Online publication ahead of print, AJMHS Vol 51, 2019

Perceptions and Knowledge of Albanian Nurses about Mandatory and Recommended Vaccinations for Healthcare Workers in Albania

Sara Malorgio[1], Irsida Mehmeti[1*], Fabian Cenko[1], Emiliano Giampa[2], Carlo Talucci[3]

[1]Catholic University "Our Lady of Good Counsel", Tirana, Albania
[2]Albanian Institute of Manual Medicine, Tirana, Albania
[3]Department of surgery, Polyclinic University Foundation "Agostino Gemelli", Rome, Italy

Abstract

Background: Vaccines represent the most cost effective and simple intervention to protect against deleterious epidemics. The health care staff, especially nurses are the forefront medical professional to meet hundreds of patients in a day and should be vaccinated in order to prevent the diffusion of vaccine preventable diseases. Their information about vaccination is important to increase public awareness about the importance of vaccination.

Aims: The main objective of this study was to investigate the extent of Albanian nurses 'knowledge, perception and practices in relation to the issue of mandatory and voluntary vaccinations and observe the extent to which the administration of vaccines is recommended in a clinical context. Secondary objectives were to evaluate the adhesion of nurses to optional vaccinations.

Study Design: Descriptive qualitative study

Methods: A cohort study was conducted in nine vaccine centers in Tirana, selecting a voluntary sample of 41 nurses. To collect data, we used paper-based questionnaire, standardized by the Higher Institute of Health, HProImmune (Promotion of Immunization for Health validated in Albanian language. Further socio-demographic data were collected to complete the survey. Data were analysed through a descriptive statistic method.

Results: 96% of the interviewed nurses are aware of the fact that vaccinations are an important tool for the prevention and protection against serious diseases and they consider vaccination a prerequisite for working in health care. On the other hand, there is little awareness about which vaccines should be recommended to the population.

Conclusion: Although a positive perception about the vaccination practice is deduced, the interviewed nurses affirm that they do not intend to get vaccinated for some non-mandatory vaccines. This study shows a theoretical awareness on vaccinations that does not correspond to a concrete vaccination in practice. Government institutions should implement more campaigns to raise awareness of vaccination coverage and training courses for all those healthcare professionals who deal with vaccines every day.

Key words: Nurses, Vaccination, Health promotion, Education.

Address for correspondence: Irsida Mehmeti*, Catholic University "Our Lady of Good Counsel", Rr.Dritan Hoxha,Tirana, Albania, 1000. Tel: +355 672121650, E-mail: i.mehmeti@unizkm.al

INTRODUCTION

Since the invention of the first vaccine against smallpox by Eduard Jenner in 1796, vaccination has become the best strategy to improve child survival and reduce morbidity, saving millions of lives (1). Vaccines represent the most cost effective and simple intervention to protect against deleterious epidemics (2). Moreover, there are mortality and morbidity related benefits derived from preventing infectious diseases through vaccination; these include financial benefits by avoiding hospitalization, preventing long-term disability; in particular this is evident for vaccination against Herpes zoster (3), for papilloma virus (4), for pneumococcal vaccination (5) and for vaccination against seasonal influence (6). Due to vaccination some of the diseases have been eradicated, as was the case for smallpox (7).The reduction of infections, and the consequent deaths or disabling sequel, are proportionally related with the increase in vaccination coverage (8).

Due to significant scientific progress, many vaccines are available and numerous are in progress of development.

However, vaccine preventable infectious diseases are still prevalent. Therefore, it is important to use the available methods to prevent as much as possible the vaccine preventable diseases. Vaccination goes beyond the simple administration of an immunobiological. It requires a significant body of knowledge, especially nurses who are direct responsible for organization of the vaccination service and contribute to reach the goals of vaccination (9). The availability of vaccines would be worthless without the proper knowledge of the healthcare workers on vaccination. Healthcare workers, especially those who handle immunization every day in their clinical practice, should continuously update their knowledge.

Nurses are key components of public health interventions and, their expertise, knowledge, and advice are vital in creating a safe and trusted environment for discussing immunizations.

