

Association between Psychological Distress, Sleepiness and Physical Health in FIFO Mine Workers

An Analysis of Health Demographic Screening Data of FIFO Mining Workers between 2011 and 2017

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OUTLINE

- Background
- Methods
- Results
- Discussion
- Conclusion

BACKGROUND

- Numbers of FIFO workers on the increase over last decade
- OHS, media, political and societal focus on health impacts
- The specific objectives of this study were to:
 - Determine the prevalence of psychological distress and sleepiness amongst FIFO workers
 - Determine the magnitude of associations between psychological distress, sleepiness, and physical health indicators of obesity and hypertension
 - Compare the prevalence of psychological distress and sleepiness in FIFO workers and the general population

BACKGROUND

- Physical and psychological health impact on work safety, productivity, claims performance and retention of workers
- FIFO associated with increased psychological stress and other health problems
 - Fatigue
 - Excessive daytime sleepiness
 - Overweight/obesity
 - Elevated systolic blood pressures
 - Suicide
 - Psychological and Cognitive issues (memory and concentration, anxiety, tension and irritability)

BACKGROUND

- Contribution of poor physical and psychological health on
 - Work safety and injury indicators
 - Productivity
 - Worker retention and workforce planning
- Media and Regulatory Focus on Mental Health Impacts
- Strong association between organic sleep disorders (OSA, PLM, Narcolepsy etc) and psychiatric disturbance



METHODS

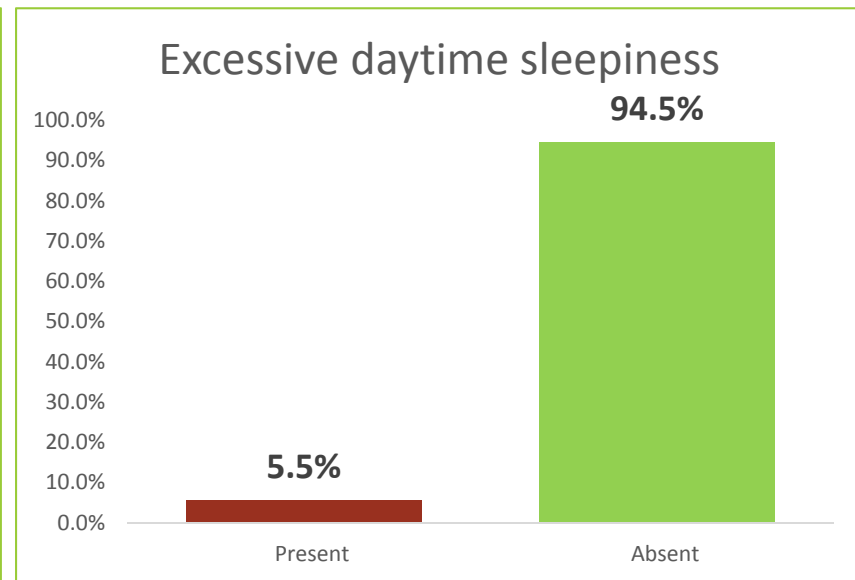
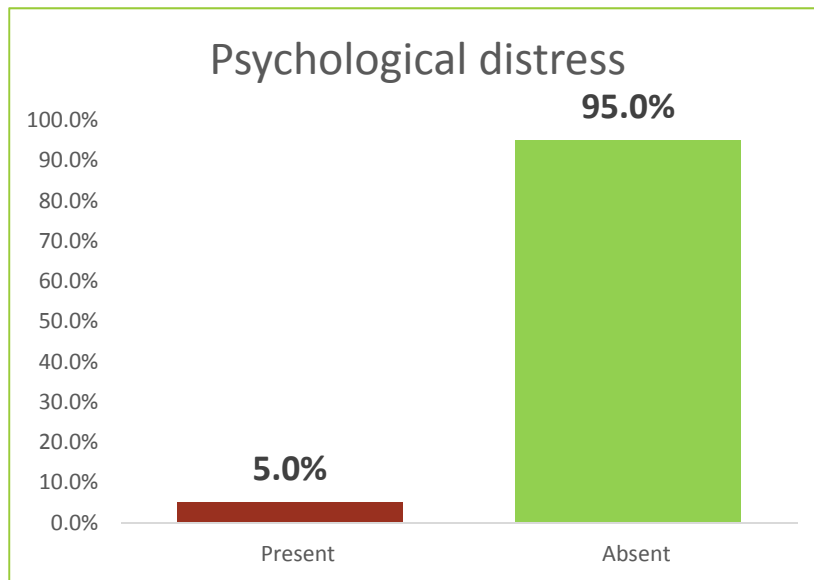
- Descriptive retrospective quantitative study
- Participants were single site FIFO mining workers; 925 medical assessments over period 2011-2017
- Ethics and commercial approval
- Inclusion criteria
 - FIFO employee of the mining company completing a medical between 2011 and 2017
 - Employment for a minimum of 3 years
- Exclusion criteria
 - Incomplete medical assessment data

