Supplementary Material

1. STUDY METHODOLOGY–THE ICMR-INDIAB STUDY

1.1. Sample size calculation:

The sample size was calculated separately for urban and rural areas [Table 1.1], as previous studies have shown large variations in urban and rural prevalence of type 2 diabetes mellitus. Assuming a prevalence of 10% in urban areas and 4% in rural areas, allowing for margin of error of 20%, a non-response rate of 20% and level of significance of 5%, the sample size was estimated to be 1200 in urban areas and 2800 in rural areas in each of the states studied, with a total of 4,000 individuals / State.

Supplementary Table 1.1. Sample size calculation for Phase II of the ICMR- INDIAB study

Sample size calculation		Prevalence (p)	q=(1-p)	Margin of error (d) =20% of "p"	Sample Size per state (n) $n=\frac{Z^2(p)(q)}{d^2}$	Accounting for Non-responders [20%]	Approx
ICMR-INDIAB	Rural	Diabetes=0.04	0.96	0.008	$n=\frac{(1.96)^2(0.04)(0.96)}{(0.008)^2}$ $=2304.96=2305$	$n=\frac{20\times 2305}{100}=461$ $2305+461=2766$	2,800
	Urban	Diabetes=0.10	0.90	0.02%	$=\frac{(1.96)^2(0.10)(0.90)}{(0.02)^2}$ $=864.36=865$	$n=\frac{20\times 865}{100}=173$ $865+173=1038$	1,200

Formula:

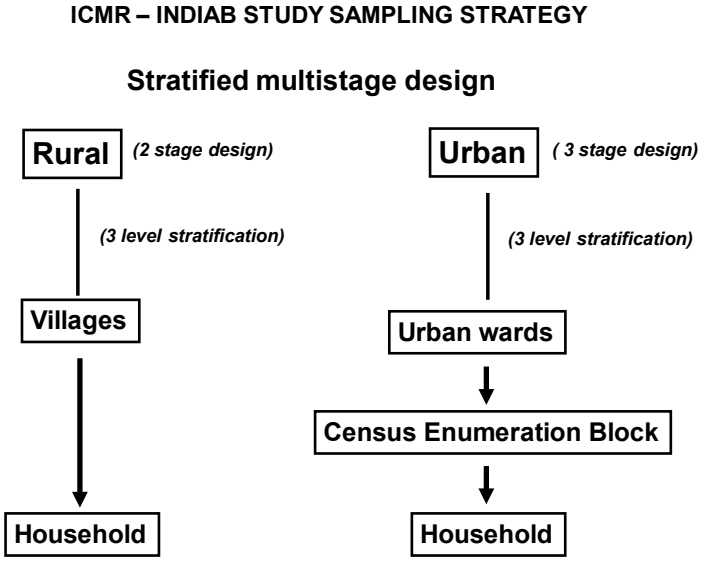
Sample size $n=\frac{Z^2(p)(q)}{d^2}$

Z=Z statistic for a level of confidence. For the level of confidence of 95%, the conventional Z value is 1.96 {2 SD}
p=prevalence or proportion of the aspect being studied in the population.
q=(1-p)
d=Margin of error of the estimated prevalence.

1.2 Sampling design:

A stratified multi-stage sampling design, [similar to the one employed in the National Family Health Survey - 3 (NFHS - 3)] was adopted for this study [Figure 1.1]. A two-stage design [Village-Household] was used in rural areas, while a three-stage design [Wards–Census Enumeration Blocks (CEBs)-Household] was adopted in urban areas. In both urban and rural areas, three-level stratification was done based on geographical distribution, population size and female literacy rate (as a surrogate of socio-economic status) so as to provide a sample of individuals that was truly representative of the population of the state under study.

The first level of stratification was based on geographic distribution with each state/UT being divided into contiguous districts. This was based on the NFHS-3 sampling methodology. The second level of stratification was based on population size to ensure that there was no bias in the study and that all villages/wards, big and small, were represented in the sample studied proportionate to their contribution to the total rural/urban population of a state. The Probability Proportional to Population size (PPS) method was used to achieve this. The third level of stratification was based on the rural/urban female literacy rate, which was used as a surrogate of socio-economic status, to ensure that the sample of villages / wards selected was truly representative of the state studied. The primary sampling units (PSUs) were villages in rural areas and Census Enumeration Blocks (CEBs) in urban areas. The ultimate stage units were households in both areas. Households were selected by systematic sampling with a random start. From each urban and rural PSU, 24 and 56 households were selected respectively. In both rural and urban areas, only one individual was selected within each household using the World Health Organization (WHO) 'Kish method' [STEP wise approach to surveillance (STEPS) World Health Organization (WHO) *http://www.who.int/chp/steps/en/*].



Supplementary Fig. 1.1. ICMR-INDIAB Sampling strategy. *Source*: Anjana RM, Pradeepa R, Deepa M, et al. The Indian Council of Medical Research-India Diabetes (ICMR–INDIAB) study: methodological details. J Diabetes Sci Technol. 2011; 5: 906–14

1.3. Example of sample selection in rural areas:

In rural areas, the 2001 Census list of villages served as the sampling frame. To ensure that the villages included in the study were representative of the rural population of the state under study, three levels of stratification were used in each state. The first level of stratification was geographic, with the state being divided into contiguous regions. This stratification was adopted from NFHS-3. Table 1.2 shows the stratification of regions for Tamil Nadu state.

Supplementary Table 1.2. Stratification I–Regions and districts in Tamil Nadu (Based on the NFHS-3 methodology)

Regions	Districts
1	Coimbatore, Dindigul, Madurai, Theni, Erode, Nilgiri
2	Vellore, Dharmapuri, Krishnagiri, Thiruvannamalai, Salem, Namakkal, Tiruchirappalli, Karur, Perambalur, Ariyalur
3	Kanniyakumari
4	Kanchipuram, Tiruvallur, Cuddalore, Villupuram, Thanjavur, Nagappattinam, Tiruvarur, Chennai
5	Pudukkottai, Sivaganga, Virudhunagar, Ramanathapuram, Thootukudi, Tirunelveli

The second level of stratification was based on the village population size [Table 1.3]. This variable was included to ensure that there was no bias in the study & that all villages, big and small, were represented in the sample studied proportionate to their contribution to the total rural population. Arbitrary cut offs were chosen as shown in Table S3.

Supplementary Table 1.3. Stratification II–Based on the Village population size

Stratification II (Village population size)
<1000
1000–3000
>3000

The third and final level of stratification was done based on female literacy rate [Table 1.4]. This variable was chosen as a crude predictor of the socio-economic status of the state. The female literacy rate for each state will be studied, and then median cut offs will be made to ensure equal and even stratification.