The International Council of Nurses (ICN) calls for greater involvement of nurses in health promotion and primary health care as they play a critical role in immunization (10). ICN believes that enhancing the engagement of nurses in immunization activities and enforcing their knowledge about vaccines, is a key strategy for improving global immunization rates. A considerable number of countries rely only on nurses to manage their immunization programs, including training and supervision of other health care workers in vaccine practices (11). Moreover, nurses should be aware of the vaccination they should administer themselves as they are in direct contact with infective materials from patients. Therefore, they are at risk of exposure to and possible transmission of vaccine preventable diseases (12). A set of occupational vaccines are recommended for health care workers to protect them from transmissible agents and to prevent nosocomial transmission of pathogens (13). The knowledge and perceptions of healthcare workers in Albania about vaccination practice is

underreported with only one study reporting the knowledge, practice and approaches of health professionals to adverse events following immunization (AEFI) in Albanian children (14).

Most of the healthcare professionals (54/102) had fair knowledge level and a considerable proportion (35/102) had poor knowledge level with vaccination nurses being the most aware of the issue compared to other categories of health professionals.

Another study assessed the antibiotic knowledge, attitudes and behaviors of Albanian health care professionals (15). The authors concluded that health care professionals acknowledged the risks of antibiotic resistance but only a few of them considered the risk and the consequences in their daily practice. For this reason, we tried to conduct a research study in a middle-income country like Albania where the vaccination strategies are being implemented rapidly according to the guide-lines given by World Health Organization (16). We interviewed nurses working at primary health centers in Tirana, the capital of Albania. In Albania, a mandatory vaccination calendar for healthcare workers is still missing. However, the Ministry of Health of Albania requires health workers to be vaccinated against flu every season and in the last year the Ministry of Health of Albania issued another decision regarding vaccination against measles (17). About other vaccines, there is not a clear opinion.

The main objective of this study was to assess the perception of nurses working at nine vaccine centers in Tirana about mandatory and voluntary vaccinations indicated for health care professionals. The specific objectives were:

- Assess the knowledge of nurses regarding vaccinations;
- Evaluate whether the vaccination practice is recommended by the nursing staff and which vaccines are the most used;
- Evaluate the adhesion of nurses to optional vaccinations.
- Evaluate whether the nurses are vaccinated or not

METHODS

The study took place from March 2017 to May 2017. Permission by the Ministry of Health and Social protection of Albania was obtained to conduct this study.

We included in the study 9 health care centers belonging to the district of Tirana. Tirana has in total 10 primary health centers and 4 specialty polyclinics. We considered nurses working in primary health care centers. The number of nurses working in all 10 health centers of Tirana is 434.

In total, 41 nurses were voluntarily enrolled in the study who constitutes about 10% of the total number of nurses working in these health centers. The study sample was chosen to be a non-probabilistic type. Nine vaccination centers of the district of Tirana represented the study setting. We decided to study only the nurse population of the district of Tirana as it is the capital of Albania and has the largest number of inhabitants and vaccination centers compared to other cities of Albania. The sample nurses were informed about

the objectives of the study and tool of the study. Participants had a dead-line of seven days to fill in the questionnaire. The questionnaire used in this study was adopted from the questionnaire used as a survey tool from the HProImmune (Promotion of Immunization for Health Professionals in Europe) Higher Institute of Health (18).

The questionnaire has been double validated and translated in Albanian language which enabled a better comprehension of the questions by the nurses.

The translated and tailored questionnaire included 8 sections, one of which was dedicated to the socio-demographic data of the subjects. The first section included various affirmations about vaccines and vaccination to which the interviewed nurses should reply choosing one of the five alternatives: completely disagree, disagree, I am not sure, agree, completely agree. The aim of this section was to understand the perceptions of health care nurses about vaccination.

The second section included question about believes of the nurses about vaccination of health care staff. The third question aimed to observe whether nurses recommend vaccination in their daily practice.

The fourth section aimed to investigate the knowledge of nurses about mandatory and recommended vaccination of health care staff. The fifth section asked the nurses whether they had been previously vaccinated or not and the sixth question asked them about whether they intend to be vaccinated in the future. The seventh question asked about the administration of obligatory vaccines.

It has been ensured the privacy and anonimity of the targeted sample. Face to face administration of the questionnaire has been performed. This helped to explain the importance of filling all the parts of the questionnaire. Nevertheless, some of the data were missing which limited the generalizing of the reached conclusions. About 14% of the respondents did not answer about which vaccines they recommend at their daily practice. Therefore, it was difficult to assess the practice of the nurses in their daily practice. Moreover, about half of the respondents did not answer to the question about the intention to be vaccinated in the future with anti-influenza vaccine (54%) and with hepatitis B vaccine (46%). So, it was difficult to assess the awareness of the nurses about the importance of vaccination of health care professionals. Data analysis was performed using common descriptive statistical methods.

