

**REVIEW**

НАЦИОНАЛЕН ЦЕНТЪР ПО ОБЩЕСТВЕНО СЪРЪБЕ И АНАЛИЗИ	
Иск. №:	20
Вх. №:	11 22 / 29 - 03 20 21

**ON**

**THE DISSERTATION "CHARACTERISTICS OF THE SHIFT WORK SCHEDULES  
AND HEALTH RISK IN HOSPITAL CARE" FOR AWARDING PHD DEGREE  
OF**

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**FROM**

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The dissertation presented for review is written on 168 pages, in the generally accepted structure - introduction, literature review, purpose and tasks, results, discussion, conclusions and contributions.

The literature review is extensive, discussing all the risk factors that lie in the etiopathogenesis of the diseases associated with shift work. It is written on 46 pages and based on 192 contemporary sources. Three hypotheses are presented, on the basis of which the goal is formulated. The second hypothesis "It is assumed that night work is associated with changes in circadian rhythms and overstrain of adaptation systems" repeats a well-known fact, and I would recommend clarifying that these are shift schedules in the conditions of frequent overtime.

The purpose of the work - to assess the characteristics of shift schedules, physiological changes and health risks in medical professionals working in hospital care in Sofia, is very relevant. Our health care system has been operating in different shift schedules for years, but the urgency of the problem now rises from the large amount of overtime, which further accumulates poor recovery and chronic fatigue, a problem that affects health policy. The tasks for achieving the set goal are clearly formulated.

The dissertation is based on an impressive amount of research material - the main shift schedules - rotating 12-hour shifts, day / evening shifts, day and night shifts only, a total of 2690 health care professionals, nursing professionals and physicians from the hospitals in Sofia were studied. A self-rated qualitative and quantitative indicators of sleep and fatigue and health status were carried, and the results were developed in terms of shifts duration, number of night shifts, length of service under shift work, overtime (at four levels), weekly working hours. The circadian rhythm of melatonin in urine and cortisol in saliva were assessed in health care professionals during the working day and night shifts. The data are processed with a contemporary statistical apparatus - statistical package IBM SPSS Statistics 15.0. ANOVA,  $\chi^2$ , stepwise multiple regression analyses and correlation analyses are applied,

and for circadian changes an analysis for repeated measurements with significance level  $p < 0.05$  was used.

Valuable data with scientific and practical significance have been obtained.

- It has been established that overtime and extra work lead to an extremely long working week (up to 61 hours per week) and an increase in night shifts. As working hours increase, so does the number of night shifts. With an increase in working hours per week, a statistically significant deterioration in sleep was found, most pronounced when working over 51 hours per week.
- Shift work with 5 or more night shifts per month, as well as overtime and extra work, respectively over 40 hours per week, contribute to increased levels of fatigue among hospital medical staff.
- Melatonin maintains its typical circadian rhythm, but with significantly lower early morning excretion levels during the night shifts compared to morning values before the day shift.
- It was found that cortisol retains its 24-hour rhythm, but with higher values for part of the day and the second half of the night shift, confirming the self-rated data for higher levels of stress and fatigue and increased health risk.
- Sleep has a significant role in the body's recovery processes and in this regard, the established data that "The quality of sleep, enough sleep, fatigue in the morning after waking up, problems in getting asleep and sleep index are significantly related and decrease with the number of night shifts per month, while the necessary amount of sleep, enough sleep, fatigue in the morning after waking up and the sleep index decrease with increasing the amount of overtime" contain scientific and practical contributions.
- It was found that male physicians working night shifts show higher incidence of cardiovascular diseases, arterial hypertension, diseases of the digestive system compared to those who have never worked at night. The same is true for female health care professionals. These data are also of scientific and practical importance.

The conclusions made in the work rise from the results obtained.

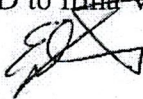
To the formulated contributions I have a recommendation - verbs such as "tracked", "performed" to be replaced with "found", "received" and to present the results.

The results of the dissertation have been disseminated in the scientific community through 8 publications, four of which abroad and participation in 6 scientific events.

## **Conclusion**

I believe that the dissertation "CHARACTERISTICS OF THE SHIFT WORK SCHEDULES AND HEALTH RISK IN HOSPITAL CARE", presented to me for review, fully meets the requirements of the educational and scientific degree "Doctor" and I suggest the esteemed members of the scientific jury to vote positively for awarding PhD to Irina Valerieva Cekova.

Prepared by:

  
(Prof. Dr. E. Dincheva)