

Web Appendix 1

The questionnaires and protocols can be obtained as follows:

Brazil (PNS 2013)

Questionnaires: www.pns.icict.fiocruz.br/index.php?pag=proposicao

Nurse measurement protocols:

www.pns.icict.fiocruz.br/arquivos/Novos/Manual%20de%20Antropometria%20PDF.pdf

Blood sample collection protocol: www.pns.icict.fiocruz.br/index.php?pag=coleta

Chile (ENS2009)

The questionnaires are available from <http://epi.minsal.cl/estudios-y-encuestas-poblacionales/encuestas-poblacionales/encuesta-nacional-de-salud/cuestionarios-ens/>

The interview, nurse and laboratory protocols are currently not publicly available, but may be released on request to the Ministry of Health.

Colombia (ENSIN 2010)

The questionnaire can be found on pages 60-70 at:

www.icbf.gov.co/portal/page/portal/PortalICBF/bienestar/nutricion/ensin/LibroENSIN2010.pdf

The measurement protocols can be found from page 77 onwards at:

<https://www.minsalud.gov.co/sites/rid/Lists/BibliotecaDigital/RIDE/VS/ED/GCFI/Base%20de%20datos%20ENSIN%20-%20Protocolo%20Ensin%202010.pdf>

Colombia (ENS 2007)

The questionnaire and protocols are available from the corresponding author.

Mexico (ENSANUT 2012)

The questionnaire files and protocols can be downloaded for free from

<http://ensanut.insp.mx/basesdoctos.php#.V2UxWrsrKUk>. An email to INSP is required to request access (via 'Contacto' on that website).

England (HSE 2013)

The technical report includes the questionnaires and the measurement protocols:

www.hscic.gov.uk/catalogue/PUB16076/HSE2013-Methods-and-docs.pdf

Scotland (SHeS 2008-2011)

The technical report includes the questionnaires and the measurement protocols:

www.gov.scot/Publications/2012/09/8038

USA (NHANES 2011-12)

The questionnaires are available from: www.cdc.gov/nchs/nhanes/nhanes2011-2012/questionnaires11_12.htm

The measurement and laboratory protocols can be downloaded from:

www.cdc.gov/nchs/nhanes/nhanes2011-2012/manuals11_12.htm

Web Table 1. Sampling & stratification

Country	Survey	Sampling frame	Stage	Sampling stages	N	Stratification of areas	PPS sampling	Oversampling	
								Areas	Population subgroups
WHO	STEPS				At least 50-100 PSUs selected, so ≥ 100 sampling units available	Depends on information available from sampling frame & information needed from survey results	The selection probability for the PSU is proportional to the number of households or individuals		
Brazil	PNS 2013	2010 Census tracts selected from the IBGE national master sampling plan	1	Census tract	6,076		Yes – census tract		No
			2	Households	10-14 per census tract				
			3	Individuals	1 per household				
Chile	ENS 2009/10	List of census tracts & population size by age and sex of population; projections using Census 2002, adjusted annually through vital statistics	1	Municipality	146	Region: type of area (urban, rural); size of municipality	Yes – area segments	All large & middle-size municipalities; random sample of small counties; oversampling of non-Santiago metropolitan and rural areas	Persons aged 65+
			2	Area segments: blocks (urban); census units (rural)	624				
			3	Households	6 per area segment				
			4	Individuals	1 per household				
Colombia	ENS 2007	List of municipalities and population (National Census 2005)	1	Municipality	177	Population size, Urban-rural proportion; unsatisfied basic needs, socioeconomic	Yes – area segments	Largest 59 municipalities selected with certainty	
			2	Area segments: blocks (urban); census units (rural)	4,263				
			3	Households	Average 12 per segment				

Country	Survey	Sampling frame	Stage	Sampling stages	N	Stratification of areas	PPS sampling	Oversampling			
								Areas	Population subgroups		
			4	Individuals	All aged under 18, 1 per hh aged 18-69, 2 per hh with 4+ 18-69 year olds.	level					
	ENSIN 2010	List of municipalities and population (National Census 2005)	1	Municipality	258	Population size; urban-rural proportion; unsatisfied basic needs index; socioeconomic level; geographical proximity	Yes – area segments	Largest 89 municipalities selected with certainty			
2			Area segments: blocks (urban); census units (rural)	4,987							
3			Households	Average 10 per segment							
4			Individuals	All the eligible individuals from the household							
Mexico	ENSANUT 2012	2005 and 2010 Household and Population Census	1	AGEBs (geostatistical areas)		1,082		Urban / rural	Yes - AGEBS	288 extra households of vulnerable population oversampled per state (32)	
			2	2	City: blocks	Rural: Communities	6 per city AGEB				3 per rural AGEB
						Rural: 50 households (pseudoblocks)					1 per rural community
			3	4	Households	6 per city block	12 per rural pseudoblock				
			4	5	Individuals	1 individual from each of: Child <5 years Child 5-9 years Adolescent Adult Users of health services					

