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The Role of Shift Work in Shaping Sleep Habits and Professional Efficiency: A Survey Study in the Fields of Occupational Medicine, Psychology and Chronobiology in Poland*

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Abstract

The modern labour market is characterised by dynamic changes and a growing need to ensure round-the-clock availability of services, which results in an intensification of shift work. Although this model of work is crucial for the functioning of many sectors of the economy, it poses significant health and psychological challenges, particularly in terms of circadian rhythm regulation and sleep quality. Sleep, a fundamental element of the body's regeneration, plays an important role in maintaining physiological and mental balance. Sleep disorders resulting from shift work can lead to a deterioration in well-being, reduced professional efficiency, health problems, decreased concentration and an increased risk of errors and accidents in the workplace.
The aim of the study is to analyse the relationship between shift work and employees' sleeping habits, and to identify the health, psychological and professional consequences of sleep disturbances. The results of scientific research in the fields of occupational medicine, psychology and chronobiology will be presented, as well as the results of surveys and industry analyses. Based on these, practical recommendations will be formulated for personnel management and support for employees working in a shift system, aimed at minimising the negative effects of shift work and improving the quality of professional and private life. The work aims to provide knowledge for both the scientific community and management practitioners, indicating optimal organisational strategies that promote the health, well-being and efficiency of employees.

Keywords: shift work, sleep habits, work efficiency, employee health

Introduction

The modern organisation of work in Poland is undergoing dynamic changes, driven by globalisation, technological development and growing social expectations regarding the availability of services and flexibility of employment. The functioning of many sectors of the economy — including healthcare, transport, logistics, industry, public safety and trade — requires round-the-clock service, making shift work an increasingly common employment model. Data indicate that a significant percentage of employees in Poland perform their duties outside traditional working hours, making the issue of shift work an important social and economic issue.

Although shift work is a response to the needs of the modern economy, its impact on human functioning is ambiguous. Working irregular hours interferes with natural biological mechanisms, including the regulation of the circadian rhythm responsible for the sleep-wake cycle. Sleep, as a basic physiological process, is responsible not only for the regeneration of the body, but also for the proper functioning of the nervous system, cognitive abilities, emotional balance and the maintenance of metabolic health. Sleep deprivation or poor sleep quality leads

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to concentration disorders, increased irritability, decreased motivation and professional efficiency, and in the long term, to the development of chronic diseases, including cardiovascular, metabolic and mental disorders.

Shift work is therefore both a challenge and an area of research with high practical significance. Scientific literature increasingly emphasises the relationship between the organisation of working time and employee well-being, productivity, occupational safety and job satisfaction. In Poland, with the increase in employment in sectors requiring a rotation system, there is a growing need to take these factors into account in the personnel and health policies of companies and public institutions. In many sectors, especially those related to services and industry, there is a growing demand for flexible working hours and the availability of employees in a 24-hour system. According to a 2024 report by the Polish Agency for Enterprise Development, as many as 63% of employers in Poland declared the need to hire employees on flexible terms, including shift work, which represents a 12 percentage point increase year-on-year. Particularly high demand for this form of work was recorded in the manufacturing (66%), logistics (62%) and trade (50%) sectors, Polish Agency for Enterprise Development, (2024). In addition, a 2024 report by Tikrow, a Polish platform supporting the employment of casual workers on short-term contracts, shows that more than half of companies plan to fill staff shortages through casual shift work, which further confirms the growing popularity of this organisational model in Tikrow's practice (2024).

The most common system globally is the three-shift 8-hour system, in which the working day is divided into three shifts: morning (usually from 6:00 to 14:00), afternoon (14:00–22:00) and night (22:00–6:00). Although this model of work originated in heavy industry and was a response to the need to maintain the continuity of technological processes, it still dominates many manufacturing and service sectors. The popularity of this system is primarily due to its versatility and the relative balance between organisational requirements and the psychophysical capabilities of employees. This model allows for full coverage of the working day without overburdening the employee with a single, excessively long shift, which helps to maintain efficiency and reduce the risk of errors resulting from fatigue Eurofound. (2017).

The aim of this study is to conduct an in-depth analysis of the role of shift work in shaping employees' sleep habits in the context of the contemporary labour market, with particular emphasis on the impact of irregular work schedules on the length, quality and circadian rhythm of sleep, as well as the health and psychosocial consequences of circadian rhythm disorders.

Methodology

The main research tool was a questionnaire developed specifically for this study. It consisted of closed and semi-open questions, which allowed for the collection of both quantitative data and qualitative descriptive additions. The survey was designed to capture various aspects of the phenomenon under study – from general information about the respondents' activities, through their experiences with shift work, to an assessment of its impact on their health and professional development.

The survey was addressed to people working in shifts in the medical, uniformed services and corporate sectors.

The questionnaire was sent to 182 people via social media and industry mailings. Responses were received from 132 respondents, representing a response rate of over 72% – a result considered very good in social research.

The survey was conducted anonymously to ensure the honesty and reliability of the responses. Respondents were informed about the purpose of the study, how the results would be used, and that participation was voluntary. Completing the questionnaire took an average of 10 to 15 minutes. The data was collected over a period of three weeks and then subjected to quantitative and qualitative analysis.

