DOI 10.24144/2077-6594.2.1.2021.235368
УДК 614.253.5:001.101+616.9-039.4

Ivanková V.[1], Belovičová M[1], Červeňáková M.[2]

Nurses' awareness of highly infectious diseases

[1]St. Elizabeth University of Health and Social Sciences, Bratislava, Slovakia
[2]Hospital with health centre NsP Sv. Jakuba, n.o., Bardejov, Slovakia

vierkai@centrum.sk, mriab9@gmail.com

Іванкова В.[1], Беловічова М.[1], Червенакова М.[2]
Інформованість медсестер про високо контагіозні інфекційні захворювання
[1]Університет здоров'я та соціальних наук імені Св. Елізавети, м. Братіслава, Словаччина
[2]Лікарня з оздоровчим центром NsP Св. Якуба, м. Бардейов, Словаччина

Иванкова В.[1], Беловичова М.[1], Червенакова М.[2]
Информированность медсестер о высококонтагиозных инфекционных заболеваниях
[1]Университет здоровья и социальных наук имени Св. Елисаветы, г. Братислава, Словакия
[2]Больница с оздоровительным центром NsP Св. Якуба, г. Бардейов, Словакия

Current state of the problem

Since time immemorial, infectious diseases have threatened humankind, and often the very existence of entire nations. They occurred on a mass-scale and caused great loss of lives. During the Peloponnesian War in 430 BC. an epidemic called Thucydides Plague raged in Athens. In 165 BC. a deadly epidemic of unspecified disease spread from Syria to the Roman Empire, and Rome and its provinces were ravaged and many cities, abandoned by the inhabitants, disappeared.

In the 6th century BC (542) an epidemic called Justinian plague and apparently some other diseases raged in Byzantium for more than 60 years. The failures of the Crusades in the 11th–13th centuries were caused mainly by infectious diseases such as plague, smallpox, typhus, dysentery, but also by some non-infectious diseases. Another major epidemic of the plague broke out in Front Asia in 1347, which like a "black death" spread throughout the whole of Europe, killing a quarter of the population – about 25 million people. In the 18th century smallpox also caused about 1500 deaths a year in Europe [1].

In the 21st century, newly discovered diseases are threatening humankind. The oft-mentioned Ebola virus was first detected in Zaire in 1976. At that time, 280 people out of 318 recorded cases died within three months [2]. Even nowadays, in 2014, the presence of Ebola in West Africa and the threat of its spread have become a current public health problem in all countries of the world. By November 9, 2014, a total of 14,099 people in the world were infected by Ebola, of whom 5,160 had died [3]. Another dangerous disease of the 21st century is the acute respiratory distress syndrome called SARS. The virus responsible for the disease was identified on March 24, 2003. Carlo Urbani, the discoverer of the modern lung disease, died alone in Thailand as a result of the infection. According to the scientists, the pathogen will normally survive outside the body for at least 24 hours, but great concern is that the virus is still identifiable more than one month after infection, e.g. in the feces of the affected person. During the epidemic with the first cases of the disease from November 1, 2002 to July 1, 2003, according to WHO, about 8,445 people were ill and 812 died of the disease. China was hit hardest (1.27 billion people) with 5,327 patients and 348 deaths. In years 2012–2013, diseases similar to SARS appeared in Saudi Arabia, which were named as coronavirus respiratory syndrome of the Middle East [4]. Today, healthcare systems, health professionals and nurses around the world are confronted with the COVID-19 pandemic. The new coronavirus SARS-CoV-2, which causes Covid 19, was first reported in Wu-chan in China in late 2019 and it has spread from that epicentre to the rest of the world. This pandemic has a large number of infected patients that far exceed the equivalents of severe acute respiratory syndromes (SARS) and middle eastern respiratory syndrome (MERS), although with lower mortality rates [5].

Highly contagious diseases as a threat of bioterrorism

Bioterrorism is a deliberate, purposeful threat of using infectious viruses, bacteria, fungi, toxins of living organisms, chemical, toxic substances or radionuclides to induce death or disease in animals or plants [6]. It can be a cause of the elimination of entire populations, economies and governments. To a large extent, this is no longer a problem of one nation, it may soon become a problem of many nations, because geographical and political boundaries provide little protection against such threats. The International Health Regulations are the legislative framework that imposes obligations on governments to prevent infectious diseases in individual member states of the World Health Organization. Bioterrorism must always be considered an extremely dangerous crime and cannot be confused with the national liberation struggle [6].