Country	Survey	Sampling frame	Stage	Sampling stages	N	Stratification of areas	PPS sampling	Oversampling	
								Areas	Population subgroups
England	HSE 2013	List of addresses (small-user Postcode Address File)	1	Area segment: postcode sectors	588	Region; local government area; % non-manual occupation	Yes – postcode sectors	Smallest regions (North East & East Midlands)	No
			2	Addresses	16 in each postcode sector				
			(3)	(Household if >1 at the address)	1				
			3 (4)	Individual	Up to 10 adults and 2 children				
Scotland	SHeS 2008-2011	List of addresses (small-user Postcode Address File)	1	Area segment: postcode sectors ^a	1,865	Area (Health Board); level of area-based deprivation	Yes – postcode sectors	Most deprived areas (below 15 th centile)	No
			2	Addresses	13-18 in each postcode sector				
			(3)	(Household if >1 at the address)	1				
			3 (4)	Individual	Up to 10 adults and 2 children				
USA	NHANES 2011-12	List of counties & their size	1	Counties or small groups of contiguous counties	30	Geography (states & census region); population characteristic (% living in rural areas, % minority concentration, % below federal poverty line)	Yes – counties and area segments		Individuals drawn at random within designated age-sex-race/ethnicity screening subgroups.

Country	Survey	Sampling frame	Stage	Sampling stages	N	Stratification of areas	PPS sampling	Oversampling	
								Areas	Population subgroups
		List of segments	2	Area segments	24 in each county				
		List of all households	3	Households	32 in each area segment				
			4	Individuals	0-all depending on subgroup of interest.				

ENS: Encuesta Nacional de Salud; ENSANUT: Encuesta Nacional de Salud y Nutrición; ENSIN: Encuesta Nacional de Situación Nutricional; HSE: Health Survey for England; hh: household; IGBE: Brazilian Institute of Geography and Statistics; NHANES: National Health And Nutrition Examination Survey; PNS: Pesquisa Nacional de Saúde; PPS: Probability Proportional to Size; SHeS: Scottish Health Survey.

^a The clustering of the sample for the SHeS 2008-2011 was geographical (datazones) and groups of geographically near datazones are grouped into batches. The sampling is performed at the beginning of the four-year cycle with a quarter of the batches being randomly assigned to each of the four survey years.

Web Table 2. Recruitment methods and response rates used in seven national health examination surveys in the Americas and the UK

Process	<i>WHO STEPS standard</i>	Brazil PNS	Chile ENS	Colombia ENSIN	Colombia ENS	Mexico ENSANUT	England HSE ^a	Scotland SHeS ^a	USA NHANES ^a
Survey year	<i>N/A</i>	2013	2009/2010	2010	2007	2012	2013	2008-2011	2011/12
Form of invitation	<i>Interviewer visits the address</i>	Advance letter, notifying them an interviewer will visit their home	Advance letter, notifying the household an interviewer will visit their home	Interviewer visits the address		Interviewer visits the address	Advance letter, notifying the household an interviewer will visit their home, plus two information leaflets.	Advance letter, notifying the household an interviewer will call at their home	
Recruitment process	<i>Interviewer visits the address; leaves a notification card if no-one home</i>	Face-to-face, Interviewer visits the household to explain about the survey, recruit participation	Face-to-face, Interviewer visits the household to explain about the survey, select individual & recruit participation	Interviewers visits all households in the segment and conduct the interview where an adult is present		Interviewers visit the household and applies the questionnaire after the consent letter was signed	Interviewer visits the household to explain about the survey, recruit participation & schedule an interview	Interviewer visits the household to explain about the survey, go through the household screener questionnaire; recruit participation (if eligible) & schedule an interview	
No of attempts to contact sampled person/address	<i>≥ 2 attempts, at different times of day</i>		≥ 3, different time of day, at least 1 weekend day	As many as necessary until finding the woman, mother or head of household	2 attempts on average	5 attempts	≥ 6 attempts, at different times of day and day of week	≥ 6 attempts, at different times of day and day of week	
Financial incentives		No	No	No	No	No	Unconditional £5 voucher per household	All examinees receive remuneration for the MEC visit as well as payment for transportation expenses (\$125)	