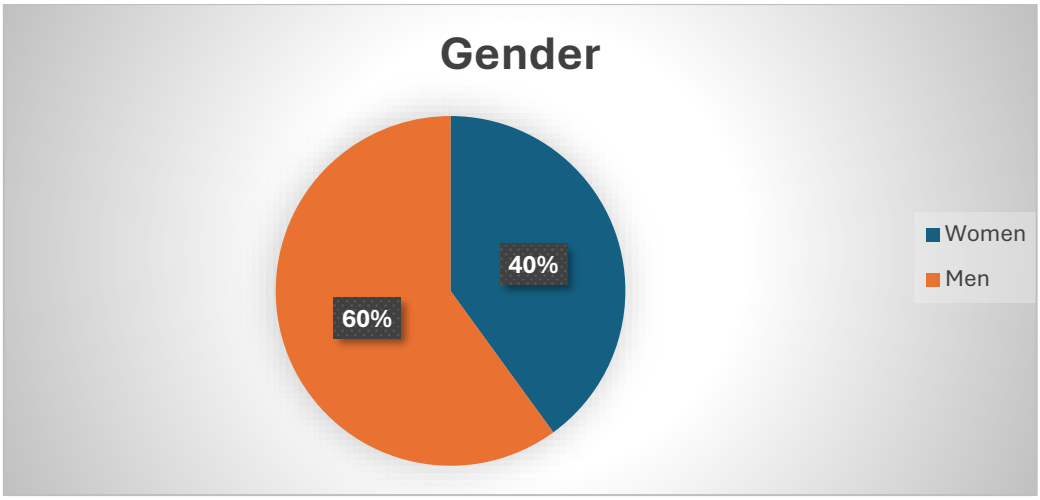

Fig. 1. Gender of respondents

The pie chart above shows the gender structure of the survey participants. The majority of respondents are men – 60%, while women represent 40% of the total number of respondents. This means that the proportion of men in the study sample was significantly higher than that of women, which may affect the interpretation of the results, especially in the context of gender differences in sleep habits and functioning in a shift work system.

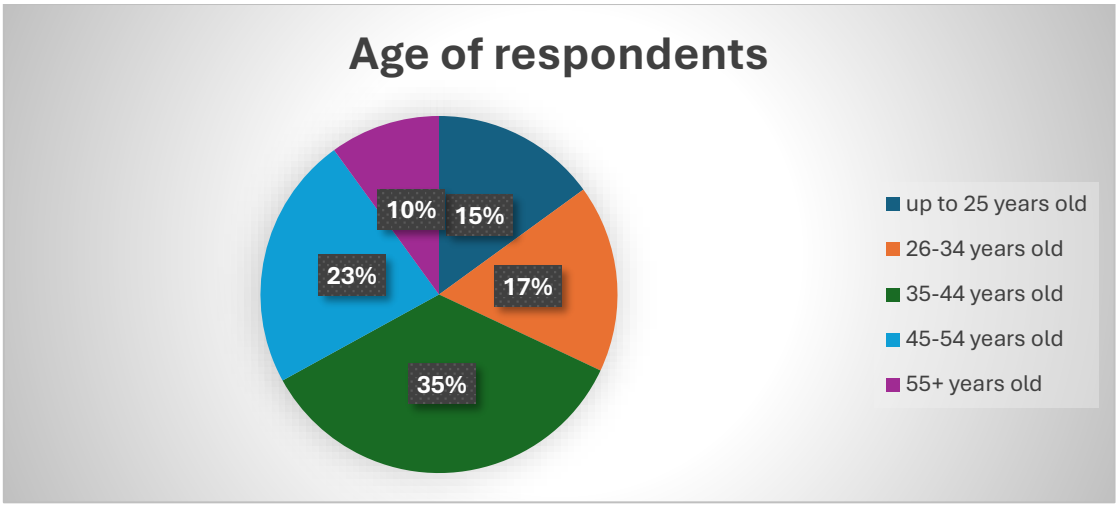

Fig. 2 Age of respondents

The pie chart above shows the age structure of the respondents who took part in the survey. The largest group consists of people aged 35–44, who represent 35% of the participants. The next largest group are respondents aged 45–54 (23%). Younger people, aged up to 25, account for 15% of the sample, while those aged 26–34 account for 17%. The smallest share is represented by respondents aged 55 and over, who account for 10% of the sample. These data indicate that the study was dominated by middle-aged people, which may be important when analysing the impact of shift work on sleep habits, especially in the context of professional experience and health burdens.

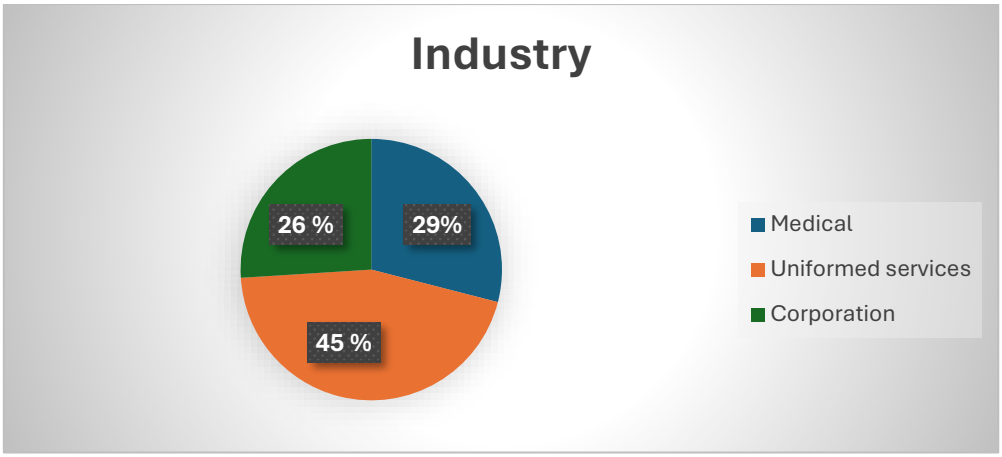

Fig. 3 Respondents' professional sector

The pie chart above shows the industries in which the respondents covered by the survey work. The largest group are people employed in the uniformed services, accounting for 45% of all participants. The next largest group are medical sector employees, who account for 29% of the sample. The smallest share is represented by people employed in corporations, who account for 26% of respondents. This structure indicates that the survey was dominated by employees of the uniformed services and the medical sector, which suggests that most of the respondents perform jobs that require shift work and involve increased stress and physical strain.

