NAMS - NFI SYMPOSIUM

Nutrition & Health Transition in India: Evidence from National Surveys

Nutrition and Health Status: Evidence from DLHS-4

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Organization of presentation

- Background of DLHS-4
- Inter and intra state variation in child malnutrition
- Inter and intra state variation in women's health
- Inter and intra state variation in prevalence of diabetes and BP

Background of DLHS

- First district level health and demographic survey in India
- DLHS-1(1998-99) covered 529,817 households representing 504 districts
- DLHS-2(2002-04) surveyed 620,107 households from 593 districts
- DLHS-3(2007-08) included 720,320 households from 601 districts
- DLHS-4 (2012-13) covered 378,487 households from 321 districts of 21 states and union territories

Objectives of DLHS

- DLHS-1 to DLHS-4 to assess maternal and child health status and healthcare utilization at the district level
- DLHS-2 added collection of data on haemoglobin level of children below 5 years, adolescent girls in 10-19 years and currently pregnant women in 15-44 years
- DLHS-3 drops haemoglobin level assessment but collected additional data for unmarried women in 15-24 years pertaining to family life education
- DLHS-4 shifted data from pen and paper to CAPI and collect additional data on health and morbidity of household members including height, weight, blood pressure, blood sugar and haemoglobin levels and data on life style diseases

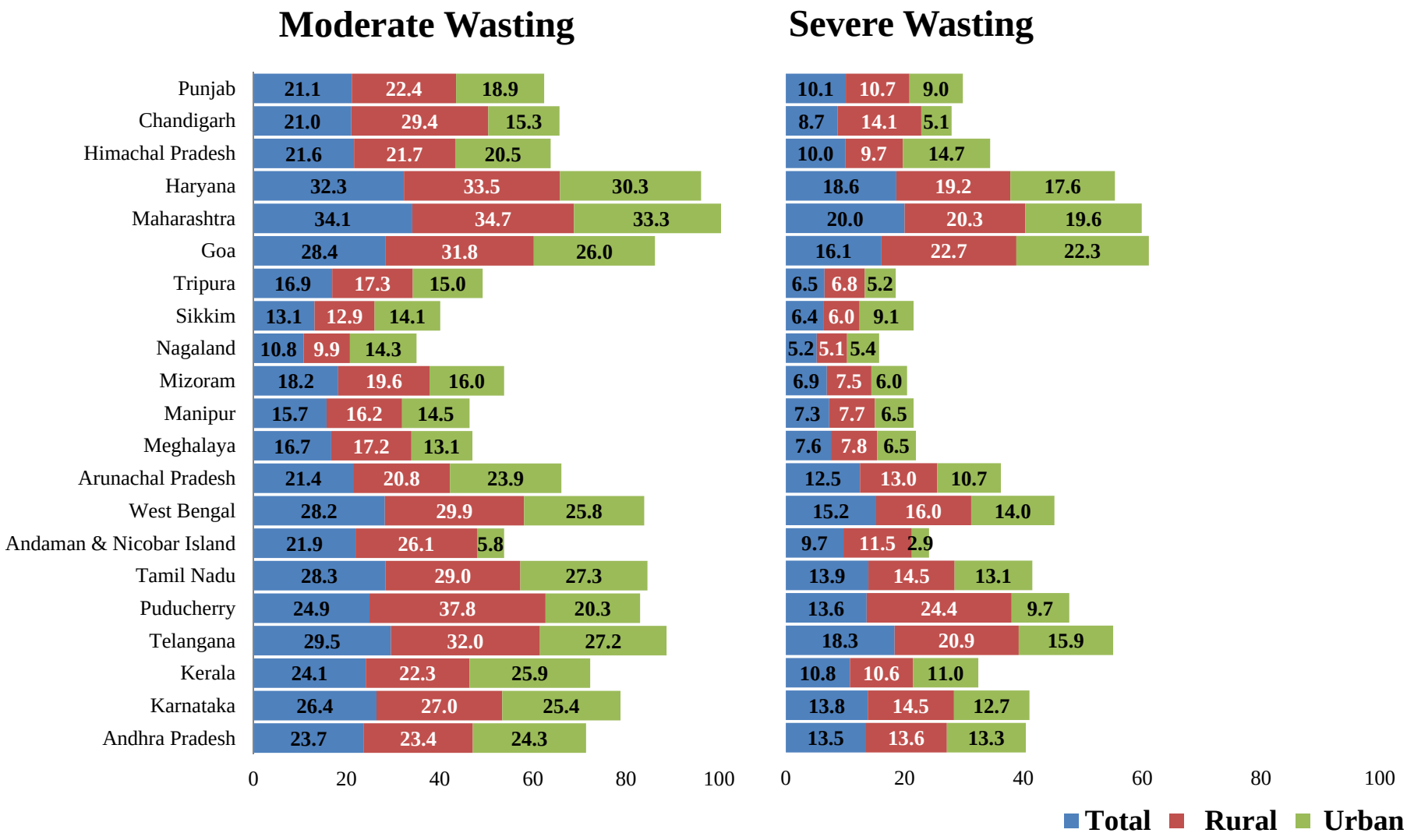
Child malnutrition

- Malnutrition among children is a consequence of insufficient food intake with adequate nutrients, vitamin and protein deficiencies, recurrent infectious diseases
- Closely associates with poverty, sanitation and hygiene
- Despite multipronged and inter departmental efforts malnutrition among children still a threat to health for all and even the growth of the country

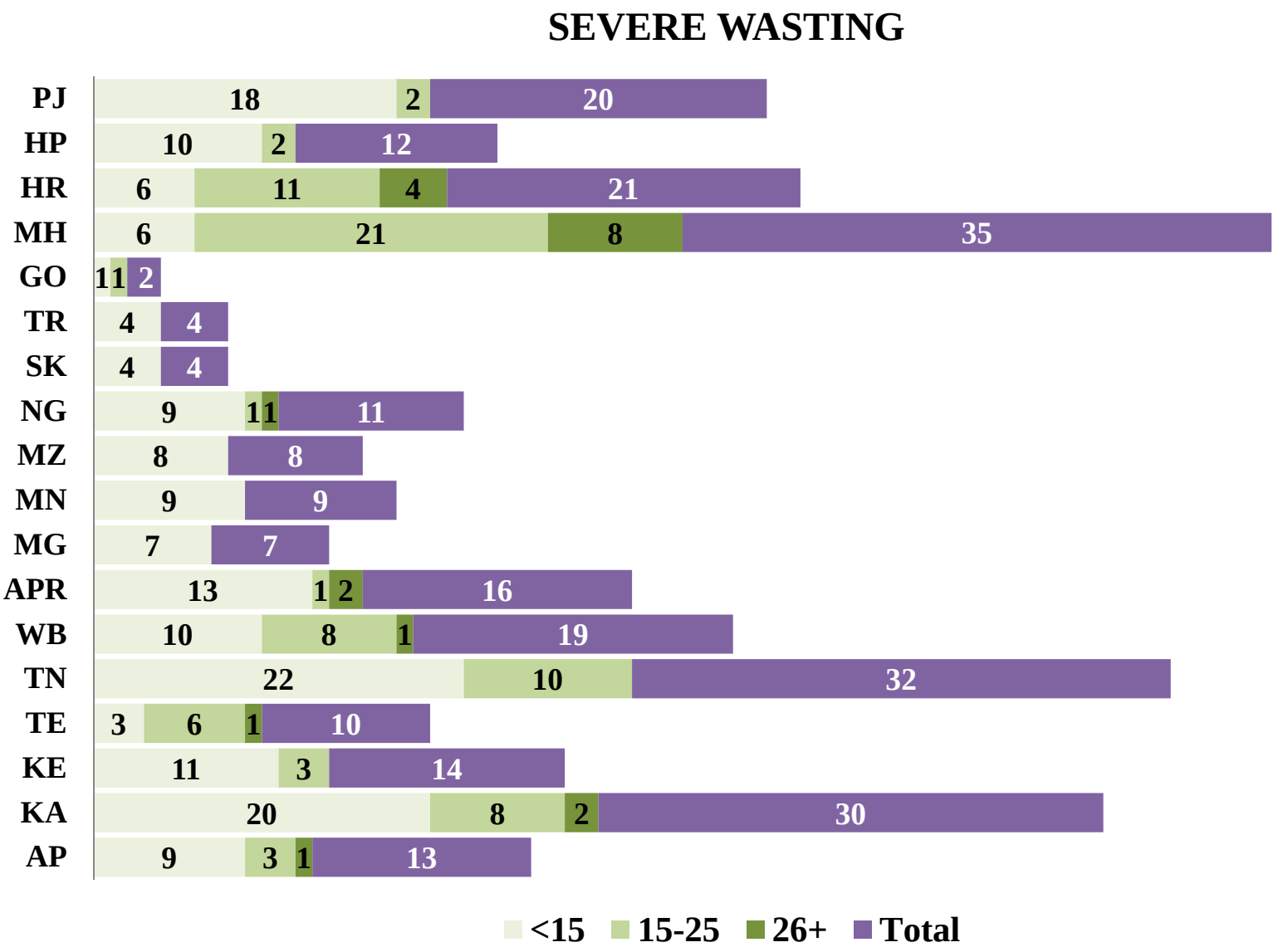
Anthropometric measures

- Wasting or thinness (low weight for height) measures weight loss due to starvation and episodes of severe diseases
- Stunting (low height for age) reflects continuous failure of growth associated with poor living conditions and recurrent diseases
- Low weight for height indicates low body mass relative to height and is considered as composite of weight for height & height for age. It captured both chronic and acute malnutrition
- Categorized as severe and moderate malnutrition corresponding to below -3SD and between -2SD & -3SD in comparison to NCHS/WHO international reference population

