of an online survey may have introduced a significant bias, as it relies on self-reported data and participants' ability to recall their vaccination history accurately. Nevertheless, our findings indicate there is substantial room for improvement in nursing students' vaccination coverage.

In conclusion, aiming to increase vaccination rates among healthcare students, including nursing students, it appears that education about VPDs alone is not sufficient to influence vaccination decision-making. There is a need for a comprehensive program for healthcare students that includes not only training and awareness on VPDs and their implications –particularly for vulnerable health populations– but also targeted interventions, such as individual consultations on vaccination, on-site vaccination opportunities, anonymous data collection from students' vaccination booklets to ensure accurate information on vaccination coverage, and free-of-charge titer testing and immunity confirmation. In addition, longitudinal studies could provide valuable insights into vaccination trends over time. Furthermore, the newly developed National Vaccination Registry in Greece should be more effectively utilized by medical professionals, and a separate section dedicated to healthcare professionals and students should be established as an extension of this registry.

ΠΕΡΙΛΗΨΗ

Εμβολιαστική κάλυψη φοιτητών Νοσηλευτικής στην Ελλάδα: Μια συγχρονική μελέτη

Μ. ΤΣΕΡΩΝΗ, Τ. ΤΣΑΒΔΑΡΟΓΛΟΥ, Π. ΓΑΛΑΝΗΣ, Π. ΜΑΓΓΟΥΛΙΑ, Β.Σ. ΒΕΛΟΝΑΚΗ, Π. ΣΟΥΡΤΖΗ

Τμήμα Νοσηλευτικής, Εθνικό και Καποδιστριακό Πανεπιστήμιο Αθηνών, Αθήνα

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ΣΚΟΠΟΣ Η αξιολόγηση της ανοσιακής κατάστασης των φοιτητών(τριών) Νοσηλευτικής του Εθνικού και Καποδιστριακού Πανεπιστημίου Αθηνών (ΕΚΠΑ) έναντι νοσημάτων που προλαμβάνονται με εμβολιασμό. **ΥΛΙΚΟ-ΜΕΘΟΔΟΣ** Διενεργήθηκε ανώνυμη συγχρονική μελέτη μεταξύ Ιουνίου και Ιουλίου 2024 σε φοιτητές(τριες) Νοσηλευτικής του ΕΚΠΑ. Τα δεδομένα συλλέχθηκαν μέσω δομημένου ερωτηματολογίου που αναπτύχθηκε ειδικά για τους σκοπούς της μελέτης. Πραγματοποιήθηκαν μονομεταβλητή και διμεταβλητή ανάλυση, ενώ η δοκιμασία x^2 χρησιμοποιήθηκε για τη διερεύνηση συσχετίσεων μεταξύ φύλου, έτους σπουδών και αποτελεσμάτων εμβολιασμού. **ΑΠΟΤΕΛΕΣΜΑΤΑ** Συνολικά, συμμετείχαν 152 φοιτητές(τριες). Η πλήρης εμβολιαστική κάλυψη ήταν 38,8% για την ηπατίτιδα Β, 33,6% για την ηπατίτιδα Α, 55,3% για την ιλαρά-παρωτίτιδα-ερυθρά (MMR), 35,5% για την ανεμευλογιά, 45,4% για τον ιό των ανθρωπίνων θηλωμάτων (HPV), 75% για την COVID-19 και 19,1% για τη γρίπη. Μόνο το 25,7% είχε λάβει αναμνηστική δόση έναντι διφθερίτιδας-τετάνου-κοκκύτη την τελευταία δεκαετία. Ο έλεγχος αντισωμάτων για την ηπατίτιδα Β συσχετίστηκε σημαντικά με το έτος σπουδών (p=0,040), ενώ τα προστατευτικά επίπεδα anti-HBs (≥10 IU/L) δεν διέφεραν ανά φύλο (p=0,366) ή έτος σπουδών (p=0,648). Ο εμβολιασμός έναντι του HPV βρέθηκε να σχετίζεται με το φύλο, όπως αναμενόταν, δεδομένου ότι η πλειονότητα των φοιτητών ήταν γυναίκες. Ο εμβολιασμός έναντι της COVID-19

σχετίστηκε με το έτος σπουδών, με τους φοιτητές του τρίτου έτους να παρουσιάζουν τα υψηλότερα ποσοστά (p=0,016). **ΣΥΜΠΕΡΑΣΜΑΤΑ** Τα ευρήματα αναδεικνύουν υποβέλτιστα επίπεδα εμβολιαστικής κάλυψης μεταξύ των φοιτητών Νοσηλευτικής, υπογραμμίζοντας την ανάγκη για την ανάπτυξη ενός ολοκληρωμένου προγράμματος εμβολιασμού προσαρμοσμένου στις ανάγκες των φοιτητών επαγγελμάτων υγείας. Ένα τέτοιο πρόγραμμα θα πρέπει να περιλαμβάνει στοχευμένη εκπαίδευση και ενημέρωση, ατομική συμβουλευτική σχετικά με τα νοσήματα που προλαμβάνονται με εμβολιασμό, ανώνυμη συλλογή δεδομένων από τα εμβολιαστικά βιβλιάρια για την ακριβή αποτύπωση της κάλυψης, εμβολιασμό εντός της σχολής, δωρεάν έλεγχο αντισωμάτων για την ηπατίτιδα Β.

Λέξεις ευρετηρίου: Ανοσοποίηση, Εμβολιασμός, Νοσήματα που προλαμβάνονται με εμβολιασμό, Φοιτητές Νοσηλευτικής

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Corresponding author:

P. Galanis, 123 Papadiamantopoulou street, 115 27 Athens, Greece
e-mail: pegalan@nurs.uoa.gr