

Supplementary Material

Supplementary Material 1: Search strategy implemented for each database.

Cochrane Library

("healthcare" NEXT worker*):ti,ab,kw OR ("health" NEXT worker*):ti,ab,kw OR nurse*:ti,ab,kw OR physician*:ti,ab,kw OR ("medical" NEXT staff*):ti,ab,kw OR [mh "Health Personnel"] AND ("night shift":ti,ab,kw OR ("shift" NEXT work*):ti,ab,kw OR "rotating shift":ti,ab,kw OR "sleep deprivation":ti,ab,kw OR "sleep loss":ti,ab,kw OR "circadian disruption":ti,ab,kw OR "sleep hygiene":ti,ab,kw OR "poor sleep":ti,ab,kw OR "insufficient sleep":ti,ab,kw OR [mh "Sleep Deprivation"]) OR [mh "Sleep Hygiene"] OR [mh "Shift Work Schedule"]) AND "substance abuse":ti OR "substance abuse":ab OR "substance abuse":kw OR "substance use":ti OR "substance use":ab OR "substance use":kw OR "drug use":ti OR "drug use":ab OR "drug use":kw OR ("alcohol" NEXT use*):ti OR ("alcohol" NEXT use*):ab OR ("alcohol" NEXT use*):kw OR ("stimulant" NEXT use*):ti OR ("stimulant" NEXT use*):ab OR ("stimulant" NEXT use*):kw OR ("caffeine" NEXT consumption*):ti OR ("caffeine" NEXT consumption*):ab OR ("caffeine" NEXT consumption*):kw OR "energy drinks":ti OR "energy drinks":ab OR "energy drinks":kw OR stimulants:ti OR stimulants:ab OR stimulants:kw OR "prescription drug misuse":ti OR "prescription drug misuse":ab OR "prescription drug misuse":kw OR [mh "Substance-Related Disorders"] OR [mh "Alcohol Drinking"] OR [mh "Caffeine"] NOT ([mh "Child"] OR [mh "Adolescent"])

Embase

('healthcare worker*' OR 'health worker*' OR nurse* OR physician* OR 'medical staff*' OR 'health personnel'/exp) AND ('night shift' OR 'shift work*' OR 'rotating shift' OR 'sleep deprivation' OR 'sleep loss' OR 'circadian disruption' OR 'sleep hygiene' OR 'poor sleep' OR 'insufficient sleep' OR 'sleep deprivation'/exp OR 'sleep hygiene'/exp OR 'shift work schedule'/exp) AND ('substance abuse' OR 'substance use' OR 'drug use' OR 'alcohol use*' OR 'stimulant use*' OR 'caffeine consumption*' OR 'substance-related disorders'/exp OR 'alcohol drinking'/exp OR 'caffeine'/exp OR 'energy drinks' OR stimulants OR 'prescription drug misuse') NOT ('child'/exp OR 'adolescent'/exp)

PsycInfo

TI "healthcare worker*" OR AB "health worker*" OR AB nurse* OR AB physician* OR AB "medical staff*" OR SU "health personnel") AND (TI "night shift" OR AB "shift work*" OR AB "rotating shift" OR AB "sleep deprivation" OR AB "sleep loss" OR AB "circadian disruption" OR AB "sleep hygiene" OR AB "poor sleep" OR AB "insufficient sleep" OR SU "Sleep Deprivation" OR SU "Sleep Hygiene" OR SU "Shift Work Schedule") AND (TI "substance abuse" OR AB "substance use" OR AB "drug use" OR AB "alcohol use*" OR AB "stimulant use*" OR AB "caffeine consumption*" OR SU "Substance-Related Disorders" OR SU "Alcohol Drinking" OR SU "Caffeine" OR AB "energy drinks" OR AB stimulants OR AB "prescription drug misuse")) NOT (SU Child OR SU Adolescent)

WebOfScience

(("healthcare worker*" OR "health worker*" OR nurse* OR physician* OR "medical staff*" OR "health personnel") AND ("night shift" OR "shift work*" OR "rotating shift" OR "sleep deprivation" OR "sleep loss" OR "circadian disruption" OR "sleep hygiene" OR "poor sleep" OR "insufficient sleep" OR "Sleep Deprivation" OR "Sleep Hygiene" OR "Shift Work Schedule") AND ("substance abuse" OR "substance use" OR "drug use" OR "alcohol use*" OR "stimulant use*" OR "caffeine consumption*" OR "substance-related disorders" OR "alcohol drinking" OR caffeine OR "energy drinks" OR stimulants OR "prescription drug misuse")) NOT (child OR adolescent)

PubMed

(("healthcare worker"[tw] OR "health worker"[tw] OR nurse*[tw] OR physician*[tw] OR "medical staff"[tw] OR "health personnel"[Mesh]) AND ("night shift"[tw] OR "shift work"[tw] OR "rotating shift"[tw] OR "sleep deprivation"[tw] OR "sleep loss"[tw] OR "circadian disruption"[tw] OR "sleep hygiene"[tw] OR "poor sleep"[tw] OR "insufficient sleep"[tw] OR "Sleep Deprivation"[Mesh] OR "Sleep Hygiene"[Mesh] OR "Shift Work Schedule"[Mesh]) AND ("substance abuse"[tw] OR "substance use"[tw] OR "drug use"[tw] OR "alcohol use"[tw] OR "stimulant use"[tw] OR "caffeine consumption"[tw] OR "substance-related disorders"[Mesh] OR "alcohol drinking"[Mesh] OR caffeine[Mesh] OR "energy drinks"[tw] OR stimulants[tw] OR "prescription drug misuse"[tw])) NOT (child[Mesh] OR adolescent[Mesh])

Supplementary Material 2: *Definition of shift work and control group according to included studies.*

Study (Year)	Country	Professional Group	Definition / Measurement of Shift Work	Comparator / Control Group
Gold et al., 1992	USA	Nurses	≥3 night shifts per month; rotating day/evening/night schedules self-reported	Fixed day or evening shifts
Trinkoff & Storr, 1998	USA	Nurses (national survey)	“Adverse schedules” including night or rotating shifts, >8 h or >40 h per week	Regular daytime shifts
Gamble et al., 2011	USA	Nurses	12-h night shifts in rotating 3-on/2–5-off pattern	Day-shift nurses
Flo et al., 2012	Norway	Nurses	Night vs. day rotation based on roster data	Day workers in same hospitals
Franke et al., 2015	Germany	Surgeons / physicians	Extended (>24 h) on-call or overnight duties; frequency per month	Internal comparison by exposure frequency
Buchvold et al., 2019	Norway	Mixed health staff	Self-reported night work from SUSH cohort; consistent night vs. consistent day work over 6 y	Daytime workers
Haile et al., 2019	Ethiopia	Nurses	Night/rotating shifts per ICSD-3 diagnostic criteria for Shift-Work Sleep Disorder	None (no day-shift control)
Vitale et al., 2023	Italy	Nurses	Self-reported occasional or frequent night shifts	Internal comparison by exposure level
Swanson et al., 2023	USA	Nurses	MCTQ-Shift questionnaire distinguishing day vs. rotating/night schedules	Daytime nurses
Kamble et al., 2024	India	Nurses + physicians	Rotating schedule ≥ 3 night shifts/month for ≥ 3 years	Fixed daytime shifts