Process	WHO STEPS standard	Brazil PNS	Chile ENS	Colombia ENSIN	Colombia ENS	Mexico ENSANUT	England HSE ^a	Scotland SHeS ^a	USA NHANES ^a
Feedback to participants		Feedback on blood and urine analysis results.	Feedback about risk factors detected in questionnaires, measurements and all blood and urine analysis results	Verbal feedback on anthropometric measurements; written hemoglobin report.	The results of the test were given to the participant along with a leaflet with explanations and recommendations. no advice from the interviewers were provided	Feedback on weight, height and blood pressure	Feedback on physical measurements and blood analysis results		Feedback on physical measurements and blood analysis results
Questionnaire administration	<i>Interviewer</i>	Interviewer, face-to-face All field staff trained to do the interviews in PDA (Personal Digital Assistance) and to perform anthropometric and blood pressure measurements	Interviewer, face-to-face Capture: PDA	By an interviewer		Interviewer, face-to-face	Interviewer face-to-face during the separate visit before examination (nurse visit) Data capture: CAPI (computer-assisted personal interviewing)		<i>Own home:</i> Interviewer face-to-face (Sample Person Questionnaire). <i>MEC:</i> ACASI (Audio Computer-Assisted Self-Interview); and CAPI. The MEC environment is considered more appropriate for sensitive topics.
Examination place	<i>Participant's home</i>	Participant's home	Participant's home	Participant's home or venue close to the home (depending on the setting)		Participant's home	Participant's home		Central examination centre (MEC)

Process	WHO STEPS standard	Brazil PNS	Chile ENS	Colombia ENSIN	Colombia ENS	Mexico ENSANUT	England HSE ^a	Scotland SHeS ^a	USA NHANES ^a
Examination time: Days of the week		Monday-Sunday	Monday-Sunday	Monday-Sunday	Not specified	Monday-Sunday	Monday-Sunday		MEC weekday mornings, afternoons and evenings, and every weekend.
Time of the day: interview		08:00-22:00	07.00-23.00	Throughout the day	Not specified	05:00-21:00	08:00-22:00		Two MEC examination subsamples assigned randomly: morning; and afternoon/evening, with some flexibility for convenience of participants.
Time of the day: measurements		08:00-22:00	08.00-11.00 (mean 09.00)	Not specified		05:00-21:00	08:00-22:00		
Season(s) of data collection		Aug-Jan	Throughout the year (11 month Oct 2009 to Sept 2010)	Nov-Dec 2009, Feb-Nov 2010	Jun-Nov 2007	Oct -May	Throughout the year		Throughout the year
Physical measurements by	<i>Interviewer</i>	Interviewer	Trained nurse	Interviewer/nutritionist	Interviewer	Interviewer	Height & weight: Trained interviewer Others: Trained nurse		Medical technician except BP measured by medical doctor
Blood samples collected by	<i>Trained nurse</i>	Phlebotomist	Trained nurse	Microbiologist		Trained interviewer	Trained nurse		Phlebotomist
Consent for Interview	<i>Written consent</i>	Yes	Yes	Verbal assent		Yes	Verbal assent		Yes
<i>Consent for measurements</i>	<i>Written consent</i>	Yes	Yes	Verbal assent		Yes	Verbal assent		Yes

Process	WHO STEPS standard	Brazil PNS	Chile ENS	Colombia ENSIN	Colombia ENS	Mexico ENSANUT	England HSE ^a	Scotland SHES ^a	USA NHANES ^a
Consent for biological samples	Written consent	Yes	Yes	Yes		Yes	Yes (& for passing selected results to participant's doctor; for data linkage; and for storage of samples for future research)		Yes
Ethical consent		National Ethic Committee	Faculty of Medicine of Pontificia Universidad Católica de Chile Ethics review board	Profamilia Institutional Review Board on Research involving Human Subjects & Colombian National Institutes of Health	Cendex from Universidad Javeriana	Ethics, Research and Biosecurity committee of the National Institute of Public Health	Research Ethics Committee in the national IRAS system Oxford A Research Ethics Committee	Multi-Centre Research Ethics Committee for Wales	National Center for Health Statistics ethics review board.
No. sampled		81,254 households	7,549 households	51,447 households 190,907 individuals	51,764 households 96,958 individuals 18-69 in co-operating households ^c	54,784 households	9,408 addresses (8,491 eligible households)	32,830 addresses (29,576 eligible households)	2011-2012: 13,431 individuals
No. individuals interviewed		69,900 aged 18+	5,412 aged 15+	162,331 individuals	80,776 adults 18-69	96,031 individuals (55,186 aged 20+)	8,795 adults	14,685 adults	9,756 individuals

Process	WHO STEPS standard	Brazil PNS	Chile ENS	Colombia ENSIN	Colombia ENS	Mexico ENSANUT	England HSE ^a	Scotland SHeS ^a	USA NHANES ^a
No. invited for biophysical measures		The laboratory exams are carried out in a subsample of 25% of selected census tracts	All interviewees invited; but the number of some of the blood and urine exams were limited by budget constraints	162,331	13,301	The laboratory exams are carried out in a subsample of 30% of selected census tract	All interviewees		All interviewees
Response rates ^b		Households: 79%; Individuals within co-operating households interviewed: 86%	Households with selected person interviewed: 75%; Physical examination: 93%; Blood and urine samples: 91%	Household: 98%; Individuals within co-operating households: interviewed and measured 85% ^c	Household: 81%; Individuals 18-69 within co-operating households: interviewed 83%; Subsample selected for anthropometric and biometric measurements: 57%	Household: 87%; Selected individuals within co-operating households: interviewed 89%; Selected individuals weighed & measured: 69%	Households: 64% Adults within co-operating households interviewed: 87%; Weight measured: 74%; Nurse visit: 61%; Blood sample: 46%	Households: 63% Adults within co-operating households: interviewed 83%; Weight measured: 68%; Nurse visit: 44%; Blood sample: 33%	Adults within co-operating households interviewed: 73% Examination: 70%

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^a These surveys have been run on many occasions. The methods have changed little. Results in this table are for the most recent year, as an example.