Supplementary Table 1.4. Stratification III–Based on the Female literacy rate
Stratification III (Female literacy)
Below Median
Above Median

All the variables used for stratification have been used in NFHS-3 design as well. For purpose of simplicity, we have chosen only 1 state (Tamil Nadu), to illustrate the details of the methodology used in the study.

After the first level of stratification, Tamil Nadu state was divided into five regions (as shown in Table 1.2). Table 1.5 shows the rural population in each region of Tamil Nadu and the number of villages in each of these regions. Thus in Tamil Nadu, the number of villages in each region was calculated as shown in Table 1.5.

Supplementary Table 1.5. Region wise selection of number of villages in the State

Region	Rural population (a)	No. of villages	Villages selected for the present study #
1	60,32,618	1844	9
2	1,18,64,028	4775	17
3	5,82,107	69	3
4	1,02,20,031	5705	15
5	62,22,897	3007	9
Total	3,49,21,681 (b)	15400	53

No. of villages to be selected for the study=100 per state
a / b x Total no. of villages to be selected per state (i.e n=100)

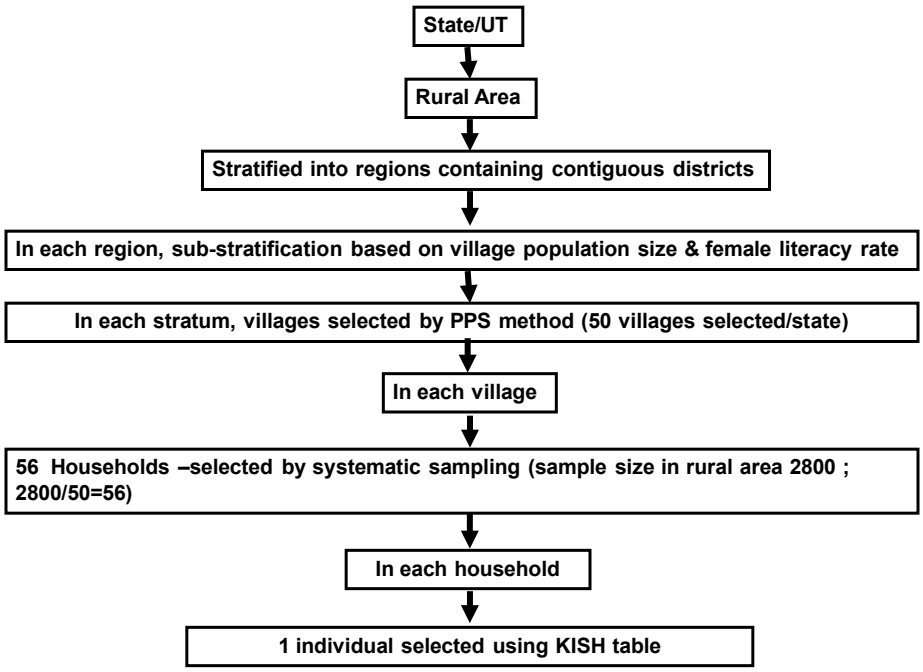
Table 1.6 shows stratification II and III done for Region 1 in rural Tamil Nadu for selecting the nine villages. Table 1.7 shows the list of villages selected in region 1 along with their district codes. Figure 1.2 shows the sampling framework in rural areas.

Supplementary Table 1.6. Stratification II and III for Region 1 in rural Tamil Nadu

Population size <1000					
Female literacy rate	Population	No. of villages	% total population	% of villages	No. of villages to be selected
<46.95	108149	206	1.79	0.16	1
≥46.95	86183	161	1.43	0.13	1
Population size 1000–3000					
<46.95	876122	461	14.52	1.30	1
≥46.95	482504	256	8.0	0.72	1
Population size >3000					
<46.95	2031918	382	33.68	2.03	2
≥46.95	2447742	378	40.58	3.45	3
Total					9

Supplementary Table 1.7. Number of villages selected for the study (Region 1)

Population Size (n)	Female Literacy (%)	Total population	No. of villages	No. of villages selected	Village name	District code	Sub-district Code
<1000	< 46.95	108149	206	1	Sirupattii	24	0004
	≥ 46.95	86183	161	1	Idayanathan	24	0006
1000–3000	<46.95	876122	461	1	Sengattampatti	13	0007
	≥ 46.95	482504	256	1	Sellappampalayam	12	0008
>3000	< 46.95	2031918	382	2	Kadamalaikundu	25	0005
					Thullukkuttinayakkanur	24	0005
	≥ 46.95	2447742	378	3	Cherangode	11	0001
					T. Meenakshipuram	25	0004
					Kandiankoil	12	0003



Supplementary Fig. 1.2. ICMR-INDIAB sampling framework in rural areas. *Source*: Ref 13.

1.4 Example of sample selection in urban areas:

For stratification I, the Tamil Nadu state was divided into regions similar to the rural areas as shown in Table 1.2. In the next level of stratification, all urban towns in the given region were stratified accordingly to population size. Table 1.8 shows the second level of stratification used for urban areas.

Supplementary Table 1.8. Stratification II–Based on the town population size

Stratification III (Town population size)
<20,000
20,000–1,00,000
>1,00,000

The third level of stratification was done using female literacy rate. Just as in the rural areas, median of literacy was used for the stratification. Table 1.9 shows stratification III in urban areas.

Supplementary Table 1.9. Stratification III–Based on the Female literacy rate

Stratification III (Female literacy)
Below Median
Above Median

Table 1.10 shows the region-wise selection of wards in urban Tamil Nadu. Just as for villages in rural areas, it was decided to study 50 wards in each state.

Supplementary Table 1.10. Region wise selection of number of wards in Tamil Nadu State

Region	Urban population (a)	No. of wards	Wards selected for the present study #
1	7178044	4095	13
2	5708744	3482	11
3	1093927	1029	2
4	9876057	3295	18
5	3627226	2382	8
Total	27483998 (b)	14283	52

No. of wards to be selected for the study=50 per state
a / b x Total no. of wards to be selected per state (*i.e.,* n=50)

Table 1.11 shows stratification II and III done in urban Tamil Nadu and Table 1.12 shows the list of wards that were selected in region 1. Figure 1.3 shows the sampling framework in urban areas.