METHODS

- Main outcome variables
 - Psychological distress (K10 Score)
 - Excessive daytime sleepiness (ESS Score)
- Secondary variables: Body mass index (BMI) & Systolic blood pressure (SBP)
- Data analysed using SPSS version 20.0
 - Frequencies (and percentages); or means (and standard deviations) for description of variables
 - Associations between psychological distress and sleepiness (Chi-square test)
 - Mean differences between test scores (t-tests; ANOVA)

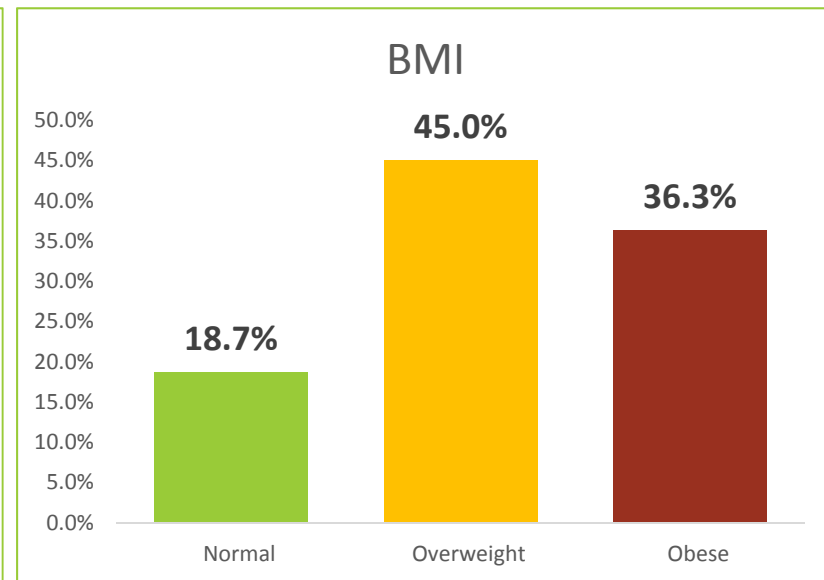
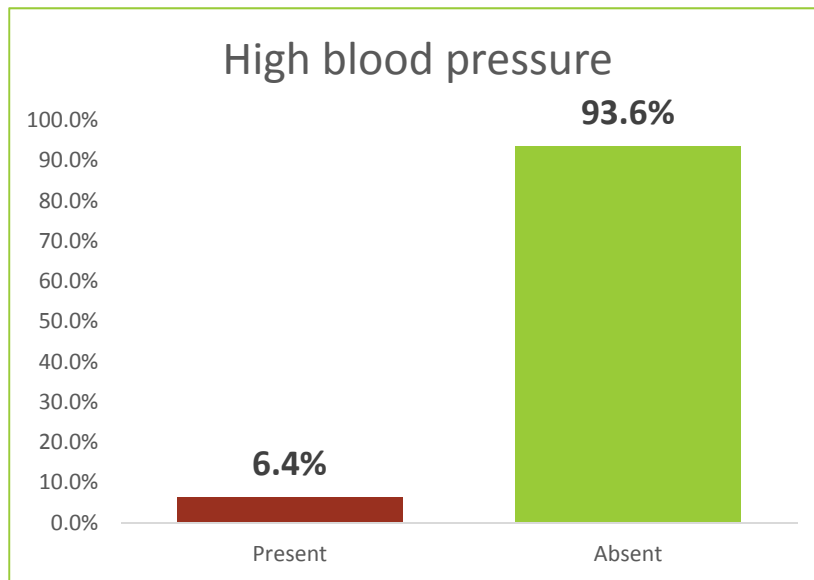
RESULTS

