

STATEMENT

From Prof. Dr. Karolina Lyubomirova, MD, PhD, MPH, ERT

Head Department of Occupational Medicine,

Faculty of Public Health, Medical University of Sofia,

in accordance with № RD-454/21.09.2022г.

for DISSERTATION ON THE TOPIC:

" OCCUPATIONAL EXPOSURE TO BLOOD AND BIOLOGICAL LIQUIDS AMONG HEALTH CARE WORKERS IN HOSPITAL CARE AND THE STATUS OF PRE- AND POSEXPOSURE PROPHILACTICS"

Author: Dr. Irina Dimitrova Dimitrova- Toneva

for acquiring the educational and scientific degree "Doctor"

in the field of higher education: 7. "Health and Sports";

Professional field: 7.1. "Medicine";

Doctoral program: "Hygiene";

Scientific tutor: Assoc. Prof. Katya Vangelova, Doctor of Biology

Biographical data:

Dr. Irina Dimitrova Dimitrova- Toneva was born in 1960. She graduated Medical university Sofia. In the period 1986- 1991 she worked in the Regional health inspectorate in Stara Zagora in the state control system of occupational health. Since 1991 she has worked in the National center of public health protection and analysis as a scientific researcher and assistant. In that period she participated in researches on occupational health (health risk assessment of different occupational groups, susceptible workers,

assessment of the work ability, etc), development of the National asbestos profile of Bulgaria – part of the National program for elimination of the asbestos related diseases , as well as investigations on the heat exposure at the workplace and health risk of workers from different industries .

Relevance of the topic:

The topic of the dissertation is relevant, as the health care sector and social care are among the biggest in Europe with 10% employees in EC. The work related threats are one of the most significant and diverse there. The injuries from sharp objects and the related blood transmitted infections leading to chronic diseases are one of the most important risks. That is why the training and information for the medical staff is critical for the health risk management.

Structure of the dissertation:

The dissertation is presented on 174 standard pages and is illustrated with 51 figures and 27 tables. The bibliography includes 300 literary sources, 21 of which are in Cyrillic.

The literature review shows the broad awareness of the PhD student on the problem.

The epidemiology and pathogenesis of the most common blood transmitted infections (HBV, HCV, HIV), as well as the distribution of the injuries from sharp objects among health care workers are presented in details. A comparison between the effects before and after the implementation of Directive 2010/32/EC was done. A review of the vaccination data against HBV and approaches for prevention injuries from sharp objects is presented. The conclusion of the literature review is that according to WHO there is a delay in achievement of the goals for elimination of the strategies for viral hepatitis and HIV. The result of this delay is the increase of the cases with chronic infections with hepatitis viruses with over 30% in the EC among the risky groups.

The PhD student underlined that the occupational exposure to blood transmitted pathogens is still a serious problem and risk for the health workers without significant differences between the EC members for the periods 2000-2010 and 2010-2018. There is

a necessity of effective educational programs for prevention and management of the exposure because the injuries from sharp objects lead to serious economic and moral burden which can be reduced through implementation of protective medical devices but only with the continuous education and safety practices at the workplaces.

The aim of the dissertation is clearly and precisely formulated and is directly related to the topic. The set of 7 tasks logically follow from the goal, allowing good implementation of the planned study.

Research methodology

The methodology of the study is precisely presented, correctly indicating the object and scope of the study, as well as the methods used.

Results

The "Results" section presents the data obtained from the survey of 2744 health care workers from 19 hospitals in Sofia. With the help of modern survey and analytical methods, a high frequency of incidents of injury with sharp objects during the work experience and in the previous year among hospital health workers is established. Interestingly, for the entire working experience, midwives reported the highest incidence of incidents (83.8%), followed by nurses (67.9%) and doctors (62%). Nurses working in surgical wards and emergency/intensive care units reported incidents to the greatest extent (over 70%). Among doctors, the most frequent (over 80%) are incidents with surgeons, obstetrician-gynecologists, urologists and anesthesiologists (74%).

The fact that the main cause in the latest incident was a lack of time when performing the relevant activity, followed by an unanticipated patient reaction, inattention and fatigue, is a matter of concern. Among the leading causes are insufficient experience with the object and/or incorrect use, as well as a lack of accessories for the safe disposal of sharps and/or inappropriate waste disposal. The dissertation found that a large proportion of healthcare workers (46.5%) did not report an incident with the main reason that the incident/patient did not appear to be at risk.

