



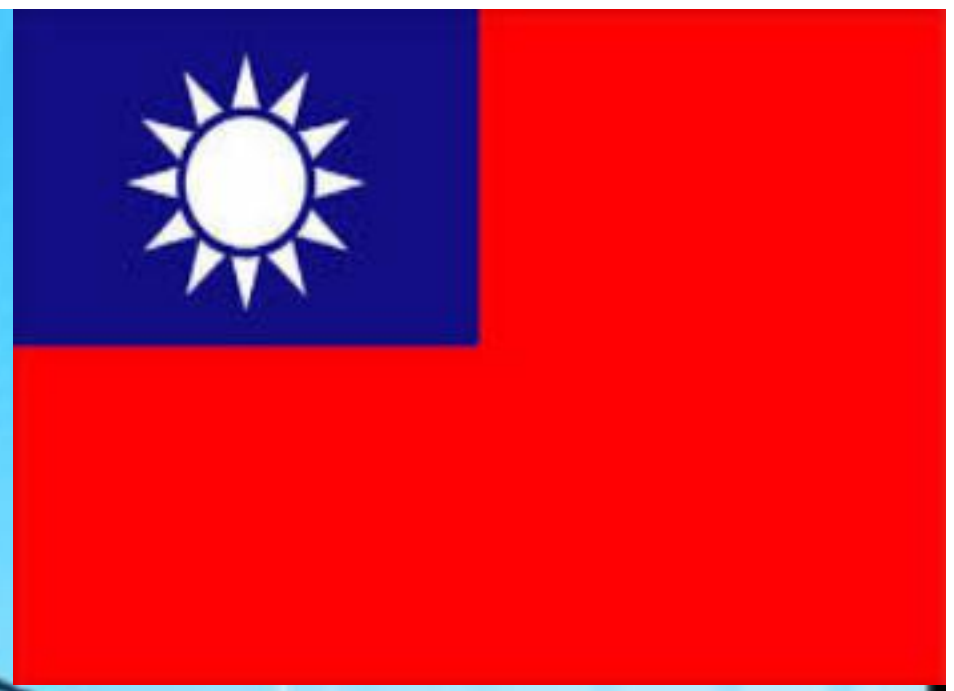
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Impact of Workplace Health Promotion Interventions on Employees at High Risk for Metabolic Syndrome

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Background:

In Taiwan, the prevalence of metabolic syndrome (MetS) among individuals aged 20 to 64 is 24.8%, indicating that one in four adults is affected. The prevalence is significantly higher in males (30.4%) than in females (19.7%). As a designated Health Promoting Hospital, prioritizing lifestyle interventions to prevent MetS among employees is a critical and urgent objective.

Objective:

To evaluate the effectiveness of workplace health promotion interventions in reducing the prevalence of high-risk metabolic syndrome factors among hospital employees.

Methods:

We analyzed health examination reports from 2024. Forty employees presenting with metabolic abnormalities were recruited based on the following criteria: Fasting Glucose (AC) ≥ 100 mg/dl, Triglycerides (TG) ≥ 150 mg/dl, HDL-C < 40 mg/dl (Male) or < 50 mg/dl (Female), Blood Pressure (BP) SBP ≥ 130 mmHg or DBP ≥ 80 mmHg, and Waist Circumference (WC) ≥ 90 cm (Male) or ≥ 80 cm (Female). Interventions implemented in 2025 included a ten-month hospital-wide walking competition, three general health diet seminars, a three-month physical fitness course, and a six-month weight control competition. Follow-up health examination data were collected at the end of 2025 and compared with the 2024 baseline data.

Results:

Data were analyzed using Chi-Square Tests and Fisher's Exact Tests with a significance level of $\alpha = 0.05$. Although statistical significance was not reached, reductions in the number of abnormal cases were observed across several indicators. Specifically, the number of employees with abnormal Waist Circumference decreased from 16 (40%) to 10 (25%) ($p=0.233$), and those with abnormal Blood Pressure decreased from 13 (32.5%) to 9 (22.5%) ($p=0.453$). Changes in Fasting Glucose (16 vs. 15 cases, $p=1.000$), Triglycerides (12 vs. 10 cases, $p=0.802$), and HDL (12 vs. 10 cases, $p=0.802$) were less pronounced.

Conclusion and Discussion:

The lack of statistical significance in this study is primarily attributed to the limited sample size ($N=40$), resulting in insufficient statistical power. However, from a clinical perspective, the reduction in waist circumference abnormalities (37.5% improvement rate) and blood pressure abnormalities (30.7% improvement rate) indicates that the health promotion interventions—specifically the dietary courses and exercise plans—yielded positive benefits in body composition and hemodynamic control. Conversely, improvements in glycemic and lipid profiles were relatively slow. Future strategies will focus on enhancing health literacy through targeted education on specific dietary content (e.g., sugar reduction and quality fat intake) to achieve significant biochemical improvements in the subsequent year.