Prevalence of psychological distress and excessive daytime sleepiness

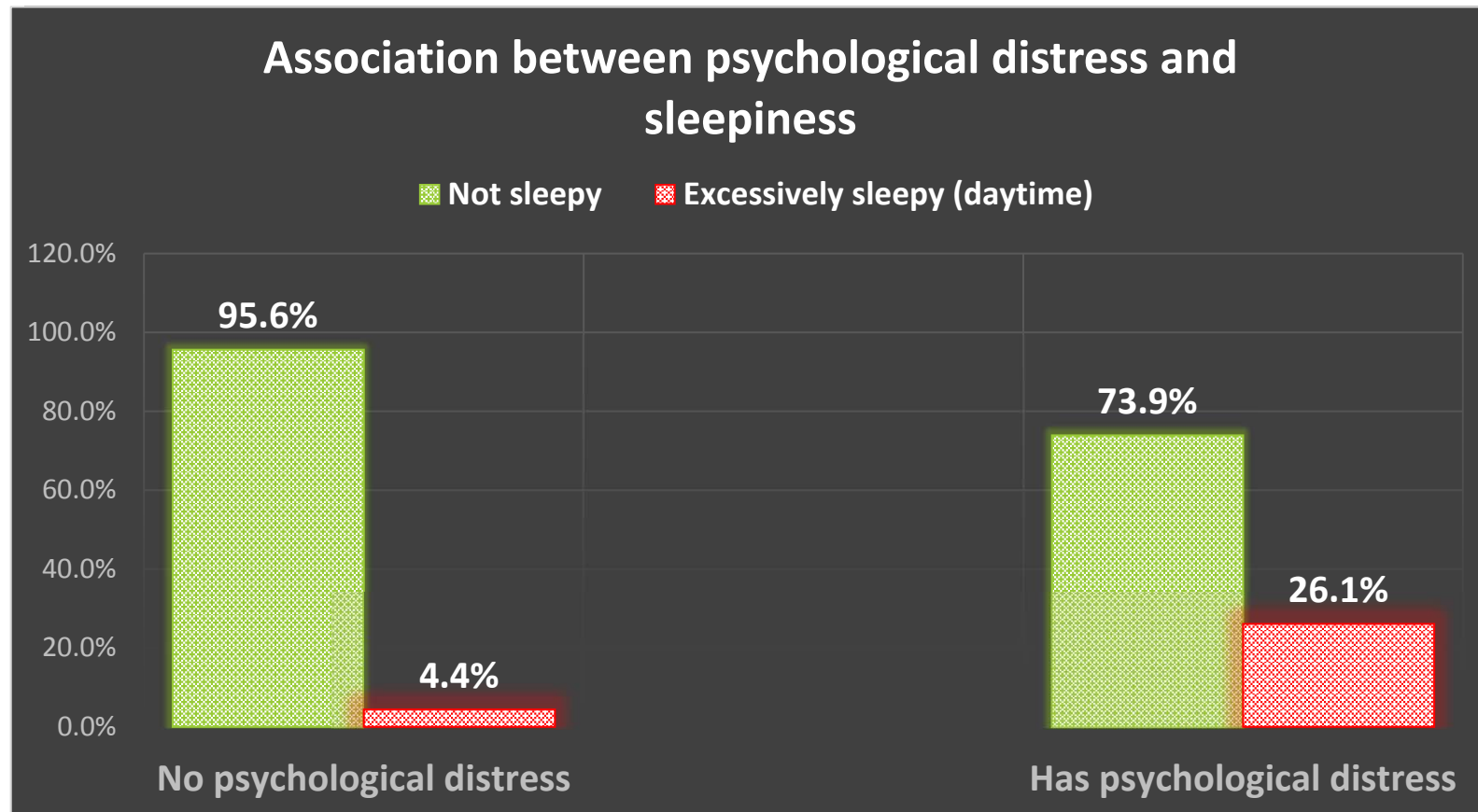


RESULTS

Prevalence of elevated blood pressure and overweight/obesity



RESULTS



$\chi^2=39.330$; $p < 0.001$

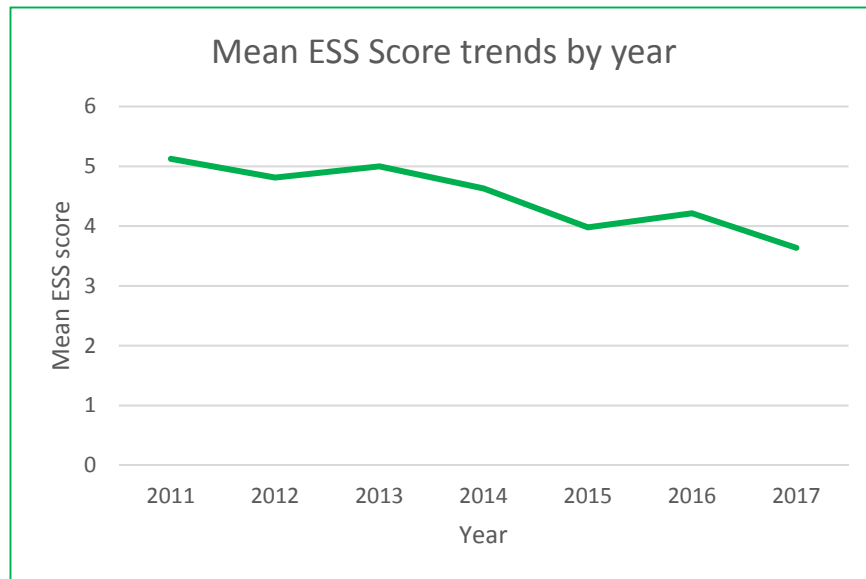