^b For individual studies, the response rate published in the national reports have been used, although the definitions vary by country regarding treatment of non-contacts and ineligible individuals. 'Household' response rate indicates the proportion of selected households in which at least one person was interviewed (subsequently referred to as a 'co-operating household'). Response rates for interview, physical examination, and biological sampling are provided among co-operating households.

^c Biochemical samples not described in this paper (hemoglobin, ferritin, CRP, vitamins A and B12, and zinc) were taken from children aged 6 months to 17 years and childbearing women. Blood sample response rates were 72% for children and 95% for women.

Web Table 3. Collection of self-reported data in eight national health examination surveys in the Americas and the UK

WHO STEPS standard ^a	Brazil PNS	Chile ENS	Colombia ENSIN	Colombia ENS	Mexico ENSANUT	England HSE ^b	Scotland SheS ^b	USA NHANES ^b
N/A	2013	2010	2010	2007	2012	2013	2008-2011	2011/12
STEPS questions collected in person by a trained interviewer/nurse	Yes	Yes	Yes	Yes	Yes	Yes		Yes
Demographic								
Sex	Yes	Yes	Yes	Yes	Yes	Yes		Yes
Date of birth	Yes	Yes	Yes <18years	No	Yes	Yes		Yes
Age	Yes	Yes	Yes	Yes	Yes	Yes		Yes
<i>Ethnicity (locally defined)</i>	Yes	Not asked	Yes	Yes	Yes	Yes		Yes
<i>Marital status</i>	Yes	Yes	Yes	Yes	Yes	Yes		Yes
Socio-economic								
No. of years in full-time education (excluding pre-school)	Yes	Yes	Yes	No	No	Age of leaving full-time education		No
<i>Highest education level completed</i>	Yes	Yes	Yes	Yes	Yes	Highest educational qualification		Highest educational qualification
<i>Work status (country-specific status)</i>	Yes	Yes	Yes	Yes	Yes	Yes		Occupational Questionnaire

WHO STEPS standard ^a	Brazil PNS	Chile ENS	Colombia ENSIN	Colombia ENS	Mexico ENSANUT	England HSE ^b	Scotland SheS ^b	USA NHANES ^b
								Section
<i>No of adults (18+) in the household</i>	Yes	Yes	Yes	Yes	Yes	Yes		No. No of adults aged 60+
<i>Average household earnings in the past year</i>	Yes	Yes	No	No	Yes (asked about income per person in the household)	Current household income		Annual family income
Behavior: Tobacco use								
Current smoking	Yes	Yes	No	Yes	Yes	Yes		Yes
Daily use	Yes	Yes	No	Yes	Yes	Yes		Yes
Age first started smoking for current smokers	Yes	Yes	No	Yes	Yes	Yes		Yes
Consumption & type of tobacco product	Yes	No (number of daily cigarettes, not other tobacco products)	No	Yes	No	Yes		Yes
Quit attempt in past 12 months	Yes	No	No	Yes	No	No		No
Advised by health worker in past 12 months to stop smoking	Yes	No	No	Yes	No	Yes		No
Former smoking	Yes	Yes	No	Yes	No	Yes		Yes

WHO STEPS standard ^a	Brazil PNS	Chile ENS	Colombia ENSIN	Colombia ENS	Mexico ENSANUT	England HSE ^b	Scotland SheS ^b	USA NHANES ^b
<i>Age of stopping smoking / time since stopped</i>	Yes	Time since stopped (<1, 1-6, 6-12, 12+ months)	No	Yes	No	Years since stopped		Time since stopped
<i>Passive smoking in the home</i>	Yes	Yes	No	No	No	Yes		Smokers in the home
<i>Passive smoking at work</i>	Illegal	Yes	No	No	No	Illegal since July 2007	Illegal since March 2006	Anyone smoked at work within last 2 weeks
<i>Smokeless tobacco use</i>	Yes	No	No	No	No	No		Yes
Behavior: Alcohol consumption								
Any consumption ever	Yes	No	No	Yes	Yes	Yes		Yes
Any consumption in past 12 months	Yes	Yes	No	No	Yes	Yes		Yes
Have you stopped drinking due to health reasons	No	No	No	No	No	Yes	No	No
Frequency in past 12 months	No	Yes	No	No	Yes	Yes		Yes
Any consumption in past 30 days	No	Yes	No	Yes	No	(past 7 days)		Current use (last 12 months)
Frequency in past 30 days	(past 7 days)	No	No	Yes	No	(past 7 days)		Days in past year

