

Sleep difficulty by occupation: a Korean nationwide survey

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Key words: Occupations, Sleep, Sleep quality

Received: May 16, 2024
Revised: June 20, 2024
Accepted: June 21, 2024

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Sleep problems are critical in occupational medicine due to their impact on job performance and safety.¹ Previous research has primarily focused on specific occupations (e.g., shift workers) or periods (e.g., coronavirus disease 2019 [COVID-19] pandemic), with limited data on overall sleep health across different occupations. Cultural variations in sleep perceptions and occupational characteristics underscore the need for population-specific studies.

To address this gap, we conducted a nationwide pilot study examining sleep difficulty by occupation in Korea. Using data from the 2019 Korea National Health and Nutrition Examination Survey, a nationally representative annual survey, we included 3,278 employed adults aged 19 and over, excluding those with missing sleep data or diagnosed with depression, cardiovascular disease (i.e., myocardial infarction, stroke), or cancer.

Sleep difficulty was assessed using the Korean health-re-

lated quality of life instrument, with ‘moderate’ or ‘severe’ sleep difficulty defined as ‘substantial.’ Occupations were categorized into six groups based on a previous study:² 1) managers, 2) office workers, 3) service and sales (S-S) workers, 4) agricultural and fishery industry workers, 5) skilled manual laborers, or 6) simple manual laborers. Detailed covariate information is presented in Table 1.

We estimated the prevalence of substantial sleep difficulty in each occupation group using multivariate logistic regression adjusted for relevant covariates. Each group was compared to the combined remaining five groups (e.g., managers vs. non-managers). Analyses were conducted using Stata/MP version 17.0 (StataCorp, College Station, TX, USA), with two-sided tests and a significant level of $P < 0.05$. All participants signed an informed consent form, and the study protocol was approved by the Institutional Review Board of Gachon University Gil Medical Center (No.

Table 1. Participant characteristics by occupation

	Managers (n=771)	Office workers (n=643)	Service & sales workers (n=673)	Agricultural-fishery industry workers (n=143)	Skilled manual laborers (n=575)	Simple manual laborers (n=473)	P-value
Demographics							
Age (years)	41.4 (11.4)	42.4 (10.8)	45.9 (14.8)	63.4 (10.5)	50.2 (12.2)	59.2 (14.9)	<0.001
Female sex	372 [18.3]	336 [52.3]	428 [63.6]	51 [35.7]	97 [16.9]	276 [58.4]	<0.001
Low income*	158 [20.5]	119 [18.5]	259 [38.5]	95 [66.4]	205 [35.7]	281 [59.9]	<0.001
Middle school graduate or less	7 [0.9]	7 [1.1]	117 [17.4]	95 [66.4]	159 [27.7]	244 [51.6]	<0.001
Unmarried [†]	229 [29.7]	172 [26.8]	235 [34.9]	12 [8.4]	111 [19.3]	154 [32.6]	<0.001
Health-related behavior							
Body mass index (kg/m ²)	23.8 (3.6)	23.7 (3.7)	24.1 (3.6)	24.4 (3.2)	24.7 (3.6)	24.2 (3.5)	<0.001
Current smoker	123 [16.0]	123 [19.1]	140 [20.8]	27 [18.9]	197 [34.3]	86 [18.2]	<0.001
Daily binge drinking [‡]	22 [3.4]	36 [6.5]	37 [7.0]	12 [12.1]	47 [9.5]	22 [6.8]	<0.001
Aerobic exercise [§]	382 [50.0]	310 [48.2]	325 [48.4]	52 [36.6]	240 [41.7]	206 [43.7]	0.005
Co-morbidities							
Hypertension	73 [9.5]	65 [10.1]	121 [18.0]	62 [43.4]	125 [21.7]	177 [37.4]	<0.001
Type 2 diabetes	36 [4.7]	19 [3.0]	42 [6.2]	25 [17.5]	57 [9.9]	55 [11.6]	<0.001
Mental health							
Stressed	279 [36.2]	206 [32.0]	185 [27.5]	26 [18.2]	146 [25.4]	103 [21.8]	<0.001
Depressed mood ^{**}	54 [7.0]	55 [8.6]	55 [8.2]	14 [9.8]	39 [6.8]	52 [11.0]	0.131
Sleep duration (hours per day)	6.6 (1.1)	6.6 (1.1)	6.6 (1.3)	6.6 (1.5)	6.5 (1.1)	6.4 (1.4)	0.109
Substantial sleep difficulty	47 [6.1]	35 [5.4]	59 [8.8]	11 [7.7]	30 [5.2]	40 [8.5]	0.049

Values are presented as mean (standard deviation) or number [%]. P-values were obtained from analysis of variance (continuous variables) or chi-squared tests (categorical variables).

*Below the median household income of the study participants, [†]Included being single or separated for any reason, [‡]Consuming seven or more drinks (male) or five or more drinks (female) in one session, [§]More than 2.5 hours/week of moderate-intensity activity, more than 1.25 hours/week of high-intensity activity, or a combination of both, ^{||}Feeling stressed 'a lot' or 'fairly often', and ^{**}Feeling depressed for >2 consecutive weeks.

