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REVIEW

Alcohol Consumption among Shift and Night Workers: A Scoping Review

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Main Points

- Consistent association between shift work and alcohol consumption: There is sufficient evidence that shift work is associated with alcohol consumption, particularly night shifts. In all occupations, shift workers are at increased risk of excessive alcohol consumption and developing alcohol-related disorders.
- Disruption of circadian rhythm leads to alcohol consumption: The disruption of circadian rhythm caused by night work leads to sleep disorders and psychosomatic problems. Many workers turn to alcohol to cope with the resulting stress and fatigue.
- Regional and sectoral variations: The effect of shift work on alcohol consumption varies considerably from one geographical region to another and from one sector to another. The strongest associations are seen in East Asian countries and in healthcare settings, reflecting cultural and occupational influences.
- Gender differences in alcohol consumption among shift workers: Women who work night shifts, particularly those aged 50 years and older, are more vulnerable to alcohol consumption and related disorders. Therefore, preventive measures and workplace interventions need to be gender specific.

Abstract

Shift work, especially night work, is known to be a generator of stress. Although many workers turn to alcohol to cope with this matter, the association between shift work and alcohol consumption remains uncertain. The scoping review aims to underscore the relationship between shiftwork and alcohol consumption. A scoping review was performed based on research published in PubMed, CINAHL, and the Cochrane Library from 2012 to July 2024. Only studies with clearly distinguishing shift workers from day workers were included. The recommendations of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses_ScR guidelines for scoping review were followed. A total of 21 studies were included. Most studies were performed in Finland, Australia, Japan, and Norway. The most used questionnaires were the Alcohol Use Disorders Identification Test, Epworth Sleepiness Scale, and Munich Chronotype Questionnaire for Shift-Workers. Concerning the findings, 17 studies reported a positive and significant association between alcohol consumption and shift work. Conflicting or negative results were found in four studies. Eight of the studies focused on health workers (e.g., nurses, psychiatrists, and hospital staff), 2 on factory workers, and one on airline employees. The others were related to transport workers and maintenance staff. This scoping review highlighted a consistent link between shift work and increased alcohol consumption in various working fields. Further strategies like sleep hygiene education and stress management are recommended to enhance the well-being of shift workers.

Keywords: Addictions to alcohol, circadian rhythms, night work, shift work

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Introduction

Work plays a vital role in ensuring financial stability, fostering social connections, and providing a sense of professional identity.

Over the last decades, many fields have undergone significant growth due to fast-changing technology. This rapid evolution has led to a significant increase in the demand for non-traditional working schedules. To ensure continuous services, shift work, particularly night shifts, has become indispensable in many economic fields, such as healthcare, manufacturing, transportation, and emergency services (Reinganum & Thomas, 2024).

The disruption of the sleep-wake cycle and the lack of sleep lead to alterations in the biological clock, contributing to the deterioration of the health of professionals (Steele et al., 2021).

This disruption of the circadian rhythm causes various psychosomatic problems and disorders such as fatigue, insomnia (Chang & Li, 2022), metabolic disorders (Poggiogalle et al., 2018; Potter et al., 2016), cardiovascular diseases (Chellappa et al., 2019; Costello & Gumz, 2021), cognitive impairment (Srinivasan et al., 2010), and reduced performance (Steele et al., 2021).

Shift work, especially night work, also generates stress and difficulties in workers' family and social lives due to irritability, nervousness, anxiety and social isolation (Silva & Costa, 2023).

To cope with these challenges, many turn to alcohol as an easy way to relax and relieve stress (Pasupathy et al., 2022; Sayette, 2017). Unfortunately, this behavior can exacerbate existing health issues and increase vulnerability to alcohol dependency.

In addition, modernization and urbanization have further exacerbated alcohol consumption trends, making it a pressing public health issue worldwide. The literature shows that a growing number of articles deal with the potential effects of alcohol on various aspects of people's daily lives such as divorce and job loss (Airagnes et al., 2019; Thomas et al., 2022).

However, the association between shift work and alcoholism is not always discussed in depth. As a result, the effect of shift work and its implications for impaired quality of life in terms of stress, sleep deprivation, social isolation, and anxiety on the one hand, and the consumption of alcohol as a coping mechanism on the other, remain unclear.

Understanding these dynamics is essential for developing effective interventions to mitigate the associated risks.

The scoping review aims to fill these gaps by evaluating the existing evidence on the relationship between shift work, its subtypes, and alcohol consumption. By exploring this relationship, the aim is to generate practical insights that can inform targeted interventions, improve workplace conditions, and promote healthier coping mechanisms among shift workers.