WHO STEPS standard ^a	Brazil PNS	Chile ENS	Colombia ENSIN	Colombia ENS	Mexico ENSANUT	England HSE ^b	Scotland SheS ^b	USA NHANES ^b
Average consumption on a drinking day in past 30d	No	(Av: last 12m implied)	No	Yes	No	(Average wkly consumption in past year)		(Average wkly consumption in past year)
Heaviest consumption in past 30d	Yes (Heaviest consumption in past 7 days)	(Heaviest consumption in past 12 months)	No	Yes	No	(Heaviest consumption in past 7 days)		No
Frequency of having 5+ (men) / 4+ (women) standard drinks in one occasion in past 30d: STEPS standard drink = 10g/12.7ml alcohol.	Yes	Yes	No	Yes	Yes	No		Ever
Consumption on each of past 7 days	(Heaviest consumption in past 7 days)	Yes	No	30 days	No	No of days drank alcohol in past 7 days; Consumption on highest drinking day in past 7 days; Average wkly consumption in past 12 months		No
Consumption of homebrewed alcohol, alcohol not intended for consumption	No	No	No	Homebrewed traditional alcohol included in alcohol consumption questions. (Alcohol not intended for	No	No		No

WHO STEPS standard ^a	Brazil PNS	Chile ENS	Colombia ENSIN	Colombia ENS	Mexico ENSANUT	England HSE ^b	Scotland SheS ^b	USA NHANES ^b
				consumption not included)				
<i>4 questions about problem drinking in past 12 months</i>	No	(Yes: 1 st 3 STEPS qq in AUDIT 13 qq)	No	No	No	No	No	No
Behavior: Diet								
Fruit consumption: frequency in typical wk	Yes	Yes	FFQ: frequency in a mth, a wk & a day	No	Yes	No	No	No
Servings of fruit on one day	Yes	Yes	No. FFQ response options: once, twice or three times per day	No	Yes	Detailed questioning about previous 24hrs		Two 24hr recalls
Vegetable consumption: frequency in typical wk	Yes	Yes	FFQ: frequency in a mth, a wk & a day	No	Yes	No	No	No
Servings of vegetables (not potatoes) on one day	Yes	Yes	No. FFQ response options: once, twice or three	No	Yes	Detailed questioning about previous 24hrs		Two 24hr recalls

WHO STEPS standard ^a	Brazil PNS	Chile ENS	Colombia ENSIN	Colombia ENS	Mexico ENSANUT	England HSE ^b	Scotland SheS ^b	USA NHANES ^b
			times per day					
How often add salt or a salty sauce to food when eating / when it is prepared	Question on how much salt they eat (No question on frequency)	No	The use of table salt. (No question on frequency)	No	Yes	No	No	No
How often eat processed food high in salt	No	No	No	No	(Frequency of consumption of some processed foods)	No	(FFQ for Chips, Crisps & savory snacks)	No
<i>Importance of lowering salt in their diet</i>	Yes	No	No	No	No	No	No	No
<i>Ways they may be trying to reduce the salt in their diet</i>	No	No	No	No	No	No	No	No
<i>Type of oil or fat most often used for household meal preparation</i>	No	No	No	No	Yes (consumption of different types of fats)	No	No	Yes 24-hour dietary recall
<i>Average no. of meals eaten per wk not prepared at home</i>	No	No	FFQ: meals not prepared at home.	No	Yes 24-hour dietary recall asks whether meals were eaten at home or outside	No	No	Yes 24-hour dietary recall asks whether meals were eaten at home
Behavior: Physical activity								

WHO STEPS standard ^a	Brazil PNS	Chile ENS	Colombia ENSIN	Colombia ENS	Mexico ENSANUT	England HSE ^b	Scotland SheS ^b	USA NHANES ^b
Questions based on a 'typical wk'	Last 30 days and past 7 days	GPAQ	No. Past 7 days. IPAQ: domains of leisure and transport	No	Based on the last wk)	No. Past 4 weeks		No. Past 7 days. Questions based on the GPAQ
No. of days with a) vigorous b) moderate intensity activity at work , at least 10minutes continuously; duration on typical day for each	Yes	GPAQ	No	No	Yes. They don't specified activities at work	2012: Specific but different questions (PASBAQ) 2013: IPAQ questions, less detailed	More detailed questions for each separate activity (PASBAQ)	Yes
No. of days walk or pedal cycle at least 10minutes continuously for travel; duration on typical day	Yes	GPAQ	Yes Only for transport in the last 7 days (IPAQ)	No	Yes	2012: Travel & leisure not differentiated (PASBAQ) 2013: IPAQ questions, less detailed	Travel & leisure not differentiated (PASBAQ)	Yes
No. of days with a) vigorous b) moderate intensity sports, fitness or recreational activities , at least 10minutes continuously; duration on typical day for each	Yes	GPAQ	Yes in the last 7 days(IPAQ)	(Discrete options not number of days)	Yes	2012: More detailed questions for each separate activity (PASBAQ) 2013: IPAQ questions, less detailed	More detailed questions for each separate activity (PASBAQ)	Yes
<i>Time spent being sedentary on typical day</i>	Yes	GPAQ	No. It includes	No	Yes	IPAQ (2012: More	(Screen time on average	Yes