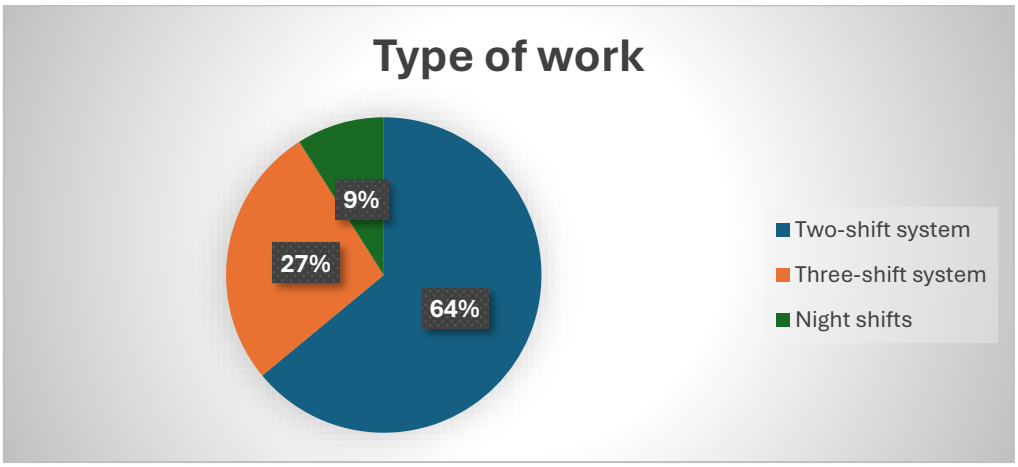

Fig. 4 Type of work performed by respondents

The pie chart above shows the type of work system used among respondents. The vast majority of respondents (64%) work in a two-shift system. The next group consists of people employed in a three-shift system, which accounts for 27% of the sample. The smallest percentage of respondents, 9%, work exclusively at night. These data indicate that the dominant form of work organisation among the study participants is the two-shift system, but a significant proportion of people also work in a multi-shift system, which highlights the importance of analysing the impact of shift work on sleep habits.

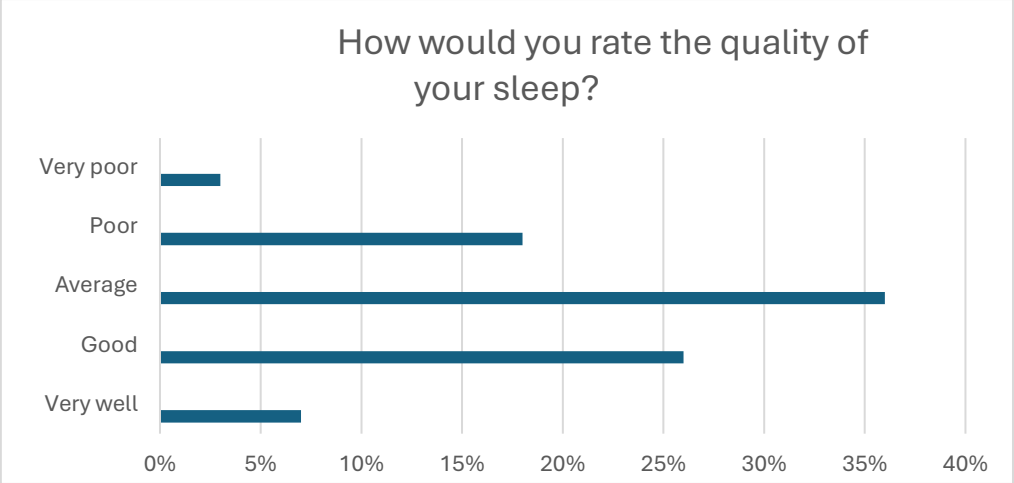

Fig. 5 Type of work performed by respondents

The chart above shows the subjective assessment of sleep quality by respondents. The largest group of respondents (36%) described their sleep quality as average. Next, 26% of participants said they sleep well, and only 7% rated their sleep as very good. On the other hand, 18% of respondents rated their sleep quality as poor, and 3% as very poor. The results indicate that the majority of shift workers experience at least moderate sleep difficulties, confirming the significance of sleep disorders in this occupational group.

