
Summary

In its 2002 monitoring report, the Netherlands Centre for Occupational Diseases (NCvB) called attention to the possible relationship between night work and breast cancer in women. It was prompted to do so by the publication in 2001 of three occupational epidemiology studies revealing an association between night work and the occurrence of breast cancer. This in turn led the State Secretary of Social Affairs and Employment to request that the Health Council provide a review of current knowledge on this topic, an opinion on its policy relevance and recommendations for further research.

Relationship between night work and breast cancer

A systematic review of epidemiological studies on night work and breast cancer was published in 2005, which also included studies of airline flight attendants. That same year also saw the publication of a British assessment of night work and breast cancer. The Committee utilises these studies (among others) in this advisory report.

The epidemiological studies identify an association between the performance of night work and an increased incidence of breast cancer in women. Whether this is a causal relationship is unclear. The two most informative studies, conducted among a large group of female nurses in the United States, point to an increased incidence of breast cancer following long-term exposure to night work. Incidence of breast cancer was approximately one and a half times higher after at

least 20-30 years of night work than among female nurses who did not work at nights. However, the studies display significant limitations with regard to the estimation of exposure to night work. These relate to the definition of night work (i.e. what hours), how night work was quantified (actual number of nights and/or hours within a specific time-frame) and how the night workers have been assigned to the study groups (possible presence of night workers in the control group).

Based on an evaluation of the epidemiological research data, the Committee concludes that a relationship has been found between prolonged periods of night work and higher incidence of breast cancer in women. However, the currently available data do not warrant the conclusion that this is a causal relationship.

Possible mechanisms

No mechanism has been identified that could explain a possible causal relationship between night work and breast cancer. A chronic disruption of the circadian rhythm could well have an effect on the production of melatonin, a hormone involved in the regulation of the sleep pattern. Disturbed melatonin secretion has been associated with the occurrence of breast cancer, though this has not been proven. Moreover, other factors that display a circadian rhythm (e.g. components of the immune system or genes that control the circadian rhythm) could equally be influenced by night work. Further research is required in this area.

Further research

The Committee believes that consideration should be given to the association that has been identified in the studies between prolonged periods of night work and increased incidence of breast cancer. This is, in part, justified by the high incidence of breast cancer among women in the Netherlands. Other significant factors to be considered are the anticipated increase in working time (i.e. the need to continue working to a later age), the growing participation of women in the workforce and the attendant increase in night-shift work. The Committee therefore recommends that further research be conducted, which should include both epidemiological studies and research into a possible causal mechanism. Wherever possible, this should draw on existing research at national and international level.

Policy implications

Women in the Netherlands aged 50 to 75 years have access to regular population screening for breast cancer (once every two years). At present, the research findings do not, in the Committee's opinion, justify recommending special measures for women who perform night work for prolonged periods in addition to the current breast-cancer screening programme. If new, scientifically sound research findings were to produce evidence of a causal relationship then one could consider what specific measures need to be taken.