WHO STEPS standard ^a	Brazil PNS	Chile ENS	Colombia ENSIN	Colombia ENS	Mexico ENSANUT	England HSE ^b	Scotland SheS ^b	USA NHANES ^b
			screen-time in a sub- sample of children			detailed questions for each separate activity (PASBAQ))	wkday and wkend day)	
Health: History of raised blood pressure								
Ever had BP measured by a doctor/health worker	Yes	Yes and when was the last time	No	Yes	No	No	Yes	No
Self-reported doctor/healthworker- diagnosed raised blood pressure or hypertension	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
Told in past 12 months	Yes	Ever told, once twice or more	No	Yes	Yes	No	No	No (age of first diagnosis in years)
Taken prescribe medication for hypertension in past 2 weeks	Yes	Whether taking prescribed medicine for high blood pressure now + ATC codes	No	Yes	Yes	Yes (prescribed; taken in past 7 days)	Yes	Whether taking prescribed medicine for high blood pressure now
Ever seen a traditional healer for raised blood pressure or hypertension	No	Traditional medicine and complementary recorded, not purpose	No	No	No	No	No	No
Taking herbal or	No	Herbals recorded,	No	No	Yes	No	No	No

WHO STEPS standard ^a	Brazil PNS	Chile ENS	Colombia ENSIN	Colombia ENS	Mexico ENSANUT	England HSE ^b	Scotland SheS ^b	USA NHANES ^b
traditional remedy for raised blood pressure		not their purpose						
Health: History of diabetes								
Ever had blood sugar measured by a doctor/health worker	Yes	Yes	No	Yes	No	No	No	Within the past 3 years
Self-reported doctor/healthworker-diagnosed raised blood sugar or diabetes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
Told in past 12 months	No	Age when first told	No	Yes	Yes	No	No	No (Age when first told)
Taken prescribe medication for diabetes in past 2 weeks	Yes	Whether taking now, pills or insulin + coded medicines ATC module	No	Yes	Yes	Yes (prescribed; taken in past 7 days)	Yes (prescribed; taken in past 7 days)	Whether taking insulin & diabetic pills now; list of prescribed medicines taken in past 30 days
Ever seen a traditional healer for raised blood sugar or diabetes	No	No	No	No	No	No	No	No
Taking herbal or traditional remedy for diabetes	No	Herbal medicines recorded, not their purpose	No	No	Yes	No	No	No

WHO STEPS standard ^a	Brazil PNS	Chile ENS	Colombia ENSIN	Colombia ENS	Mexico ENSANUT	England HSE ^b	Scotland SheS ^b	USA NHANES ^b
For those with Diabetes – additional questions in Pan-American Core								
At least two HbA1c measurements in past year	Yes	No	No	No	Yes	No	No	Check within the last year
Eyes examined in past 2 years	Yes	Yes (categories are <1y, 1-2y, 2-5y, never)	No	No	Yes	Yes	(could volunteer as 'other' regular care in diabetes module)	Yes
Feet examined in past year	Yes	Yes	No	No	Yes	(could volunteer as 'other' regular care in diabetes module)		Yes
Health: History of raised total cholesterol								
Ever had cholesterol levels measured by a doctor/healthworker	Yes	Yes + month/year last measured	No	Yes	Yes	Yes	Yes	Yes
Self-reported doctor/healthworker-diagnosed raised cholesterol	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
Told in past 12 months	Yes	No (Age 1 st told)	No	Yes	No	Yes	Yes	No
Taken prescribe medication for raised total cholesterol in past 2 weeks	Yes	Whether taking prescribed medication to lower blood	No	No	Yes	Yes (prescribed; taken in past 7 days)	Yes (prescribed; taken in past 7 days)	Whether taking prescribed medication to lower blood

WHO STEPS standard ^a	Brazil PNS	Chile ENS	Colombia ENSIN	Colombia ENS	Mexico ENSANUT	England HSE ^b	Scotland SheS ^b	USA NHANES ^b
		cholesterol + Actual medication use module: ATC statins codes. Number of years and months since started is recorded						cholesterol now
Ever seen a traditional healer for raised cholesterol	No	No ^d	No	No	No	No	No	No
Taking herbal or traditional remedy for raised cholesterol	No	No ^c	No	No	No	No	No	No
Health: History of cardiovascular diseases								
Ever had heart attack or angina or stroke	Yes	Yes	No	Yes	Yes	(HSE 2011)	Yes	Yes
Currently taking aspirin regularly to prevent or treat heart disease	Yes	Actual medication use module: ATC code for aspirin	No	No	No	Yes	Yes	Yes (low-dose aspirin)
Currently taking statins regularly to prevent or treat heart disease	No	Whether taking prescribed medication to lower blood cholesterol +	No	No	No	Yes	Yes	Yes