Surveillance of highly contagious diseases

In Slovakia, Surveillance of Communicable Diseases has been gradually introduced since the 1960s. Surveillance is a systematic, epidemiological, laboratory control. International monitoring of the occurrence of disease transmission and a coordinated approach in their prevention, as well as in measures in their occurrence, is necessary. The Slovak Republic has approximated the relevant EU legislation in the field of infectious disease control and since May 1, 2004 has been fully ensuring its control in accordance with the decisions of the European Parliament and the Council and the European Commission [7]. Surveillance of individual diseases in the Slovak Republic is provided by a network of regional public health authorities. In the Slovak Republic in the implementation of surveillance the reference centres (NRCs) play an important role for priority diseases in terms of their occurrence and severity. An important part of the NRC's activities is ensuring international cooperation, especially the integration of Slovakia into European networks created for individual infections and coordinated by the European Commission [8].

Basic functions of the surveillance system include:

- detection of the case and identification of the cases and outbreaks,
- registration of the case and recording of existing cases of the disease,
- case confirmation and laboratory case confirmation with an epidemiological link,
- reporting and communication of information on probable and confirmed cases,
- data analysis and their interpretation, statistical processing of the interpreted data with specification for population, place and time,
- epidemic preparedness, the level of existing epidemic preparedness includes epidemic preparedness plans, stock capacity, quarantine and isolation capacity,
- response and control, provision of information for the early warning system,
- feedback, providing feedback through newsletters and news [9].

Nurses' preparedness for highly contagious diseases

The spread of a highly dangerous infection requires from the nurses enough information on measures that are in line with WHO recommendations and generally binding legislation. These measures are aimed at increasing staff preparedness and protecting public health. The general and basic principle is the isolation of the person suspected of being infected with highly contagious disease and the adherence to barrier nursing techniques, which requires uniform coordination and cooperation of all nursing care stakeholders according to pre-established, uniform procedures that determine the order of activities, mutual communication in activities, coordination of work procedures and use of protective procedures.

To carry out the research we used a method of a questionnaire of our own design in inpatient wards of hospitals: NsP Š. Kukuru in Michalovce a.s. and of NsP Sv. Jakuba, n.o. in Bardejov. The research sample consisted of nurses with secondary education and university education. We wanted to find out whether the level of education of nurses has an impact on the level of awareness of highly contagious diseases and thus on the level of readiness of nurses to apply in practice the specifics of nursing procedures in highly contagious diseases.

The aim of the research was to find out the differences in the level of nurses´ awareness of highly contagious diseases in relation to the achieved education. The key criteria for the selection of respondents were nurses with university education and nurses with secondary education working in institutional care in inpatient wards. To select a sample, we used a quantitative method of respondent selection. The total set of 220 respondents represented 96% women and 4% men. The research sample consisted of more than half of 55% of nurses with a university degree aged 33-45, similarly to nurses with a secondary education, 52% in the same age category. Nurses from various wards participated in the research.

According to the results of our research, 82.41% of nurses with university degree consider highly contagious diseases to be a risk to humankind. In the case of nurses with secondary education, 83.92% stated that highly contagious diseases are a risk to humankind. Almost 17.60% of nurses with university degree and 6.25% of nurses with secondary education do not consider them a threat. We think that the absence of information on the diseases and a distorted picture of their consequences also contribute to the mentioned opinion of the respondents. A statistically significant difference with respect to education was confirmed in the perception of the importance of having sufficient knowledge of the procedures for identifying a person suspected of being infected with a highly contagious disease. The need for this knowledge was confirmed by 72.22% of nurses with university degree and only by 53.57% of nurses with secondary education. Furthermore, due to their education, a statistically significant difference was confirmed between the nurses in the source they used to learn how to proceed in the case of a patient with suspected highly contagious disease. 38.80% of university-educated nurses cited lectures and school as the most common source of information. The highest number, 27.68%, of secondary school-educated nurses stated that the source of their information in this regard is the employer. We were detecting differences in the degree of control of procedures when being in contact with highly contagious disease between nurses with higher education and secondary education in inpatient wards. With regard to university or secondary education of nurses, no statistically significant difference was confirmed in whether nurses were informed by the employer or by the Regional Public Health Office on how to proceed in case of highly contagious disease, what personal protective equipment is available to nurses in the workplace, what initial barrier measures nurses could take in contact with a patient suspected of having a highly contagious disease, what is the minimum physical distance that needs to be maintained when collecting anamnestic and clinical data from the person suspected of having a highly contagious disease, and to whom is, according to the nurses, the responsible person obliged to immediately report the data on the patient suspected of having a highly contagious disease. According to the Decree of the Ministry of Health 585/2008 Coll., laying down details on the prevention and control of