A considerable percentage of 17.2% of underreporters do not know about such a requirement. The fact that the pre-exposure prophylaxis with hepatitis B vaccine does not have the necessary scope for the examined healthcare workers is alarming – 41.6% of the healthcare workers are not vaccinated. Only 25.2% of respondents had received three doses of vaccine with evidence of established immunity, with the highest proportion among doctors (35.6%), followed by nurses (25%), laboratory staff (21.3%), midwives (15.7%), paramedics (10.6%) and rehabilitators (2.9%). However, 65% of these respondents did not prove immunity within the established time frame. Doctors are the only professional group in which those immunized with 3 doses and a proven At titer (35.6%) are more than the unvaccinated (26.8%). The proportion of correctly vaccinated compared to non-vaccinated is greater in surgical, hemodialysis, rheumatology and sterilization wards.

Important for practice is the established rate of post-exposure prophylaxis, only among 51% of workers after the last incident no blood test was offered, a small part of health workers (27%) was offered a preventive procedure, and for 12.8% it was vaccination against hepatitis In and for <2% - HBIG. Unvaccinated HCWs had the lowest rate (9%) of being offered vaccination after a reported incident, 52.7% were not offered a post-exposure blood test, they had the highest proportion (42%) of those who never reported and in those who did not seek advice after an incident (55%).

As a result of the performed analyses, it is established that healthcare workers have an inaccurate perception of the risk of infection in the event of an incident with blood contaminated with one of the considered pathogens. The probability of infection according to the respondents is high, but the risk is the same for HBV and HCV, probably the infection is considered most often for HIV, a non-existent probability of infection is reported by the largest proportion of workers for HBV.

In hospital emergency care, the highest proportions of workers who did not report an incident, those who after reporting were not advised on safety procedures and were not offered a blood test, the lowest participation of control infection authority.

The occupational and medical characteristics of the health care sector show that adverse psychosocial factors related to the organization of work (shift mode, long working hours, increased number of night shifts per month), with high stress, emotional load, degree of safety influence the frequency of NOP , influence on the organization of work, with the fatigue and stress of the workers.

The author's conclusion is that a high frequency of exposure to blood/body fluids in the examined hospital healthcare workers indicates serious gaps in all aspects of the application of Directive 2010/32 and Ordinance No. 3 of the Ministry of Health / 2013 for the approval of a medical standard for prevention and nosocomial infection control and staff protection through a comprehensive approach to sharps injury prevention, reporting and case control and post-exposure prophylaxis.

The results are illustrated with appropriate informative figures and tables.

Findings:

Based on the obtained results, 12 findings are formulated, which follow logically from the set tasks and summarize the most important results of the dissertation.

The abstract (referat) to the dissertation correctly reflects the structure of the development and contains the most significant results and conclusions of the study.

Publications: As a result of the dissertation 8 publications were presented (1 in foreign editions). In 5 of the publications the dissertation is the first author. The results of the dissertation are presented at 5 scientific forums (4 abroad).

I have no critical remarks on the dissertation.

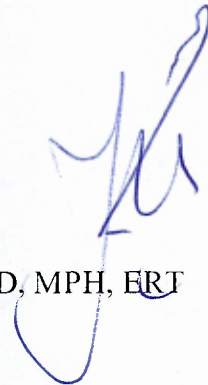
IN CONCLUSION:

The topicality, the use of modern scientific methods, the significant practical results and the importance of the conclusions and contributions of dissertations, give me the reason to conclude that the work of Dr. Irina Dimitrova Dimitrova- Toneva meets the requirements of the Law on Academic Development in Bulgaria for acquisition of scientific and educational degree "doctor".

Based on the above, I recommend the members of the scientific jury to vote positively for the award of the scientific and educational degree "Doctor" to Dr. Irina Dimitrova Dimitrova- Toneva.

Sofia, October 23, 2022

Prof. Dr. Karolina Lyubomirova MD, PhD, MPH, ERT

A handwritten signature in blue ink, appearing to be 'KL', is written over the printed name of Prof. Dr. Karolina Lyubomirova.