RESULTS

Table 1 displays socio-demographic features of participants.

Table 1 Demographic data

	M	W
Sex	7 (17%)	34 (83%)
Participation in specific vaccination training course	5(12%) = No 2 (5%) = m	7 (17%) =No 19 (46%) = Yes 8 (20%) = m
Total years of work	6,14 ±3,07	11,8± 9,08
Years of work in the vaccination centers	1,7±0,75	5,08±4,48

*****Data are expressed in Media ± Standard Deviation; M= Man; W= Woman; m= Missing data.

Table 2 displays the answers about the 13 items of the questionnaire regarding the perception and personal opinion of participants about certain features of vaccines.

Then the questionnaire investigated the theoretical knowledge of these nurses asking them if they were aware about which vaccination are recommended for professional health-care. Results are displayed in figure 1.

The number of nurses actually vaccinated is summarized in figure 2.

14% of interviewed nurses states that recommending vaccinations is not a nurse duty, 6% did not answer this item, while 80% states to recommend vaccination to people in their every-day clinical practice. Another item investigated the actual number of nurses vaccinated for non-mandatory vaccines; only 41% of them states to be vaccinated for non-mandatory vaccines.

(2/41) 4 % of the nurses did not agree that vaccines are important to reduce or eliminate the serious diseases. This percentage is considerable, considering that one nurse might contact more than 50 patients a day and her perceptions are transmitted to her patients and influence her vaccination practice.

Table 2 Give your opinion on the following statements

	Do not agree	I am not sure	Agree	NA	Tot.
I believe that vaccines are important for reducing or eliminating serious illnesses	2 (5%)	0 (0%)	39(95 %)	0 (0%)	41 (100%)
I believe that vaccines are worthwhile in certain situations, for example, in developing countries	8 (20%)	4 (10%)	29(71 %)	0(0%)	41 (100%)
I do not have any opinion on this regard	13 (32%)	6 (15%)	0 (0%)	22(54 %)	41 (100%)
I believe more in the natural immunity acquired through the disease than in the vaccines	23 (56%)	1 (2%)	16 (39%)	1(2%)	41 (100%)
I do not believe in vaccinations: I think they do more harm than good	41 (100)	0 (0%)	0 (0%)	0(0%)	41 (100%)
I fear adverse events following immunization	22 (54%)	5 (12%)	14 (34%)	0(0%)	41 (100%)
My religious convictions are against vaccinations	41 (100)	0(0%)	0 (0%)	0(0%)	41 (100%)
I do not think I'm at risk of contracting any infectious disease	32 (78%)	5(12%)	4 (10%)	0(0%)	41 (100%)
I'm afraid of getting sick after being vaccinated	27 (66%)	14(34%)	0(0%)	0(0%)	41 (100%)
I believe the vaccines are not effective	25 (61%)	12(29%)	4 (10%)	0(0%)	41 (100%)
I am suspicious about the long-term effects on the health of vaccinations	11 (27%)	24(59%)	6 (15%)	0(0%)	41 (100%)
I believe that the vaccination of health-care workers is a prerequisite for working in healthcare system	0 (0%)	0(0%)	40(98 %)	1(2%)	41 (100%)
I believe that vaccinations are an obligation of health-care workers as they should represent an exemplary for patients	4 (10%)	0(0%)	36 (88%)	1(2%)	41 (100%)

*NA=No answer

About 14% (6/41) of the nurses did not have any opinion about vaccination. However, 100% of them agree that vaccines are harmless. This is an encouraging result which might indicate that at least the nurses do not spread false opinions about vaccinations. 34 % (14/41) of the nurses feared adverse events following immunization. Almost all of the nurses believed that vaccination is an indispensable requisite for health care professions (40/41). 19% of the nurses were not vaccinated with hepatitis B vaccine, 17% were not vaccinated with influenza vaccine and 51% of them did not receive Tdap or td vaccine in the last 10 years. This result indicates a neglecting of the nurses toward vaccination. They are not aware of the risks that come from not being vaccinated.

22% (9/41) of the nurses had more than 10 years of experience in the sector of vaccination and all of them recommended vaccines in their daily practice. 32% of the nurses (13/41) had less than 5 years of experience in the vaccination sector and all but 3 recommended vaccines in their daily practice.

From the 6 nurses who stated that vaccination was not part of their duty, only one had more than 10 years of experience in the sector while the others had less than 5 years of experience in the vaccination practice. 44% (18/41) of the nurses had previously taken vaccination training. Despite being trained and qualified about vaccination, 22% of them (4/18) declared of not being sure about the efficacy of vaccines. The remaining were sure about this.