Methods

A scoping review methodology was performed based on the framework of Arksey and O'Malley (Arksey & O'Malley, 2005). The recommendations of The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) were followed (Tricco et al., 2018).

Stage 1: Identifying the Research Question

The primary research question for this review is "What is the relationship between shift work and alcohol consumption?"

Population, Concept, and Context framework was used to determine relevant terms and studies. The review's population of interest consisted of adult workers aged 18 years and older working on shift work in various domains. The main theme of interest was alcohol consumption, measured as frequency (e.g., daily, weekly), with several measures on the pattern of drinking, such as binge drinking, and also on the outcome of drinking, such as alcohol use disorders.

Stage 2: Identifying Relevant Studies

The initial search was carried out on July 7, 2024, in 3 databases: PubMed, CINAHL, and the Cochrane Library. The search focused on articles published from 2012 to July 2024 in order to capture recent trend and data. The search strategy was undertaken in English using several keywords: "alcohol consumption" or "Alcohol Drinking" [Mesh] or "Binge drinking" [Mesh]) AND ("shift work" or "night shift" or "shift work schedule" [Mesh]).

Stage 3: Selecting the Studies

The data extraction process for the review was guided by defined criteria, such as the author's first name, year of publication, country of study and study design (cross-sectional or cohort). Population characteristics included the number of participants and a comparison between night and day workers. Data collection included information on frequency and patterns of alcohol consumption (including binge drinking), as well as outcome measures of alcohol use disorders. Studies not clearly distinguishing night shift workers from day workers or non-shift workers were excluded. Studies that only reported on alcohol consumption but did not provide any quantitative data were excluded. The search was restricted to quantitative observational studies, such as cross-sectional, cohort, and case-control studies. Qualitative studies, case reports, systematic reviews, meta-analyses, interventional studies, and non-peer-reviewed sources were excluded. Exclusion criteria were developed to assist in study selection (Table 1).

Stage 4: Charting the Data

Data to be charted include:

- Author(s), year of publication, study location.
- Aim(s) of the study.
- Study population, inclusion and exclusion criteria, number of patients.
- Study design (cross-sectional or cohort).

First of all, duplicate citations were removed and then article titles and abstracts were sequentially reviewed to determine which articles met criteria for full-text review.

Two out of 3 reviewers charted the data and independently compared independently the extracted information to ensure completeness.

Table 1.
Exclusion categories used for title and abstract review

Exclusion Category	Description if Applicable
Not relevant	Article that did not focus on night shift work or alcohol
Not human	Research with non-human animals
Not adults	Study with samples composed exclusively of individuals under age 18
Not written in English	
Review articles	Article that did not present original research (meta-analyses, systematic reviews)
Not peer-reviewed	Dissertations, magazine articles, conference proceedings, news alerts, opinion pieces

The next step involved selecting articles based on the screening of titles and abstracts independently using a 2-stage selection approach. In the first step, studies that did not meet the eligibility criteria were excluded. Next, the full-text articles of potentially relevant studies were examined. In cases of discrepancies in inclusion criteria, the reviewers discussed with a third reviewer. Any disagreements were resolved by discussion with a fourth reviewer. All steps were clearly reported. The main variables extracted included study design, population characteristics, measures of alcohol consumption, and shift work modalities.

Stage 5: Collating, summarizing, and reporting the findings

The final selection of the studies is summarized in a PRISMA flow diagram. The results of the scoping review are presented in graphical and table format (Table 2). A narrative synthesis was adopted to elaborate on the findings and describe how the results are linked to the research objective.

Results

In the initial search, a total of 432 studies were identified. After that, 77 duplicate records were eliminated. The remaining 355 articles were screened based on their titles and abstracts. Of those, 260 studies were excluded after the first screening. A total of 95 eligible articles underwent a full-text review. After this, 74 further studies were excluded due to a lack of data, inappropriate population, or methodological gap (Figure 1).

A total of 21 studies were included in this review, conducted in various regions and covering a wide range of worker populations. Most were cross-sectional designs ($n = 16$) with a few cohort studies ($n = 5$). Sample sizes ranged from 118 to 100,612 participants.