communicable diseases, the communicable disease and the suspicion of a serious or rapidly spreading communicable disease must be reported to the competent regional authority by the healthcare provider or the healthcare professional. In contrast, a statistically significant difference, with respect to the education of nurses, was confirmed in what measures nurses would take in the case of meeting a highly contagious patient in practice. Nurses with university degree indicated a higher number of measures they would implement. A statistically significant difference was confirmed in the measures performed by the nurses after obtaining initial lay clinical and anamnestic data from a person suspected of a highly contagious disease. Nurses with university degree would also be more active in such case. Miterpáková (2009) [10] states that all diseases have their specific character, therefore in the case of suspicion of a highly contagious disease, it is very important to detect and identify the disease as soon as possible in the suspected person. It is very important to detect the disease in time, to isolate the patient with strict adherence to biotechnology. A statistically significant difference was confirmed in what measures the nurses would take in the workplace after contact with a patient suspected of having a highly contagious disease. As many as 88% of nurses with university education reported correct procedures, while 36% of nurses with secondary education would be surprised by this situation and would not be able to decide what measures to implement first. Implementing strategies to adequately ensure proper procedures to set up patient isolation in the case of a suspected highly contagious disease requires that nurses and physicians work together effectively, based on mutual respect, and cooperation. The nursing profession requires not only critical thinking, high expertise level, but especially practical knowledge. Nurses are one of the most important professionals who, with their approach and erudition, can help to prevent the spread of highly contagious disease and it is up to them how they use their knowledge, skills, alertness and self-control in a tense situation, how they can coordinate proper procedures in contact with highly contagious disease. Nurses with university degree are more familiar with the correct procedures for dealing with highly contagious diseases than nurses with secondary education. As many as 91.67% of nurses with university degree state that they have a personal interest in knowing more about the issue of highly contagious diseases. This personal interest was demonstrated in only 73.21% of nurses with secondary education.

Hanzen (2012) [11]. claims that this century will be the century of the emergence of new infectious diseases and diseases of civilization. For the most part, new infectious diseases or diseases of civilization have emerged. Therefore, there is an increased interest in this issue. Job satisfaction of nurses and the opportunity to learn is an important indicator of the functioning of the health system, which has an impact on their professional performance. 30% of nurses with secondary education do not supplement their knowledge of the issue. For university nurses, it is half less – 15%. Despite graduating from university, 66% of university nurses expand their horizons through self-study and also 19% at professional seminars. We investigated whether nurses were personally interested in knowing more about the issue of highly virulent diseases. We were unpleasantly surprised by their answers, because up to 18% of nurses with secondary education were not interested in the issue at all and did not consider dealing with it important. As many as 92% of nurses with university education have a personal interest in a given topic. Nurses with secondary school are much less enthusiastic about the area, only 73% are interested in it and 9% of them do not know if they have a personal interest in knowing more about highly contagious diseases.

Conclusions

Although nurses are educated and they are being continuously educated, research into their awareness of highly contagious diseases has shown that they do not have sufficient information on highly contagious diseases and are not sufficiently prepared to deal with highly contagious diseases. Therefore, nurses need to pay more attention to the issue, because when in contact with a patient suspected of highly contagious diseases, where the nurses are involved in the practical management of such cases, improper practices can have negative consequences not only for the patient but also for the staff and people who were in close contact with the suspect.

References

1. Bakoss, P. 2004. Infectious diseases – a permanent fate of a man? Lecture. Bratislava: Comenius University, April 2004. [online]. Available online: http://www.comeniusuniversity.sk/index.php?id=36&type=123.