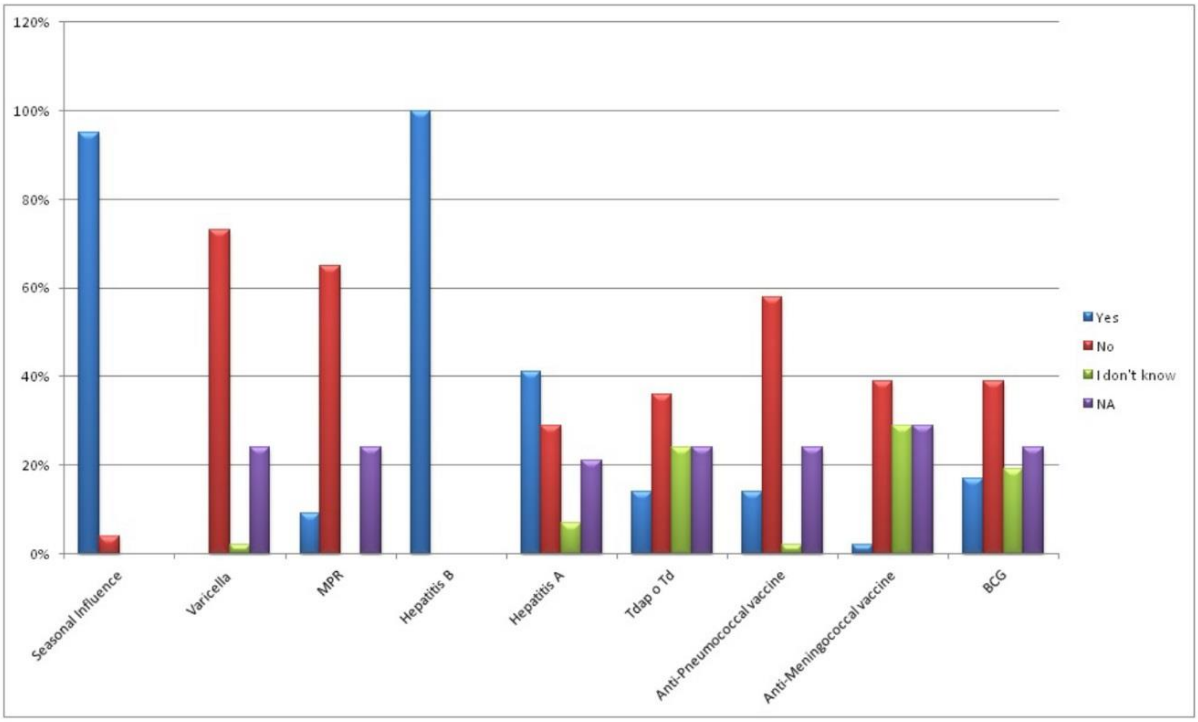

Figure 1 Awareness about which vaccinations are recommended for health-care professionals

The qualification level of nurses seemed to not influence on the knowledge of the nurses about some of the vaccines. All the trained nurses knew that influenza was one of the recommended vaccines for health care workers compared to 60% of the not trained ones ($\chi2=15$, $p=0.001$). 33% of the trained nurses knew that BCG vaccine was recommended for health workers compared to 0% of the not trained ones ($\chi2=17$, $p=0.007$).

22% of the trained nurses knew that Tdap vaccine was recommended for health workers compared to 0% of the not trained ones ($\chi2=23$, $p=0.001$).

100% (41/41) declared to know that Hepatitis B vaccine was recommended for health care workers.

While the qualification level of nurses did not influence the knowledge of nurses about MMR vaccine, varicella vaccine, hepatitis A vaccine, antipneumoccocal vaccine and meningococcal vaccine.

This differential knowledge of nurses about different vaccines indicates that during the training courses the importance has been given to the most common recommended vaccines for health care workers. The lack of a legal framework and specific guidelines makes the situation chaotic and not clear about the types of vaccines recommended for health workers.

When asked if they were previously vaccinated with non-obligatory vaccines, 63% of the nurses who had more than 10 years of experience in the sector replied yes, compared to 45% of them who had between 5 and 10 years of experience and 36% of the ones who had less than 5 years of experience ($\chi2=13.2$, $p=0.039$).