Wasting children among children under 5 years



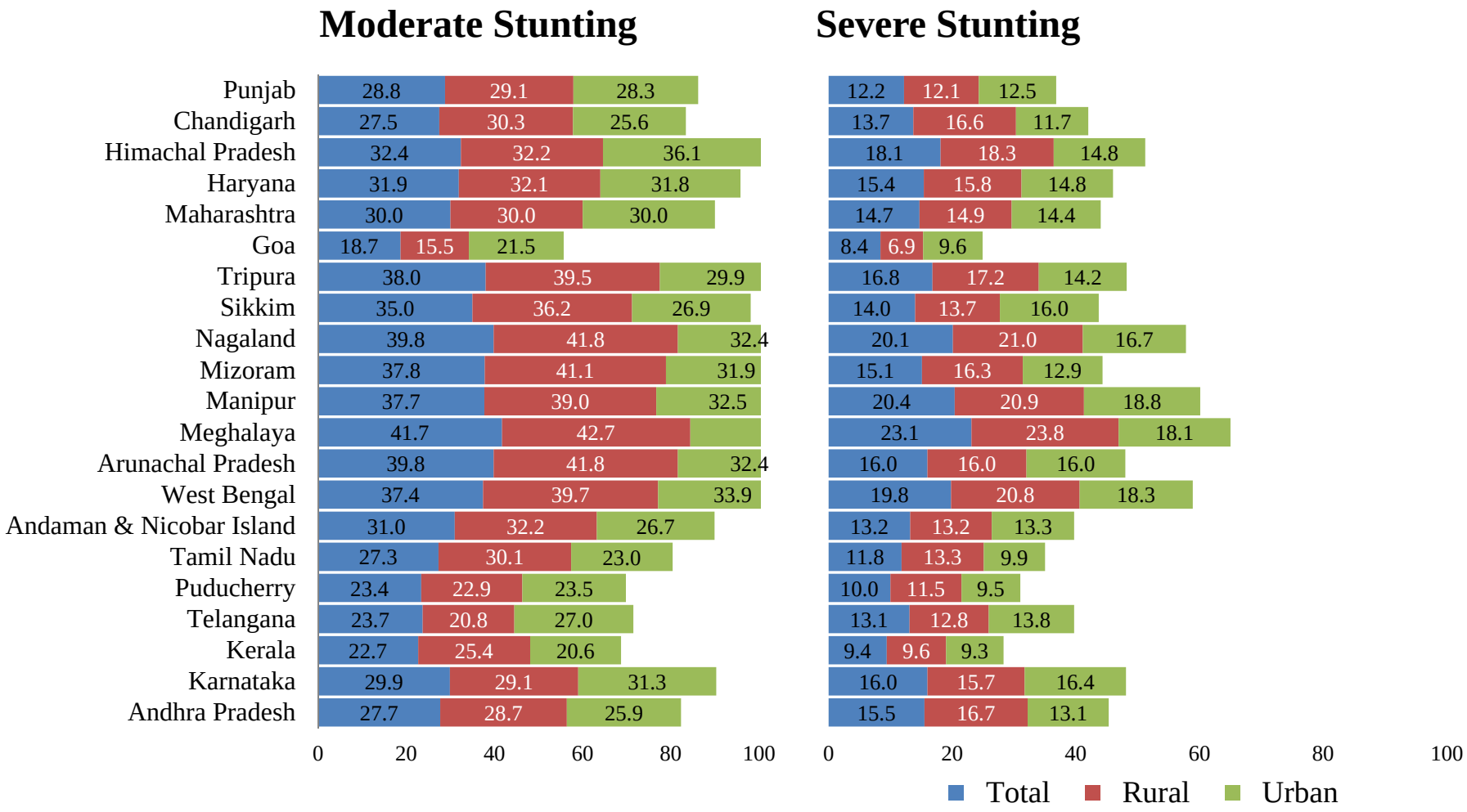
Number of districts by level of severe wasting



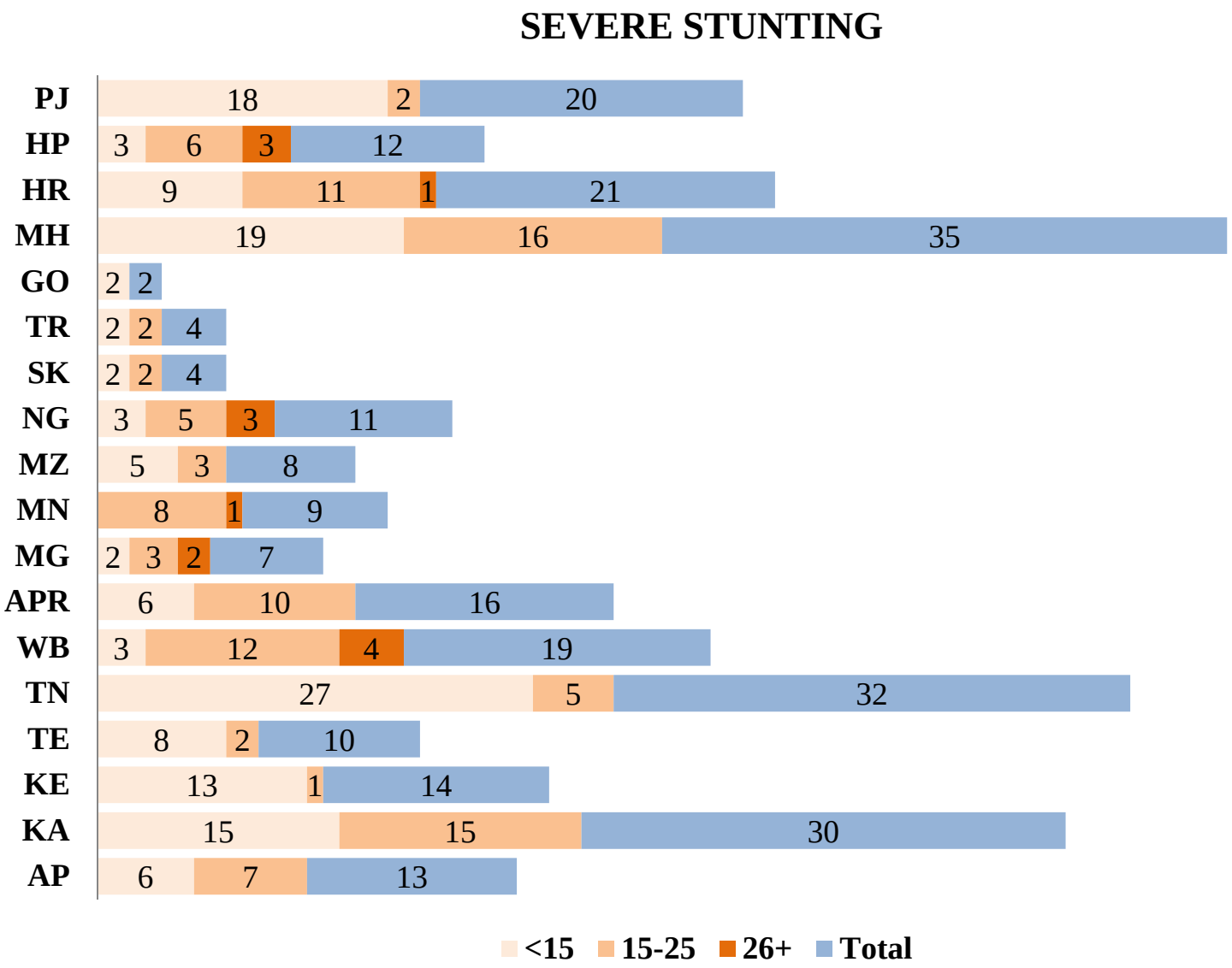
State	Districts with highest level of severe wasting
PJ	Amritsar (15.7%), SAS Nagar(17.8%)
HP	Bilaspur(18.2%), Shimla(20.7%)
HR	Karnal(32.0%), Kuruksherta(28.0%), Rewari(26.6%), Rohtak(26.2%), Gurgaon(18.2%)
MH	Bid (26.1%), Dhule(27.6%), Jalgaon(25.1%), Thane(33.7%), Wardha(27.3%)
GO	North Goa(19.5%)
TR	All districts below 15 %
SK	All districts below 15 %
NG	Longleng(20.0%), Mon(26.8%)
MZ	All districts below 15 %
MN	All districts below 15 %
MG	All districts below 15 %
APR	East Siang(21.0%), Changlang(25.5%), Lohit(26.5%)