RESULTS - GENDER

Influence of gender on both psychological distress and excessive sleepiness

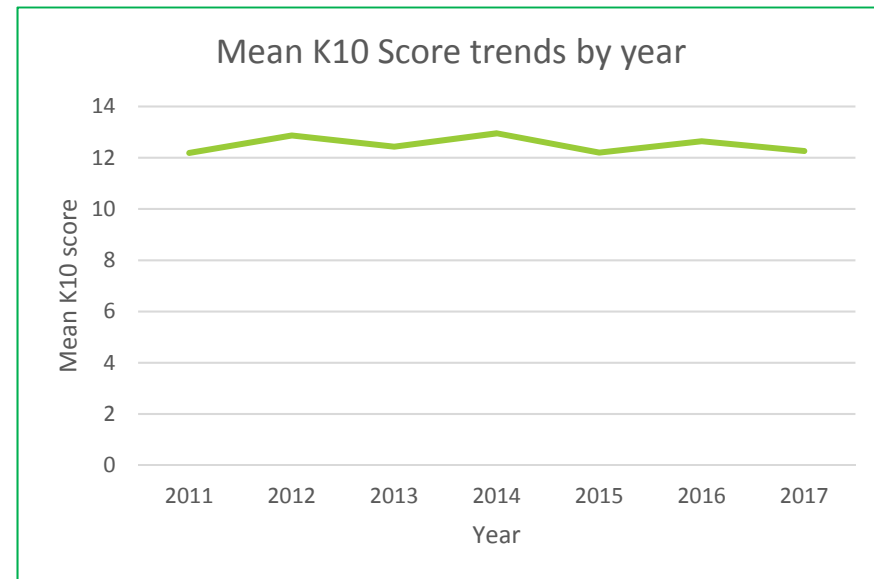
	Male	Female	<i>t</i>	<i>p</i> -value
Sleep ESS Score (Mean±SD)	4.3±3.1	3.8±2.9	1.559	0.119
K10 Score (Mean±SD)	12.5±3.1	13.0±3.9	-1.737	0.083

