

Table 2 Exploratory factor analysis of the modified WHO STEPS questionnaire and principal component analysis with varimax rotated loadings

Factor	Eigen value	Explained variation, %	Item	Factor loading
Factor I: BP monitoring	5.3	15.7	In a week, how many days do you eat fruit?	0.316
			Systolic BP-1	0.836
			Diastolic BP-1	0.520
			Systolic BP-2	0.829
			Diastolic BP-2	0.876
Factor II: Raised BP	3.4	9.9	Have you ever had your BP measured by a doctor?	0.737
			Have you ever been told by a doctor that you have raised BP or hypertension in past 12 months?	0.769
			Have you ever had your cholesterol measured by a doctor?	0.731
			Have you ever been told by a doctor that you have raised cholesterol?	0.666
Factor III: Smoking behaviour	2.6	7.6	Smoking	0.950
			Regular smoking	0.891
			During the last 12 months, have you tried to stop smoking?	0.569
Factor IV: Heart rate	2.4	6.9	Heart rate-1	0.939
			Heart rate-2	0.960
			Baseline blood sugar level	0.152
Factor V: Physical measurements	2.1	6.3	Weight	0.747
			Waist circumference	0.715
			Hip circumference	0.738
Factor VI: Dietary fats	1.9	5.5	Oil and fats used for the preparation of meal	0.796
			Have you ever taken any allopathic antihypertensive medication in past 2 weeks?	0.628
Factor VII: NCDs	1.6	4.7	Ischaemic heart disease	0.622
			Hypertension	0.777
			Diabetes	0.670
Factor VIII: Diabetes	1.6	4.7	Have you ever had your blood sugar measured by doctor?	0.681
			Have you ever been told by doctor that you have raised blood sugar or diabetes?	0.783
			Height	0.396
Factor IX: Diet & exercise	1.5	4.3	In a typical week, on how many days do you eat vegetables?	0.793
			Do you walk or bicycle for at least 10 minutes daily	0.423
Factor X: Cardiac risk factors	1.3	3.7	Do you currently use any smokeless tobacco?	0.563
			Does your work involve low intensity activity?	0.139
			Have you ever had a heart attack or chest pain?	0.810
Factor XI: Physical activity	1.2	3.5	Does your work involve moderate intensity activity?	0.397
			Have you ever been told by doctor that you have raised blood pressure or hypertension?	0.735
Factor XII: Stroke	1.1	3.3	Stroke	0.792

WHO: World Health Organization; BP: blood pressure; NCD: noncommunicable disease.

Discussion

We used exploratory factor analysis of the modified WHO STEPS questionnaire to assess the validity of the modified version. We could not use the original version of the STEPS questionnaire because it included questions on behavioural measurements, medical

check-ups, tradition and background. The WHO STEPS questionnaire was designed to be applied to any community, we modified it according to our socioeconomic and demographic conditions. Another study on the burden of NCDs developed and validated the tool extracted from a past research questionnaire