

OPINION

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CONCERNING: Ph.D. thesis of assistant Dr. Irina Dimitrova Dimitrova-Toneva, Ph.D. student on self-education on the topic „*Occupational exposure to blood and biological fluids in healthcare workers in hospital care and state of pre- and post-exposure prophylaxis*“

This opinion was prepared on the basis of Order No RD-454/21.09.2022 of the Director of the National Centre of Public Health and Analyses determining the composition of the scientific jury for conducting the defense of the Ph.D. thesis of assistant Dr. Irina Dimitrova Dimitrova-Toneva, Ph.D. student of independent preparation for the award of educational and scientific degree "Doctor" in professional field 7.1. "Medicine", in the scientific specialty "Hygiene".

The dissertation submitted by Dr. Irina Dimitrova Dimitrova-Toneva on the topic: „*Occupational exposure to blood and biological fluids in healthcare workers in hospital care and state of pre- and post-exposure prophylaxis*“, with scientific leader Ass. Prof. Katya Vangelova, Ph.D. consists of 176 pages with chapters: Introduction, Review of the literature, Aim and Tasks, Contingent and methods, Results, Discussion, Contributions, References, following the mandatory parts clarifying the list of publications, participation in scientific events. The literature review is very thorough and consists of 300 publications directly related to the theme of the dissertation and prove the necessity and actuality of the objectives and tasks set in the dissertation.

The dissertation work is extremely relevant as it concerns the medical staff – doctors, nurses, lab technicians, midwives, nurses who have a direct relationship to blood tests and processing of biological material.

The purpose of the dissertation work is "to assess the frequency of professional exposure to blood and biological fluids in health workers in the hospital care in Sofia, post-exposure prophylaxis in workers, their perception of the risk of infection with blood pathogens, as well as to assess the practical implementation of Directive 2010/32/EU, transposed in Bulgaria by Ordinance No 3 of the Ministry of Health /2013".

The study involved a contingent of 2,744 health workers from 19 hospitals in the city Sofia. Health workers were mostly women (87.3%) with an average age of 48.08 ± 11.9 , as follows: 763 doctors, 1,427 nurses, 208 lab technicians, 176 midwives, 77 rehabilitators, 93 nurses. In this respect, the dissertation work is the basis for a serious analysis of the state of working conditions and safety at work for health workers from the same professions and similar units across the country, as it covers 19 hospitals with diverse diagnostic and therapeutic activities.

The tasks assigned relate to the collection of information on the contact of health workers with blood and biological fluids, on working conditions and preventive measures applied at work, on the perception of the risk in healthcare workers and the real state of that risk, the application of European and national legislation in this field, and the preparation of recommendations for safe handling of blood and biological fluids.

The Ph.D. student has adapted and standardized a questionnaire-survey for self-assessment of blood exposure "Exposure of hospital staff to blood and blood portable infections", which is used in studies around the world, including and in the South-East

European region. It includes 18 questions about the existence of a blood/body fluid exposure incident for the previous year, the number, type, circumstances and causes of the incidents, the extent of their reporting and the reasons for not reporting them. It includes questions about illnesses after incidents, the perception of staff risk, the state of vaccinations against diseases carried by such incidents.

Survey methods were also used to assess the organization of work, the state of stress in workers (German and Danish questionnaires), including the quality of sleep (Karolinska Institute of Occupational Medicine).

The statistical methods used are modern and the results of the surveys are examined by many different directions through SSPS and ANOVA statistical packages, by applying methods of comparison, regression, correlation analysis, odds ratio.

The results of the doctoral student's research show a high level of incidents of injuries with acute objects, their uneven distribution in the groups of medical workers (by profession, activities, specialties, wards).

Cases of needle injuries, skin contact, as well as cleaning and disposal of bio-waste have been analysed.

An important problem is found in incident reporting – there the analysis shows a low level of awareness, which is analyzed deep in the work.

Inadequate perception of risk is also relevant for high traumatism among workers, and diseases are largely due to low vaccination rates.

The Ph.D. student finds a low level of pre-exposure, also the post-exposure prophylaxis of hepatitis B.

Last but not least, there are gaps in the implementation of national and European legislation in this regard.

Poor organization of work, psycho-social factors, underestimation of risk, low vaccination rate and other factors affect the final effect – a large number of diseases associated with contact with blood and biological fluids – mainly hepatitis B, C.

The main contributions described by the Ph.D. student are real, important for practice and applicable through recommendations based on the analysis of results.

The dissertation includes graphs that clearly show the trends that are analyzed and from which the conclusions emerge.

The dissertation work is written in good Bulgarian language, with the application of the correct medical terminology (including that of occupational medicine). In this regard, I would make a remark to the author to use the Bulgarian terms more as an example - perception, respondents.

Scientific contributions relate mainly to the link between established diseases in blood and biological fluid workers and inadequate incident reporting, inadequate risk perception, gaps in the prevention and control of blood exposures under the legislation, and poor labour organisation of those workers.

I know Dr. Irina Dimitrova-Toneva as a serious, educated and competent medic – labour hygienist, hardworking, intelligent, calm and a colleague who is well involved in a collective.

In conclusion, Irina Dimitrova Dimitrova-Toneva has presented a dissertation work that is up-to-date, carried out according to the requirements for a serious epidemiological scientific study of the risk of personnel who are at risk in relation to a number of serious diseases related to activities in contact with blood samples and bodily fluids, such as hepatitis B and C, HIV and others. It has found that national and European legislation in this respect is not sufficiently strictly applied, medical staff operate under conditions that are high risk of

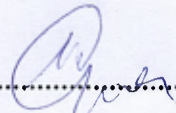
accidents due to poor labour organisation, protection measures (including vaccinations), inadequate risk communication, poor psycho-social factors.

Irina Dimitrova-Toneva presents 8 publications in the field of thesis, participates actively in scientific forums, where she has presented the results achieved independently and together with her scientific leader, which are quite enough.

Due to the above, I will vote ***strongly positively*** for the award of the educational and scientific degree "Doctor" to assistant Dr. Irina Dimitrova Dimitrova-Toneva, Ph.D. student of self-education, in professional field 7.1. "Medicine", in the scientific specialty "Hygiene". I also invite other members of the ANJ to vote positively.

Sofia

25 October 2022

Signature: 

(Prof. M. Israel, PhD)