2. Vymětal, Š. – Mičková , M. 2015. Ebola health, social, psychological and crisis aspects of the epidemic In. Information material for the training of crisis management staff, IRS units, psychosocial and humanitarian services. 2015 Prague: Psychological Department OBP MV ČR, March 2015. [on-line]. Available online: http://www.mvcr.cz/clanek/informace-pro-odbornou-verejnost830875.aspx.

3. Avdičová, M. 2014. Ebola occurrence in the world and the risk of its introduction into the Slovak Republic. In Theory and practice of a pharmaceutical laboratory technician. Vol. 3, no. 15 / 2014. p. 14-15. [online]. Available online: http://www.szske.sk/sucasnost/casopis_FL/fl_15-2014.pdf.

4. Žilka, J.- Štibraná, M. 2014. SARS, Severe Acute Respiratory Syndrome. October 2014. [online]. Available online: http://wiki.szsbb.eu/lib/exe/fetch.php?media=zilka:sars.pdf.

5. Zhu, H., Wei, L., Niu, P. 2020. The novel coronavirus outbreak in Wuhan, China. In Glob health res policy 5, 6 (2020). [online]. Available online: https://doi.org/10.1186/s41256-020-00135-6.

6. Ništiar, F. – Ništiarová, A. – Lukačínová, A. 2003. Bioterrorism and veterinary protection of animals and foodstuffs In. Slov. vet. magazine, 38, no. 2/ 2003: p. 13-15.
7. Bazovská, S. et al. 2008. Epidemiology. 1st ed. Bratislava: Comenius University, 2008. p. 340. ISBN 978-80-223-2301-7.
8. Krištufková, Z. 2006. Strengthening of surveillance and control of infectious diseases in the Slovak Republic, Final conference. Bratislava. 2006. [on-line]. Available: www.health.gov.sk/Zdroje?/dokumenty/ww2/eupp/.../MUDr-Kristufkova.
9. Jamison, D. et al. 2006. Disease Control Priorities in Developing Countries, 2nd edition. Washington (DC): World Bank, 2006. ISBN 10: 0-8213-6179-1.
10. Klement, C. et al. 2009. International health regulations, Bratislava: PRO, 2009. p. 440. ISBN 9788089057245.
11. Miterpáková , M. – Juriš, P. 2009. Parasitosis in public health. Košice : Harlequin, 2009. p. 73. ISBN 978-80-89082-21-6.
12. Hanzen, J. 2012. Human microorganisms in health and disease. Bratislava: Hpl Servis spol, 2012. p. 191. ISBN 978-80-971151-0-4.

Дата надходження рукопису до редакції: 12.02.2021 р.

In human history, there have always been diseases, often with high mortality, that were new to a particular area and community and that often occurred in epidemics. Nowadays, we encounter infectious diseases in patients as well as diseases against which they have been vaccinated and yet became infected (e.g. mumps). This indicates that viruses are changing, mutating and taking on a different character unknown to us. It is a diverse group of diseases characterized by the penetration, existence and multiplication of pathogens in the human body – viruses, bacteria, fungi, protozoa, parasites or prions, which, just like the human race in the process of evolution, have undergone adaptive changes during their existence, so as to survive under the best possible conditions. Over the past 20 years, more than 30 new microorganisms, in many cases capable of inducing very serious infectious diseases, have been identified. The development of infectious diseases, like any evolutionary process, is a phenomenon that is constantly ongoing. Manifestations of such development are observed in several directions. The clinical picture of some infections changes mainly in terms of the severity of the course, but also in terms of symptomatology. This results from the very ability of the microorganisms to undergo developmental changes, but also from the changes in the external environment and other causes such as people's lifestyle, trade, transport, medical practices, wars, etc.

Uncontrolled spread of the disease can occur in the population at any time. If the patient was isolated and their contacts were tracked and monitored, there would be virtually a zero risk of spreading the disease. The problem may arise especially due to the current intense population movement around the world, when the introduction of any infectious disease into any country can not be ruled out, which poses a threat of new epidemics in the future. Therefore, it is important to know whether the country, but especially the medical staff – nurses are prepared for such situation.

