

CKD REGISTRY OF INDIA



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Indian Transplant Registry

2st Annual Report CKD Registry of ISN

CKD Registry New Form - 2008



Indian Society Of Nephrology

Convener : Dr. M. M. Rajapurkar, MD

: Muljibhai Patel Society for Research in Nephro- Urology,
Dr.V.V.Desai Road, NADIAD, 387001, Gujarat. India.

Biostatistician : Shashikant Chinchole

I T Support : Kalpesh Desai

APCN 2010

Visit : www.ckdri.org



PROCESS OF CKD REGISTRY FORMATION

- CONCEPT OF REGISTRY.
- FORMATION OF CORE GROUP.
- DESIGNING THE FORM.
- DEVELOPING GUIDELINES.
- METHODOLOGIES OF DATA COLLECTION.
- WEBSITE & SOFTWARE DEVELOPMENT.
- DATA ANALYSIS & REPORTS
- FUTURE PLANS.

CONCEPT OF REGISTRY.

- Initial discussions.
- President ISN's initiative during Varanasi conference, 2004.
- Pilot study.
- Deciding the aims and objectives.

AIMS AND OBJECTIVES

- **Establish prevalence and pattern of diseases causing CKD**
- **Prevalent referral patterns of CKD**
- **Demographic and socioeconomic information**
- **Proportion of CKD Vs getting RRT**
- **Risk factor analysis**

- **Provide information Platform for advocacy, prevention/treatment proposal and improvement opportunities.**

Core group Of CKD Registry 2010

Dr. R. N. Sahoo	Cuttack	Immediate Past President
Dr. Amit Gupta	Lucknow	President ISN
Dr. Ravi Raju	Hyderabad	President Elect
Dr. Vinay Sakhuja	Chandigarh	Hon.Editor IJN
Dr. R.K. Sharma	Lucknow	Hon.Secretary
Dr. Anuradha	Hyderabad	Chairman, Scientific Committee
Dr. Ashok Kirpalani	Mumbai	Member
Dr. D. K. Pahari	Kolkata	Member
Dr. Georgi Abraham	Chennai	Member
Dr. Gopesh Modi	Bhopal	Member
Dr. M. M. Rajapurkar	Nadiad	Member; Convenor
Dr. Sanjay Agarwal	New Delhi	Member
Dr. Alan Almedia	Mumbai	Member
Dr. Ramdas Pisharody	Trivandrum	Member
Dr. Vivekanand Jha	Chandigarh	Member
Dr. Sishir Gang	Nadiad	Member
Dr. Arvind Bagga	New Delhi	Member, ISPN
Dr. B. R. Nammalwar	Chennai	Member,ISPN

THE FORMS

FORM FOR ADULTS

CKD REGISTRY - INDIAN SOCIETY OF NEPHROLOGY	
Center Name _____	Nephrologist: _____ Date of Entry: _____
Name: _____	
Father's / Husband's Name: _____	
Age _____ Years _____ Months _____ Days	Date of Birth: _____ Gender: Male / Female
City/Village _____ State: _____	
Religion: Hindu /Muslim /Christian /Parsi /Sikhism /Jainism /Buddhist /Other _____	
Education: Illiterate / Literacy only / Primary / Secondary / Graduate / Post-graduate / Not Applicable	
Family Income (Rupees / Month): <5000 / 5000-20000 / >20000	
Source of Funding: Self / Employer / Insurance / Others	
Basic Diagnosis: Diabetic Nephropathy / Hypertensive Nephrosclerosis / Renovascular disease / Chronic Glomerulopathy, Specify _____ / Tubulo interstitial disease, Specify _____ / Congenital disease: Aplastic, Hypoplastic, Dysplastic, VUR, Megaureters, Metabolic / Heredofamilial, Specify _____ / Renal stone disease / Hypercalciuria / Cystic disease / Obstructive uropathy, Specify _____ / Undetermined / Other (Specify) _____	
Kidney Biopsy Diagnosis: _____	
1. Diabetes Mellitus:	Not Checked / No / Yes (Type-1 / Type-2) Duration (Years): <5 / 5-10 / 10-15 / 15-20 / >20 Diet only / OHA / Insulin / Combination
2. Hypertension:	No / Yes Duration (Years): <5 / 5-10 / 10-15 / 15-20 / >20 Number of Drugs: 0 / 1 / 2 / 3 / 4 / More ARB / ACEI / Both
3. Cardiovascular disease:	Not Checked / No / Yes IHD / CHF / LVH Other (Specify) _____
4. Family History:	None / Diabetes / Hypertension / Cardiovascular disease / Kidney disease : If Yes, Specify _____
5. Habit:	None / Smoking / Chewing / Alcohol / NSAID / Herbominerals / Other _____
Examination:	Current Management
Height / Length (cms): _____ Weight (kgs): _____	Conservative
Urine Protein: Nil / Trace / + / ++ / +++ / ++++	Vitamin D: Yes / No
24 Hour Protein: _____ g/day	Growth Hormone: Yes / No
S.Creat: _____ mg/dl Hb: _____ g/dl	EPO: No / Yes _____ iU/wk
Bone Disease	CAPD / MHD / Renal Transplant
Ca: Checked/Not Checked: _____ mg/dl	Graft Loss: Yes / No
P: Checked/Not Checked: _____ mg/dl	Hepatitis Status:
iPTH: Checked/Not Checked: _____ pg/ml	HBsAg: Not checked / +ve / -ve
Alk.P04: Checked / Not Checked: _____ iu/ml	Anti HCV: Not checked / +ve / -ve
Please send to, Dr. Mohan Rajapurkar, MD	
Muljibhai Patel Urologic Hospital, NADIAD-387 001, Gujarat India.	We write : www.ckd.in.org Email : info@ckd.in.org / mnur@icenet.net