GCIRB2023-100).

Overall, 6.8% of participants experienced substantial sleep difficulty. Most participant characteristics varied across occupation groups (Table 1). Fig. 1 presents the estimated prevalence of substantial sleep difficulty per occupation. S-S workers exhibited a significantly higher prevalence of sleep difficulty compared to non-S-S workers (6.3% vs. 4.2%; odds ratio, 1.53; $P=0.024$).

Our finding of increased sleep difficulty among S-S workers contrasts with a previous Korean study reporting lower psychological well-being in this group compared to managers.³ However, unlike our study’s more inclusive reference (comparator) group, their comparison group (managers) had the highest stress levels (Table 1). The rate of stressed mental health status was highest among managers. In contrast, our study employed a more informative reference group consisting of a combined representation of all other occupation groups.

The elevated rate of sleep difficulty among S-S workers is unsurprising given the demands of emotional labor. Fre-

quent exposure to customer complaints and expectation of emotional suppression can lead to emotional dissonance, a known risk factor for burnout, depressive mood, and subsequent sleep disturbances. Previous research has linked discrimination, customer confrontation, and emotional labor to increased sleep difficulty among workers.⁴ Furthermore, job insecurity and low rewards contribute to psychological distress among Korean S-S workers.⁵

This study’s limitations include a lack of detailed characteristics for sleep (e.g., sleep quality by a standardized questionnaire, sleep duration using actigraphy or polysomnography) and occupational specifics, which could confound the association between occupation and sleep difficulty. Additionally, healthy worker bias may have underestimated sleep difficulty rates.

Despite these limitations, our findings highlight the need for workplace health initiatives. Screening for sleep problems, especially among S-S workers, and implementing strategies to reduce risk factors (e.g., scheduled breaks) are crucial steps toward promoting employee well-being.

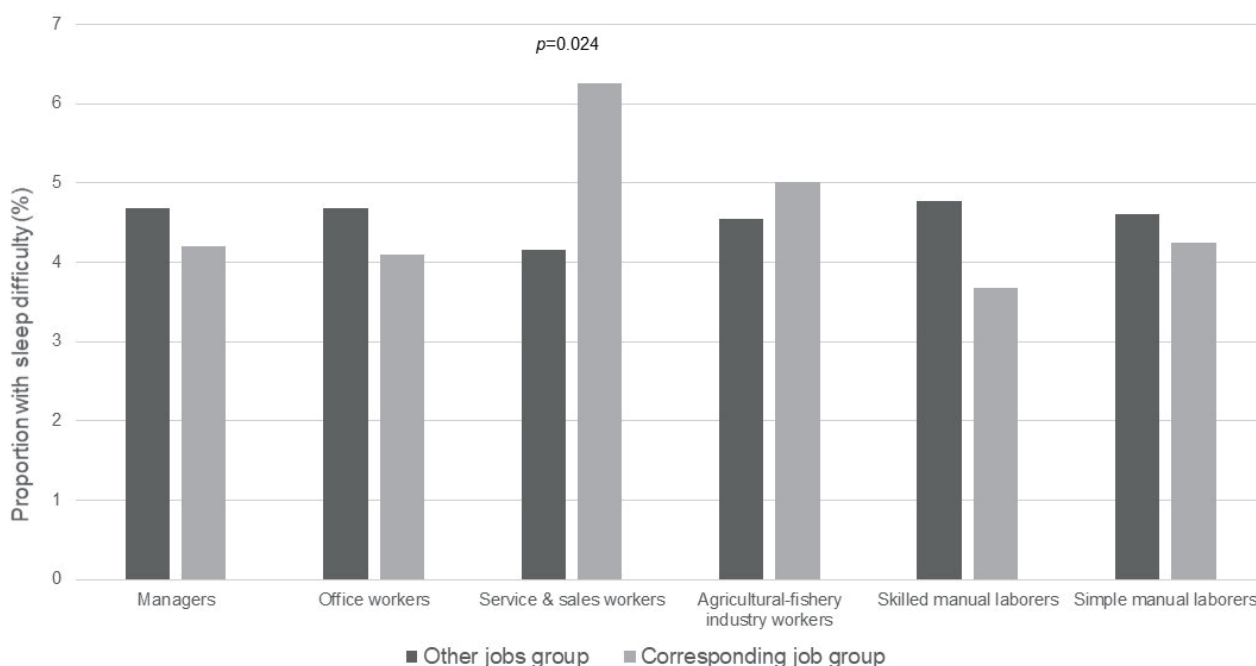


Figure 1. Prevalence of substantial sleep difficulty by occupation. Estimated proportions were adjusted for demographics (age, sex, economic status, education, and marital status), health behaviors (body mass index, current smoking, binge drinking, and aerobic exercise), comorbidities (hypertension and type 2 diabetes), mental health (stress and depression), and sleep duration. The other jobs group represents participants in all occupations except the corresponding job group.

ACKNOWLEDGEMENT

This work was supported by the Gachon University Gil Medical Center (Grant no., FRD2021-14).

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