Eight of the studies focused on health workers (e.g., nurses, psychiatrists and hospital staff), two on factory workers, one on airline employees, and the others related to transport workers, maintenance staff. Mainly studies were performed in Finland (Hemiö et al., 2020), Australia (Dorrian et al., 2017; Dorrian & Skinner, 2012), Japan (Morikawa et al., 2014; Tada et al., 2014), Korea (Bae et al., 2017; Jung et al., 2022; Kim et al., 2024; Pham & Park, 2019), China (Li et al., 2023; Lu et al., 2016) and Norway (Buchvold et al., 2019; Saksvik - Lehouillier et al., 2013). The most used questionnaires were Alcohol Use Disorders Identification Test (AUDIT), Epworth Sleepiness Scale (ESS) and Munich Questionnaire Chronotype standardized tools for shift workers.

The results showed that 17 studies reported a positive and significant association between alcohol consumption and night shift work or shift work. Of the rest four studies, three studies found no significant relationship, and only one found a negative association.

In a sample of Finnish airline workers, working at night was associated with excessive alcohol consumption among employees. This was particularly marked among women. In addition, the study by Dorrian and Skinner (2012) analyzed data from an Australian household survey and found that shift workers had significantly higher rates of drinking alcohol at short-term risky levels (OR = 2.10, 95% CI [1.08 – 4.12]). Risky levels were defined here as seven or more drinks for men and five or more drinks for women, compared with workers who did not have a shift schedule. This possibly reflects the use of alcohol as a sleep aid during shift-associated sleeping problems.

Swanson et al. (2023) also showed the influence of circadian misalignment among 750 nurses on alcohol consumption, finding that heavy drinkers with night shifts had a later chronotype.

Furthermore, in Pham and Park's (2019) study, it was noted that Korean women working night shifts were more likely to develop alcohol use disorders than daytime workers ($p = .006$). In fact, the risk of alcohol use disorders was 2.23 times higher among female night workers compared to female day workers.

Regarding the impact of the duration and frequency of night shifts on alcohol intake, a strong correlation was found. Research by Dorrian et al. (2017) found that Australian shift workers who worked 12-hour rotating shifts had a higher self-reported binge drinking rate than those who only worked 8-hour shifts. Similarly, in Buchvold et al.'s (2019) longitudinal cohort study of 1371 Norwegian nurses, an increase in the number of hours worked per week was related to higher alcohol use; however, no significant differences were observed between night and day workers when followed up over the 6-year period. In this context, Saksvik-Lehouillier et al. (2013) showed that new night shift workers (less than 1 year) had significantly higher alcohol consumption compared to experienced night shift workers (6 years or more).

In terms of geographical and work-related aspects, marked differences were identified in the results. Indeed, in China, the psychiatrists who had less than 3 night shifts per month reported a significantly higher risk of alcohol misuse (Li et al., 2023).

On the other hand, it was Kim et al. (2024) reported that among 11,972 Korean workers, those who worked night shifts and suffered from poor sleep patterns had the highest risk of developing alcohol use disorder, especially if they worked long hours.