State	Districts with highest level of severe wasting
WB	Birbhum(19.9%), Darjeeling(17.5%), Jalpaiguri(17.6%), Maldah(19.6%), Murshidabad(25.1%)
TN	Khancheepuram(16.7%), Cuddalore(16.4%), Karur(15.5%), Thiruvallur(18.75), Virudhunagar(17.3%)
TE	Khammam(23.4%), Nalgonda(20.3%), Rangareddi(21.5%), Warangal(25.0%), Medak(26.0%)
KE	Ernakulam(15.7%), Palakkad (25.0%),Thiruvananthapuram(21.7%)
KA	Raichur(21.0%), Shimoga (24.1%), Udupi(27.7%), Devangere(17.3%), Kodagu(26.6%)
AP	Guntur(16.%),Visakhapatnam(19.2%),West Godavari(17.9%), East Godavari(25.%)

Stunting children among children under 5 years



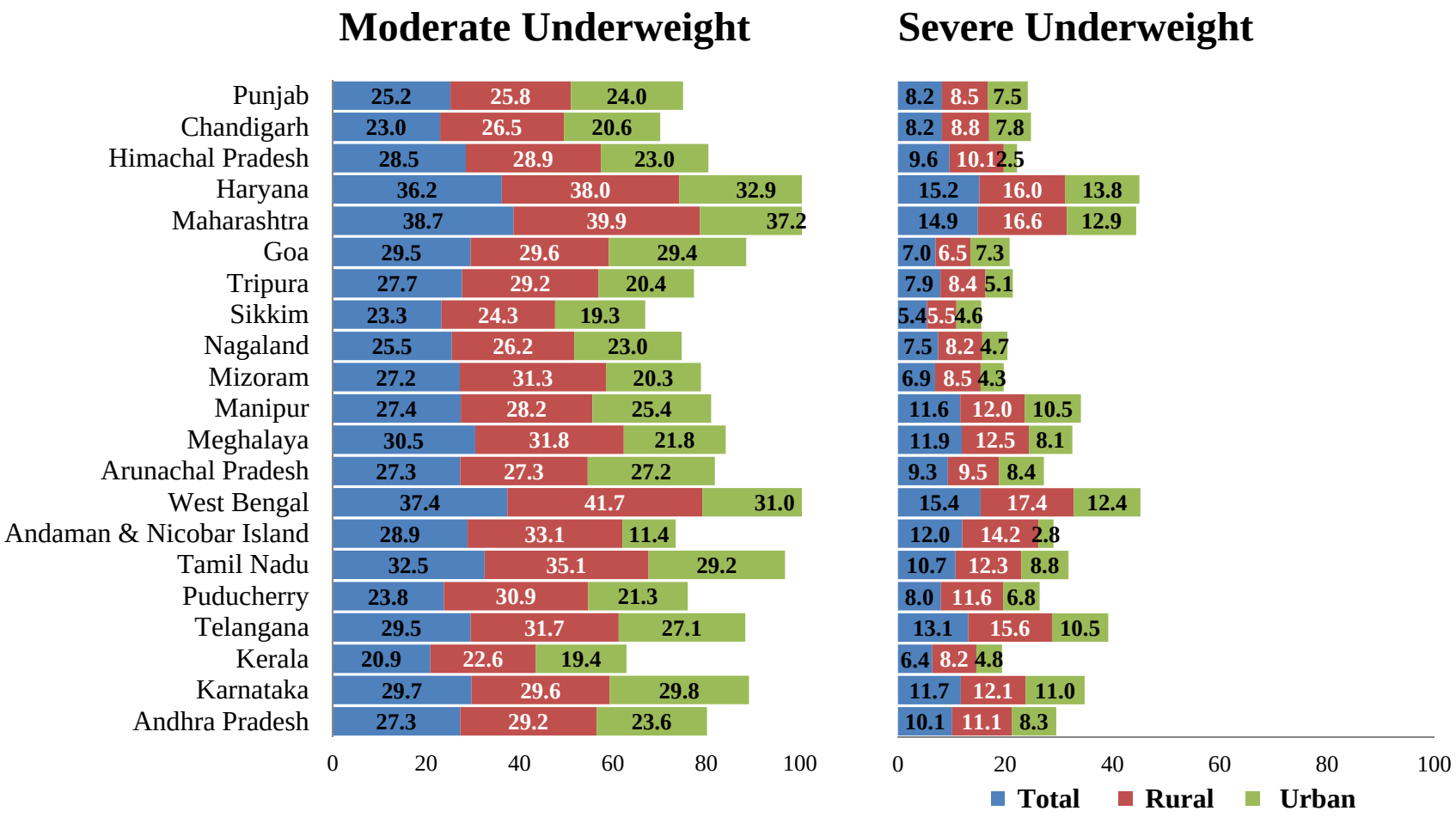
Number of districts by level of severe stunting



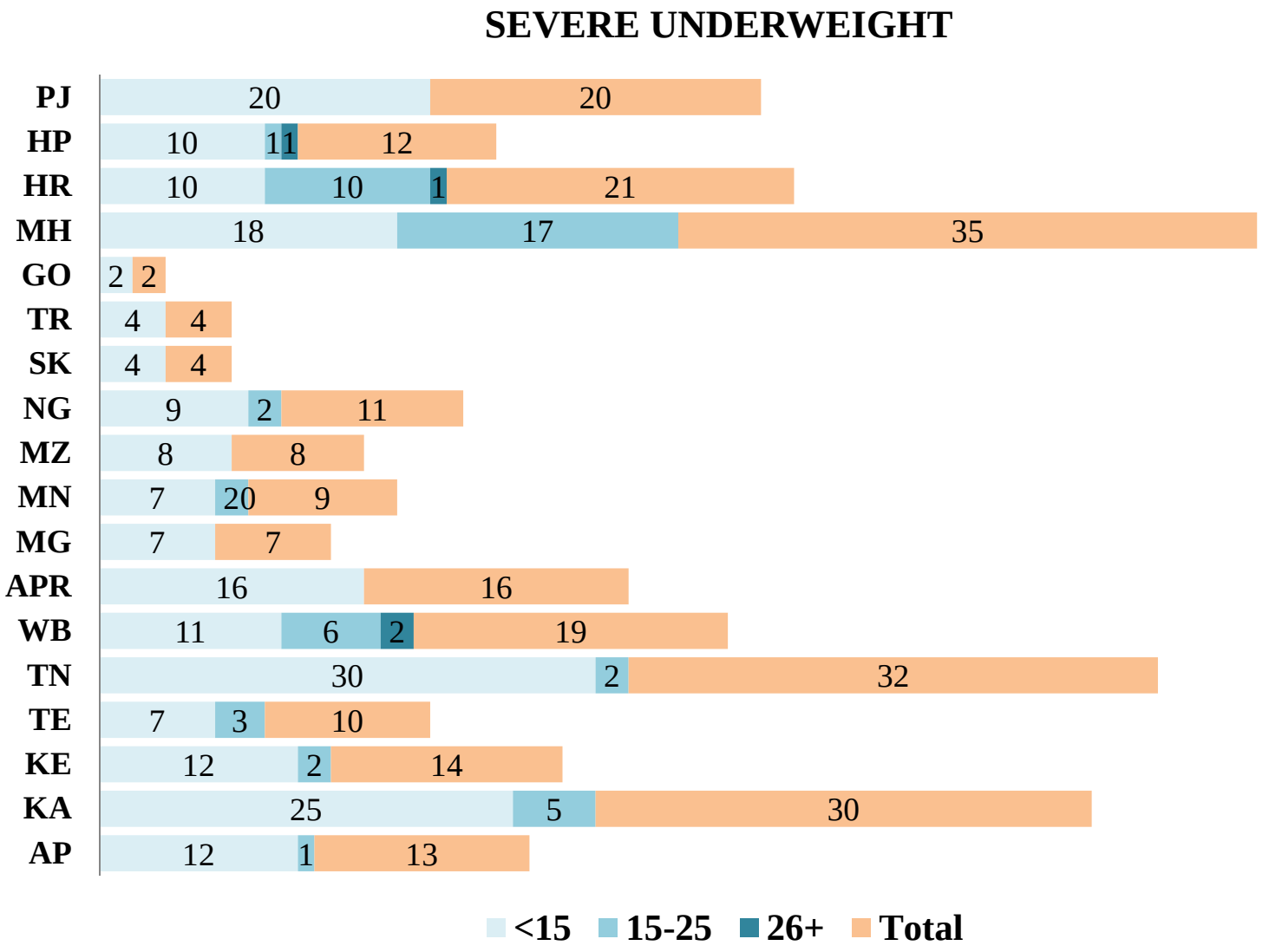
State	Districts with highest level of severe stunting
PJ	Kapurthala (16.1%),Patiala(17.1%)
HP	Sirmaur (16.1%), Solan (25.0%), Chamba (26.1%),Kullu(27.1%),Mandi (37.5%)
HR	Fatehabad (16.9%), Gurgaon(18.9%), Ambala(24.2%), Panchukala(18.3%), Kaithal(27.0%)
MH	Sindhudurg(20.9%) ,Nagpur(19.1%) ,Nashik (19.7), Pune(16.3%) ,Raigarh(15.9%)
GO	All district below 15 %
TR	Dhalai (22.9%),North Tripura (20.0%)
SK	North (15.4%), South(15.2%)
NG	Mon (22.4%),Paren(17.4%), Kiphire(28.6%),Kohima(27.5%),Tuensang(25.9%)
MZ	Lawngtlai (17.1%), Mamit(16.1%),Saiha(20.9%)
MN	Imphal East(15.7%) , Imphal West(19.0%), Senapati(22.3%), Ukhrul(23.3%), Churachandpur(29.2%)
MG	East Garo Hills (17.4%), East Khasi Hills (20.2%), Ri Bhoi (24.5%), Jaintia Hills,(30.4%)West Khasi Hills(26.9%)
APR	Anjaw(23.9%),Dibang Valley(20.6%),Kurung Kumey(18.1%), Papumpare(24.0%) Lower Subansiri(18.9%)