WHO STEPS standard ^a	Brazil PNS	Chile ENS	Colombia ENSIN	Colombia ENS	Mexico ENSANUT	England HSE ^b	Scotland SheS ^b	USA NHANES ^b
		Actual medication use module: ATC statins codes						
Lifestyle advice from doctor / health worker in past 3 years								
Quit using tobacco or don't start	Yes	No	No	No	Questions on all these are put with treatment recommendations for diabetes hypertension, & high cholesterol	Yes	Yes	No
Reduce salt intake	No	No	No	No		No	No	Yes (in the last 12 months)
Eat at least 5 servings of fruit and/or vegetables daily	No	No	No	No		No	No	No
Reduce fat in your diet	No	No	No	No		No	No	Yes (in the last 12 months)
Start or do more physical activity	No	Similar question for hypertension, diabetes and cholesterol on treatment with lifestyle changes	No	No		No	No	Yes (in the last 12 months)
Maintain a healthy body weight or lose weight	No	Whether a doctor has told him he is overweight	No	No		No	No	Yes (in the last 12 months)

ENS: Encuesta Nacional de Salud; ENSANUT: Encuesta Nacional de Salud y Nutrición; ENSIN: Encuesta Nacional de Situación Nutricional; FFQ: food frequency questionnaire; GPAQ: Global Physical Activity Questionnaire; HSE: Health Survey for England; IPAQ: International Physical Activity Questionnaire (short form); NHANES: National Health And Nutrition Examination Survey; PASBAQ: Physical Activity & Sedentary Behaviour Assessment Questionnaire; PNS: Pesquisa Nacional de Saúde; qq: questionnaire; SheS: Scottish Health Survey.

^a WHO STEPS Core items are in normal type; *items from the Expanded STEPS protocol are in italics*. The Pan American version of STEPS instrument 3.1 is used in this table.

^b These surveys have been run on many occasions. The methods have changed little. Results in this table are for the most recent year, as an example, except where stated.

^c There was a traditional medicine and complementary medicine use module in 2010, but not matched with a specific disease. Traditional remedies are registered by the nurse in the medication module; only those with ATC code have a code, the rest are not coded.

Web Table 4. Comparison of measurement protocols in eight national health examination surveys in the Americas and the UK

WHO STEPS standard ^a	Brazil PNS	Chile ENS	Colombia ENSIN	Colombia ENS	Mexico ENSANUT	England HSE ^b	Scotland SheS ^b	USA NHANES ^b
N/A	2013	2010	2010	2007	2012	2013	2008-2011	2011/12
Physical measurements								
Height	yes	yes	yes	yes	yes	yes	yes	yes
Conforms to STEPS protocol ^c	yes	No stadiometer, no Frankfort plane used;	yes	yes	yes	yes	yes	yes
Weight	yes	yes	yes	yes	yes	yes	yes	yes
Conforms to STEPS protocol ^d	yes	yes	yes	yes	yes	yes	yes	yes
If woman is pregnant	Excluded from measurements	Excluded from survey	yes	No	Excluded from measurements	Excluded from measurements	Excluded from measurements	Excluded from certain measurements
Waist circumference	yes	yes	yes	No	yes	yes	yes	yes
Conforms to STEPS protocol ^e	yes	2 measures included: midway and over iliac crest	yes	N/A	yes	yes	yes	yes
Hip circumference ^f	yes	No	No	No	yes	Light indoor clothing		No
No. of readings recorded	2 readings unless >3cm different	N/A	N/A	N/A	Not specified	2 readings unless >3cm different		N/A
Blood pressure measured ^g	yes	yes	No	yes	yes	yes	yes	yes

WHO STEPS standard ^a	Brazil PNS	Chile ENS	Colombia ENSIN	Colombia ENS	Mexico ENSANUT	England HSE ^b	Scotland SheS ^b	USA NHANES ^b
Sphygmomanometer	Omron HEM 907	Omron HEM 742	N/A	Omron HEM-711AC	Mercury; Omron HEM-907 XL in a 1/3 subsample	Omron HEM 907		Mercury
Rest conditions ^g	BP measured after 5minute rest	BP measured after 5minute rest; no talking during measure	N/A	BP measured after ≥5minute rest.	BP measured after 5minute rest.	No talking for 5 min before, and during; BP measured after 5minute rest.		No talking for 5 min before, and during
Other restrictions	Avoid eating, drinking alcohol, smoking 30 minutes before	Fasting (thus no eating, no drinking alcohol), empty bladder before	N/A	Avoid alcohol or exercise for 12hr, avoid coffee for 1hr before, no smoking for 30 min before; empty bladder	Avoid eating, drinking alcohol, smoking 30 minutes before	Avoid eating, drinking alcohol, smoking & physical activity 30 minutes before		Avoid eating, alcohol, coffee and cigarettes 30 minutes before
Arm used	Default: right arm	Default: left (ENS 2003 Omron 713C cuff could only be used in left position)	N/A	Not reported	Default: right arm	Default: right arm		Measurements on the right arm
Cuff size used ^f	3: 17-22cm; 22-32cm; 32-42cm	2: obese cuff used when arm >31cm	N/A	1: standard adult cuff	4: 17-22cm; 22-32cm; 32-42cm, 42-50cm	3: 17-22cm; 22-32cm; 32-42cm		4 (+ infant): 17-22cm; 22-30cm; 30-38cm; 38-48cm
3 readings recorded ^f	yes	yes	N/A	1 reading	2 readings	yes		yes
Gap between each reading ^f	1 minute	2 minutes	N/A	No	1 minute	1 minute		30 seconds