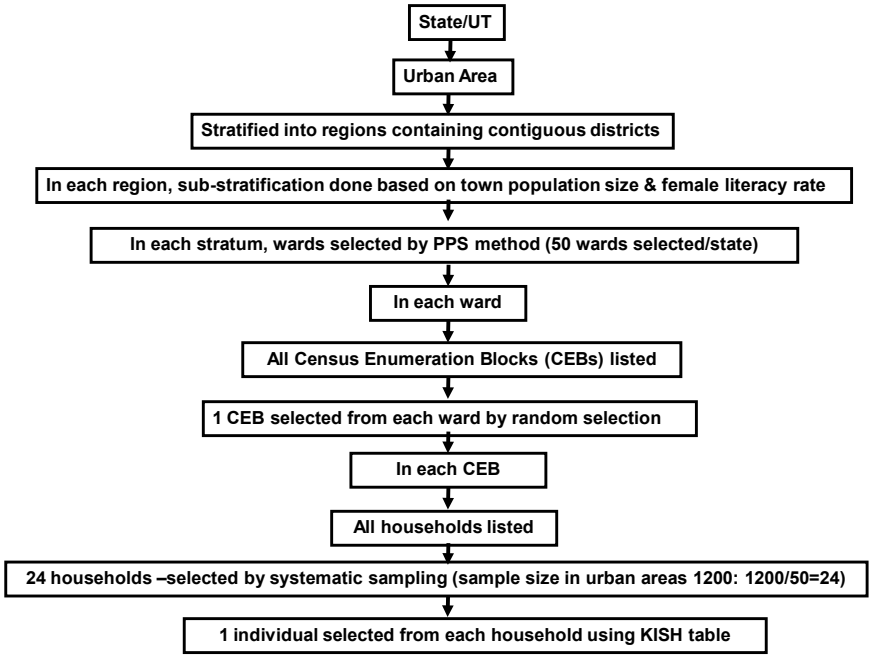
Supplementary Table 1.11. Stratification II and III for region I in urban Tamil Nadu

Female literacy rate	Population	No. of Towns	No. of wards	% of wards	No. of wards to be selected
			Population size <20,000		
< 65.31	16937	30	0.24	0.03	1
≥ 65.31	0	0	0	0	0
			Population size 20,000 -1,00,000		
< 65.31	782355	656	10.90	1.42	1
≥ 65.31	160543	126	2.24	0.29	1
			Population size >1,00,000		
< 65.31	2659331	1991	37.05	4.41	4
≥ 65.31	3558878	1292	49.58	6.44	6
			Total		13

Total no of wards selected in region 1=13

Supplementary Table 1.12. List of wards selected for the study (Region 1)

Population Size (n)	Female Literacy (%)	Total population	No. of towns	No. of wards selected	Town (Ward No)	District code	Sub-district code
<20,000	< 65.31	16937	30	1	Andipalayam (CT) - Ward No.2	12	0003
	≥ 65.31	0	0	1	-	12	0005
20,000 – 1,00,000	< 65.31	782355	656	1	O' Valley (TP) - Ward No.7	11	0002
	≥ 65.31	160543	126	4	Theni Allinagaram (M) - Ward No.27	25	0003
					Theni Allinagaram (M) - Ward No.23	25	0003
					Kotagiri (TP) - Ward No.7	11	0004
					Periyanaicken-palayam (TP) - Ward No.13	12	0005
>1,00,000	< 65.31	2659331	1991	0	-	-	-
	≥ 65.31	3558878	1292	6	Coimbatore (M.Corp.)- Ward No.54	12	0006
					Coimbatore (M.Corp. - Ward No.19	12	0006
					Coimbatore (M.Corp.)- Ward No.53	12	0006
					Madurai (M Corp.) - Ward No.25	24	0007
					Coimbatore (M.Corp.)- Ward No.32	12	0006
					Erode (M) - Ward No.19	10	0005



Supplementary Fig. 1.3. ICMR-INDIAB sampling framework in urban areas. *Source*: Ref 13.

1.5 Weightage Analysis

i) Estimation procedure adopted to arrive at the weights: Weights: Weighting was done for urban and rural areas separately for each state.

The development of weights for the ICMR-INDIAB study involved three steps:

Step 1 - The base weight or design weight, or the ratio of probability of selection to probability of selection in the domain.

$$Base\ weight, BW = \frac{Probability\ of\ selection}{probability\ of\ selection\ in\ the\ Domain}$$

Step 2 - An adjustment for non-response of individuals eligible for the survey. Non-response adjustment is done at the individual level. In each state/UT household level non-response is considered separately in urban and rural areas.

$$\text{Adjusted Base Weight, ABW} = \frac{BW}{RR}$$

Where:

$$Response\ rate.\ RR = \frac{Total\ number\ of\ responders}{Total\ sample\ size}$$

Step 3–After adjustment for nonresponse, the weights are normalised so that the total number of weighted cases is equal to the total number of unweighted cases. This is done by multiplying the final weight by the number of responders.

Normalisation of weight is done using the following formulae

$$\text{Normalised weight, NW} = ABW * Number\ of\ responder$$

Then, developing weights pooling across urban and rural

$$Weight\ (Urban) = ABW\ (Urban) * \frac{Total\ number\ of\ responders}{Overall\ Normalized\ weight}$$

$$Weight\ (Rural) = ABW\ (Rural) * \frac{Total\ number\ of\ responders}{Overall\ Normalized\ weight}$$

Ultimately, the final weight (W) for an individual respondent was computed as the product of the normalised weights (separately in each geographical region within rural/urban area) and domain weight (urban and rural separately). The final weights were used in all analyses to produce estimates of population parameters. An example for weight calculation for the state of Tamil Nadu is provided in Tables 1.13-1.15.

Supplementary Table 1.13. Example of weight calculation used for Tamil Nadu state (as an example)

Tamil Nadu State (A)	Details (B)	Urban (C)	Rural (D)	Total (E)	Cell number 1
					2
Population	Total Population	27,483,998	34,921,681	62,405,679	3
Sample size	Total Sample size	1,248	2,968	4,216	4
Probability of selection (fi)	C4 / C3 (for urban) D4 / D3 (for rural)	0.00005	0.00008	0.0000676	5
Number screened		1,076	2,588	3,664	6
Response Rate (RR)	C6 / C4 (for urban) D6 / D4 (for rural)	0.86217	0.87196	0.86907	7
Design Weight (Ratio of Probability of selection and probability of selection in the Domain)	E5/ C5 (for urban) E5 / D5 (for rural)	1.48779	0.79489		8
Weight adjusted for Response Rate (Design Weight/ RR)	C8 / C7 (for urban) D8 / D7 (for rural)	1.7256	0.91		9
Normalisation of weight	C9 * C6 (for urban) D9 * D6 (for rural)	1856.76268	2359.23732	4216	10
Final Weight	C9 * (E6/(C10 +D10)) (for urban) D9 * (E6/(D10 +C10)) (for rural)	1.49968	0.79224	0.86907	11
Weighted Number of cases	C6 * C11 (for urban) D6 * D11 (for rural)	1613.65713	2050.34287	3664	12