State	Districts with highest level of severe stunting
WB	Bankura (27.2%), Darjeeling(28.4%), Jalpaiguri(32.7%), Kolkata(28.2%), Haora(22.5%)
TN	Ariyalur (16.4%), Khancheepuram(17.3%) ,Nilgiris(17.1%),Tiruppur(15.3%), Tiruvannamalai(18.0%)
TE	Mahbubnagar(16.7%),Nizamabad(21.4%)
KE	Palakkad(23.5%)
KA	Ramanagara(23.7%), Dharwad(21.6%), Gadag(24.0%),Koppal(22.7%),Uttara kannada(24.0%)
AP	Anantapur(18.0%), Anantapur(18.0%), Kurnool(19.3%), Nellore (24.4%), Visakhapatnam(16.8%)

Underweight children among children under 5 years

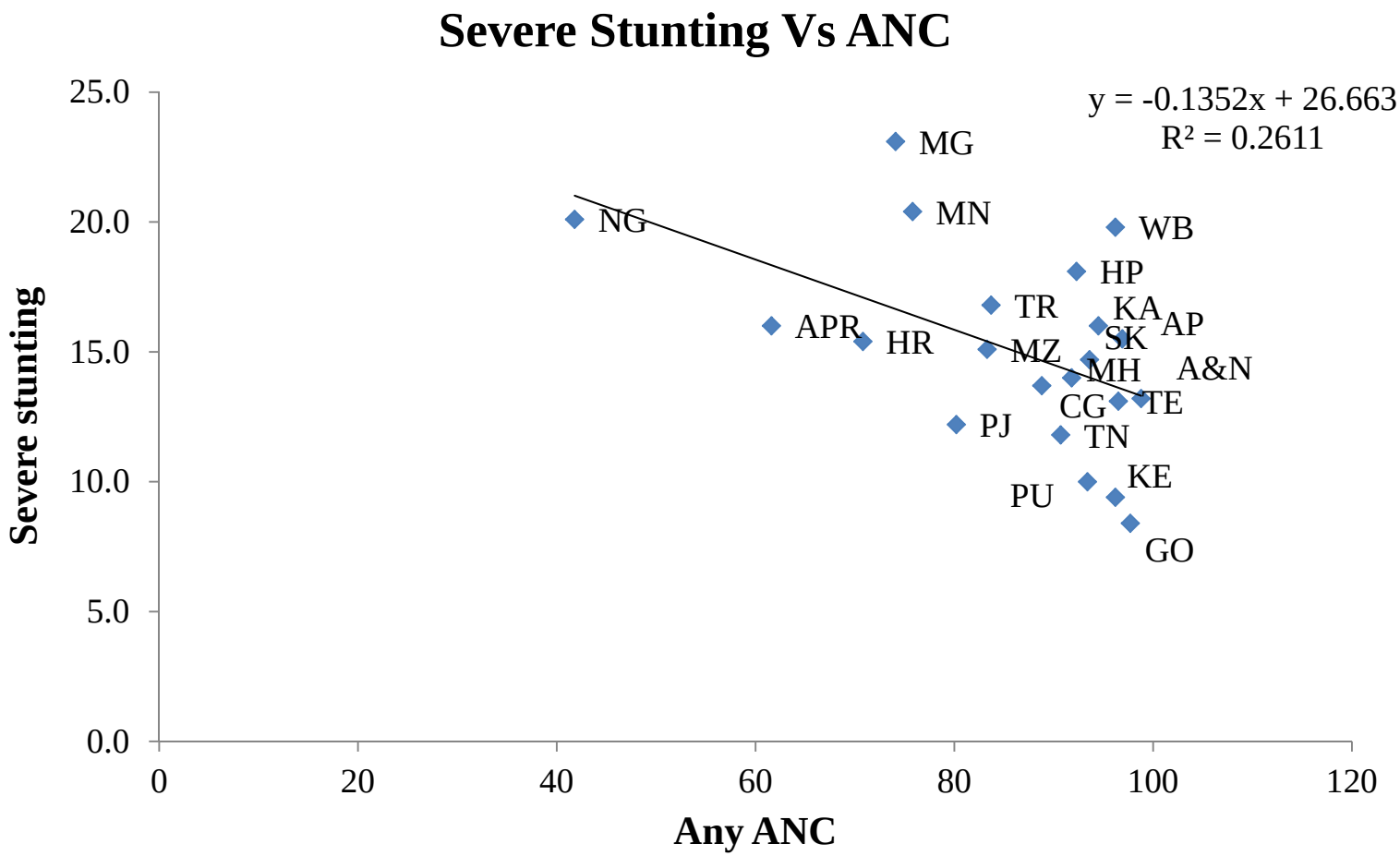


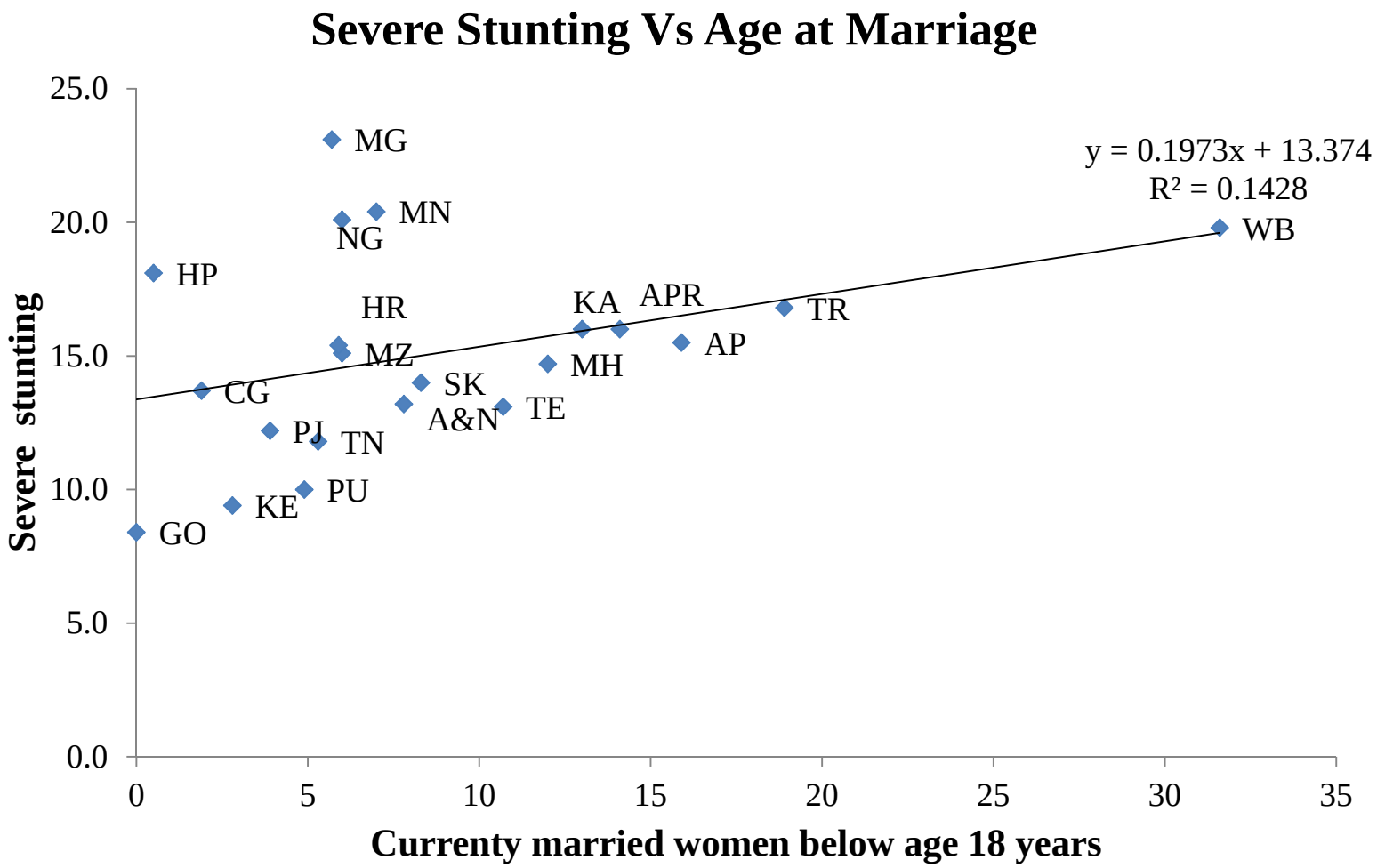
Number of districts by level of severe underweight