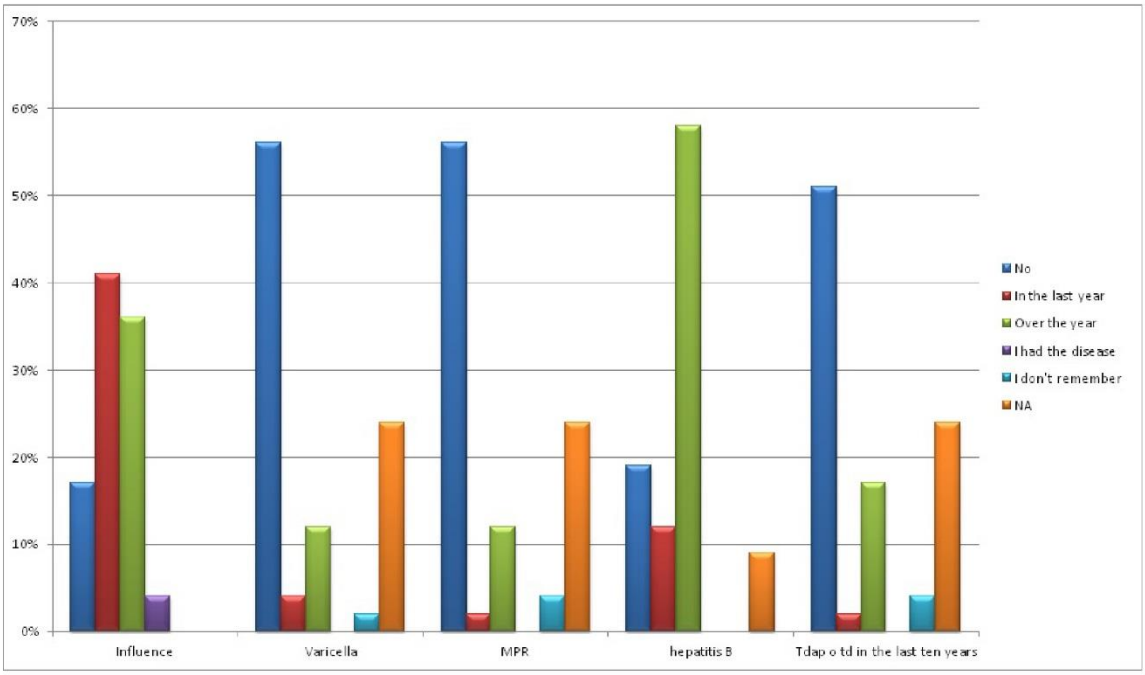

Figure 2 Number of nurses actually vaccinated for different diseases

DISCUSSION

The analysis of the data obtained showed that a significant proportion of nurses working in the vaccine centers in Tirana agree that vaccines are important for reducing or eliminating serious diseases and that they are a strong tool for the prevention of certain diseases in the developing countries (95% and 70% respectively). It is interesting to note that 34% of the interviewed nurses are afraid of the possible post-vaccination events. It is observed that this perception is partially distorted and amplified as scientific studies demonstrate that vaccines, like all pharmaceutical products, may be associated by side effects (19). However, serious complications are very rare and to prevent them, it is sufficient to stay for at least 15 minutes in a special room of the vaccination clinic, equipped for the treatment of this type of reactions (20). It is therefore important to evaluate the risk-benefit ratio. The risk possibly associated with the vaccines is irrelevant compared to the benefits that it entails (21). Pre licensure clinical trials demonstrate that most of the adverse events associated with the vaccines are minor and that serious adverse events are not common (22). However, rare and serious events are less likely to be detected before marketing authorization, even in relatively large clinical trials (23). If a serious adverse event is causally related to a vaccine, the ratio between vaccine benefits and risks could shift, possibly leading to changes in recommendations for vaccination or incite efforts to improve vaccine safety. Robust safety studies that convincingly demonstrate that a causal relationship between vaccines and adverse events following immunization is unlikely should help maintain confidence in vaccine programs (24). As the burden of vaccine-preventable diseases is reduced, there will be increasing attention focused on potential adverse effects, on the development of effective surveillance systems, and on improved methods to manage and control any harmful consequences of vaccination (25).

Another suspicion that emerged from this study concerns the long-term protection effects of vaccination. This distrust covers 58% of the interviewed nurses.

From the scientific literature it is known that the duration of the protection conferred by the vaccines is a consequence of a phenomenon known as immunological memory, which is the ability of the immune system to recognize a biological agent (virus, bacterium or other) after a previous presentation (26).