Supplementary Table 1.14. Example of weight calculation used for Tamil Nadu state–Rural (as an example)

Rural Tamil Nadu	Region 1	Region 2	Region 3	Region 4	Region 5	Total
Population	6,032,618	11,864,028	582,107	10,220,031	6,222,897	34,921,681
Sample	504	952	168	784	560	2,968
Actual tests	448	824	149	716	451	2,588
Response Rate	0.88888	0.86554	0.88690	0.91326	0.80535	0.87196
Probability of selection	0.000083	0.000080	0.00028	0.000076	0.000089	0.000084
Design weight	1.01728	1.05916	0.29448	1.10791	0.94443	
Weight adjusted for response rate	1.14444	1.22369	0.33203	1.21313	1.17269	
Number of cases	512.71	1008.33	49.47	868.60	528.89	2968.00
Normalised weight	0.99792	1.06702	0.28952	1.05781	1.02255	
Number of cases	447.06941	879.22756	43.13918	757.39309	461.17073	2588.00
	0.79224	0.79224	0.79224	0.79224	0.79224	
Final Weights	0.79060	0.84534	0.22937	0.83805	0.81011	

Supplementary Table 1.15. Example of weight calculation used for Tamil Nadu state–Urban (as an example)

Urban-Tamil Nadu	Region 1	Region 2	Region 3	Region 4	Region 5	Total
Population	7,178,044	5,708,744	1,093,927	9,876,057	3,627,226	27,483,998
Sample	312	264	48	432	192	1,248
Actual tests	266	222	42	383	163	1,076
Response Rate	0.85256	0.84090	0.87500	0.88657	0.84895	0.86217
Probability of selection	0.000043	0.000046	0.000043	0.000043	0.000052	0.000045
Design weight	1.04468	0.98190	1.03486	1.03808	0.85784	1
Weight adjusted for response rate	1.22534	1.16767	1.18269	1.17089	1.01046	
Number of cases	325.94	259.22	49.67	448.45	164.71	1248.00
Normalised weight	1.05646	1.00674	1.01969	1.00955	0.87120	
Number of cases	281.02080	223.49763	42.82730	386.64816	142.00609	1076.00
	1.49968	1.49968	1.49968	1.49968	1.49968	
Final weights	1.58436	1.50979	1.52922	1.51396	1.30652	

Note: Similar weighting was done for all the 31 states/UT of India

ii) Estimation procedure adopted to arrive at the weights using NFHS household data: In order to estimate the current prevalence of cardiometabolic risk factors in each state, we re-weighted subgroup specific estimates according to the 2019 population using information from the National Family Health Household Survey-5 (NFHS-5). Study weights were computed for subgroups defined by region, sex and age (10-year intervals) following the complex survey design. Study weights assigned to each subgroup based on the NFHS-5 household dataset were multiplied by the prevalence of the respective subgroup. The prevalence of each of the cardiometabolic risk factors in the specific state was calculated by adding the weighted prevalence of all subgroups.

The NFHS-5 data was used to achieve the current prevalence in three steps.

Step-1 (Using NFHS-5 dataset):

As a first step, we filtered the data by individuals age greater than or equal to 20 years. To sub-group the data, we grouped the age into 7 by 10-year intervals. The weighted frequency for each sub-group (region x Sex x Age-group) was calculated using the survey freq technique using stratum as sample stratum, cluster as primary sampling unit, and weight as household sampling weight for each state. The weight is calculated by dividing the weighted frequency for each subgroup by the total weighted frequency as shown in the supplementary table.

Step 2 (Using ICMR-INDIAB):

The weighted prevalence of cardio-metabolic risk factors were calculated for the same sub-group (region x Sex x Age-group) in ICMR-INDIAB-dataset (as mentioned in page 8).

Step 3 (Using both NFHS-5 and ICMR-INDIAB):

In the final step, the re-weighted prevalence for each sub-group was achieved by multiplying the prevalence from the ICMR-INDIAB dataset with the weight in NFHS-5 for each sub-group. Finally, the prevalence was calculated by adding the weighted prevalence of all sub-group. An example for weight calculation using NFHS household data for the state of Himachal Pradesh is provided in Tables 1.16 and 1.17.

Supplementary Table 1.16. Example of weights calculation using NFHS household data for Himachal Pradesh State

State	Region	Sex	Age Grp	Weighted frequency (A)	Sum of Weighted Frequency (B)	Weight C=(A/B)
Himachal Pradesh	Urban	Male	20-29	348.5	38863.4	0.90
Himachal Pradesh	Urban	Male	30-39	720.2	38863.4	1.85
Himachal Pradesh	Urban	Male	40-49	1189.7	38863.4	3.06
Himachal Pradesh	Urban	Male	50-59	1030.6	38863.4	2.65
Himachal Pradesh	Urban	Male	60-69	676.7	38863.4	1.74
Himachal Pradesh	Urban	Male	70-79	290.8	38863.4	0.75
Himachal Pradesh	Urban	Male	80	107.2	38863.4	0.28
Himachal Pradesh	Urban	Female	20-29	104.6	38863.4	0.27
Himachal Pradesh	Urban	Female	30-39	241.6	38863.4	0.62
Himachal Pradesh	Urban	Female	40-49	209.9	38863.4	0.54
Himachal Pradesh	Urban	Female	50-59	210.9	38863.4	0.54
Himachal Pradesh	Urban	Female	60-69	214.0	38863.4	0.55
Himachal Pradesh	Urban	Female	70-79	148.6	38863.4	0.38
Himachal Pradesh	Urban	Female	80	90.9	38863.4	0.23
Himachal Pradesh	Rural	Male	20-29	917.4	38863.4	2.36
Himachal Pradesh	Rural	Male	30-39	3461.9	38863.4	8.91
Himachal Pradesh	Rural	Male	40-49	5952.5	38863.4	15.32
Himachal Pradesh	Rural	Male	50-59	6678.2	38863.4	17.18
Himachal Pradesh	Rural	Male	60-69	5229.7	38863.4	13.46
Himachal Pradesh	Rural	Male	70-79	2459.7	38863.4	6.33
Himachal Pradesh	Rural	Male	80	1037.3	38863.4	2.67
Himachal Pradesh	Rural	Female	20-29	260.0	38863.4	0.67
Himachal Pradesh	Rural	Female	30-39	856.8	38863.4	2.20
Himachal Pradesh	Rural	Female	40-49	1548.6	38863.4	3.98
Himachal Pradesh	Rural	Female	50-59	1629.3	38863.4	4.19
Himachal Pradesh	Rural	Female	60-69	1507.3	38863.4	3.88
Himachal Pradesh	Rural	Female	70-79	1081.0	38863.4	2.78
Himachal Pradesh	Rural	Female	80	659.5	38863.4	1.70
				38863.4		100.00