FORM FOR PEDIATRICS

PEDIATRIC CKD REGISTRY - INDIAN SOCIETY OF NEPHROLOGY	
Central Registry No. _____	Hospital Registration No. _____
Center Name: _____	Nephrologist: _____ Date of Entry: _____
Name: _____ Gender: Male / Female	
Father's Name: _____	
Date of birth: _____	City/Village: _____ State: _____
Age (at diagnosis): _____ Years _____ Months _____ Days	Duration of symptoms: _____ Years _____ Months
Religion: Hindu /Muslim /Christian /Parsi /Sikhism /Jainism /Buddhist /Other _____	
Education of caretaker: Illiterate / Primary / Secondary / Graduate / Post-graduate / Not Applicable	
Family income (Rupees / Month): <5000 / 5000-20000 / >20000	Number of siblings: _____
Source of funding: Self / Employer / Insurance / Others	
BASIC DIAGNOSIS: Obstructive uropathy / Neurogenic bladder / Reflux nephropathy / Chronic pyelo nephritis / Tubulointerstitial disease / Renal hypoplasia / Dysplasia / Cystic kidney disease / Chronic glomerulonephritis / Vasculitis / Lupus / Hemolytic uremic syndrome / Previous AKI / Other (Specify) _____	
KIDNEY BIOPSY DIAGNOSIS: _____	
PRESENTING FEATURES: Edema / LVF / Acidosis / Encephalopathy / Failure to thrive / Anemia / Bony deformities / Hypertension / Antenatal anomalies / Detected incidentally	
FAMILY HISTORY: Kidney disease: No / Yes (Specify) _____ Hypertension: No / Yes (Specify) _____	
VIRAL INFECTIONS:	HBV: +ve / -ve / Not checked HCV: +ve / -ve / Not checked HIV: +ve / -ve / Not checked CMV: +ve / -ve / Not checked Hepatitis B vaccine: Yes / No Vaccella: Suffered / Vaccinated
EVALUATION: Height (cm): _____ Weight (kg): _____ Head circumference (cm): _____ Hypertension: No / Stage I / Stage II Medications: ACEI / ARB / CCB / β -Blockers / Other (Specify) _____	
Creatinine: _____ mg/dl	Hb: _____ g/dl Proteinuria: Nil / Non-nephrotic / Nephrotic
pH: Not checked / Checked: _____	Bicarbonate: Not checked / Checked: _____ mEq/L
Na: Not checked / Checked: _____ mEq/L	K: Not checked / Checked: _____ mEq/L
Ca: Not checked / Checked: _____ mg/dl	P: Not checked / Checked: _____ mg/dl
Alkaline phosphatases: Not checked / Checked: _____ IU/1	iPTH: Not checked / Checked: _____ pg/ml
Albumin: Not checked / Checked: _____ g/dl	
CURRENT MANAGEMENT:	
EPO: No / Yes, _____ IU/wk	
Vitamin D: No / Yes, Specify _____	Growth hormone: Yes / No
Lipid lowering agents: Yes / No	Phosphate binders: No / Yes, Specify _____
Immuno suppressants: No / Yes, Specify _____	
Conservative: <input type="checkbox"/> Palliative: <input type="checkbox"/>	
RRT: <input type="checkbox"/> CAPD / MHD / Renal Transplant Graft Loss: Yes / No	
Please send to, Dr. Mohan Rajapurkar, MD	
Muljibhai Patel Urologic Hospital, NADIAD-387 001, Gujarat India.	We write : www.ckd.in.org Email : info@ckd.in.org / mamrajaym1a@iupuh.org / mam@icenet.net

DEVELOPING GUIDELINES & METHODOLOGIES OF DATA COLLECTION.

- Guidelines committee.
- See website. www.ckdri.org
- Data collected in paper forms.
- Data online.
- Data offline using standalone programme.
- Data via email.