Specific cells named memory lymphocytes of type B keep track of the first presentation and are able to recognize the same virus or bacterium in a second encounter and activate an immune response. This physiological process develops both in the case of a natural infection and following a vaccination.

All vaccines used in current vaccination programs of children induce immunological memory. Some of them need periodic recalls and others do not. The recalls are essential when it comes to diseases whose incubation period is short (21). Nurses of Tirana are aware that vaccinations are

an essential requirement for working in health care system (97%), and that vaccines are first and foremost a duty of the health worker to give the right perception of their work to their patients and to the community (87%).

These data show that the interviewed nurses are informed about the importance of vaccinations in the health sector, but above all they have an ethical and moral charge towards the community. A small minority (14%) of the respondents declared that recommendation of vaccines is not part of nursing skills. Nevertheless, the majority of the sample (80%) rightly states that they usually recommend vaccination in their clinical practice. It is observed a clear perception of the figure of the nurse, as in his professional profile and in his deontological code the nurse has full responsibility for the assistance and care of the human in respect of life and health. Being informed the first about the importance of vaccination, the nurses play an essential role in preventing and fighting the main infectious diseases and at the same time have the actual skills to inform and recommend vaccinations to the community. Moreover, the respondents were asked if they knew which vaccinations were recommended for being administered by health care professionals. The vaccines that were most accepted were the seasonal flu vaccine (95%) and the hepatitis B vaccine (100%). There is a high awareness that being vaccinated for influenza is very important, as this virus spreads very quickly and changes characteristics every season. As well as the hepatitis b vaccine, as in Albania the incidence of this virus is increasing.

This result is in contrast with the one obtained by Dalma et al., who studied the perceptions and barriers to immunization of 278 physicians, nurses, infection-control personnel, and policymakers in 7 European Union Member States (27). The interviewed health professionals considered influenza vaccine as less important than others.

For the remaining vaccines proposed as: Varicella, MPR, td, hepatitis a, pneumococcal and meningococcal vaccine and BCG, there was a relatively high proportion to the non-recommendation of these vaccines for health workers and a discrete percentage of abstainers to this question.

From the received data it is observed that there is inadequate clarity on what are the effective vaccinations recommended for the health personnel. For this reason, there should be clearer and more specific Albanian legislation in this regard. This is the case of Italy where the new reform on vaccination of health care workers in 2017 specified an adequate immunization of health workers is essential for the prevention and the control of infections (anti hepatitis b, anti-influenza, anti-measles, mumps, rubella, anti-varicella and anti-pertussis) (28).

According to the opinion of most of the interviewed nurses, active immunization plays an important role not only in the protection of the individual operator, but also in ensuring the patients, to whom the operator could transmit the

infection causing serious damage and even fatal cases (21).

Respondents were asked for which of the following vaccines have administered: influenza, varicella, MMR, hepatitis b, td.

The barriers to HCW immunization in this survey included the fear of nurses to adverse events following immunization and the suspicion about the long-term effects on the health of vaccinations which was present in 15% of the nurses. There were no religious issues related to the barriers to immunization. Another barrier to immunization was related to the lack of knowledge of the nurses about which vaccines are recommended for health care workers. The low vaccine knowledge is present among all HCW in all countries of Europe as reported in a study by Gusmano and Michel (29).

Moreover, in Albania there is no legal framework about HCW vaccines. Although the European directive no. 89/391/EEC on protection of workers from the risks related to exposure to biological agents at work provides general framework for activities related to immunization of health care workers, in Albania there is still missing a specific legislation on this regard (30). All the member states of European Union have implemented this directive in their national policies about mandatory and recommended vaccines of health care workers. However, with the exception of France and Slovakia, vaccine- specific mandatory policies pertaining to the immunization of health care workers do not exist in vast majority of EU countries.

It turned out that only 41% were vaccinated for influenza in the last year; this shows negligence from the nurses, as the remaining unvaccinated staff has a high probability of contracting and transmitting the virus. 58% have been vaccinated for hepatitis B more than a year ago. While, for the remaining group of diseases there was a high percentage of non-vaccination. This attitude seems to be related to the years of experience of nurses in the sector, with the ones who have more years of experience in the sector being more vaccinated compared to those who have only a few years of experience.

It is necessary to conduct vaccination coverage studies among health care workers in Albania in order to evaluate appropriately the situation.