Supplementary Table 1.17. Example of weights calculation using ICMR-INDIAB data for Himachal Pradesh State

State	Region	Sex	Age group	Prevalence of Diabetes (D)	Weighted prevalence of diabetes E=(D*C)
Himachal Pradesh	Urban	Male	20-29	1.32	0.01
Himachal Pradesh	Urban	Male	30-39	5.07	0.09
Himachal Pradesh	Urban	Male	40-49	17.44	0.53
Himachal Pradesh	Urban	Male	50-59	23.54	0.62
Himachal Pradesh	Urban	Male	60-69	34.07	0.59
Himachal Pradesh	Urban	Male	70-79	33.96	0.25
Himachal Pradesh	Urban	Male	80+	8.73	0.02
Himachal Pradesh	Urban	Female	20-29	.	
Himachal Pradesh	Urban	Female	30-39	6.42	0.04
Himachal Pradesh	Urban	Female	40-49	5.63	0.03
Himachal Pradesh	Urban	Female	50-59	25.77	0.14
Himachal Pradesh	Urban	Female	60-69	24.49	0.13
Himachal Pradesh	Urban	Female	70-79	30.77	0.12
Himachal Pradesh	Urban	Female	80+	29.48	0.07
Himachal Pradesh	Rural	Male	20-29	1.11	0.03
Himachal Pradesh	Rural	Male	30-39	3.24	0.29
Himachal Pradesh	Rural	Male	40-49	9.07	1.39
Himachal Pradesh	Rural	Male	50-59	18.32	3.15
Himachal Pradesh	Rural	Male	60-69	21.38	2.88
Himachal Pradesh	Rural	Male	70-79	17.32	1.10
Himachal Pradesh	Rural	Male	80+	7.28	0.19
Himachal Pradesh	Rural	Female	20-29	1.14	0.01
Himachal Pradesh	Rural	Female	30-39	2.13	0.05
Himachal Pradesh	Rural	Female	40-49	12.71	0.51
Himachal Pradesh	Rural	Female	50-59	20.03	0.84
Himachal Pradesh	Rural	Female	60-69	23.59	0.91
Himachal Pradesh	Rural	Female	70-79	18.24	0.51
Himachal Pradesh	Rural	Female	80+	8.51	0.14
					14.66

2. SENSITIVITY ANALYSIS DEFINITIONS

2.1 New AS 2021 CKD Epidemiology Collaboration (CKD-EPI) equation (Ref 16):

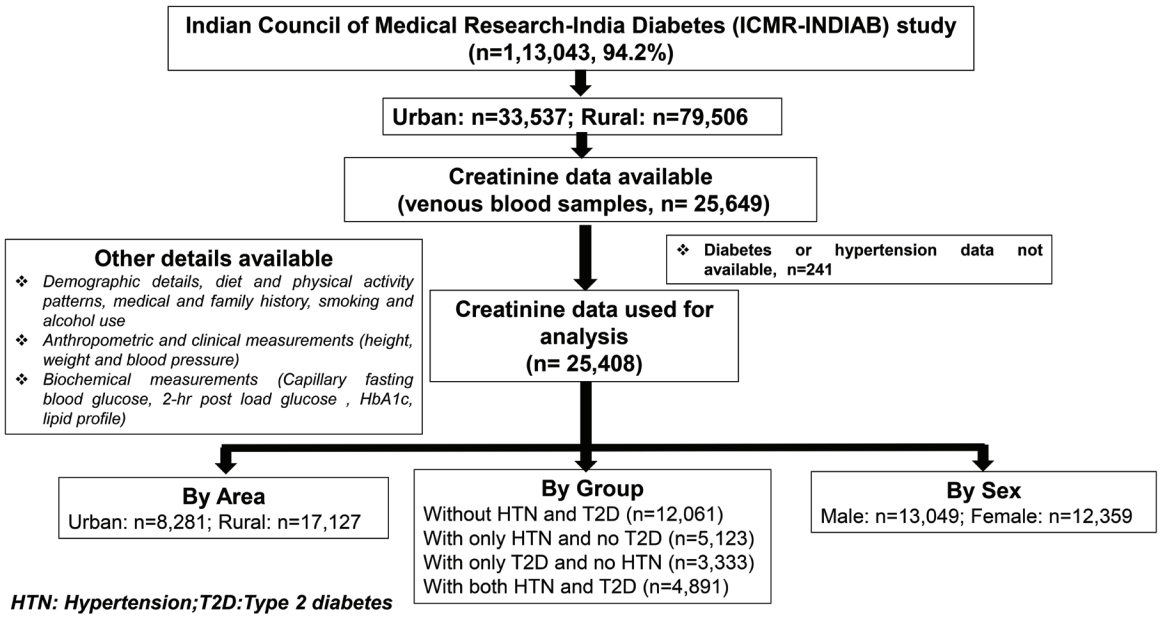
eGFR=142 × min (SCr/κ,1)α × max (SCr/κ,1)-1.200 × 0.9938Age × 1.012 [if female] where SCr is standardised serum creatinine (in mg/dL), k is 0.7 for females and 0.9 for males, α is −0.241 for females and −0.302 for males, min is the minimum of S_{cr}/k or 1, and max is the maximum of S_{cr}/k or 1 and age is participant's age (in years).