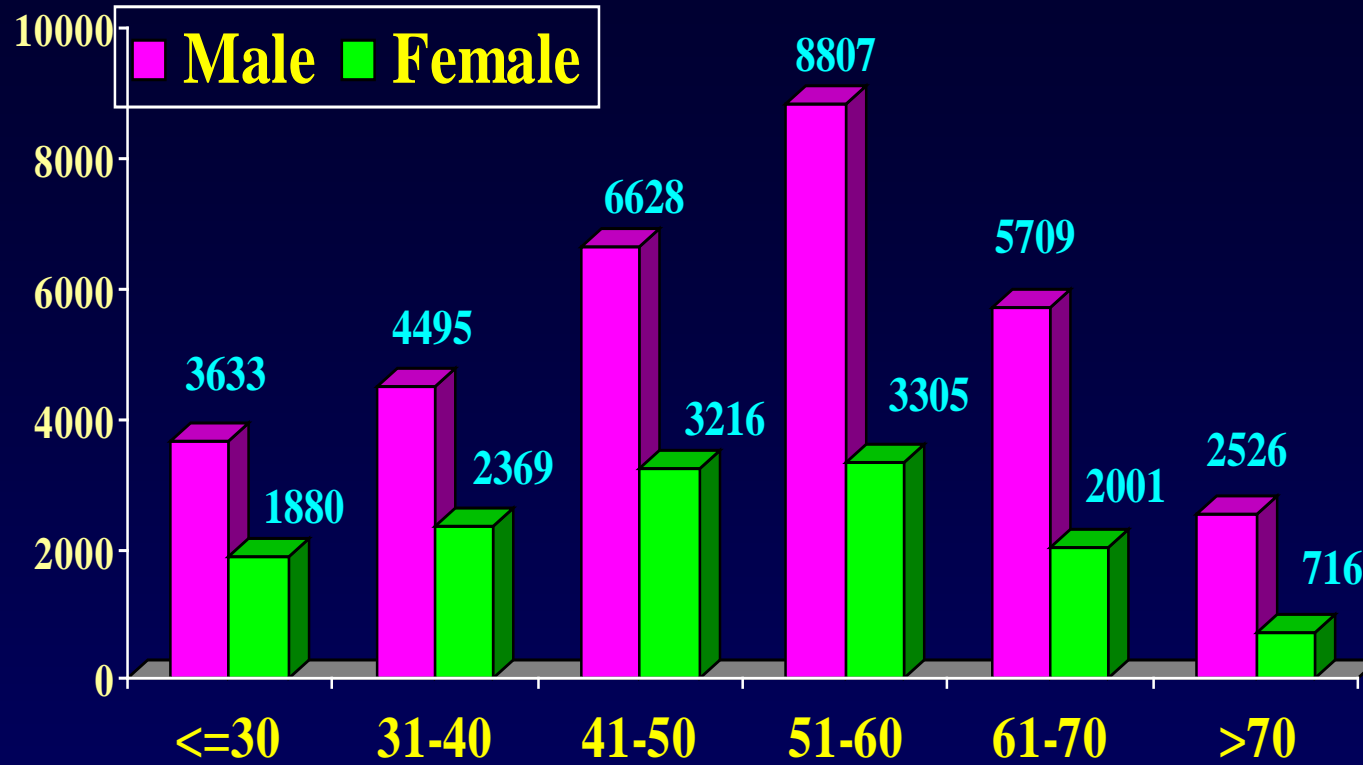
DATA ANALYSIS & REPORTS

CKD Registry of India

Total Number Of Centers : 154
Centers of ISN : 116
Centers of ISPN : 38

	Pilot 2005	2006	2007	2008	Total
	Cochin	Bhubaneshwar	Delhi	Pune	
Number of registered centers	10	60	37	47	154
Data received	3679	11457	11848	13593	40577
Data used for analysis	3679	10346	11689	12479	38193

AGE AND GENDER



- **Males** : 32202 / 45885 (70.2% Males)
Mean age 50.9 ± 14.6 years
- **Females** : 13683 / 45885 (29.8% Females)
Mean age 48.4 ± 14.4 years
- **Overall** : Mean age 50.1 ± 14.6 years ; Age Range (19,98) years

The total numbers represent less than n stated below, due to lack of complete information on age.

RELIGION

	Hindu	Muslim	Christian	Sikhism	Jainism	Buddhist	Parsi	Other
Stage I	725	99	38	48	7	1	1	3
Stage II	1563	177	69	60	10	2	0	2
Stage III	6649	831	304	224	71	17	6	7
Stage IV	8978 (26.1%)	1112 (25.0%)	368 (24.3%)	327 (26.1%)	84 (29.5%)	13 (20.0%)	7 (25.9%)	19 (35.2%)
Stage V	16537 (48.0%)	2227 (50.1%)	733 (48.5%)	594 (47.4%)	113 (39.6%)	32 (49.2%)	13 (48.1%)	23 (42.6%)
TOTAL	34452 (81.0%)	4446 (10.5%)	1512 (3.6%)	1253 (2.9%)	285 (0.7%)	65 (0.2%)	27 (0.1%)	54 (0.1%)

Population Status	Hindu	Muslim	Christian	Sikhism	Jainism	Buddhist	Parsi	Other
Percent	80.5	13.4	2.3	1.9	0.4	0.8	0.3	0.4

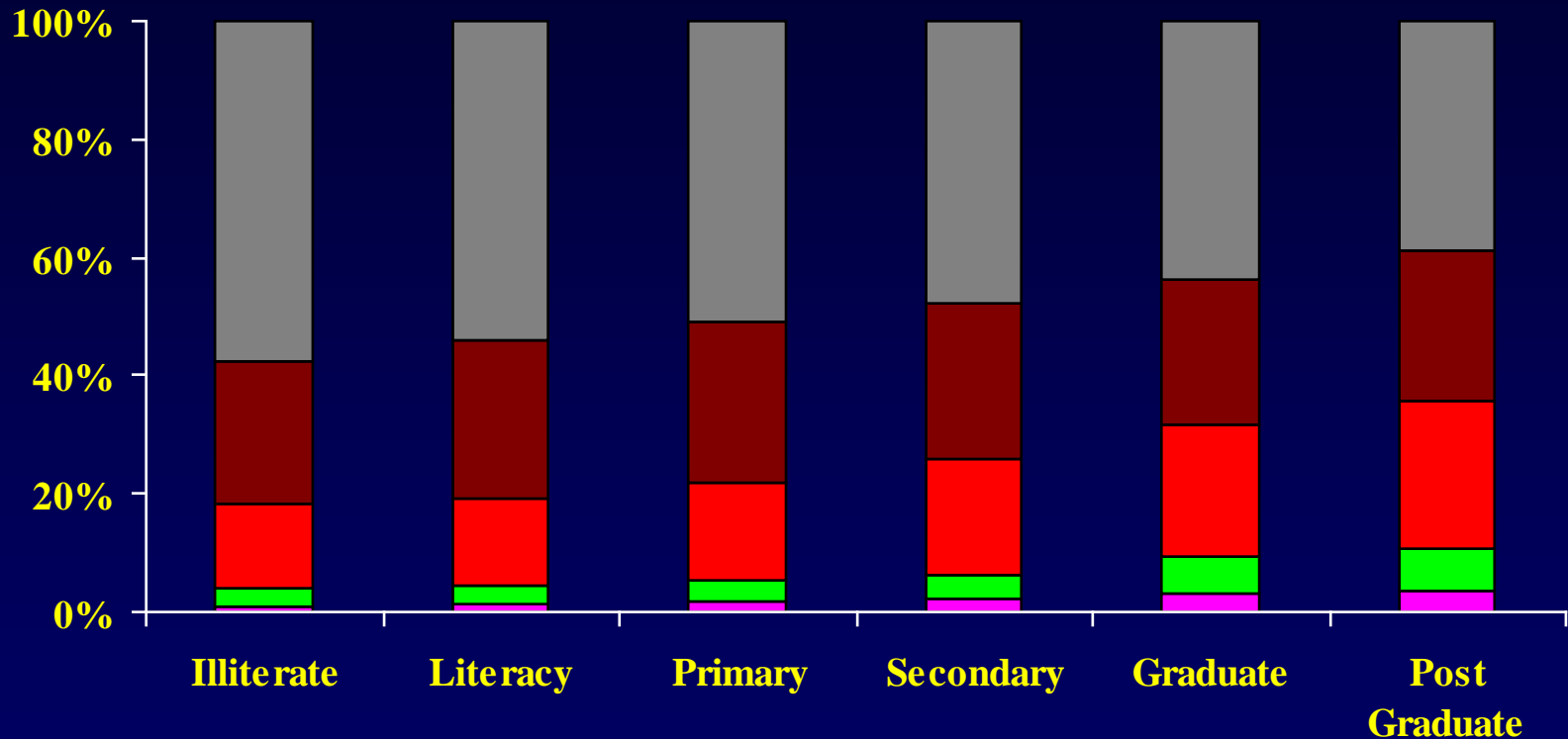
- **More than 74% patients irrespective of their religion status report to Nephrologists after stage IV CKD.**

