

The health equity assessment of correlation between employee overload and Hypertension, Hyperglycemia, and Chronic Kidney Disease among Medical Center Staff in Northern Taiwan: A Case Study

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Background and objective: Taiwan's comprehensive national healthcare insurance and medical resources have led to high healthcare quality and satisfaction but have also resulted in excessive workload among hospital staff, affecting health equity. This study aims to explore the correlation between workload and health status, specifically focusing on hypertension, hyperglycemia, and chronic kidney disease (CKD) with diverse medical and administrative staff in the medical center.

Methods: This cross-sectional study, approved by the hospital Institutional Review Board (IRB) under case number 111131-F, involves healthcare institution personnel as the study sample. We utilized the Occupational Overload Assessment Scale from the Bureau of Occupational Safety and Health of the Ministry of Labor (Taiwan) and employee health examination data. Statistical analyses explored factors associated with the correlation between work overload and the risk group for high blood pressure, high blood sugar, and concurrent CKD.

Relation to conference main theme: Complex work patterns and shift work are prevalent in healthcare institutions, especially in large teaching hospitals. This study explores the correlation between the health status and workloads of employees of different genders and tenures, aligning with the conference theme of HEALTH EQUITY.

Keywords: Health Equity, Hypertension, Hyperglycemia, Chronic Kidney Disease (CKD), Employee Overload

Results: In a specific medical center, employees in the high-risk group showed significantly higher values in age, weight, BMI, waist circumference, triglycerides, and LDL cholesterol compared to the non-high-risk group. The high-risk group for HDL cholesterol was significantly lower than the non-high-risk group, consistent with other research findings. Gender differences were significant in the risk group with high blood pressure, high blood sugar, triglycerides, and concurrent CKD. Although work overload and personal fatigue did not show significance in the risk group, both demonstrated a significant negative correlation with age.

Conclusions: Large medical institutions or teaching hospitals in Taiwan are generally overloaded or understaffed with medical staff, especially in the Nurse group. The preliminary analysis results of this study suggest that most senior employees have health indicators out of the laboratory criteria, and junior employees are under a greater work overload. There is a need for attention from hospital senior managers and government departments regarding excessive workload.

Relevance to HPH: It is important to improve the health status of different job categories in hospitals and examine overloaded work patterns. The topic and content of this study are related to HPH.

Table 1: T-test analysis of risk factors between high-risk groups and non-high-risk groups

Variables	CKD combined with high blood sugar and blood pressure		T-test	P value
	N=164			
	The high-risk group N=75	Non-high-risk group N=89		
	Mean±SD	Mean±SD		
Age	41.69 ± 9.02	39.03 ± 7.35	2.081*	0.039
Weight	66.13 ± 14.73	59.09 ± 10.16	3.496***	0.001
BMI	25.62 ± 5.25	23.08 ± 3.68	3.514***	0.001
Waist circumference	81.67 ± 11.76	75.81 ± 10.08	3.44***	0.001
Triglycerides (TG)	118.32 ± 74.39	87.88 ± 62.74	2.843**	0.005
HDL-Cholesterol	57.65 ± 15.43	63.66 ± 13.99	-2.614**	0.010
LDL-Cholesterol	120.32 ± 33.47	110.52 ± 27.91	2.046*	0.042

p* < 0.05, p** < 0.01, p*** < 0.001

醫務財團法人徐元智先生醫藥基金會
亞東紀念醫院人體試驗審議委員會

Research Ethics Review Committee
Far Eastern Memorial Hospital
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試驗/研究變更許可書

案件編號: 111131-F
計畫名稱: 不同屬性工作人員之職場健康促進與過勞風險因子評估
試驗/研究機構: 醫務財團法人徐元智先生醫藥基金會亞東紀念醫院
計畫主持人: 魏蔚
共同主持人: 林靜梅、陳銘銜
研究成員: 楊景嵐、歐冠芬、潘東恩、許正祥、陳怡靜、劉勇份、賴子欣
試驗/研究人數: 3451
試驗/研究期限: 2022年9月23日至2024年12月31日
追蹤審查頻率: 一年
有效期間至二〇二二年十二月三十一日。(續於有效期間到期二個月前繳交持續審查報告以利本案進行審議)

主任委員 張淑雯 魏蔚

Permission of protocol amendment of Clinical Trial / Research

FEMH No.: 111131-F
Protocol Title: The work attribute and overload risk assessment of staff with different categories in medical institutions
Trial/Research Institution: Far Eastern Memorial Hospital
Principal Investigator: Fu Wei
Co-investigator: Chang-Mei Lin, Ming-Shu Chen
Study Coordinator: Chang-Lan Yang, Yu-Fen Ou, Tung-Hui Pan, Zhi-Qian Xu, Yi-Jung Chen, Yen-Ling Lin, Yu-Xin Lai
Number of subjects: 3451
Trial/Research period: September 23, 2022 to December 31, 2024
Continuing review frequency: one year

The protocol is valid till December 31, 2022. (The investigator is required to apply for a continuing review not less than two months prior to approval expiration date.)
核准日期/Approval date: 2022-11-09

本委員會的運作符合優良臨床試驗準則及政府相關法律規章
The committee is organized under, and operates in accordance with,
the Good Clinical Practice guidelines and governmental laws and regulations.
2022-07-22

Table 2: X²-test of risk factors between high-risk groups and non-high-risk groups

Variables	CKD combined with high blood sugar and blood pressure		X ²	P value
	N=164			
	The high-risk group N=75	Non-high-risk group N=89		
BMI Group			11.506**	0.003
<24	35	63		
24-27	18	16		
>27	22	10		
Age Group			8.742*	0.033
30 years below	8	15		
31-40 years old	26	30		
41-50 years old	29	41		
51 years up	12	3		
Waist circumference			7.666**	0.006
Normal	32	20		
Abnormal	43	69		



亞東紀念醫院受試者保護中心

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人體試驗/研究同意執行證明書

IRB 案件編號: 111131-F
計畫名稱: 不同屬性工作人員之職場健康促進與過勞風險因子評估
部門/計畫主持人: 職業安全暨總務處/魏蔚

本案件經本院人體試驗審議委員會審議通過及列案管理,由受試者保護中心覆核相關文件,代表機構正式同意本案件執行。

主任

彭渝森

日期: 2022年9月29日

Implementation Letter of Clinical Trial / Research

Far Eastern Memorial Hospital

FEMH IRB No.: 111131-F
Protocol Title: The work attribute and overload risk assessment of staff with different categories in medical institutions
Department/Principal Investigator: Occupational Safety and General Affairs Department / Fu Wei

Above protocol has been approved and monitored by the Research Ethics Review Committee of the Far Eastern Memorial Hospital. After reviewed by Human Research Protection Center, the implementation of the protocol is approved.

Chief

Yu-Sen Peng

Date: September 29, 2022



Figure 1: This study was approved by the Institutional Review Board (IRB) of Far Eastern Memorial Hospital. Certificate: IRB-FEMH No: 111131-F. Research period: September 2022 to December 2024.