Table 2.
Summary of analyzed studies

Reference	Methodology	Population	Work System	Questionnaire	Results
Kim et al. (2024)	Cross-sectional study	*N* = 11,972 Korean workers	Poor sleep patterns, night shifts	Alcohol Use Disorders Identification Test (AUDIT)	Poor sleep patterns were associated with higher odds of alcohol use disorders in both males (Adjusted Odds Ratio (AOR) = 1.22, 95% CI [1.07 – 1.39]) and females (AOR = 1.21, 95% CI [1.03 – 1.41]). - Night shift workers with poor sleep patterns had the highest association with alcohol use disorders, especially among those working long hours
Swanson et al. (2023)	Cross-sectional survey	USA *N* = 750 nurses, (COVID-19 pandemic)	Night shift vs. standard shift nurses	AUDIT, Munich Chronotype Questionnaire Shift (MCTQ-Shift)	-Binge drinkers working night shifts had more than twice the odds of contracting COVID-19 (OR = 2.08, 95% CI [0.75 – 5.79]). -Night shift workers also had a significantly later chronotype, which was associated with circadian misalignment.
Li et al. (2023)	Cross-sectional study	*N* = 3549 Chinese psychiatrists	High workloads, including long hours	AUDIT	-Alcohol misuse was significantly associated with fewer night shifts per month.
Jung et al. (2022)	Longitudinal study (2005 – 2019)	*N* = 4046 Korean workers	Fixed daytime vs. shift work, schedule transitions	Self-reported drinking behaviors	-Workers transitioning to shift work had a higher risk of binge drinking (AOR = 1.19, 95% CI [1.02 – 1.49]). -Shift workers showed a modest increase in unhealthy behaviors (AOR = 1.11, 95% CI [1.01 – 1.26]).
Hamieh et al. (2022)	Longitudinal study	France *N* = 47 ,288 men and 53,324 women (CONSTANCES cohort)	Atypical working hours (night shifts, weekends, non-fixed schedules)	Self-reported alcohol use	-Night shifts were associated with increased alcohol use (OR=1.12 to 1.14), particularly in those working non-fixed hours. -Weekend work was linked to higher alcohol consumption (OR=1.09 to 1.14).
Adane et al. (2022)	Cross-sectional study	Ethiopia *N* = 398 healthcare workers	Two-shift and 3-shift schedules with >10-night shifts per month	Insomnia Severity Index (ISI), Epworth Sleepiness Scale (ESS), and International Classification of Sleep Disorders (ICSD-3)	-Alcohol consumption significantly associated with shift work sleep disorder (AOR = 2.6, 95% CI [1.45 – 4.92]).
Plescia et al. (2021)	Cross-sectional study	*N* = 392 Italian workers	Day vs. night work	AUDIT-C, ISI	-Night workers reported higher alcohol consumption and binge drinking -Insomnia strongly correlated with alcohol abuse.
Proper et al. (2021)	Longitudinal study	*N* = 1633 Dutch workers	Shift vs. non-shift workers	SF-36 Mental Health and Physical Functioning Scales	- Shift workers showed no significant differences in mental or physical health compared to non-shift workers. However, smoking and physical inactivity mediated health outcomes. -Alcohol consumption was not statistically significant.
Hemiö et al. (2020)	Prospective cohort study	*N* = 366 Finnish airline employees	Shift work	Work stress questionnaire, ESS, food intake questionnaire	-Increased night shifts were associated with significant alcohol consumption among women.
Pham & Park (2019)	Cross-sectional study	*N* = 26,895 Korean workers	Night work vs. day work	AUDIT and EuroQol-5D (EQ-5D)	-Female night workers had a higher risk of Alcohol use disorder (AUD).

Buchvold et al. (2019)	Longitudinal cohort study	*N* = 1371 Norwegian nurses	various shift schedules including night shifts	AUDIT	-No significant differences in alcohol consumption between night and day workers.
Bae et al. (2017)	Cross-sectional study (2010 – 2012)	*N* = 11,680 Korean adults	Day work vs. shift work (evening, night, rotating)	Self-reported alcohol consumption	-Female shift workers aged ≥50 years were more likely to engage in high-risk drinking (OR = 2.22; CI = 1.53 – 3.23), smoking (OR = 5.55; CI = 3.60 – 8.55), and inadequate sleep (OR = 1.50; CI = 1.10 – 2.05). -No significant associations for men.
Dorrian et al. (2017)	Cross-sectional study	*N* = 118 Australian shift workers	12-hour and 8-hour rotating shifts	Cancer Council Dietary Questionnaire, Shiftwork Index	-12-hour rotating shift workers reported higher alcohol consumption and binge drinking.
Lu et al. (2016)	Cross-sectional study	*N* = 1654 Chinese steel workers	Rotating shift workers (morning, afternoon, and night shifts) vs. daytime workers	Self-administered lifestyle and health questionnaires	-Shift workers had higher alcohol consumption, smoking rates, and poor sleep compared to daytime workers. -Elevated white blood cell (WBC) counts were also observed.
Ramin et al. (2015)	Cross-sectional study (Nurses' Health Study II)	USA *N* = 54,724 nurses	Night shift vs. day shift (rotating, permanent)	Food Frequency Questionnaire (FFQ)	-No significant difference in alcohol consumption between night shift and day shift workers. -Higher body mass index (BMI), caffeine intake, and smoking were more prominent in night shift workers.
Buchvold et al. (2015)	Cross-sectional study	*N* = 2059 Norwegian nurses	Night vs. day shifts	AUDIT-C	-Night shifts were not significantly related to alcohol misuse. -However, more hours worked per week were associated with higher alcohol consumption.
Tada et al. (2014)	Cross-sectional study	*N* = 2758 Japanese female nurses	Rotating shift vs. daytime work	Self-administered food and lifestyle questionnaires	-Shift workers had higher BMI and consumed more alcohol and sugar-sweetened beverages compared to day workers.
Morikawa et al. (2014)	Cross-sectional study	*N* = 3398 male Japanese factory workers	Blue-collar vs. white-collar, fixed vs. shift work	Job Content Questionnaire, Depression Scale	-Younger workers (20 – 29 years) in shift work had a higher risk of heavy drinking (OR = 4.22, 95% CI [1.07 – 16.62]). -Psychosocial factors such as low social support were predictive of heavy drinking.
Morikawa et al. (2013)	Cross-sectional survey	*N* = 909 Japanese factory workers	Day vs. night shift worker	Diet History Questionnaire (DHQ), self-reported sleep quality	-Night-shift workers with poor sleep had significantly higher odds of heavy drinking (OR = 2.17, 95% CI [1.20 – 3.93]).
Saksvik-Lehouillier et al.	Cross-sectional study	*N* = 749 Norwegian nurses	New vs. experienced night workers	AUDIT	-New night workers had significantly higher alcohol consumption compared to experienced workers.
Dorrian & Skinner (2012)	Cross-sectional study (Household, Income and Labour Dynamics in Australia (HILDA) survey)	*N* = 2090 Australian workers	Shift work schedules	Alcohol consumption patterns	-Shift workers were twice as likely to engage in risky alcohol consumption compared to day workers.