2.2 European Kidney Function Consortium (EKFC) creatinine-based equation (Ref 17):

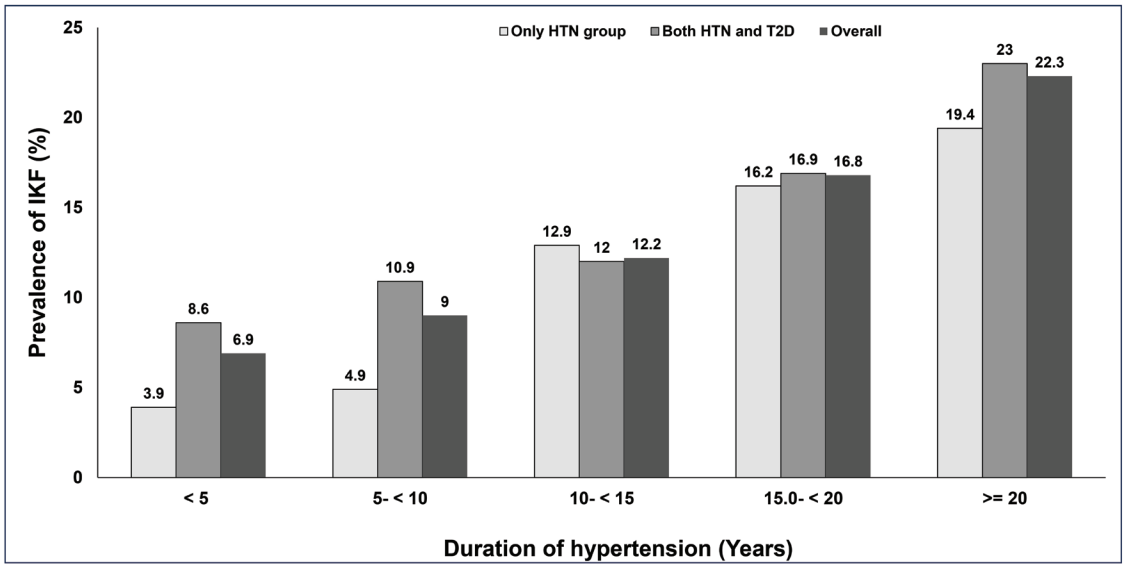
Age	Sex		eGFR-Equation
≥ 18	Women	SCr ≤ 0.70	$143 \times (SCr/0.70)^{-0.241} \times 0.9938^{Age}$
		SCr> 0.70	$143 \times (SCr/0.70)^{-1.200} \times 0.9938^{Age}$
	Men	SCr ≤ 0.90	$142 \times (SCr/0.90)^{-0.302} \times 0.9938^{Age}$
		SCr> 0.90	$142 \times (SCr/0.90)^{-1.200} \times 0.9938^{Age}$
18 - 40	Women	SCr/Q < 1.0	$107.3 \times (SCr/Q)^{-0.322}$
		SCr/Q ≥ 1.0	$107.3 \times (SCr/Q)^{-1.132}$
	Men	SCr/Q < 1.0	$107.3 \times (SCr/Q)^{-0.322}$
		SCr/Q ≥ 1.0	$107.3 \times (SCr/Q)^{-1.132}$
> 40	Women	SCr/Q < 1.0	$107.3 \times (SCr/Q)^{-0.322} \times 0.990^{(Age-40)}$
		SCr/Q ≥ 1.0	$107.3 \times (SCr/Q)^{-1.132} \times 0.990^{(Age-40)}$
	Men	SCr/Q < 1.0	$107.3 \times (SCr/Q)^{-0.322} \times 0.990^{(Age-40)}$
		SCr/Q ≥ 1.0	$107.3 \times (SCr/Q)^{-1.132} \times 0.990^{(Age-40)}$

Q-values were 0.93 mg/dL and 0.73 mg/dL (n=98,720) in men and women in the EKFC equation totally race-free

3. ADDITIONAL ANALYSIS

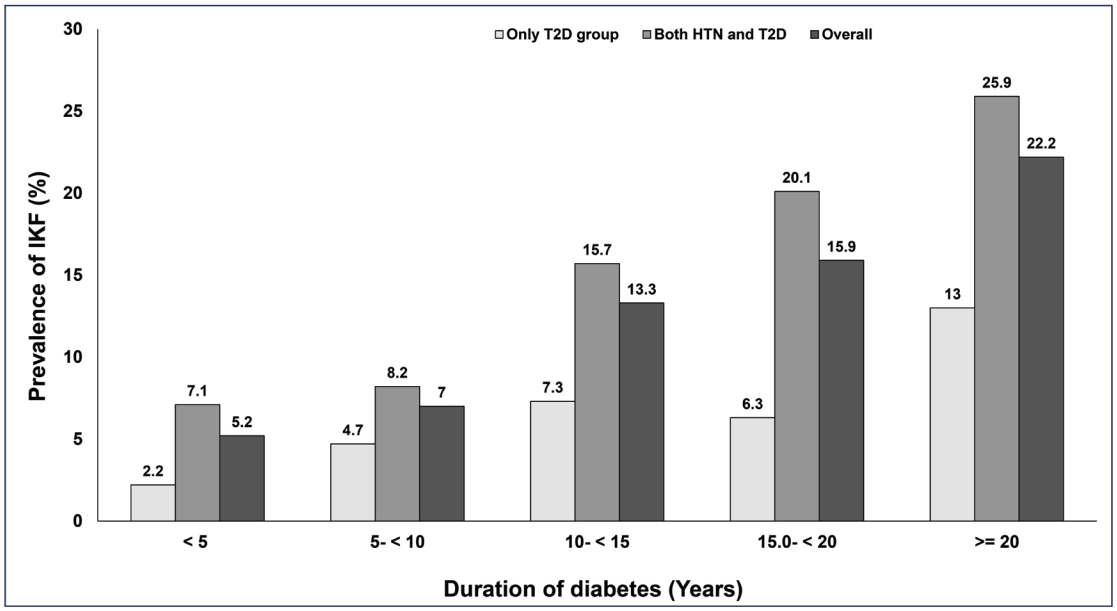


Supplementary Fig. 3.1. Flow chart of study methodology.



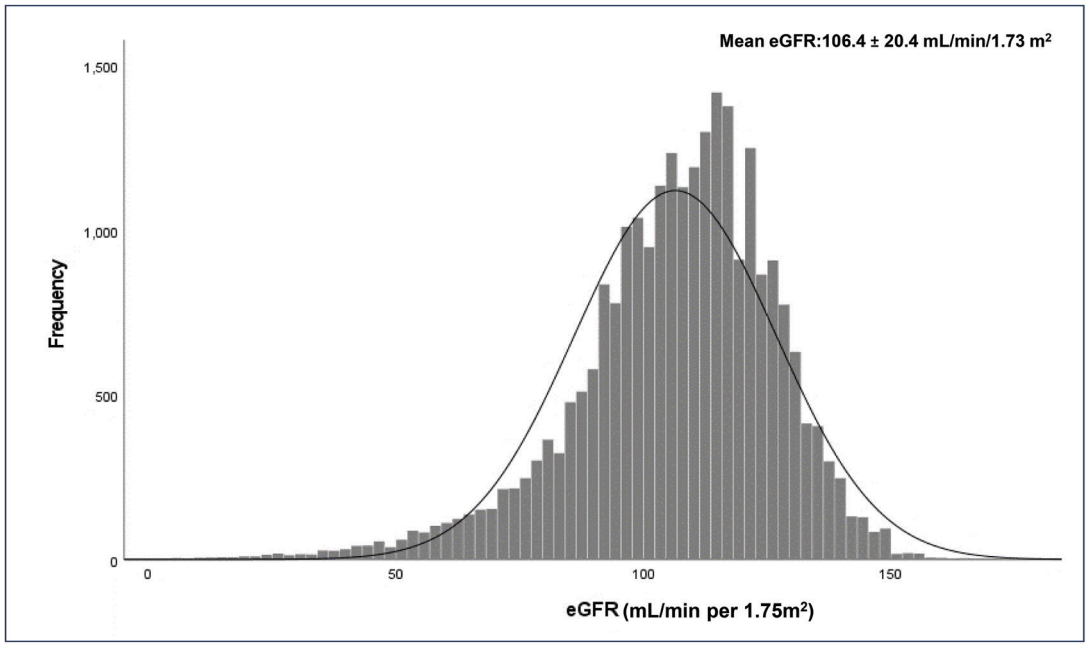
p for trend <0.001 in all groups

Supplementary Fig. 3.2. Prevalence of impaired kidney function among individuals with self-reported hypertension in relation to duration of hypertension.