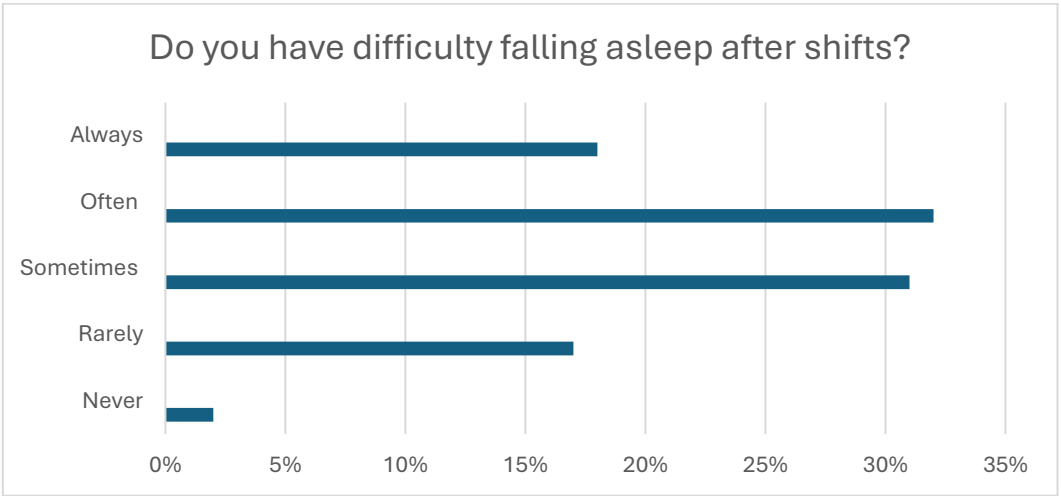

Fig. 6 Difficulties falling asleep among respondents after shift work

The chart above shows respondents' answers to a question about difficulty falling asleep after shift work. Most people said they had these problems often (32%) or sometimes (31%). Another group of respondents (17%) experienced such difficulties rarely. Only 2% of respondents said they never had trouble falling asleep after a shift, while 18% said they always had trouble. The results clearly show that most shift workers have trouble falling asleep, which may indicate a disruption of the circadian rhythm and the body's adaptation to irregular working hours.

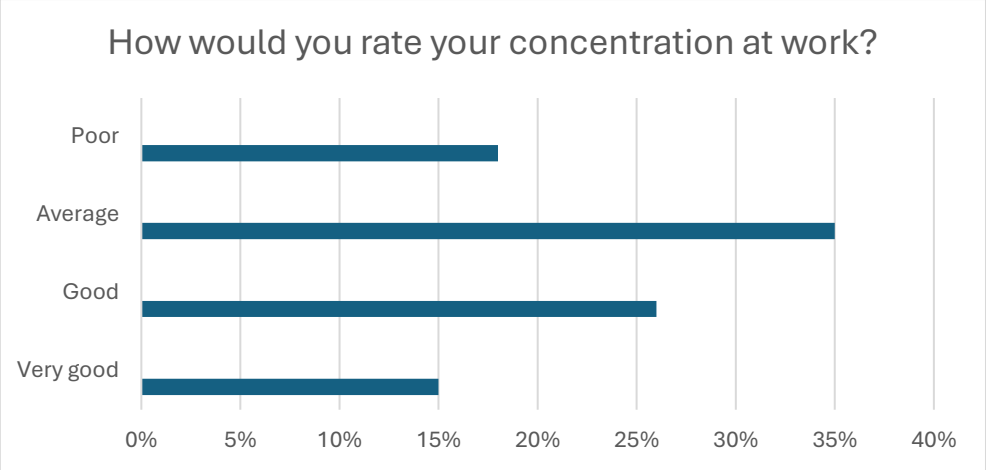

Fig. 6 Concentration of respondents during shift work

The chart above shows respondents' subjective assessment of their concentration at work. The largest group of respondents (35%) described their concentration as average. Next, 26% rated their concentration skills as good, and 15% as very good. In contrast, 18% of respondents considered their concentration to be poor. These results suggest that for most shift workers, concentration levels remain average or good, but a significant proportion of respondents experience a decline in attention, which may be associated with sleep disturbances and fatigue resulting from working irregular hours.

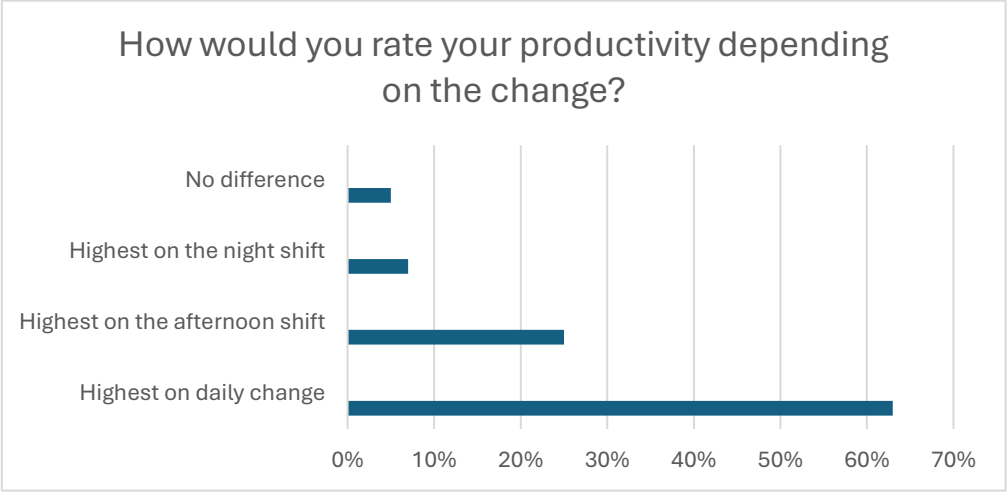

Fig. 7 Productivity of respondents during shift work

The chart above shows respondents' productivity ratings depending on the type of shift they work. The vast majority of respondents (63%) indicated that they are most productive when working the day shift. Next, 25% of respondents declared that they are most productive during the afternoon shift. Only 7% of people identified night work as the shift during which they achieve the highest productivity. Meanwhile, 5% of respondents stated that the type of shift had no impact on their efficiency. The results clearly indicate that working during daylight hours is most conducive to maintaining high productivity, which may be related to the body's natural circadian rhythm and better quality of sleep and regeneration.

