

Appendix 1 The result of principal component analysis of the multidimensional indicators

Principal component	Variance explained
Unhealthy nutrition 0.97 healthy food, 0.72 tea and coffee, 0.59 junk food	33%
Increased activity and adequate sleep 0.74 daily physical activity, 0.32 night sleep rates, 0.72 watching TV and working with computer	38%
Increased exposure to environmental pollutants 0.72 smoking, 0.70 air pollution	35%
Decreased social security 0.86 life satisfaction, 0.79 communication with family and friends, 0.65 violence	37%
Increased exposure to green space and sunlight 0.74 interaction with environment, 0.75 exposure to sunlight	56%
Better hygiene 0.73 personal hygiene, 0.72 peripheral hygiene indicator	53%

Appendix 2 Definition of latent variables with their related questions from the questionnaire

Principal component	Definition (higher values represent...)	Measured by questions about ... (question numbers from Persian version of WHO-GSHS)
Nutrition	Using more junk food, less healthy food, more tea and coffee, and less weight satisfaction	Diet type, diet composition, and weight satisfaction (question numbers: 5–8, 20–21, 24–25, 28–45)
Activity and sleep	Longer physical activity time, less night sleep time, and more screen time	Individual physical activity, daily work-outs, time consumed working with computer, cell phones and watching TV, and amount of night sleep (question numbers: 52–55, 56–57, 60–63, 132–133)
Harmful substances	More smoking, more exposure to smoke, and more report of exposure to air pollutants	Smoking and secondhand smoking, tobacco use, and rate of discomfort from peripheral pollution (question numbers: 93, 95, 97–98, 130–131)
Stress	Less self-reported life satisfaction, less social communication and higher violence, and more disputes	Satisfaction from relationships with family and friends, self-satisfaction and happiness from the place of living, number of disputes in last year, and the measure of time spent with friends (question numbers: 1–4, 10, 11, 13–17, 68–73)
Environment	Higher exposure to sunlight and more participation and outdoor activities	Number of days per week spent in green spaces in different seasons and rate of exposure to sunlight (question numbers: 124–129)
Health	Higher health-related activities	Measurements of brushing teeth, hand-washing in different places, and a pre-defined hygiene indicator (question numbers: 46–51)
Cardiovascular diseases risk indicator	Higher blood pressure, more elevated cholesterol and triglycerides levels, and higher fasting blood sugar	Blood pressure measurement and blood sample analysis
Renal diseases risk indicator	Higher serum creatinine	Blood sample analysis
Hepatic diseases risk indicator	Higher serum SGPT (ALT)	Blood sample analysis

Abbreviations: ALT, alanine aminotransferase; SGPT, serum glutamic pyruvic transaminase; WHO-GSHS, World Health Organization-Global School Student Health Survey.

Appendix 3 Validity and fitness of the proposed model

Tests	Values	Reference
Comparative fit index	0.90	≥ 0.90
Tucker–Lewis index	0.92	0.90
Root mean square error of approximation	0.043	0.90