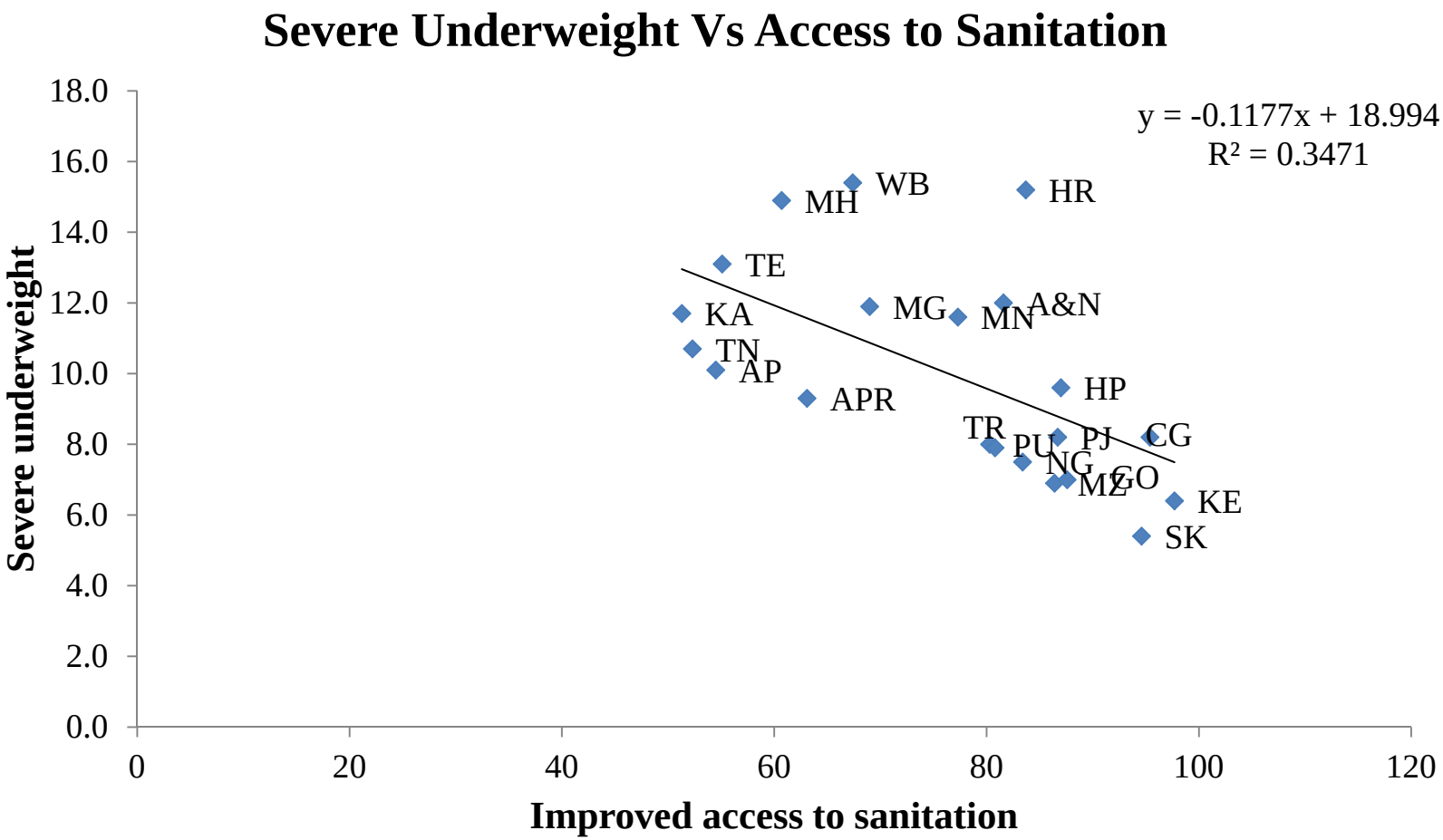


State	Districts with highest level of severe underweight
PJ	All below 15 %
HP	Bilaspur(20.0%), Chamba(31.3%)
HR	Ambala(17.0%),Fatehabad(17.1%), Kaithal(20.9%), Jhajjar(16.2%), Panchukala(25.%)S
MH	Ratnagiri(17.0%), Thane (19.8%), Wardha(18.8%),Washim (17.0%), Buldana(21.7%)
GO	All below 15 %
TR	All below 15 %
SK	All below 15 %
NG	Longleng(20.0%), Mon (17.0%)
MZ	All below 15 %
MN	Senapati(15.5%), Tamenglong(20.9%)
MG	All below 15 %
APR	All below 15 %

State	Districts with highest level of severe underweight
WB	Jalpaiguri(19.0%), KochBihar(16.1%) , Maldah(21.6%), Birbhum(25.8%), Murshidabad(26.3%)
TN	Dindigul(15.7%), Pudukkottai(16.7%)
TE	Karimnagar(15.5%), Medak(17.5%), Nizamabad(20.3%)
KE	Palakkad(28.6%) ,Wayanad(28.6%)
KA	Bijapur(16.8%), Gadag(17.9%), Kodagu(19.5%), Raichur(16.6%), Uttara kannada(15.6%)S
AP	West Godavari(15.3%)


Severe Stunting Vs ANC
y = -0.1352x + 26.663
R² = 0.2611
Severe stunting
Any ANC
25.0
20.0
15.0
10.0
5.0
0.0
0
20
40
60
80
100
120
MG
MN
NG
WB
HP
TR
KA
AP
SK
APR
HR
MZ
MH
A&N
CG
TE
PJ
TN
KE
PU
GO


Severe Stunting Vs Age at Marriage
y = 0.1973x + 13.374
R² = 0.1428
Severe stunting
Currenty married women below age 18 years
25.0
20.0
15.0
10.0
5.0
0.0
0
5
10
15
20
25
30
35
MG
MN
NG
HP
HR
KA
APR
TR
WB
MZ
AP
MH
SK
CG
A&N
TE
PJ
TN
PU
KE
GO

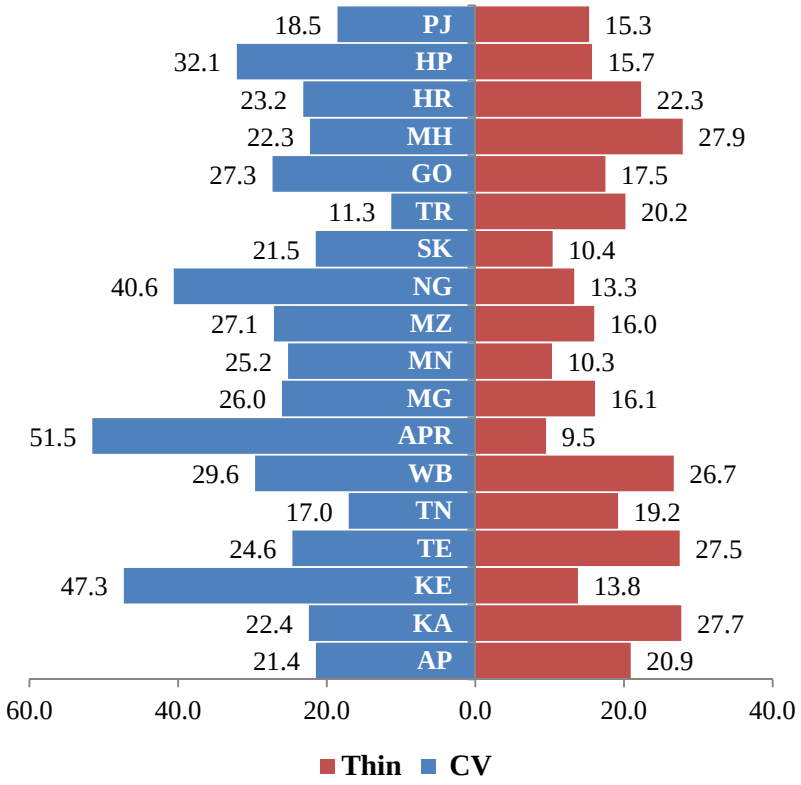

Severe Underweight Vs Access to Sanitation
y = -0.1177x + 18.994
R² = 0.3471
Severe underweight
Improved access to sanitation
18.0
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
0
20
40
60
80
100
120
WB
MH
HR
TE
MG
A&N
MN
KA
TN
AP
APR
HP
TR
PU
PJ
CG
NG
MZ
GO
KE
SK