The total numbers represent less than n stated below, due to lack of complete information needed for calculation of eGFR &/or information on religion.

CKD Registry of India (n=45885)
(Indian Society of Nephrology)

EDUCATION

■ Stage I ■ Stage II ■ Stage III ■ Stage IV ■ Stage V



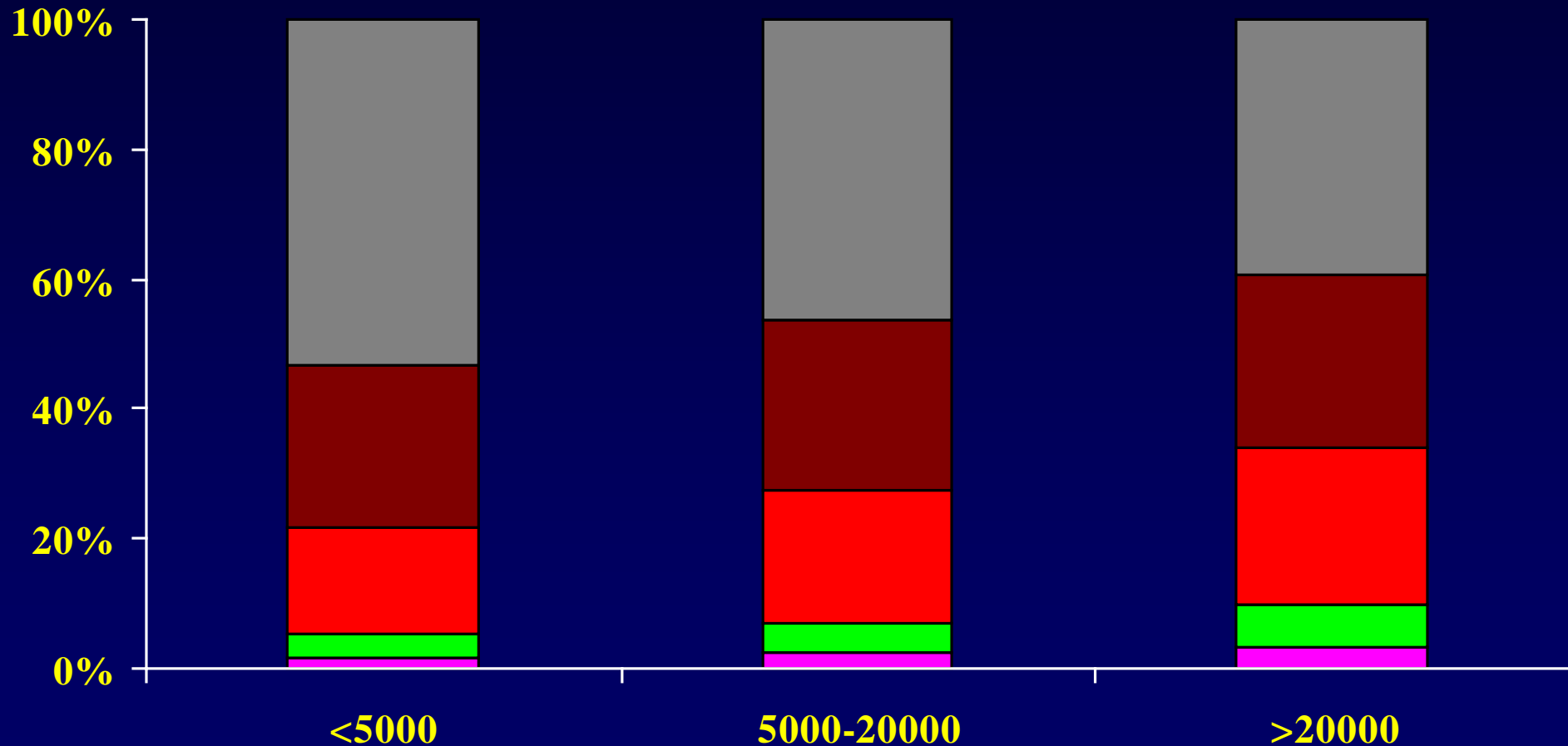
- More than 74% patients irrespective of their educational status report to Nephrologists after stage IV CKD.
- As education level increases the patients come earlier to the nephrologist.