WHO STEPS standard ^a	Brazil PNS	Chile ENS	Colombia ENSIN	Colombia ENS	Mexico ENSANUT	England HSE ^b	Scotland SheS ^b	USA NHANES ^b
Medication for raised blood pressure in past 2 weeks	yes	Whether taking prescribed medication to lower blood pressure + Actual medication use module: ATC codes	No	No	yes (if they are taking any drugs to control hypertension)	yes (prescribed; taken in past 7d)		Whether taking prescribed medicine for high blood pressure now; list of prescribed medicines taken in past 30 days
Heart rate ^h	yes	yes	No	No	No	yes	yes	yes
Biochemical measurements								
Blood glucose	No: glycated hemoglobin	yes & glycated Hb (if capillary $\geq 100\text{mg/dl}$ or known diabetic)	No	yes	yes	No: glycated hemoglobin		yes & glycated Hb
Venous sample	yes	yes & capillary	No	No - capillary	yes (subsample)	yes		yes
Fasting or not (12hr)	No	yes (10-12)	N/A	yes	yes	No		yes
Insulin or other antidiabetic drugs that day	(whether taking insulin or other antidiabetic drug in past 2 weeks)	(prescribed; told to take medicines as usual)	N/A	No	In the adult health questionnaire if they are consuming any drugs or insulin or both	(prescribed; taken in past 7d)		yes
Total cholesterol	yes	yes (52%)	No	yes	yes	yes	yes	yes

WHO STEPS standard ^a	Brazil PNS	Chile ENS	Colombia ENSIN	Colombia ENS	Mexico ENSANUT	England HSE ^b	Scotland SheS ^b	USA NHANES ^b
Medication for raised cholesterol in past 2 weeks	(whether a doctor has advised the participant should take medication)	(prescribed; told to take medicines as usual)	N/A	No	(past 12 months)	(prescribed; taken in past 7d)		yes
<i>Triglycerides</i>	<i>yes</i>	<i>yes (52%)</i>	<i>No</i>	<i>yes</i>	<i>yes</i>	<i>No</i>	<i>No</i>	<i>yes</i>
<i>HDL cholesterol</i>	<i>yes</i>	<i>yes (52%)</i>	<i>No</i>	<i>yes</i>	<i>yes</i>	<i>yes</i>	<i>yes</i>	<i>yes</i>

ENS: Encuesta Nacional de Salud; ENSANUT: Encuesta Nacional de Salud y Nutrición; ENSIN: Encuesta Nacional de Situación Nutricional; HSE: Health Survey for England; NHANES: National Health And Nutrition Examination Survey. PNS: Pesquisa Nacional de Saúde; SheS: Scottish Health Survey;

^a WHO STEPS Core items are in normal type; *items from the Expanded STEPS protocol are in italics.*

^b These surveys have been run on many occasions. The methods have changed little. Results in this table are for the most recent year, as an example.

^c Height measurement: using a portable stadiometer (height measuring board) on a firm surface against a wall, with the head in the Frankfort plane for maximum height; participant without footwear or head gear, where appropriate.

^d Weight measurement: portable electronic scales on a firm, flat surface; participant without footwear

^e Waist circumference measurement: taken directly over participant's skin if possible, otherwise over light clothing; at the end of normal expiration, with arms relaxed at the side and feet together; at midpoint between lower margin of lowest palpable rib and top of the iliac crest; using a constant tension tape positioned horizontally across front and back.

^f Hip circumference measurement: taken directly over participant's skin if possible, otherwise over light clothing; with arms relaxed at the side and feet together; at the maximum circumference over the buttocks; using a constant tension tape positioned horizontally across front and back.

^g Blood pressure measurement: taken after 15 minute rest sitting quietly with legs uncrossed; 3 measurements taken, with 3minute rest between each measurement, using a digital automatic blood pressure monitor, e.g. OMRON, with an appropriate cuff on the left arm.

^h Heart rate measurement is automatically provided when blood pressure is measured.