An analysis of responses to open-ended questions confirms the results presented in the charts, indicating a significant impact of shift work on sleep quality, concentration and overall employee functioning. Respondents primarily emphasised difficulties related to maintaining a regular circadian rhythm and physical regeneration. The most frequently mentioned burden was the disorganisation of the day — employees emphasised that it was difficult for them to establish regular sleeping and eating hours, which led to chronic fatigue and problems falling asleep, especially after night shifts. Many of them pointed to the feeling of ‘living backwards’ compared to the rest of society, which makes it difficult to maintain social relationships and plan family activities, which corresponds particularly to the high percentage of average sleep quality and concentration ratings.

On the other hand, some respondents saw positive aspects of flexible working hours, such as the ability to run errands during the day. This shows that, despite its drawbacks, the shift system can offer certain organisational benefits.

The responses regarding the expected actions of the employer included specific proposals that could improve the comfort of shift work. The most important of these were: introducing a stable, predictable schedule and planning shifts well in advance; limiting the number of consecutive night shifts and using a rotation system in line with the natural biological rhythm; increasing the number of employees on shifts to reduce overload; providing additional breaks and creating space for short rest periods during night shifts. Another important demand was adequate remuneration for night and weekend work and recognition of the effort put into shift work.

The collected statements indicate that optimising work schedules, supporting regeneration and recognising the specific nature of shift work can significantly improve employee well-being and efficiency, which is consistent with observed trends in sleep quality and productivity across different shifts.

Literature Review

The first reports related to the structure and physiology of sleep come from the work of Aserinsky and Kleitman (1953), who discovered the occurrence of cyclical phases of rapid eye movement (REM) during sleep. The researchers showed that sleep consists of repeating phases, which initiated the development of modern sleep science and contributed to a better understanding of the mechanisms of bodily regeneration. This discovery became the basis for later analyses of the impact of sleep rhythm disorders on the health of shift workers.

Another significant contribution was made by Aschoff (1965), who studied circadian rhythms in humans. His research confirmed the existence of an internal biological clock that regulates physiological functions, including the sleep-wake cycle. The author showed that circadian rhythms are susceptible to disruption in the absence of natural environmental stimuli, such as daylight, which is particularly important for people who work at night and in rotating shifts. Aschoff's findings form the basis of contemporary research on circadian rhythms and point to the key role of sleep hygiene and exposure to light.

Åkerstedt (2003) focused directly on the impact of shift work on sleep and wakefulness. The author pointed out that shift work leads to sleep disorders, deterioration in the quality of rest and increased levels of fatigue. He also emphasised that difficulties in adapting to schedule changes are particularly evident in night work, which is associated with a higher risk of somatic diseases, accidents at work and mental health problems. This publication is one of the key scientific references in the analysis of the impact of shift work on health.

In the context of the work environment, Baicker, Cutler and Song (2010) analysed the effectiveness of workplace health programmes. The authors demonstrated that wellness programmes, including health education, psychological support and activities promoting physical activity and sleep hygiene, can improve employee health and generate real savings for employers. These results highlight the importance of investing in staff health, which is also important in the context of shift workers' productivity.

Bara and Arber (2009) examined the impact of shift work on mental health using data from a British household panel.. The authors demonstrated that shift workers, especially night shift workers, exhibit higher levels of mental health symptoms such as depression and anxiety. These findings confirm the negative impact of long-term shift work on mental well-being and the need to implement measures to support workers and monitor their health.

Bąk and Napierała (2022) analysed the risk of excessive daytime sleepiness and obstructive sleep apnoea among professional drivers. The authors pointed out that prolonged sitting, irregular work schedules and lack of adequate sleep are significant risk factors for sleep disorders and reduced alertness. The results of the study emphasise that daytime sleepiness in this occupational group can lead to an increased risk of traffic accidents, which confirms the need to monitor the quality of sleep among employees and to educate them about sleep hygiene, especially in professions involving high responsibility.

Booker and co-authors (2021) conducted a randomised clinical trial evaluating the effectiveness of an individualised educational and coaching programme on sleep and shift work in nurses with shift work disorder. The results showed that interventions involving education about circadian rhythms, techniques for improving sleep quality, and individual support led to a significant reduction in sleep disorder symptoms and improved well-being among participants. This study indicates that targeted support programmes can be effective in mitigating the negative effects of shift work in medical professions that are particularly prone to sleep disorders.

Brami-Cherrier and co-authors (2020) investigate the effect of psychoactive substances on the body's circadian rhythm, focusing on the impact of cocaine on brain structures involved in the regulation of biological rhythms. The authors demonstrated that this substance causes a ‘reprogramming’ of circadian rhythms in the striatum through the activation of D2R dopamine receptors. Although the publication concerns molecular mechanisms, it is important for understanding the biological basis of circadian rhythm disorders, including those caused by other factors, such as irregular work schedules. The results indicate that circadian rhythm disorders are closely related to the neurobiology of reward and behaviour regulation, which may explain the difficulties in adapting to night and shift work.