RESULTS – YEARLY TRENDS

Yearly trends of mean ESS scores (A) and K10 scores (B) in the study population



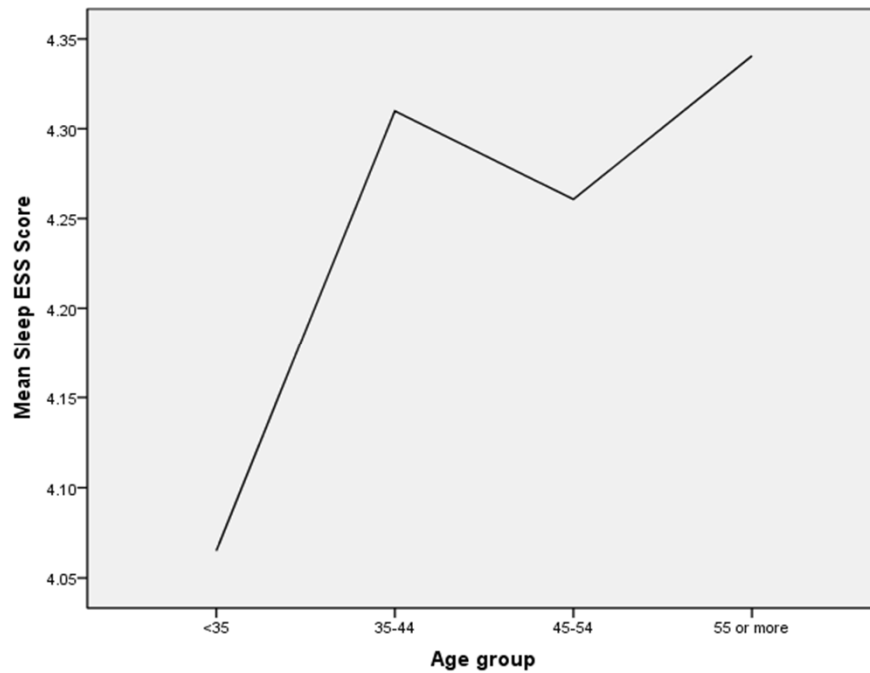
A



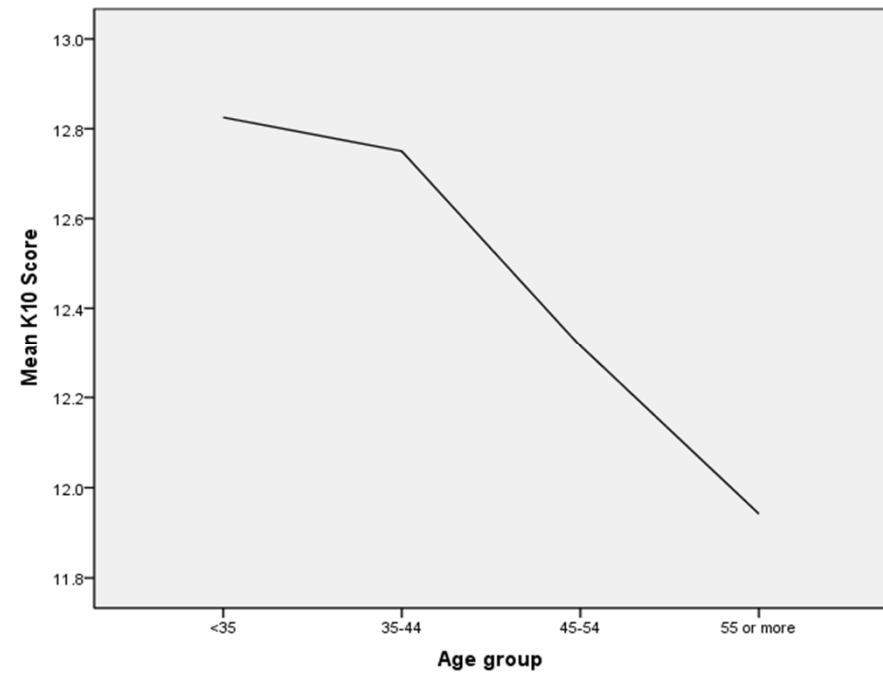
B

RESULTS – AGE TRENDS

Trends in the average ESS scores (A) and average K10 scores (B) across age groups



