

Tobacco and shift work

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- The modern "24-hour Society" is the expression of this condition, where we are both consumers and producers at the same time, requiring, on the one hand, the availability of goods and services and, on the other hand, making consumption and production possible at any time of the day and the night

- The most recent statistics indicate that the majority of the working population is engaged in irregular or "non-standard" working hours, including
 - shift and night work,
 - week-end work, split shifts, on-call work,
 - compressed weeks,
 - telework, parttime work,
 - variable/flexible working time, and prolonged duty periods (i.e. 12-h shifts)

the classical working day, **7-8 a.m. to 5-6 p.m.**, Monday to Friday, is nowadays a condition affecting a minority of workers, that is 27% of employed and 8% of self employed people according to the 3rd European survey on working conditions

Types of Shift Work

- Fixed (permanent)
- Rotating
 - Slow
 - Weekly
 - Rapid
- Oscillating
 - Evening & day
 - Evening & night
- Split shift
 - restaurant
- Relief shift
- Flexitime
 - Designing his daily work hours
- Stagger
 - Choose start time

Biologic Rhythms

- Ultradian
 - <20h
 - REM
- Infradian
 - >28h
 - Menstrual cycle
- Circadian

Health Implication

- Circadian Rhythms and Sleep Problems
- Performance Efficiency, Errors, and Accidents
- Health Disorders
 - Psychological and mental health
 - Gastrointestinal disorders
 - Metabolic disorders
 - Cardiovascular disorders
 - Cancer
 - Women's reproductive function
 - Social Problems

Health Implication

- Gastrointestinal Disorders
 - 30%
 - Constipation f
 - Stomach or digestive problem m
- Cardiovascular Implications
 - IHD
 - TG & BP is lower after phase-delay rotation than phase-advance
 - More smoker in S.W.
 - Ventricular ectopic beats
- Reproductive findings
 - LBW
 - Preterm birth

Exacerbation by shift work

- Sleep disorders
- Asthma
- Diabetes mellitus
- Coronary artery disease
- Psychiatric disorders (depression & Bipolar disorders)
- Epilepsy
- GI disorders
- **SMS** (shift maladaptation syndrome)
- Long-term Drug Therapy, polypharmacy

Shift work Maladaption syndrome

- **Acute** (within 1 month)

- Insomnia
- Excessive sleepiness at work
- Mood Disturbance
- Increased errors
- Increased accidents
- Family/social problems

- **Chronic** (5+years)

- Sleep disorders
- C.V. dis.
- G.I. Dis.
- Absenteeism
- Separation/Divorce

- The misalignment of circadian rhythms of body functions is responsible of the so-called "jet lag" (or "shift-lag" in this case) syndrome, characterized by feelings of

- fatigue,
- sleepiness,
- insomnia,
- digestive troubles,
- irritability,
- poorer mental agility,
- reduced performance efficiency

a person recovers in a few days depending on the length and duration of the phase shift imposed, personal characteristics (e.g. age), and coping strategies.

- Shift Work and Health: Current Problems and Preventive Actions [Saf Health Work](#). 2010 Dec; 1(2): 112–123.

impact of smoking

- Smoking is a substantial risk factor for chronic obstructive pulmonary disease, neurological diseases, cardiovascular diseases and various cancers
- Smokers have
 - reduced **total sleep time**,
 - difficulty **initiating sleep**,
 - more **fragmented sleep**
 - more **light sleep** than non-smokers,
 - as has been shown with both objective measurements of sleep through **polysomnography** and as subjectively reported complaints.
 - In addition, other sleep disturbances, such as
 - **obstructive sleep apnea**
 - **restless-legs syndrome** are also associated with smoking.
- *Smoking is associated with sleep disturbances*
- Smoking is a risk factor for the development of difficulty initiating sleep. Treatment for sleep disturbances should be included in **smoking-cessation programs**.

Smokers with insomnia symptoms are less likely to stop smoking

I:<https://doi.org/10.1016/j.rmed.2020.106069>

impact of smoking

- The high prevalence of **sleep disturbances** in smokers is mainly **mediated by the nicotine** in cigarette smoke.
- Nicotine exerts its effect on the central nervous system by the **activation of nicotine-acetylcholine receptors** which leads to **the release of neurotransmitters** (e.g. dopamine, acetylcholine and serotonin)
- These **neurotransmitters** participate in **regulating the sleep-wake cycle**, which is disrupted because of the increased release of neurotransmitters
- Other, less important mechanisms are **acute withdrawal** due to the **short half-life of nicotine**
- the impact of smoking on the **airways** that may lead to sleep-disordered breathing

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- the **number of cigarettes smoked per day** increases more in shift workers than in day workers
- it is much easier for a shift worker to **start smoking**.
- smoking may become a mediating, not only a confounding, factor between shift work and CVD
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- Health surveillance has to carefully address basic psychophysiological status (sleep, digestion, women hormonal pattern, body mass index), life styles (i.e. diet, smoking, alcohol and coffee intake, physical activity), previous and current health troubles and disorders (with particular reference to gastrointestinal, cardiovascular, endocrine, metabolic and neuro-psychic), current therapy, and absenteeism due to health impairment.

Medical significance of Biologic Rhythms

- Onset of symptoms varies with the time of day
 - Asthma
 - Angina
 - Cerebral infarction
 - Myocardial infarction
 - Epileptic seizures
 - Skin tests
 - Allergic response
 - Physiologic response to
 - Toxin
 - Drug
 - Theophilin,insulin,penicillin,prednisone,lidocaine,digitalis...

- Abrupt cessation of tobacco use, or reduction in the amount of tobacco used, followed within 24 hours by four (or more) of the following signs or symptoms:
 - Irritability,
 - frustration, or anger
 - Anxiety
 - Difficulty Concentrating
 - Increased appetite
 - Restlessness
 - Depressed mood
 - Insomnia