

Cardiometabolic Risk Clustering in Spinal Cord Injury: Results of Exploratory Factor Analysis.

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Abstract

BACKGROUND:

Evidence suggests an elevated prevalence of cardiometabolic risks among persons with spinal cord injury (SCI); however, the unique clustering of risk factors in this population has not been fully explored.

OBJECTIVE:

The purpose of this study was to describe unique clustering of cardiometabolic risk factors differentiated by level of injury.

METHODS:

One hundred twenty-one subjects (mean 37 ± 12 years; range, 18-73) with chronic C5 to T12 motor complete SCI were studied. Assessments included medical histories, anthropometrics and blood pressure, and fasting serum lipids, glucose, insulin, and hemoglobin A1c (HbA1c).

RESULTS:

The most common cardiometabolic risk factors were overweight/obesity, high levels of low-density lipoprotein (LDL-C), and low levels of high-density lipoprotein (HDL-C). Risk clustering was found in 76.9% of the population. Exploratory principal component factor analysis using varimax rotation revealed a 3-factor model in persons with paraplegia (65.4% variance) and a 4-factor solution in persons with tetraplegia (73.3% variance). The differences between groups were emphasized by the varied composition of the extracted factors: Lipid Profile A (total cholesterol [TC] and LDL-C), Body Mass-Hypertension Profile (body mass index [BMI], systolic blood pressure [SBP], and fasting insulin [FI]); Glycemic Profile (fasting glucose and HbA1c), and Lipid Profile B (TG and HDL-C). BMI and SBP formed a separate factor only in persons with tetraplegia. Conclusions: Although the majority of the population with SCI has risk clustering, the composition of the risk clusters may be dependent on level of injury, based on a factor analysis group comparison. This is clinically plausible and relevant as tetraplegics tend to be hypo- to normotensive and more sedentary, resulting in lower HDL-C and a greater propensity toward impaired carbohydrate metabolism.

KEYWORDS:

body composition, cardiometabolic syndrome, cardiovascular disease, diabetes, dyslipidemia, factor analysis, spinal cord injury