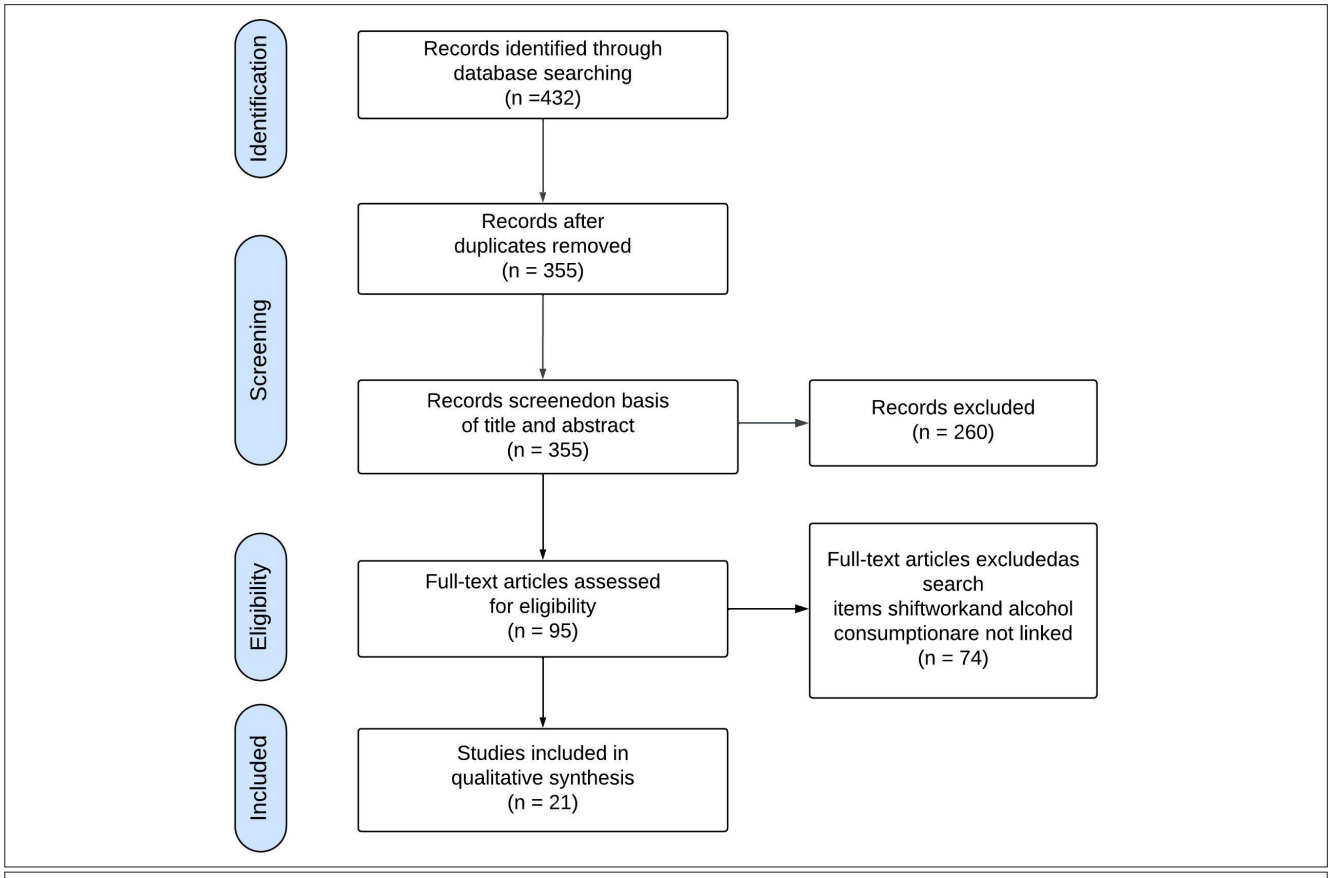

Figure 1 Flowchart of Search Strategy.