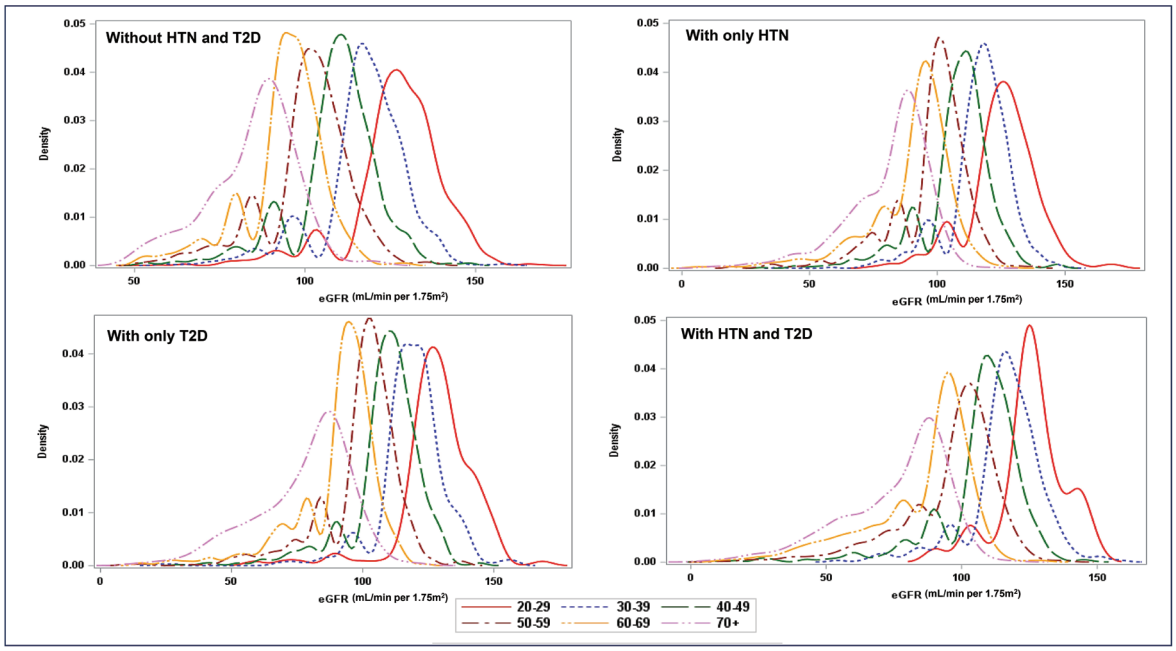


p for trend <0.001 in all groups

Supplementary Fig. 3.3. Prevalence of impaired kidney function among individuals with self-reported diabetes in relation to duration of diabetes.



Supplementary Fig. 3.4. Distribution of eGFR in the study population.



Supplementary Fig. 3.5. Density plot for eGFR by different age groups among the study groups.

Supplementary Table 3.1. Clinical and biochemical characteristics of the study population

	Individuals without hypertension or diabetes (n=12061)	Individuals with only hypertension (n=5123)	Individuals with only diabetes (n=3333)	Individuals with both hypertension and diabetes (n=4891)
Age (yr)	38.9 (13.1)	48.4 (14.5)	50.1 (12.8)	55.8 (12.0)
Male (%)	50.6 (49.5 - 51.6)	43.1 (41.6 - 44.6)	49.9 (47.8 - 52.0)	51.0 (49.3 - 52.7)
Rural (%)	70.4 (69.2 - 71.6)	67.3 (65.4 - 69.1)	58.1 (55.8 - 60.5)	55.1 (53.0 - 57.3)
Height (cm)	158.1 (8.9)	158.2 (9.3)	157.9 (9.5)	157.6 (9.2)
Weight (Kgs)	55.3 (11.5)	59.5 (13.0)	61.7 (12.7)	64.7 (12.9)
BMI (Kg/m^2)	22.1 (4.1)	23.7 (4.4)	24.8 (4.7)	26.1 (5.0)
Waist circumference (cm)	78.7 (11.1)	84.4 (13.1)	87.9 (14.1)	92.1 (11.7)
Male	79.7 (10.6)	85.5 (13.4)	88.3 (12.2)	92.8 (11.3)
Female	77.7 (11.5)	83.0 (12.6)	87.5 (15.7)	91.4 (12.1)
Generalised Obesity (%)	20.9 (20.0 - 21.8)	34.8 (33.2 - 36.4)	44.8 (42.7 - 46.9)	54.7 (52.8 - 56.6)
Abdominal Obesity (%)	29.1 (28.0 - 30.1)	44.9 (43.2 - 46.7)	58.4 (56.3 - 60.5)	72.9 (71.2 - 74.5)
Systolic blood pressure (mm/Hg)	120 (11.0)	147 (18.5)	122 (11.5)	150 (20.2)
Diastolic blood pressure (mm/Hg)	76.5 (8.0)	91.1 (11.0)	77.9 (7.8)	89.4 (11.8)
Current alcohol use (%)	13.7 (12.9 - 14.5)	20.0 (18.6 - 21.4)	11.4 (10.0 - 12.7)	13.9 (12.6 - 15.1)
Current smoking (%)	16.0 (15.2 - 16.9)	15.5 (14.4 - 16.7)	12.1 (10.8 - 13.4)	10.3 (9.2 - 11.4)
Smoking tobacco products used n (%)				
Bidis	59.3 (56.6 - 62.1)	62.4 (58.3 - 66.5)	61.6 (56.3 - 66.9)	54.8 (48.8 - 60.8)
Manufactured cigarettes	29.2 (26.8 - 31.7)	33.0 (29.0 - 37.0)	32.6 (27.5 - 37.7)	41.4 (35.4 - 47.5)
Hand-rolled cigarettes	9.7 (8.1 - 11.4)	5.3 (3.6- 7.0)	2.7 (1.1- 4.3)	2.1 (0.9- 3.3)
Pipe full of tobacco	1.3 (0.7- 1.8)	0.7 (0.1- 1.3)	1.8 (0.5- 3.0)	1.4 (0.2- 2.5)

Contd...