Chang and co-authors (2015) conducted a study on the impact of evening use of light-emitting devices (e.g. LED e-readers) on sleep, circadian rhythm and alertness the following day. The results clearly showed that exposure to blue light before bedtime delays melatonin secretion, prolongs the time it takes to fall asleep, impairs sleep quality and reduces evening sleepiness. In addition, people who used light-emitting devices had lower psychophysical performance in the morning. This study is of practical importance in the context of shift work, as night workers and people with irregular sleep patterns often use electronic devices before bedtime, which may further exacerbate circadian rhythm and sleep quality disorders.

Costa (2010) discussed current health problems associated with shift work and preventive measures in a review article. The author pointed out that shift work is associated with numerous health consequences, such as sleep disorders, cardiovascular disease, metabolic problems, reduced immunity and mental disorders. Costa emphasises the need to implement preventive measures, including optimising work schedules, educating employees, monitoring health, and creating conditions conducive to regeneration. The article is a valuable source of knowledge for employers and occupational physicians.
In another study, Costa (2003) presents a broad overview of issues related to shift work from the perspective of occupational medicine. The author describes the biological mechanisms of disorders associated with night work, the particular susceptibility of workers to sleep disorders, fatigue and the risk of reduced productivity and accidents. He also emphasises the role of organisational support, regular preventive medical examinations and the implementation of strategies to mitigate the negative effects of shift work. The article provides an important theoretical foundation for analysing the impact of the work system on workers' health.

Drake and co-authors (2004) conducted one of the key studies on sleep disorders associated with shift work, known as Shift Work Sleep Disorder (SWSD). The authors assessed the prevalence and consequences of SWSD by comparing shift workers with day workers. The results showed that shift workers were significantly more likely to experience insomnia, excessive daytime sleepiness and impaired daytime functioning. Furthermore, the study indicates that SWSD is associated with cognitive impairment, an increased risk of occupational errors, and a reduced quality of life. This publication emphasises that sleep problems in shift workers are chronic in nature and require systemic preventive and therapeutic strategies.

Drągowska, Kowalewska and Krajewska-Kułak (2023) conducted a study on the prevalence of sleep disorders among nurses. The authors confirmed that shift work, high professional responsibility, stress and the inability to fully regenerate lead to frequent sleep problems in this professional group. The study reported difficulties in falling asleep, reduced sleep quality and excessive daytime sleepiness. The results particularly emphasise that healthcare workers are a group at high risk of sleep disorders, which can have a negative impact on their health, work efficiency and patient safety.

Ebrahim and co-authors (2013) reviewed studies on the effects of alcohol on sleep physiology. The authors showed that alcohol, although often used as a sleep aid, significantly disrupts sleep architecture. It shortens the REM phase, fragments sleep and impairs its quality, especially in the second half of the night. It can also exacerbate sleep apnoea and increase the risk of breathing disorders during sleep. This study is particularly relevant in the context of shift work, as some employees may resort to alcohol as a way of coping with sleep problems, which in fact exacerbates the disorders and hinders effective regeneration.

Folkard and Tucker (2003) reviewed studies on the relationship between shift work and employee safety and productivity. The authors pointed out that irregular working hours, especially night work, are associated with an increased risk of accidents in the workplace, decreased alertness and reduced efficiency. They also emphasised that the accumulation of fatigue during consecutive night shifts particularly increases the risk of errors and adverse events. The study highlights the need for appropriate work schedule design, taking into account the physiological regenerative capabilities of the body and shift rotation in a way that limits the accumulation of fatigue.

Gangwisch and co-authors (2006) analysed data from the American NHANES study to assess the relationship between sleep duration and the risk of hypertension. The results showed that short sleep duration (≤ 5 hours per night) significantly increased the risk of developing hypertension, even after adjusting for confounding factors such as age, body weight and lifestyle. This study provides strong epidemiological evidence for the association between sleep deprivation and serious health consequences, which is crucial in the context of shift work, where limited sleep duration is common.

Gaździński i współautorzy (2021) w pilotażowym badaniu z wykorzystaniem funkcjonalnego rezonansu magnetycznego Gaździński and co-authors (2021) conducted a pilot study using functional magnetic resonance imaging (fMRI) to assess the impact of overnight driving on selective attention in professional lorry drivers. The results showed that sleep deprivation and prolonged activity requiring concentration lead to a significant decrease in brain activity in areas responsible for executive functions and attention, which directly impairs drivers' cognitive abilities. This study further highlights the risks associated with sleep deprivation in occupations requiring constant alertness and provides neurobiological evidence of the negative effects of night work and prolonged wakefulness.
Johns (1991) developed the Epworth Sleepiness Scale (ESS) – a short, self-reporting tool for assessing daytime sleepiness based on the likelihood of falling asleep in typical everyday situations. The scale quickly became the standard in the diagnosis of excessive sleepiness and sleep disorders due to its simplicity, reliability and applicability in both clinical and general populations.

Kalat (2006) presents the biological basis of sleep, describing the main NREM and REM phases and their neurophysiological mechanisms. He draws attention to the cyclical nature of sleep and the role of brain stem structures in regulating the transition between phases. This knowledge provides a theoretical background for understanding the causes of daytime sleepiness and its relationship to sleep quality.
The two sources complement each other: Johns provides a measurement tool, while Kalat provides a biological explanation of the processes leading to sleepiness.