In a Japanese cross-section of male factory workers, Morikawa et al. (2013) found significantly higher rates of alcohol use as a sleep aid at least once a week among night-shift workers (OR = 1.52, 95% CI [0.95 – 2.41], p = .07) than among day-shift workers (OR = 0.64, 95% CI [0.24 – 1.69], p = .03).

In occidental countries, Ramin et al. (2015) reported in a cross-sectional study conducted in the USA: (Nurses' Health Study II) among 54,724 nurses on night shift vs. day shift (rotating, permanent) using the Food Frequency Questionnaire, that there was no significant difference in alcohol consumption between night and day shift workers.

In African countries, such as Ethiopia, Adane et al. (2022) conducted a cross-sectional study among 398 healthcare workers with 2- or 3-shift schedules, involving more than 10 nights of work per month. The study relied on the Insomnia Severity Index (ISI), the Epworth Sleepiness Scale (ESS), and the International Classification of Sleep Disorders (ICSD-3). It demonstrated that alcohol binge drinking (more than 210 g/week) was significantly associated with shift-work sleep disorder (AOR = 2.6, 95% CI [1.45 – 4.92]).

Discussion

This scoping review found a strong correlation between shift work and alcohol consumption in different sectors, particularly in strained occupations such as healthcare and manufacturing. Night workers, compared to day workers, appear more likely to engage in behaviors such as binge drinking and alcohol use. Many studies have shown that night workers, especially females aged more than 50 years, noted higher levels of alcohol consumption, usually as a coping solution for sleep disturbance, fatigue, and stress.

These findings are in line with the literature, which suggests that shift work leads to alcohol abuse as a form of self-medication to fall asleep (Ebrahim et al., 2013). In addition, insufficient or poor-quality sleep appears to be linked to alcohol consumption as a means of reducing insomnia-related anxiety (Hasler & Pedersen, 2020). However, the relationship between the mechanism of circadian rhythm disturbances and binge alcohol consumption has not been explained in most of the studies.

In the findings, geographical differences were evident, with stronger associations between night shift work and alcohol consumption observed in East Asian countries such as Korea and Japan, particularly among female workers, compared to Scandinavian studies, such as those carried out in Norway. Scandinavian regions reported a low difference in alcohol intake between night and day workers. This might be explained by cultural variations in alcohol use or availability in the general population. In East Asian countries, social norms often encourage drinking during after-work gatherings or corporate events, even for night shift workers. In contrast, Scandinavian nations, such as Norway, enforce strict alcohol regulations, including high taxes and limited sale hours, which discourage excessive consumption and minimize disparities between night and day workers (WHO, 2023)

Limitations

Certain strengths and limitations can be noted in this review. In fact, as most of the research data on this subject is cross-sectional in nature, it is very difficult to draw conclusions about causality between night work and alcohol consumption. Moreover, most of these studies are based on self-reported measures. This may lead to study bias, under-reporting, or misreporting of alcohol consumption. Biomarkers such as gamma-glutamyl transferase or other biological assays should be used advantageously in studies.

Conclusion

This study showed a consistent link between shift work, especially night shift work, and increased alcohol consumption in various working fields. Indeed, shift workers could use alcohol as a coping strategy for stress, fatigue, reduced ability, and sleep disturbances.

Further strategies like sleep hygiene education programs and workplace-based stress management, are recommended to encourage shift workers to adopt a healthy work condition and suitable lifestyle.

Promoting workplace awareness campaigns on the risks of alcohol consumption and training supervisors to identify and address early signs of alcohol misuse could complement these efforts. Furthermore, integrating periodic health assessments and providing access to mental health support services can play a crucial role in preventing alcohol use disorders.

Future research should explore the effectiveness of such interventions and consider the role of cultural and regional differences in shaping alcohol-related behaviors among shift workers.

Data Availability Statement: The data that support the findings of thisstudy are available on request from the corresponding author.

Peer-review: Externally peer-reviewed.

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