The total numbers represent less than n stated below, due to lack of complete information needed for calculation of eGFR &/or information on education.

CKD Registry of India (n=45885)
(Indian Society of Nephrology)

FAMILY INCOME

■ Stage I ■ Stage II ■ Stage III ■ Stage IV ■ Stage V



CKD Registry of India (n=45885)
(Indian Society of Nephrology)

BMI (Kg/m²) CKD STAGE (n=41171)

	Mean±SD Kg/m² (n)	% Underweight 18.50 Kg/m² (n)	% Normal 18.50-24.99 Kg/m² (n)	% Pre-obese 25.00-29.99 Kg/m² (n)	% Obese >30.00 Kg/m² (n)
Stage I	27.06 ± 5.83 (927)	2.94 (26)	36.16 (320)	36.05 (319)	24.86 (220)
Stage II	25.63 ± 4.97 (1897)	5.32 (97)	43.77 (798)	33.90 (618)	17.00 (310)
Stage III	24.71 ± 4.64 (8199)	6.04 (480)	51.06 (4058)	31.21 (2480)	11.69 (929)
Stage IV	23.24 ± 4.31 (11014)	10.60 (1137)	60.21 (6456)	22.42 (2404)	6.77 (726)
Stage V	21.66 ± 4.06 (20483)	20.78 (4113)	61.10 (12094)	14.80 (2930)	3.31 (656)

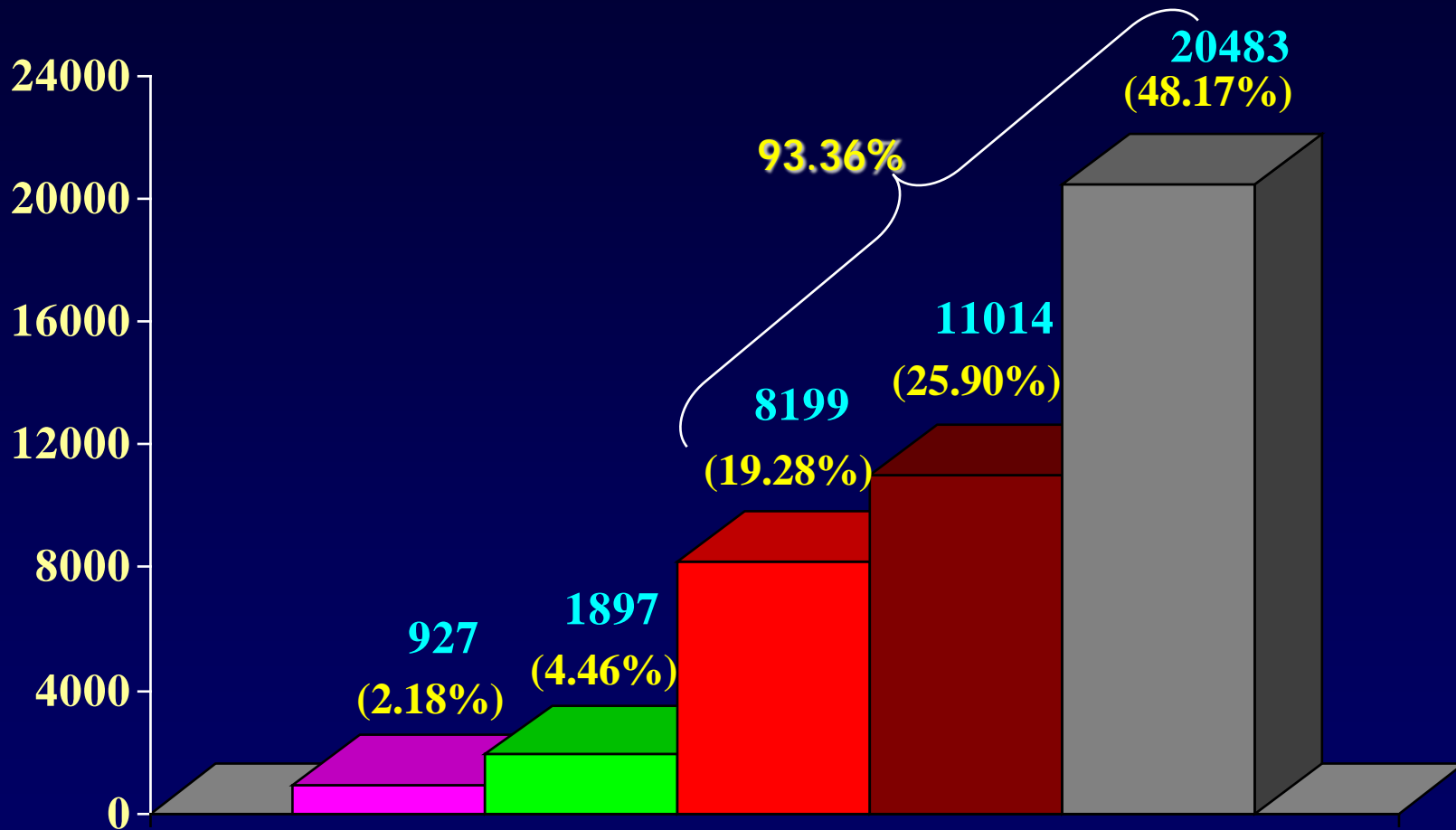
As expected BMI decreases with increasing stage of CKD.