Nutritional Status of Women in 15-49 years

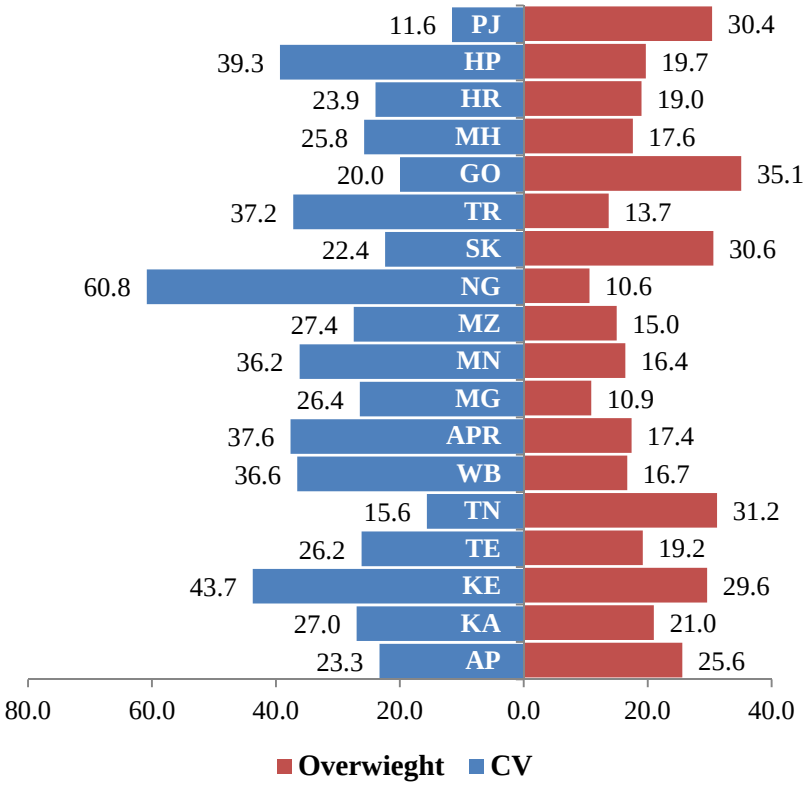
- In adults, nutritional status is commonly expressed as the body mass index (BMI)
- BMI is an acceptable proxy for thinness and fatness, and has been directly related to health risks and death rates in many populations
- WHO also endorsed that weight gain in adult life is associated with increased morbidity and mortality at increasing BMI
- Categorization into ‘Thin’ and ‘Overweight or Obese’ on the basis of BMI below 18.5 Kg/m sq and over 25 Kg/m sq

Under nutrition and over nutrition among women

District variation in under nutrition



District variation in over nutrition



State	Districts with highest level of under nutrition among women
PJ	Rupnagar(18.1%),Firozpur(19.2%),Muktsar(21.3%),Faridkot(19.0%),Mansa(17.4%)
HP	Chamba(22.5%),Kangra(19.4%),Una(21.3%),Simaur(22.9%),Shimla(16.8%)
HR	Yamunanagar(27.9%), Fatehabad(28.3%), Sirsa,(27.4%), Hisar(29.0%), Mahendragarh(26.8%)
MH	Gondiya(35.1%),Yavatmal(38.8%),Nanded(35.9%),Jalna(35.4%),Ratnagiri(40.3%)
GO	North Goa(20.4%),South Goa(13.8%)
TR	West Tripura(23.5%),South Tripura(22.0%),Dhalai(19.5%),North Tripura(18.3%)
SK	North (8.2%),West(11.0%),South(13.3%),East(9.2%)
NG	Mokokchund(22.1%),Dimapur(14.8%),Kohima(13.4%),Kiphire(21.9%),Longleng(17.0%)
MZ	Mamit(17.6%),Serchihhip(15.8%),Lunglei(16.7%),Lawngtlai(24.4%),Saihna(22.4%)
MN	Senapati(16.3%),Bishnupur(10.2%),Thoubal(10.4%),Imphal East(9.9%),Ukhrul(11.3%)
MG	West Garo Hills(22.1%),East Garo Hills(19.1%),South Garo hills(13.6%),R. Bhoi(18.7%),East Khasi Hills(17.4%)
APR	Lower Subansiri(9.7%),East siang(9.1%),Lohit(18.1%),Changlang(20.9%),Tirap(13.6%)S

State	Districts with highest level of under nutrition among women
WB	Murshidabad(34.5%), Birbhum(30.0%),Bankura(33.4%), Puruliya(36.9%), Paschim Medinipur(34.8%)
TN	Karur(23.1%), Ariyalur(23.3%), Cuddalore(23.4%), Thiruvarur(23.5%), Krishnagiri(24.4%)S
TE	Nizamabad(29.6%), Karimnagar(28.2%), Medak(34.2%), Rangareddi(29.0%), Mahbubnagar(34.15)
KE	Kasaragod(16.5%), Malappuram(19.1%), Palakkad(21.5%), Ernakulam(18.7%), Alappuzha(14.7%)
KA	Gulbarga(33.5%), Bidar(37.3%), Raichur(37.6%), Bellary(33.8%), Yadgir(42.2%)
AP	Vizianagaram(23.9%),Visakhapatnam(21.7%), Cuddapah(23.2%), Kurnool(26.7%), Anantapur(25.1%)

State	Districts with highest level of over nutrition among women
PJ	Shahid Bhagat Singh Nagar(34.2%), Rupnagar(18.15),Fatehgarh Sahid(11.8%),Ludhiana(16.2%),Moga(15.8%)
HP	Kangra(26.5%),Lahul & Spiti(21.3%),Hamirpur(28.9%),Una(24.3%),Solan(31.7%)
HR	Panipat(26.0%),Sonipat(26.8%),Bhiwani(23.7%),Rohtak(24.4%),Mahendragarh(23.5%)
MH	Nagpur(21.9%),Mumbai(Suburban) (32.0%),Mumbai(28.6%),Solapur(23.9%),Satara(21.4%)
GO	North Goa (30.4%),South Goa(40.4%)
TR	West Tripura(20.3%),South Tripura(12.1%),Dhalai(10.2%),North Tripura(9.9%)
SK	North(34.1%),West(23.75),South(24.1%),East(36.4%)
NG	Mokokchung(12.0%),Dimapur(21.1%),Kohima(14.3%),Phek(12.35),Paren(15.9%)
MZ	West Garo Hills(14.0%),East Garo hills(14.1%),South Garo hills(10.2%),Ri Bhoi(9.0%),East Khasi Hills(10.9%)
MN	Churanchandpur(15.8%),Bishnupur(16.8%),Thoubal(19.1%),Imphal West(22.5%),Imphal East(24.4%)
MG	Kolasib(16.3%),Aizawl(20.4%),Champhai(14.5%),Serchhip(13.9%),Lunglei(13.8%)
APR	Tawang(29.3%),West Kameng(26.6%),Papumpare(20.3%),West Siang(20.95),Lower Dibang valley(22.0%)

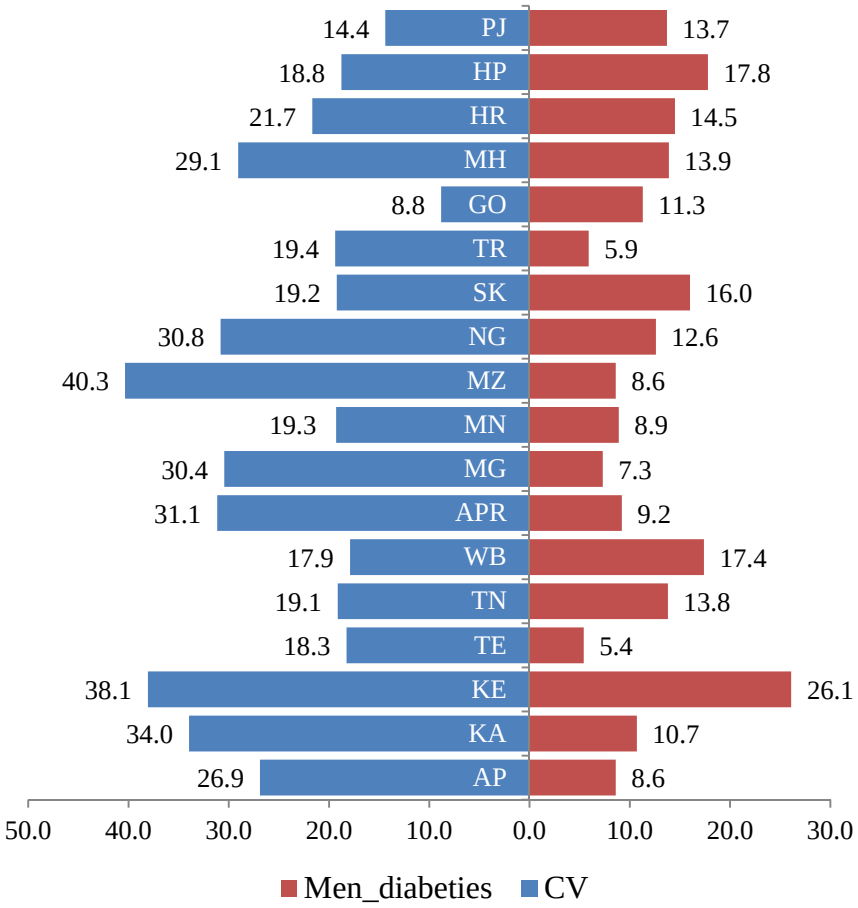
State	Districts with highest level of over nutrition among women
WB	Nadai(22.3%),North 24 parganas(31.8%),Hugli(21.8%),Haora(31.3%),Kolkata(36.4%)
TN	Thiruvallur(38.7%),Chennai(48.9%),Madurai(36.0%),Theni(35.6%),Kanniyakumari(37.9%)
TE	Nizamabad(21.1%),karimnagar(24.2%),Hyderabad(30.9%),Rangareddi(21.5%), Khammam(24.8%)
KE	Kozzhikode(37.5%),Kottayam(33.9%),Alappuzha(33.0%),Kollam(37.7%),Thiruvananthapuram(36.4%)
KA	Banglore(34.4%),Banglore Rural(28.1%),Mandya(32.0%),Hassan(29.4%),Ramanagara(32.4%)
AP	Srikakulam(32.5%),West Godavari(30.9%),Guntur(33.0%),Prakasam(42.9%),Nellore(33.1%)

