CORRESPONDENCE

Night Work and the Risk of Depression

A Systematic Review

by Prof. Dr. med. Peter Angerer, Dr. phil. Renate Schmook, Irina Elfantel, and Dr. rer. sec. Jian Li, MD, MPH, PhD in issue 24/2017

Decrease in Chronobiological Adaptability

In the literature review of the article I missed—at least in the discussion section—any mention of the problem of the different chronological sequences of shift work (duration of the respective shift, inset days without having to work) and of the age of the study participants (1).

From my own experience (one year of shift work on the intensive care ward in a university medical center's hospital for internal medicine in the early 1970s) I know that even in a scenario of weekly shift work (for example, a work pattern of early shift—late shift—night shift—free period) the chronobiological adjustment has to become quasi-permanent, and that for this reason, longer shift sequences (10–14 days) would make sense. As a hospital doctor I had patients under my care who were exposed to shift changes every three days or even daily. These patients experienced this as making them ill. In the context of hospital operation, shifts alternate usually on a weekly basis (except for the permanent night shifts, which, for family reasons, are taken over by mostly female nursing staff. Elsewhere in working environments, shifts alternate in briefer intervals, sometimes on a daily basis. This may go some way to explaining the different results of the research.

Prospective studies of the duration of the shift periods would therefore be instructive, as for health reasons (not only with regard to depression), shifts alternating too quickly would no longer be permissible in terms of occupational health. In my opinion, this would be an important outcome.

Studies of the age of the shift workers might show that from a certain age, the chronobiological ability to adapt may decrease so much that shift work will have to be regarded as no longer reasonable/appropriate.

DOI: 10.3238/arztebl.2017.0680a

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Dr. med. Jürgen Bickhardt
Erding
juergen-bickhardt@t-online.de

In Reply:

Bickhardt's correspondence raises important questions. From a chronobiological perspective and based on observations and experimental studies, the old guideline of the German society for

occupational and environmental medicine (*Deutsche Gesellschaft für Arbeitsmedizin und Umweltmedizin*, DGAUM) recommended planning no more than three sequential night shifts in forward rotation. The main argument for this was that because of the 24 hour rhythm of the circadian time cues (*zeitgeber*) daylight and social life, chronobiological adaptation—as seen when travelling through time zones—is not possible in the context of shift work. This means that the stress burden increases continually, night after night. As several short breaks are more effective than fewer, longer ones, the stress periods should be kept as brief as possible. Observational studies from the real working environment that is the hospital (1) and a meta-analysis of intervention studies (2) have confirmed the validity of this concept. Introducing short shift sequences had a positive effect on health indicators such as sleep or melatonin concentrations. However, in an environment of multifactorial events, unfavorable physiological effects owing to long shift sequences or permanent night work may be counterbalanced by more favorable psychosocial stressors—for example, as a result of better compatibility of professional and personal challenges.

A new consensus based (S2k) guideline on night work and shift work has been announced and will probably be published in 2018. The systematic reviews undertaken to set out the guideline already indicate that the existing data cannot provide an answer to the question of which shift working system poses the smallest risk for long term health sequelae, such as depression, myocardial infarction, or metabolic syndrome.

The age after which the chronobiological adaptability is reduced to the extent that shift work becomes an impossibility also remains an unanswered question. It is a known fact that the tolerance for shift work decreases with the aging process (3). People's adaptability, however, develops in very different ways, so that no convincing arguments can be brought forward in favor of fixed age thresholds.

DOI: 10.3238/arztebl.2017.0680b

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On behalf of the authors
Prof. Dr. med. Peter Angerer
Institut für Arbeits-, Sozial- und Umweltmedizin
Centre for Health and Society
Medizinische Fakultät
Heinrich-Heine-Universität Düsseldorf
peter.angerer@uni-duesseldorf.de

Conflict of interest statement

The authors of both letters to the editor declare that no conflict of interest exists.