BASIC DIAGNOSIS

Basic Diagnosis	No.	%
Diabetic Nephropathy	14331	31.2
Undetermined	7290	15.9
CGN	6310	13.8
Hypertensive Nephrosclerosis	6041	13.2
Others	5234	11.4
TID	3190	7.0
Obstructive Uropathy	1586	3.5
ADPKD	1352	2.9
Reno vascular Disease	385	0.8
Graft Dysfunction	166	0.4
Total:	45885	100.0

STAGES OF CKD

■ Stage I ■ Stage II ■ Stage III ■ Stage IV ■ Stage V



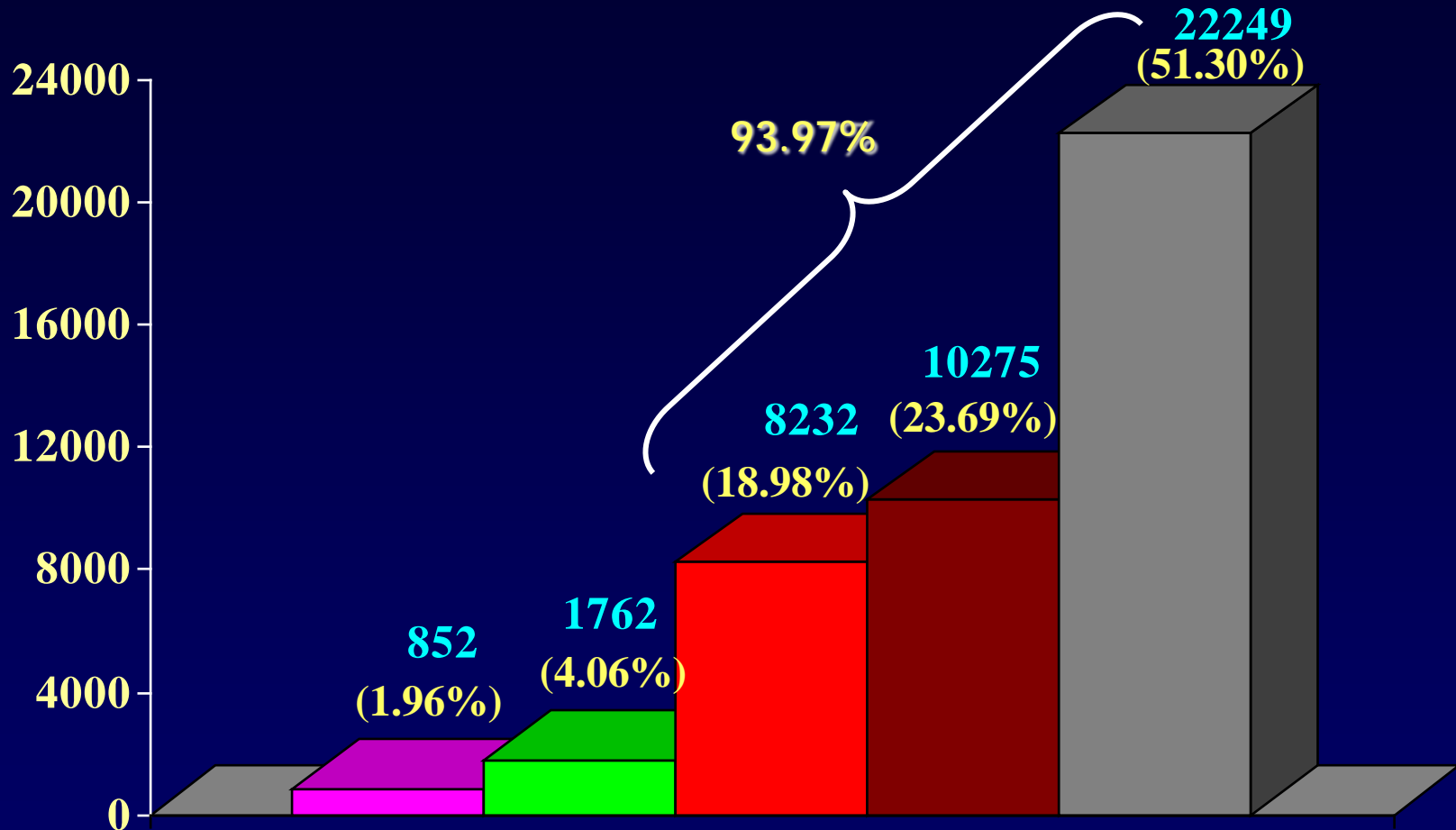
Calculated by
• **Cockcroft-Gault**

The total numbers represent less than n stated below, due to lack of complete information needed for calculation of eGFR.

CKD Registry of India (n=45885)
(Indian Society of Nephrology)