Prevalence of diabetes

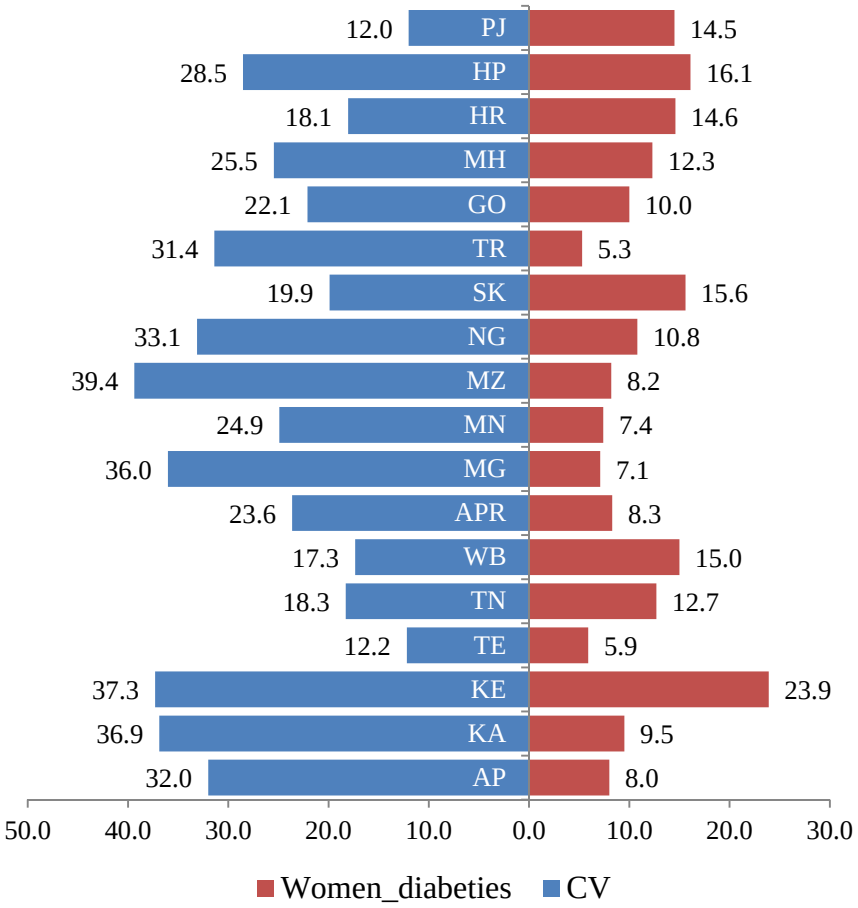
- Diabetes is the outcome failure of pancreas to produce enough insulin
- Diabetes often leads to kidney failure, heart attack, strokes etc.
- Prevalence of diabetes is rising fast in low income countries
- Healthy lifestyle, avoiding saturated fat intake & tobacco use, regular intensive physical activity
- Above 140 mg/dl is used for categorization as diabetic
- Global prevalence of diabetes is 8.4 % in 2014

Diabetes among men and women

Diabetes men district variation



Diabetes women district variation



State	Districts with highest level of diabetes among men
PJ	Amritsar(17.6%),Jalandhar(15.6%),Hoshiarpur(16.9%),Shahid Bhagat Singh Nagar(15.8%), Rupnagar(15.2%)
HP	Kangra(18.5%),Hamirpur(21.7%),Una(24.8%),Bilaspur(20.6%),Solan(18.3%)
HR	Sira(18.2%),Bhiwani(17.9%),Mahendragarh(19.%) ,Rewari(18.1%),Palwal(20.0%)
MH	Thane(22.7%),Mumbai(suburban)(18.8%),Ahmadnagar(19.9%),Sindhudurg(25.1%), Sangli(19.1%)
GO	North Goa(17.3%),South Goa(19.6%)
TR	West Tripura(6.3%),South Tripura(7.0%),Dhalai(5.2%),North Tripura(4.5%)
SK	North(13.2%),West(17.8%),South(20.0%),East(14.3%)
NG	Zunheboto(15.6%),Wokha(16.3%),Kohima(14.0%),Phek(17.8%),Paren(15.1%)
MZ	Kolasib(11.4%),Aizawl(8.9%),Champhai(7.0%),Serchhip(14.0%),Lawngtlai(9.1%)
MN	Senapati (9.8%),Churachandpur(8.8%),Bishnupur(9.2%),Thoubal(9.8%), Imphal East(12.2%), Chandel(8.3%)
MG	West Garo Hills(21.9%),East Garo Hills(20.7%),South Garo Hills(14.6%), West Khasi Hills(7.4%), Ri Bhoi(14.3%)
APR	Papumpare(12.1%),Lower Subansiri(13.3%),West Siang(13.4%),Changlang(12.1%), Tirap(11.6%)

State	Districts with highest level of diabetes among men
WB	Jalpaiguri(22.1%),Koch Bihar (21.5%),Uttar Dinajpur(21.8%),Puruliya(21.0%), Kolkata(25.3%)
TN	Nagapattinam(18.3%),Pudukkottai(18.4%),Madurai(18.4%),Thirunelveli(20.1%), Kanniyakumari(18.%)
TE	Nizamabad(9.3%),Karimnagar(8.5%),Rangareddi(8.5%),Mahbubnagar(7.5%), Khammam(7.8%)
KE	Kasaragod(33.1%),Kannur(41.95),Kottayam(36.4%),Kollam(34.2%), Thiruvananthapuram(33.3%)
KA	Kolar(16.6%),Banglore(18.2%),Banglore Rural(18.0%), Kodagu(14.%), Ramanagara(20.3%)
AP	Srikakulam(11.3%),West Godavari(15.5%), Prakasam(11.6%),Nellore(10.0%), Chittoor(10.2%)

State	Districts with highest level of diabetes among women
PJ	Hoshiarpur(17.7%),Shahid Bhagat Singh Nagar(16.9%),Moga(17.2%), Firozpur(16.1%), Bhathinda(17.0%)
HP	Lahul & Spiti(16.7%),Hamirpur(18.2%),Una(25.6%),Bilaspur(18.4%),Solan(20.2%)
HR	Fatehabad(16.6%),Sira(18.5%),Hisar(17.2%),Mahendragarh(17.0%),Palwal(19.4%)
MH	Thane(17.8%),Mumbai (Suburban)(16.4%),Ratnagiri(16.6%),Sindhudurg(20.8%), Kolhapur(16.5%)
GO	North Goa(13.5%),South Goa(18.5%)
TR	West Tripura(7.1%),South Tripura(6.2%),Dhalai(4.5%),North Tripura(3.4%)
SK	North (14.5%),West(15.8%),South(20.5%),East(13.2%)
NG	Mokokchung(14.3%),Zunheboto(12.8%),Wokha(14.0%),Phek(12.9%),Paren(15.1%)
MZ	Kolasib(10.1%),Aizawl(9.0%),Champhai(8.0%),Serchhip(14.2%),Lawngtlai(8.0%)
MN	Senapati(8.7%),Churachandpur(7.7%),Bishnupur(7.9%),Imphal east(9.2%),Ukhrul(8.5%)
MG	West Garo Hills(17.5%),East Garo Hills(19.2%),Ri Bhoi(14.3%),East Khasi Hills(11.0%), Jaintai Hills(9.6%)
APR	West Kameng(8.9%),Lower Subansiri(11.0%),West Siang(11.5%),Tirap(10.6%), Kurung Kumey(9.7%)

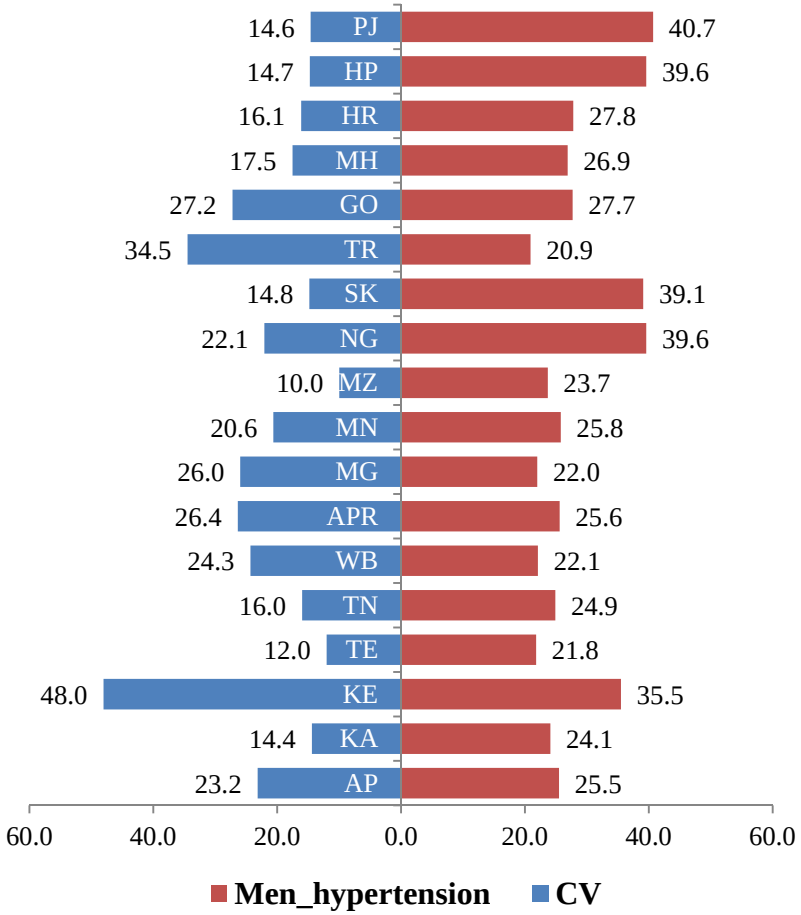
State	Districts with highest level of diabetes among women
WB	Jalpaiguri(17.8%),Uttar Dinapur(18.5%),North 24 parganas(18.3%), Kolkata(23.0%), South 24 parganas(17.9%)
TN	Chennai(16.85),Dindigul(15.9%),Nagapattinam(15.9%),Madurai(19.9%), Kanniyakumari(16.3%)
TE	Nizamabad(7.5%),Hyderabad(6.3%),Rangareddi(6.7%),Mahbubnagar(6.5%), Khammam(7.5%)
KE	Kasaragod(29.9%),Kannur(38.3%),Kottayam(30.2%),Kollam(28.7%), Thiruvananthapuram(30.1%)
KA	Banglore(16.4%),Banglore Rural(13.8%),Kodagu(14.7%),Mysore(13.4%), Ramanagara(19.3%)
AP	Srikakulam(10.0%),Weat Godavari(14.9%),Prakasam(11.4%),Nellore(11.4%), Chittoor(9.2%)