Korkutata, Korkutata and Lazarus (2025) analyse the impact of physical activity on sleep and sleep disorders, emphasising that regular exercise improves sleep quality, shortens the time it takes to fall asleep and reduces the symptoms of disorders such as insomnia and obstructive sleep apnoea. The authors point out that the mechanisms behind these benefits include the regulation of circadian rhythms, stress reduction and modulation of the autonomic nervous system. The article presents current experimental and clinical evidence confirming the role of physical activity as a non-invasive, effective intervention supporting healthy sleep.

Krzych et al. (2019) examine sleep quality and daytime sleepiness among Polish anaesthesiologists and intensivists, a professional group particularly vulnerable to sleep disorders due to shift work and high stress levels. The results indicate a high prevalence of sleep disorders and increased daytime sleepiness, which may affect professional functioning and patient safety. The authors draw attention to the need to implement preventive measures and systemic support in groups of medical professionals working under stressful conditions.

Both sources focus on factors affecting sleep quality — the first emphasises the role of modifiable factors (physical activity), while the second points to environmental and occupational stress, which shows the multidimensional nature of the problem of sleep disorders.

In his book Fundamentals of Shiftwork Scheduling, Miller (2013) presents practical principles for designing shift work schedules, drawing attention to their impact on employee health, sleep and performance. The author discusses, among other things, the importance of shift length, rotation, recovery breaks and the compatibility of the work schedule with circadian rhythms. He emphasises that poorly designed schedules can lead to chronic sleepiness, mood disorders, reduced work safety and decreased productivity, while proper shift organisation is a key element of health prevention in occupations involving night work.

Moen, Kelly and Hill (2011) analyse how control over working time and flexibility affect the level of burnout and employee turnover. In a natural experiment conducted in a large organisation, the authors showed that increasing the ability to influence work schedules significantly reduced turnover, improved employee well-being and reduced work-life conflicts. The results emphasise that greater autonomy in planning working time is an effective tool for improving job satisfaction and stability.

Both sources focus on the organisation of working time as a factor influencing the health, functioning and stability of staff — the first concerns shift workers, the second office workers, but both emphasise the value of rational working time management and its impact on well-being.

Oskwarek and Tokarska-Rodak (2017) analyse occupational stress in the working environment of firefighters, pointing out that the specific nature of this profession — high responsibility, life-threatening situations, irregular working hours and exposure to traumatic events — leads to increased mental and physiological stress. The authors also emphasise the role of organisational factors, such as shift work, which can exacerbate the negative effects of stress, including sleep and recovery disorders.

Pasierb et al. (2019) studied insomnia among shift workers at a zinc smelter, demonstrating a high prevalence of sleep disorders in this group. The results suggest that shift work — especially night shifts — significantly increases the risk of problems with falling asleep, reduced sleep time and reduced sleep quality. The authors point out that sleep disorders can affect not only the health of employees, but also their efficiency and safety at work.

Patterson et al. (2018) conducted a systematic review and meta-analysis to assess the effectiveness of training programmes on fatigue and sleep hygiene among emergency medical services personnel and other shift workers. The results indicate that educational programmes can lead to improved sleep quality, reduced fatigue and increased work safety, although the effectiveness of interventions depends on their intensity and implementation at the organisational level.

A common theme in these studies is the impact of occupational stress and shift work on the sleep quality and functioning of workers in high-risk occupations, which highlights the need for preventive, educational and organisational interventions.

Songkham et al. (2019) analyse sleep quality among industrial workers and the factors contributing to its deterioration. The study found that poor sleep quality was associated with shift work, long working hours, high stress levels, and exposure to noise and other environmental factors. The authors emphasise that disturbed sleep led to reduced work performance, more errors and poorer overall well-being.

Sitkiewicz and Sygitowicz (2017) present the molecular mechanisms of the biological clock, focusing on the regulation of circadian rhythms by coupled transcriptional-translational loops of genes such as CLOCK, BMAL1, PER, and CRY. The authors emphasise that disturbances in the functioning of the biological clock can lead to serious health consequences, including sleep disorders, metabolic disorders and an increased risk of chronic diseases.

In his classic historical essay, Thompson (1967) analyses the development of the discipline of working time in industrial capitalism, showing how the growth of factories and time-monitoring systems led to a change in the social understanding of time and the subordination of the rhythm of the day to the demands of work. This work reveals the cultural and social sources of the contemporary organisation of working time — including regularity, punctuality and time pressure — which also influence sleep and rest patterns.

A common thread running through these publications is the impact of time organisation and environmental factors on sleep regulation and health, analysed from biological, psychological and socio-historical perspectives.

Walker and Stickgold (2004) present key evidence that sleep plays a fundamental role in learning and memory consolidation. The authors describe how different phases of sleep — particularly NREM (stage 2 and slow-wave sleep) and REM — support different memory processes, including the consolidation of procedural, declarative and emotional memory. The article points to sleep-dependent neuroplasticity mechanisms that enable the reorganisation of memory traces after learning.

In his popular science monograph Why We Sleep, Walker (2018) synthesises contemporary knowledge about the functions of sleep, presenting numerous scientific evidence on the impact of sleep on physical, mental and cognitive health. The author emphasises that sleep affects memory, emotion regulation, the immune system, metabolism and the risk of chronic diseases. The book popularises the idea that chronic sleep deprivation is a serious public health problem.

Wolińska and co-authors (2017) analyse the prevalence of insomnia and daytime sleepiness among professional drivers, a group particularly vulnerable to sleep disorders due to shift work, irregular lifestyles and prolonged exertion. The authors show that sleep problems are common and can lead to reduced concentration and an increased risk of road accidents, which highlights the importance of monitoring sleep quality in occupations that require high psychomotor performance.

