

The role of combined modifiable lifestyle behaviors between stressful life events and allostatic load in Australian adults

R.V.K. Siew¹, S.J. Bowe², A.I. Turner¹, Z. Sarnyai³, C.J. Nilsson⁴, J.E. Shaw⁵, D.J. Magliano⁵ and S.J. Torres¹

¹*Institute for Physical Activity and Nutrition, Deakin University, Burwood, Victoria, Australia,*

²*Deakin Biostatistics Unit, Deakin University, Burwood, Victoria, Australia,*

³*College of Public Health, Medical and Veterinary Sciences, James Cook University, Townsville, Qld, Australia,*

⁴*Department of Public Health, University of Copenhagen, Copenhagen, Denmark and*

⁵*Baker Heart and Diabetes Institute, Melbourne, Victoria, Australia*

Behavioral stress response is a proposed pathway that links exposure to stressors to elevated allostatic load, yet there is little empirical evidence.^(1,2) The present study aimed to test the mediating role of combined modifiable lifestyle behaviors in the mechanistic pathway between stressful life events and allostatic load among Australian adults. Three waves of data from The Australian Diabetes, Obesity and Lifestyle Study ($n = 3301$) were used. A latent profile analysis was performed to identify latent subgroups with distinct behavioral clusters based on five modifiable lifestyle behaviors (smoking, sedentary behaviour, physical activity, alcohol consumption, and diet quality). Subsequently, a path analysis was applied using a sequential mediational model to test the mediating effect of behavioral clusters in the associations between stressful life events and allostatic load. The indirect effects via behavioral clusters were estimated using the product of coefficient approach. Three behavioral clusters: “least healthy lifestyle” (12.0%), “moderately healthy lifestyle” (78.7%), and “most healthy lifestyle” (9.3%) emerged from our analytic sample. Compared to the “moderately healthy lifestyle” group, the “most healthy lifestyle” participants had significantly lower allostatic load ($b = 0.687$; 95% CI $[-0.989, -0.386]$, $p < 0.01$). Path analyses revealed non-significant indirect associations via the “least healthy lifestyle” ($b = 0.003$; 95% CI $[-0.003, 0.013]$) compared to the “moderately healthy lifestyle” group. This study confirms previous findings on the salutary effect of healthy lifestyle behaviors on allostatic load. In contrast with the allostatic load model, the unhealthy behavioural cluster examined in this study did not explain the association between stressful life events and allostatic load.

References

1. McEwen B & Stellar E (1993) *Arch Intern Med* **153**, 2093–2101.
2. Siew RVK, Nabe-Nielsen K, Turner AI, *et al.* (2022) *Psychoneuroendocrinol* **138**, 105668.