STAGES OF CKD

■ Stage I ■ Stage II ■ Stage III ■ Stage IV ■ Stage V



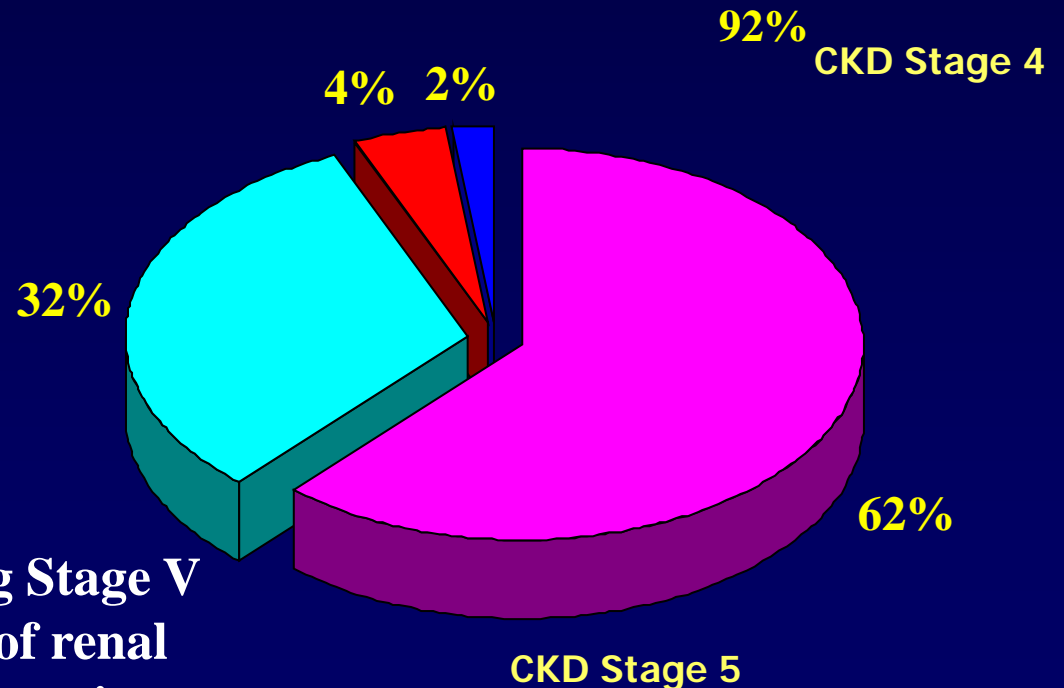
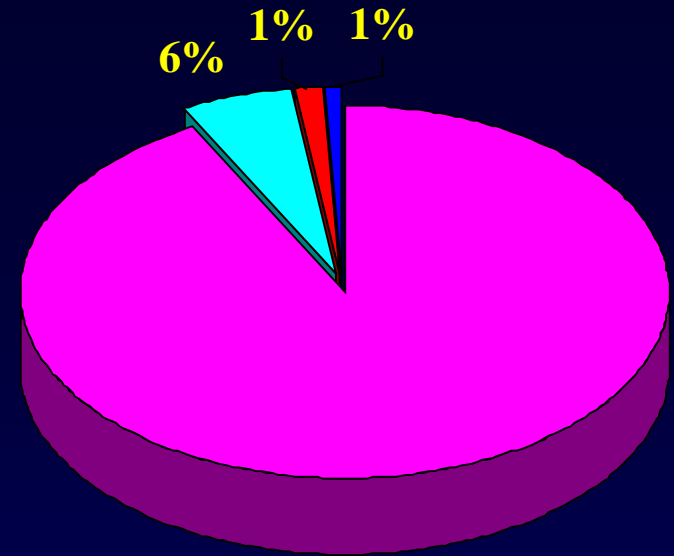
The total numbers represent less than n stated below, due to lack of complete information needed for calculation of eGFR.

Calculated by
• **Modified MDRD**

CKD Registry of India (n=45885)
(Indian Society of Nephrology)

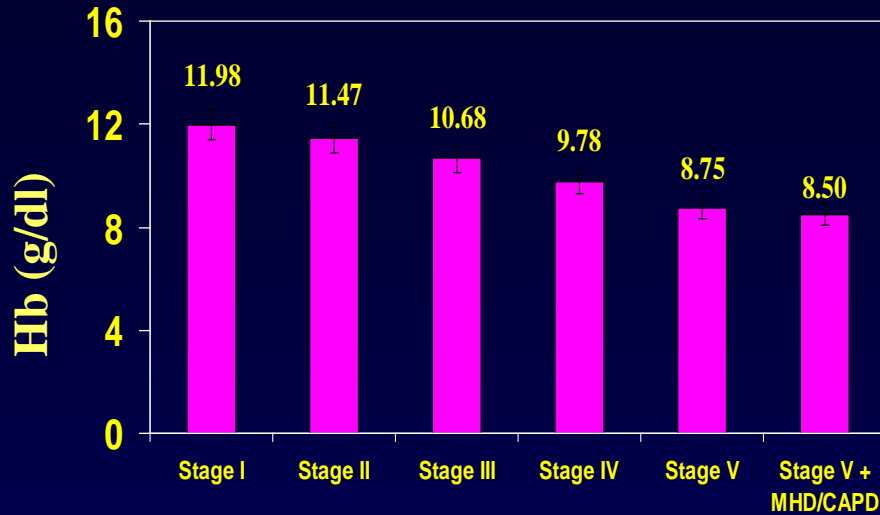
CURRENT MANAGEMENT

Current Management	No's	%
Conservative + Palliative	35250	76.82
Dialysis – MHD	8395	18.30
Dialysis – CAPD	1256	2.74
Renal Transplantation	984	2.14
TOTAL	44626	100.0



12636 (61.7%) / 20483 among Stage V were not receiving any form of renal replacement at the time of reporting