As a conclusion, more than half of the interviewed nurses (59%) are not covered by non-mandatory vaccines, although they are recommended for nursing staff for individual and community prevention purposes. It is important that these gaps be filled through training and continuous updating courses of public health. As it is observed by the study, the training influences the knowledge of the nurses about vaccines recommended for health care staff with the trained nurses being more aware about vaccination of health care workers. However, training materials should be updated and designed according to international guidelines. Although the administration and indications of HCWs' immunization differ between Albania and other EU countries, there are common perceptions and barriers to immunization.

This is the first study in Albania which assess the knowledge of health care workers about vaccines recommended for them. In an era where the vaccination of HCW is neglected by all stakeholders and there is no national guidelines or legislative framework, studies of this type are important to give a picture of the situation and increase the awareness of policy makers to the issue.

However, this study has several limitations;

- Only 41 nurses were interviewed due to low capacity of health centers at the time of the interview. Because of this, it was impossible to have a greater sample than the one enrolled in the study;
- Some questionnaires have not been adequately filled by the nurse staff. Due to this some data were missing and it was impossible to fully study the perceptions of the nurses regarding vaccination;
- The study took place in the district of Tirana. Therefore, the obtained results do not represent the whole country.

Another important limitation of the study is that it excludes many healthcare professionals other than nurses that have direct contact with patients. Thus, the study findings cannot be applied to other health care professionals.

Moreover, being a qualitative study not quantitative, the results cannot be generalized with statistical confidence. However, the findings and information reported in this study is important to develop training materials, design policies and implement vaccination campaigns among health care staff.

CONCLUSIONS

From this survey it can be concluded that the interviewed nurses have a high awareness of the effectiveness and protective value of vaccines but there is uncertainty about which are the recommended vaccines for health workers. The most evident fact that emerges from the entire research is that despite a good awareness of the effectiveness of the vaccines, several nurses admit they do not intend to get vaccinated for those diseases whose vaccination is not included in the vaccination schedule. It is necessary that the gaps in education, culture and social mentality be filled with campaigns to increase awareness of the vaccination importance. Training programs are also important to be established in order to update the professional's knowledge and perception of the nurses is crucial for the immunization coverage for a certain community as they deal with people every day in their clinical practice. The nurses should give the right example to the whole community.

Acknowledgements: We would like to thank all the healthcare workers enrolled in this study for their collaboration.

Conflict of Interest: The authors declare no conflicts of interest of any type.

REFERENCES

1. World Health Organization . Global vaccine action plan 2011-2020.Secretariat Annual Report 2013. [online] WHO Press. Available from: http://www.who.int/immunization/global_vaccine_action_plan/en/.

2. Centers for Disease Control and Prevention. Understanding the Vaccine Adverse Event Reporting System (VAERS).2013. Available from:http://www.cdc.gov/vaccines/hcp/patient-ed/conversations/downloads/vacsafe-vaers-color-office.pdf.

3. De Boer PT, Wilschut JC, Postma MJ. Cost-effectiveness of vaccination against herpes zoster. Hum Vaccin Immunother 2014;10(7):2048-61.

4. Giraldi G, Martinoli L, De Luca d'Alessandro E. The human papillomavirus vaccination: a review of the cost-effectiveness studies. Clin Ter 2014;165(6).

5. Chen J, O'Brien MA, Yang HK, Grabenstein JD, Dasbach EJ. Cost-effectiveness of pneumococcal vaccines for adults in the United States. Adv Ther 2014;31(4):392-409.

6. Clements KM, Meier G, McGarry LJ, Pruttivarasin N, Misurski DA. Cost-effectiveness analysis of universal influenza vaccination with quadrivalent inactivated vaccine in the United States. Hum Vaccin Immunother 2014;10(5):1171-80.

7. World Health Organization. Global vaccine action plan 2011-2020. Secretariat Annual Report 2013. WHO Press. 2013. Available from: http://www.who.int/immunization/global_vaccine_action_plan/en/ [Accessed 28 Jun. 2016.

8. Global Advisory Committee on Vaccine S, secretariat WHO. Global safety of vaccines: strengthening systems for monitoring, management and the role of GACVS. Expert Rev Vaccines. 2009;8(6):705.

9. Fagundes LG, Frota, OP, Silva EM. Nursing practices in vaccination: An integrative review. J Nurs Educ Pract 2018;8.

10. International Council of Nurses. ICN on mobilising nurses for health promotion. Nursing Matters. ICN: Geneva, Switzerland. 2009. Retrieved from http://www.icn.ch/images/stories/documents/publications/fact_sheets/21d_FS-Health_Promotion.pdf.

