

OPINION

**By Prof. Michel Salvator Israel, Ph.D.,
Department of Physical Factors
Analytical and Laboratory Activities Directorate, NCPHA**

CONCERNING: Ph.D. thesis of assistant Irina Valerieva Tsekova, Ph.D. student on self-education on the topic “*Characteristics of replacement shift regimes and health risk in hospital care*”

This opinion was prepared on the basis of Order No RD-68/11.02.2022 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 Irina Valerieva Tsekova, PhD 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 Irina Valerieva Tsekova on the topic: “*Characteristics of replacement shift regimes and health risk in hospital care*”, with scientific leader Ass. Prof. Katya Vangelova, PhD consists of 167 pages with chapters: Introduction, Review of the literature, Purpose and Tasks, Contingent and methods, Results, Discussion, Contributions, References, following the mandatory parts clarifying the list of publications, participation in scientific events, annexes and recommendations. The chapters are constructed in volumes and contents needed. The literature review consists of analyses of 162 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, healthcare professionals who work on different replacement regimes, especially related to the Covid 19 pandemic.

The purpose of the work is to assess the characteristics of the replacement regimes of work shifts, physiological changes and the risk to health, in the case of medical professionals working in the hospital care of the town of Sofia. A contingent was correctly selected only from the town of Sofia in the difficulties we have as scientists to explore different contingents in the country. The individuals studied are 2690 healthy workers from 19 hospital care facilities.

The assigned tasks are logically arranged and lead to results that cover the problem of the risk of working in swapped mode from different directions – exposure assessment of work under different replacement modes, monitoring of changes in the excretion of melatonin and cortisol in saliva, a study of individual and behavioural reactions of workers in a replacement mode, the subjective perception of the health status of the studied individuals and is finally concluded with a real risk assessment of medical staff working under different working and rest regimes. All this (in this order and volume) is a serious investigation in the field of occupational health, very useful in the currently existing global conditions.

The PhD student has developed a survey on change work and working regimes, in addition to using a similar methodology for subjective assessment of the health status of workers and the assessment of sleep quality and fatigue.

The objective evaluation methods used related to changes in the excretion of melatonin and cortisol in saliva, the examination of the quality and quantitative characteristics of sleep associated with the excretion of melatonin are very suitable for reaching the goal that the PhD student has set in the dissertation. Given the long experience and scientific

recognition of her scientific leader in such studies, it is clear that the PhD student is being focused in the right direction in order to achieve an outcome suitable for assessing the risk of staff working in replacement working arrangements.

The order of the work in the performance of the tasks, as well as the analysis of the results achieved, the applied statistical processing of the survey and other survey data, is noticeable. The analyses are short, scientifically justified and specific to the problem posed, which is analysed.

The conclusions come from the results, and although they are logical and expected, they give a quantitative assessment of fatigue, the higher risk of cardiovascular disease, endocrine, mental, gastrointestinal tract, as well as oncological diseases associated with the type of work and the change of working regime. The influence of sleep disorder as a predictor of the cited diseases is discussed, especially if they are potentiated by individual factors, such as smoking, regular alcohol intake and others.

Scientific contributions are mainly related to the evaluation of melatonin excretion and stress assessment in healthcare workers working in a replacement mode. There are similar studies in Bulgaria in different areas of the industry, and for the medical staff – only in physiotherapy, carried out by the scientific leader Assoc. Prof. Katya Vangelova, but there are no data on medical staff in clinical practice.


An important scientific and practical contribution of the dissertation is the risk assessment of health staff in clinics operating on replacement regimens, as well as the recommendations listed in the dissertation to reduce this risk.

In conclusion, Irina Valerieva Tsekova has presented a dissertation work that is very up-to-date, carried out according to the requirements for a serious scientific study of the risk of personnel who are currently at risk with regard to a number of diseases of the cardiovascular, endocrine, central nervous system, gastrointestinal tract. The risk increases due to the change of work of healthcare workers and this is clearly followed up in the survey conducted.

Irina Tsekova has several publications in the field where she presents some of the results achieved.

Due to the above, **I will vote positively for the award of the educational and scientific degree "Doctor"** to assistant Irina Valerieva Tsekova, PhD student of self-education, in professional field 7.1. "Medicine", in the scientific specialty "Hygiene". I invite other members of the Jury to vote positively.

Sofia
8th of March 2022

Signature: 
(Prof. M. Israel, PhD)