A



B

RESULTS – PREDICTORS

Predictors of psychological distress

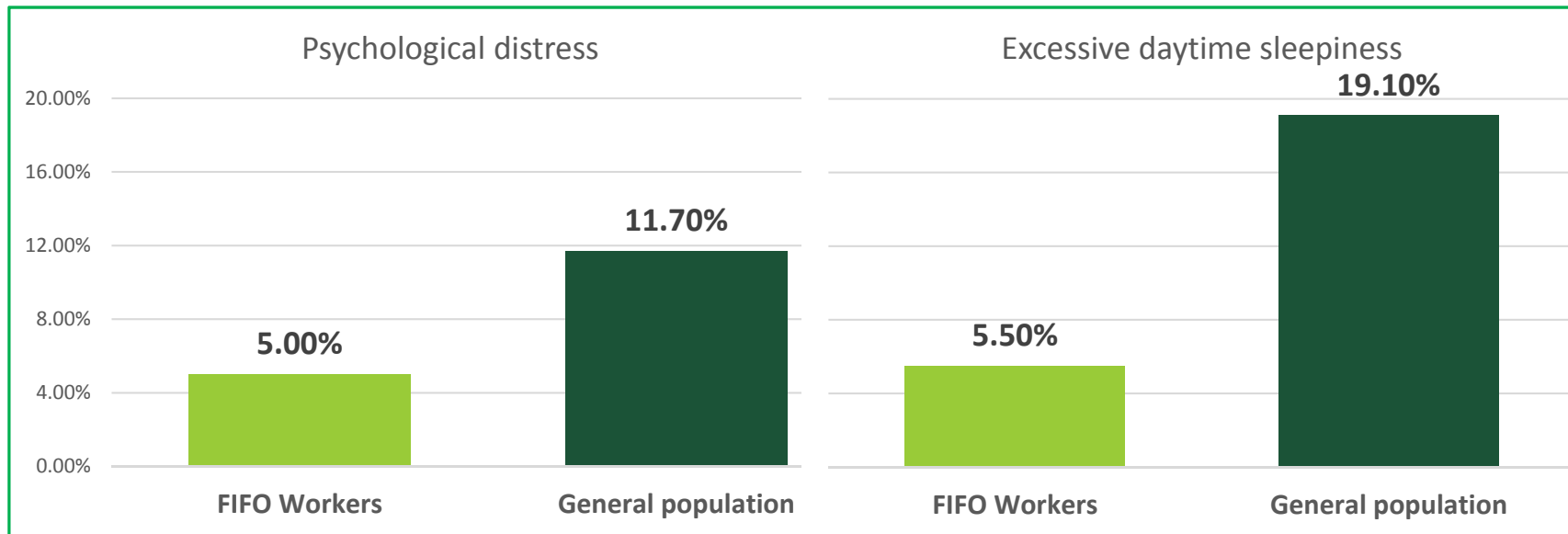
Model	Standardized Beta Coefficients	Exp(B)	Sig.
Age	-0.128	-4.102	0.000
Gender	0.079	2.487	0.013
Sleep ESS Score	0.363	11.872	0.000
BMI	-0.026	-0.844	0.399
BP (systolic)	0.010	0.238	0.812

Predictors of excessive daytime sleepiness

Model	Standardized Beta Coefficients	Exp(B)	Sig.
Age	0.088	2.777	0.006
Gender	-0.087	-2.741	0.006
K10 Score	0.366	11.872	0.000
BMI	-0.027	-0.881	0.378
BP (systolic)	-0.064	-1.541	0.124

RESULTS - COMPARISON


Prevalence of psychological distress and excessive daytime sleepiness in FIFO workers compared with the general Australian population



P < 0.0001 (95% CI: 5.03 – 8.02)

P < 0.0001 (95% CI: 10.76 – 16.45)


DISCUSSION

- FIFO workers with psychological distress are more likely to suffer from excessive daytime sleepiness
 - Compared with the general population, FIFO workers did not have higher rates of reported of psychological distress and excessive daytime sleepiness (as expected)
 - Age is a significant predictor of both psychological distress and excessive daytime sleepiness on assessment
 - BMI and systolic blood pressure do not influence the occurrence of psychological distress or excessive daytime sleepiness
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DISCUSSION

- Strength
 - Large number of participants (n= 925)
 - Data collection over a number of years
- Limitations
 - Retrospective study design
 - Use of self-administered screening tools
 - Single site study
 - Low female inclusion
- Bias
 - Context (deliberate symptom minimization)
 - Suitability for comparison with general population data

CONCLUSION

- A significant proportion of FIFO workers suffer from both psychological distress and excessive daytime sleepiness
 - How these interact in terms of overall impairment is uncertain
 - It is important to review safety and occupational health policies surrounding operator psychological health and attentiveness
 - Further research is required to determine influence of FIFO on psychological and physical health; and the best way to measure impairment sensitive health impacts utilizing evidence based screening tools
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Thank You For Listening!



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