11. International Council of Nurses. Adult and Childhood Immunisation. ICN: Geneva Switzerland 2013 Retrieved from http://www.icn.ch/images/stories/documents/publications/fact_sheets/21d_FS-Health_Promotion.pdf.

12. Alfonsi V, Montaño C, Rota MC, Declich S. Promotion of Immunization for Health Professionals in Europe. ProImmune 2012. Available from:http://www.hproimmune.eu/downloads/HProImmune_State_of-the-art-report.pdf.

13. Loulergue P, Moulin F, Vidal-Trecan G, Absi Z, Demontpion C et al. Knowledge, attitudes and vaccination coverage of healthcare workers regarding occupational vaccinations. Vaccine, 2009; 27(31): 4240-4243.

14. Mehmeti I, Nelaj E, Simaku A, Tomini E, Bino S. Knowledge, practice and approaches of

health professionals to adverse events following immunization and their reporting in Albania. Heliyon 2017; 3(6).

15. Kaae S, Malaj A, Hoxha I. Antibiotic knowledge, attitudes and behaviours of Albanian health care professionals and patients - a qualitative interview study. J Pharm Policy Pract 2017;10:13.

16. Kakarriqi, E. Epidemiological background of infectious diseases in Albania (1960-2001) and their prevention and control in the context of natural disasters and infectious diseases. Albania, Tirana: Department of Epidemiology Institute of Public Health. 2002 Available from http://www.gideononline.com/features/resources/.

17. Ministry of Health and Social Protection of Albania. Order no.58, 16.01.2018 of Ministry of Health and Social Protection of Albania about preventive actions to be undertaken in order to prevent measles outbreak in Albania. 2018. Tirane, Albania.

18.URL;
https://www.epicentro.iss.it/vaccini/pdf/20-6-2014/questionaio_pre.pdf.

19. Bigham M, Copes R. Thiomersal in vaccines: balancing the risk of adverse effects with the risk of vaccine-preventable disease. Drug Saf 2005;28(2):89-101.

20. Wood RA, Berger M, Dreskin SC, Setse R, Engler RJ, Dekker CL et al. An Algorithm for Treatment of Patients With Hypersensitivity Reactions After Vaccines. Pediatrics. 2008;122(3).

21. Ara G, Giovanetti F. Vaccinazioni: Le Risposte Alle Domande Piu' Frequenti Dei Genitori.2012. Available from http://www.epicentro.iss.it/.

22. World Health Organization. Regional Office for the Western Pacific. Immunization safety surveillance: guidelines for managers of immunization programms on reporting and investigating adverse events following immunization. Manila: WHO Regional Office for the Western Pacific 1999. Available from; http://iris.wpro.who.int/handle/10665.1/12993.

23. World Health Organization Global vaccine action plan 2011-2020. Secretariat Annual Report 2013. WHO Press 2013. Available from: http://www.who.int/immunization/global_vaccine_action_plan/en/ [Accessed 28 Jun. 2016.

24. Griffin MR, Braun MM, Bart KJ. What should an ideal vaccine post licensure safety system be? Am J Public Health 2009;99(Suppl. 2):S345–S350.

25. Food, Medicine & Healthcare Administration and Control Authority of Ethiopia. Guide for AEFI Surveillance in Ethiopia 2011. Available from www.fmhaca.gov.et.

26. Clemens JD, Nacify A, Rao MR, Koo H. Longer term evaluation of vaccine protection: methodological issues for Phase III and Phase IV studies. In: Levine MM, Kaper JB, Rapuoli R, Liu MA, Good MF, editors. New generation vaccines.3.ed.New York: Marcel Dekker; 2004;29-48.

27. Dalma A, Karnaki P, Baka A, Raftopoulos V, Zota D et al. Promotion of Immunizations for Health Professionals in Europe: A Qualitative

Study in Seven European Member States. Hosp Top 2018; 96(1):18-27.

28.URL;https://www.nurse24.it/infermiere/attualita-infermieri/vaccini-operatori-sanitari-obbligo-presentazione-libretto.html 'accessed September 2017'.

29. Life course vaccination and healthy aging. Aging Clin Exp Res. 2009;21(3):258-63.

30. European Agency for Health and Safety at Work 2000. Directive 2000/54/EC of the European Parliament and of the Council of 18 September 2000 on the protection of workers from risks related to exposure to biological agents at work (seventh individual directive within the meaning of Article 16 (1) of Directive 89/391/EEC. Official J. L. 262:0021–0045.