Prevalence of high BP

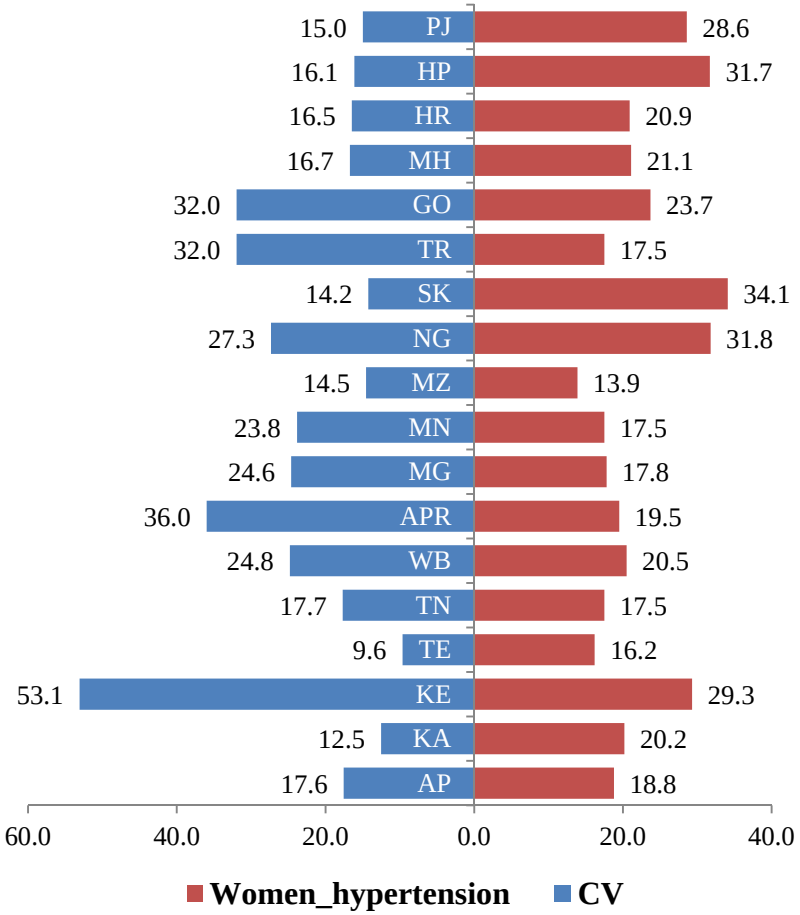
- Hypertension above normal
  - systolic (above 140 mm of Hg)
  - diastolic (above 90 mm of Hg)
- Persons 18 years & above
- 40 % globally, Africa highest (about 46%)

High hypertension by sex

BP among men district variation



BP among women district variation



State	Districts with highest level of hypertension among men
PJ	Firozpur(49.0%),Faridkot(45.6%),Bhathinda(49.1%),Mansa(54.9%),Sangrur(45.1%)
HP	Kangra(47.7%),Hamirpur(51.8%),Una(44.0%),Solan(40.0%),Shimla(42.0%)
HR	Panchukala(31.3%),Jind(33.1%),Mahendragarh(38.8%),Faridabad(35.5%),Mewat(30.3%)
MH	Dhule(33.0%),Nashik(32.2%),Mumbai(34.8%),Ahmadnagar(32.1%),Satara(35.5%)
GO	North Goa(23.2%),South Goa(25.6%)
TR	West Tripura(31.4%),South Tripura(18.5%),Dhalai(15.9%),North Tripura(17.3%)
SK	North (42.7%),West(33.8%),South(34.1%),East(44.9%)
NG	Zunheboto(45.6%),Wokha(42.9%),Kohima(46.4%),Phek(53.4%),Paren(48.8%)
MZ	Mamit(22.6%),Kolasib(26.8%),Aizawl(23.8%),Champhai(26.2%),Lunglei(22.9%)
MN	Tamenglong(29.7%),Bishnupur(32.3%),Imphal West(29.3%),Imphal East(28.4%),Chandel(24.9%)
MG	West Garo Hills(22.2%),South Garo Hills(24.2%),Ri Bhoi(27.9%),Jaintai Hills(26.9%),West Khasi Hills(21.2%)
APR	Tawang(38.1%),West Kameng(30.2%),Lower Subansiri(30.7%),Lower Dibang valley (29.4%),Anjaw(34.4%)

State	Districts with highest level of hypertension among men
WB	Nadai(26.8%),North 24 parganas(33.0%),Hugli(34.1%),Haora(27.5%), Kolkata(31.1%)
TN	Vellore(30.7%),Salem(30.2%),Nilgiris(34.3%),Krishnagiri(31.3%), Tiruppur(30.9%)
TE	Nizamabad(23.3%),Medak(23.0%),Hyderabad(23.5%),Rangareddi(22.9%), Warangal(27.5%)
KE	Kasaragod(37.6%),Kannur(45.0%),Wayanad(35.4%),Idukki(80.5%), Pathanamthitta(60.9%)
KA	Biapur(29.4%),Chitradurga(28.2%),Udupi(29.4%),Mandya(31.3%), Ramanagara(29.6%)
AP	Srikakulam(38.8%),West Godavari(31.0%),Prakasam(33.2%), Cuddapah(32.8%), Kurnool(29.9%)

State	Districts with highest level of hypertension among women
PJ	Firozpur(34.8%),Faridkot(34.0%),Bhathinda(34.7%),Mansa(38.0%),Sangrur(30.6%)
HP	Kangra(39.7%),Lahul &Spiti(34.2%),Hamirpur(36.4%),Una(37.4%),Kinnaur(35.5%)
HR	Ambala(25.6%),Jind(25.5%),Mahendragarh(27.0%),Faridabad(28.1%),Mewat(23.8%)
MH	Dhule(28.6%),Buldana(24.7%),Mumbai(28.8%),Bid(25.5%),Satara(25.4%)
GO	North Goa(23.2%),South Goa(25.6%)
TR	West Tripura(25.3%),South Tripura(15.1%),Dhalai(15.1%),North Tripura(13.2%)
SK	North (42.7%),West(33.8%),South(34.1%),East(44.9%)
NG	Zunheboto(38.3%),Wokha(37.2%),Kohima(36.1%),Phek(44.5%)
MZ	Kolasid(16.1%),Aizawl(14.8%),Champhai(17.2%),Lunglei(14.3%),Lawngtlai(14.2%)
MN	Tamenglong(22.9%),Bishnupur(21.1%),Imphal West(21.2%),Imphal East(18.4%)
MG	West Garo Hills(18.2%),South Garo Hills(17.3%),Ri Bhoi(22.9%),Jaintai Hills(19.1%),East Khasi Hills(20.7%)
APR	Tawang(38.5%),West Kameng(26.1%),Lower Subansiri(23.0%),West Siang(24.4%),Anjaw(24.8%)

State	Districts with highest level of hypertension among women
WB	Nadai(27.3%),North 24 parganas(30.1%),Hugli(32.0%),Haora(27.5%), Kolkata(28.5%)
TN	Vellore(22.2%),Salem(22.0%),Nilgiris(24.7%),Coimbatore(21.1%), Tiruppur(24.0%)
TE	Nizamabad(16.3%),Medak(18.4%),Hyderabad(17.3%),Rangareddi(17.4%), Warangal(18.2%)
KE	Kasaragod(33.8%),Kannur(37.5%),Ernakulam(29.1%),Idukki(75.5%), Pathanamthitta(56.9%)
KA	Chitradurga(24.1%),Udupi(22.75),Mandya(25.5%),Mysore(23.7%), Ramanagara(27.0%)
AP	Srikakulam(25.5%),Visakhapatnam(19.0%),WestGodavari(22.6%), Prakasam(24.6%),Cuddapah(21.4%)

Forward move

- Disaggregation by sex, wealth quintile, access to sanitation, water, community support system
- Changing pattern of shape and distribution of Z-scores
- Interaction of programme, community and household amenities
- More RCT intervention studies

Thank You