In their textbook Psychology and Life, Zimbardo and Gerrig (2012) present a broad overview of the most important issues in psychology, including topics related to stress, health and human functioning in the workplace. The authors emphasise that occupational stress and work-life imbalance can lead to serious psychological and physiological consequences, such as reduced efficiency, sleep problems and burnout. The book provides a foundation of knowledge about the psychological processes that influence employee behaviour and well-being.
Zwetsloot and Starren (2004) analyse the relationship between corporate social responsibility (CSR) and occupational health and safety (OHS). The authors argue that corporate social responsibility encompasses not only pro-environmental and ethical activities, but also systematic care for the health, safety and working conditions of employees. They emphasise that organisations that incorporate OHS issues into their CSR strategies reap benefits in the form of higher employee motivation, lower absenteeism and increased efficiency. The publication points to the strategic importance of investing in employee health as part of long-term management.

The literature emphasises that sleep is crucial for cognitive, emotional and physical functioning, and that sleep disorders lead to decreased performance, increased fatigue and the risk of errors. Research indicates that shift work, occupational stress and unfavourable environmental conditions significantly impair sleep quality and increase daytime sleepiness. At the same time, some publications draw attention to the biological mechanisms regulating circadian rhythms and the importance of work time organisation and interventions that support healthy sleep. The common conclusion of the literature is that sleep is recognised as a fundamental factor in health and safety at work.

Further actions and Recommendations

In light of the presented results and the current state of knowledge, it seems necessary to develop multidimensional adaptation strategies that will limit the negative effects of shift work. It is essential to design work schedules in accordance with current chronobiological knowledge, taking into account physiological sleep needs and circadian rhythms, which can significantly reduce biological desynchronisation and the accompanying ailments. At the same time, organisations should invest in systemic educational programmes covering sleep hygiene, light exposure regulation, fatigue management strategies, and techniques to support cognitive and emotional recovery. The development of an organisational culture that treats sleep as a key component of employee health is also becoming increasingly important, which fits into the broader framework of corporate social responsibility.

In the context of public health, it is important to strengthen preventive measures by regularly monitoring sleep quality and fatigue symptoms in occupational groups particularly exposed to night work and high stress levels. In the future, it is also advisable to conduct longitudinal studies that will enable the analysis of the long-term consequences of shift work on the metabolic, cardiological, neuropsychological and social functioning of individuals. Finally, interdisciplinary research projects combining the perspectives of chronobiology, occupational ergonomics, health psychology and occupational medicine are needed to develop more precise and effective support tools for employees working irregular hours.

Summary

Both literature analysis and the results of our own research clearly show that shift work is a significant factor disrupting natural biological processes, especially the circadian rhythm responsible for regulating sleep and wakefulness. Classic works, such as Aserinsky and Kleitman's research on the structure of REM sleep and Aschoff's findings on the endogenous circadian rhythm, form the foundation of our knowledge about how sensitive the human body is to the regularity of the light-dark cycle. In light of this theory, all forms of night and shift work lead to disruption of the biological clock, as confirmed by numerous contemporary studies discussing the physiological, cognitive and emotional consequences of shift work.

Publications on occupational medicine and psychology clearly indicate that shift work is associated with a higher risk of insomnia, excessive daytime sleepiness, mood disorders, chronic fatigue, as well as reduced productivity and a higher number of professional errors. Research by Drake and colleagues on Shift Work Sleep Disorder (SWSD) confirms that sleep disorders in shift workers are chronic and lead to permanent deterioration in functioning. The results of studies on doctors, nurses, professional drivers and industrial workers indicate that a significant proportion of this population experiences both difficulty falling asleep and sleep fragmentation, as well as daytime sleepiness.

An important addition to the literature isresearch on environmental and behavioural factors — such asexposure to blue light, occupational stress, lack of regeneration, andpoor sleep hygiene habits — which further exacerbate the

negative effectsof shift work. At the same time, some publications present effective strategiesfor mitigating these effects, including sleep education, organisational interventions, improvementsin schedule ergonomics, and coaching programmes.The results of our own research presentedin this paper are fully consistent with the literature. The vast majority of respondentsreported average or poor sleep quality, and more than half of the respondents experienced frequent or constant problemsfalling asleep after a shift change.A significant group of participants also reported reduced concentration andproductivity, especially during night work, which corresponds with studiessuggesting cognitive impairment after sleep deprivation. Employeesemphasised the disruption of their circadian rhythm, difficulties in maintaining regularsleep and meal times, and chronic fatigue. Quantitative and qualitative resultsalso point to the psychosocial costs of shift work, such as difficultiesin maintaining social relationships and work-life balance.

Some respondents reported isolated organisational benefits resulting from flexible working hours, but these were significantly outweighed by the prevailing negative effects.

In summary, both the scientific literature and the results of the empirical study clearly indicate that shift work:

- disrupts the biological mechanisms of sleep and circadian rhythm,
- leads to reduced sleep quality and difficulties with regeneration,
- causes daytime sleepiness, fatigue and decreased concentration,
- reduces productivity and increases the risk of errors,
- has a negative impact on physical, mental and social health,
- makes it difficult to maintain a balanced lifestyle and healthy habits.

In light of these findings, shift work appears to be a significant health, organisational and social challenge in the modern labour market, requiring a comprehensive approach to personnel management, health prevention and the creation of working conditions conducive to employee recovery and well-being.

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