Key words: nurses, awareness, infectious deseases

В історії людства завжди були хвороби, часто з високою смертністю, які були новими, і які часто відбувалися в епідеміях. В даний час ми стикаємося з інфекційними захворюваннями у пацієнтів, а також захворюваннями, за якими вони були вакциновані, і все ж стали зараженими (наприклад, mumps). Це вказує на те, що віруси змінюються. Це різноманітна група захворювань, що характеризуються проникненням, існуванням і розмноженням патогенів в організмі людини – віруси, бактерії, грибки найпростіші, паразити, які, як і людство в процесі еволюції, піддалися адаптуванню, щоб вижити в найкращих можливих умовах. За останні 20 років було виявлено понад 30 нових мікроорганізмів, у багатьох випадках, здатних індукувати дуже серйозні інфекційні захворювання. Розвиток інфекційних захворювань, як будь-який еволюційний процес, є явищем, яке постійно триває. Прояви такого розвитку спостерігаються в декількох напрямках. Клінічна картина деяких інфекцій змінюється головним чином з точки зору тяжкості перебігу, а й з точки зору симптоматології. Це призводить до здатності мікроорганізмів проходити зміни в розвитку, але і з зміни зовнішнього середовища та інших причин, таких як спосіб життя, торгівля, транспорт, медичні практики, війни і т. д.

Неконтрольоване розповсюдження захворювання може відбуватися в популяції в будь-який час. Якщо пацієнт був ізольований, і їх контакти відстежували і контролювали, був би практично нульовий ризик поширення захворювання. Проблема може виникнути особливо через сучасне інтенсивне переміщення населення по всьому світу, коли ввезення будь-якого інфекційного захворювання в будь-яку країну не виключено, що становить загрозу нових епідемій в майбутньому. Тому важливо знати, чи є країна, але, особливо медичний персонал – медсестри, готовими до такої ситуації.

Ключові слова: медсестри, обізнаність, інфекційні захворювання.

В истории человечества всегда были болезни, часто с высокой смертностью, которые были новыми и которые часто происходили в эпидемиях. В настоящее время мы сталкиваемся с инфекционными заболеваниями у пациентов, а также заболеваниями, по которым они были вакцинированы, и все же стало зараженным (например, mumps). Это

указывает на то, что вирусы меняются. Это разнообразная группа заболеваний, характеризующихся проникновением, существованием и умножением патогенов в организме человека – вирусы, бактерии, грибки простейшие, паразиты или приоки, которые, как и человечество в процессе эволюции, подверглись адаптуре, чтобы выжить в наилучших возможных условиях. За последние 20 лет было выявлено более 30 новых микроорганизмов, во многих случаях, способных индуцировать очень серьезные инфекционные заболевания. Развитие инфекционных заболеваний, таких как любой эволюционный процесс, является явлением, которое постоянно продолжается. Проявления такого развития наблюдаются в нескольких направлениях. Клиническая картина некоторых инфекций меняется главным образом с точки зрения тяжести курса, но и с точки зрения симптоматологии. Это приводит к способности микроорганизмов проходить изменения в развитии, но и из изменений внешней среды и других причин, таких как образ жизни, торговля, транспорт, медицинские практики, войны и т. д.

Неконтролируемое распространение заболевания может происходить в популяции в любое время. Если пациент был изолирован, и их контакты отслеживали и контролировали, был бы практически нулевой риск распространения заболевания. Проблема может возникнуть особенно из-за современного интенсивного перемещения населения по всему миру, когда введение любого инфекционного заболевания в любую страну не исключено, что представляет угрозу новых эпидемий в будущем. Поэтому важно знать, является ли страна, но, особенно медицинский персонал – медсестры готовыми к такой ситуации.

Ключевые слова: медсестры, осведомленность, инфекционные заболевания.

Конфлікт інтересів: відсутній.
Conflicts of interest: authors have no conflicts of interest.

Відомості про авторів

PhDr. **Viera Ivanková** – external doctoral student, St. Elizabeth University of Health and Social Sciences; Bratislava, Slovakia. vierkai@centrum.sk.

assoc. Prof. **Belovičová Mária**, MD. PhD – St. Elizabeth University of Health and Social Sciences; Bratislava, Slovakia. mriab9@gmail.com.

Mgr. **Monika Červeňáková** – Hospital with health centre NsP Sv. Jakuba, n.o; Bardejov, Slovakia.