	Individuals without hypertension or diabetes (n=12061)	Individuals with only hypertension (n=5123)	Individuals with only diabetes (n=3333)	Individuals with both hypertension and diabetes (n=4891)
Cigars, cheroots, cigarillos	1.5 (0.8- 2.2)	1.4 (0.5- 2.3)	2.5 (0.9- 4.0)	2.7 (1.2- 4.1)
Hookah	4.5 (3.2- 5.8)	2.0 (0.7- 3.3)	4.6 (2.6- 6.5)	2.9 (1.5- 4.4)
Others	5.6 (4.4- 6.7)	3.3 (2.1- 4.6)	2.3 (0.9- 3.7)	2.4 (1.1- 3.7)
Self-reported diabetes (%)	-	-	48.8	61.2
Duration of diabetes (years)	-	-	6.2±5.8	7.2±6.4
Self-reported hypertension (%)	-	28.5	-	54
Duration of hypertension (years)[#]	-	2.0 (0.9 - 4.7)	-	3.9 (1 - 7.9)
Fasting capillary glucose (mg/dl)	94.0 (12.0)	96.8 (12.1)	172 (70.6)	170 (66.6)
2 hour post capillary glucose (mg/dl)	114 (22.8)	120 (25.3)	203 (51.0)	218 (44.1)
Glycated haemoglobin [HbA1c] (%) [mmol/mol]	5.3 (0.7) [34]	5.4 (0.7) [36]	7.5 (2.2) [58]	7.6 (2.0) [60]
Serum cholesterol (mg/dl)	163 (40.6)	177 (42.6)	181 (46.4)	190 (48.0)
Serum triglycerides (mg/dl)[#]	104.1 (75.7 - 147.6)	126.3 (90.1 - 179.8)	145.9 (100.7 - 212)	152.8 (108.7 - 228.4)
High density lipoprotein-cholesterol(mg/dl)	40.9 (11.0)	41.7 (11.1)	38.9 (10.5)	39.4 (10.5)
Male	39.4 (11.2)	40.9 (12.3)	37.2 (10.3)	38.1 (10.6)
Female	42.4 (10.5)	42.7 (10.5)	40.7 (10.5)	40.6 (10.5)
Low density lipoprotein-cholesterol(mg/dl)	96.3 (35.4)	105 (37.2)	107 (39.3)	112 (41.3)
Creatinine (mg/dl)	0.71 (0.23)	0.76 (0.29)	0.74 (0.30)	0.81 (0.38)
eGFR (ml/min/1.73 m^2)	113.7 (17.1)	103.5 (19.1)	103.1 (19.6)	94.3 (21.2)

Data are mean (SD) or percentage (95% CI).[#] Median (interquartile range)

Supplementary Table 3.2. Weighted prevalence of impaired kidney function in the study population

	New AS CKD-EPI 2021 equation (race free)			EKFC equation (race free)		
	Unweighted n	Weighted prevalence (%)	95% Confidence Interval	Unweighted n	Weighted prevalence (%)	95% Confidence Interval
Overall	701	2.7	2.4-2.9	862	3.3	3.0-3.5
Area wise						
Urban	249	2.7	2.3-3.1	305	3.3	2.8-3.8
Rural	452	2.7	2.4-2.9	557	3.2	2.9-3.5
Sex wise						
Females	274	2.1	1.8-2.3	349	2.6	2.3-2.9
Males	427	3.2**	2.9-3.6	513	3.9*	3.5-4.3
Group wise						
Individuals without hypertension/diabetes	125	1.0	0.8-1.2	144	1.1	0.9-1.3
Individuals with hypertension	123	2.3**	1.9-2.8	157	3.0	2.4-3.5
Individuals with diabetes	104	3.2**	2.6-3.9	129	4.0	3.3-4.8
Individuals with diabetes and hypertension	349	6.7**	5.9-7.5	432	8.3	7.4-9.2

*P**<0.05, ***<0.001 compared to individuals without hypertension/diabetes; CKD-EPI -CKD Epidemiology Collaboration; EKFC-European Kidney Function Consortium

Supplementary Table 3.3. Change in eGFR for every year/ decade increase in age among individuals with self-reported hypertension and/ or diabetes

	Urban	Rural	Male	Female	Overall
	β (95% CI)	β (95% CI)	β (95% CI)	β (95% CI)	β (95% CI)
Change in eGFR with yearly increase in age					
Overall					
Change in eGFR	-1.05 (-1.11 to -0.99)	-1.03 (-1.08 to -0.99)	-1.03 (-1.09 to -0.97)	-1.04 (-1.09 to -0.99)	-1.04 (-1.08 to -1.00)
Individuals with only self-reported hypertension					
Change in eGFR	-0.97 (-1.09 to -0.85)	-0.93 (-1.02 to -0.84)	-0.90 (-1.02 to -0.79)	-0.97 (-1.05 to -0.89)	-0.94 (-1.0.1 to -0.87)
Individuals with only self-reported diabetes					
Change in eGFR	-0.97 (-1.08 to -0.87)	-1.05 (-1.15 to -0.95)	-0.97 (-1.08 to -0.86)	-1.05 (-1.15 to -0.95)	-1.02 (-1.09 to -0.95)
Individuals with self-reported hypertension and diabetes					
Change in eGFR	-1.1 (-1.20 to -1.01)	-1.05 (-1.12 to -0.98)	-1.11 (-1.19 to -1.04)	-1.04 (-1.13 to -0.95)	-1.08 (-1.14 to -1.02)
Change in eGFR with decadal increase in age					
Overall					
Change in eGFR	-9.89 (-10.45 to -9.32)	-9.61 (-10.06 to -9.17)	-9.69 (-10.23 to -9.14)	-9.72 (-10.16 to -9.28)	-9.74 (-10.09 to -9.39)
Individuals with only self-reported hypertension					
Change in eGFR	-9.36 (-10.47 to -8.27)	-8.77 (-9.58 to -7.96)	-8.62 (-9.68 to -7.57)	-9.16 (-9.92 to -8.40)	-8.97 (-9.62 to -8.31)
Individuals with only self-reported diabetes					
Change in eGFR	-8.90 (-9.88 to -7.91)	-9.71 (-10.64 to -8.78)	-9.00 (-9.98 to -8.03)	-9.60 (-10.58 to -8.63)	-9.41 (-10.58 to -8.73)
Individuals with self-reported hypertension and diabetes					
Change in eGFR	-10.38 (-11.26 to -9.51)	-9.66 (-10.47 to -8.98)	-10.47 (-11.21 to -9.73)	-9.58 (-10.38 to -8.79)	-10.02 (-10.58 to -9.47)