Hb (g/dl) AND CKD STAGES



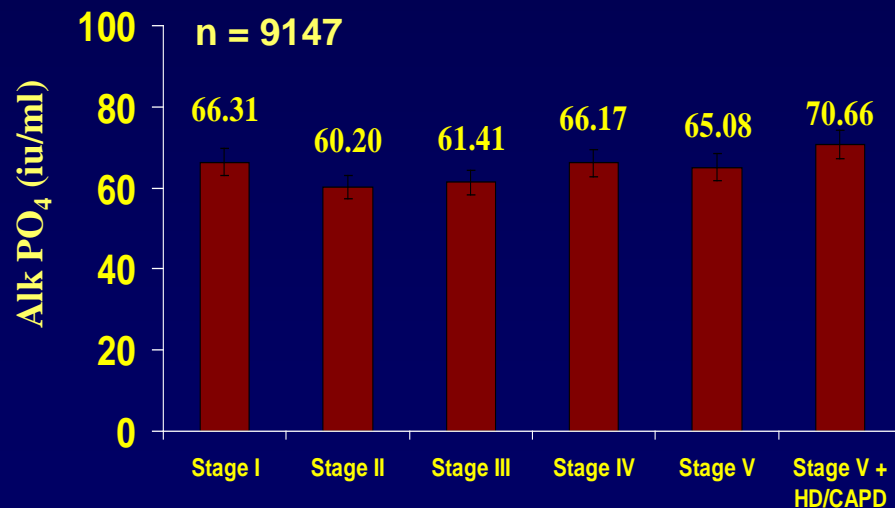
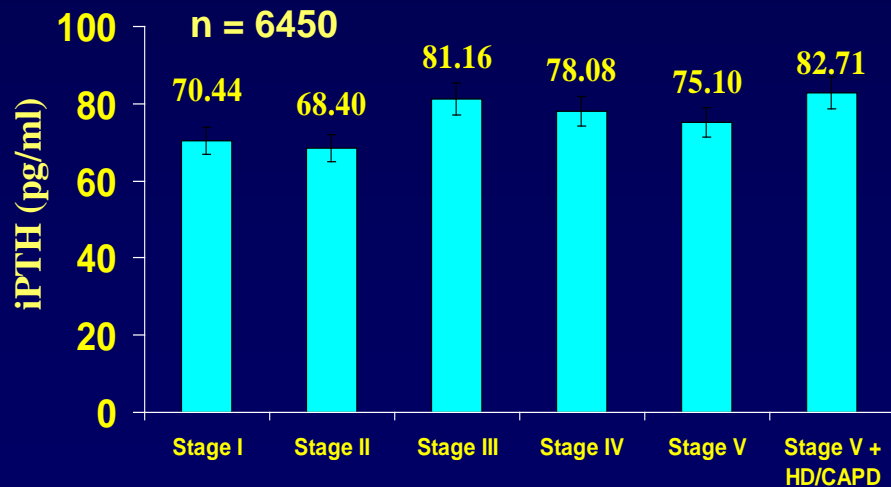
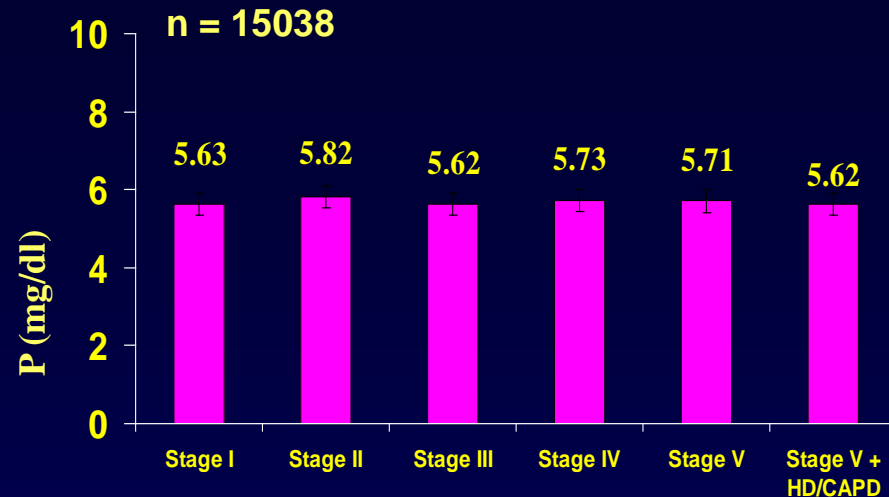
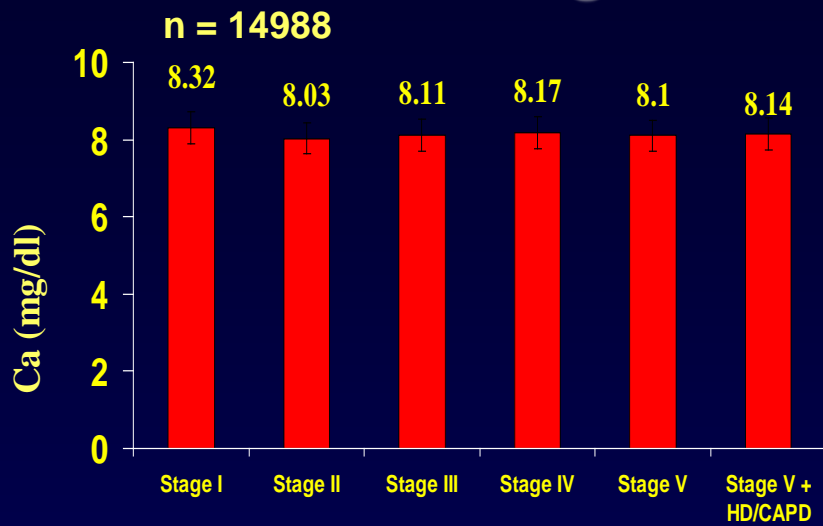
n = 34031

	Stage I (848)	Stage II (1755)	Stage III (7489)	Stage IV (9794)	Stage V (12160)	Stage V + MHD/CAPD (10396)
Hb <13 g/dl (Males)* & Hb <12 g/dl (Females)*	305 (36.0%)	822 (46.8%)	4861 (64.9%)	7390 (75.5%)	9699 (79.8%)	8168 (78.6%)
<12 g/dl	240	664	4218	6886	9389	7964
<11 g/dl	154	428	3171	5776	8704	7477
<10 g/dl	86 (10.1%)	245 (14.0%)	1969 (26.3%)	4222 (43.1%)	7417 (61.0%)	6533 (62.8%)
EPO	66 (7.8%)	157 (8.9%)	730 (9.7%)	1363 (13.9%)	2313 (19.0%)	3340 (32.1%)

* WHO definition of Anemia

CKD Registry of India (n=45885)
(Indian Society of Nephrology)

CKD Stages AND Bone Disease Parameters



Hepatitis Status

	Checked In	+ve	-ve
HBsAg	9960 / 21458 (46.4%)	255 / 9960 (2.6%)	9705 / 9960 (97.4%)
Anti HCV	9027 / 21458 (42.1%)	186 / 9027 (2.1%)	8841 / 9027 (97.9%)

18049 (39.3%) had Diabetes Mellitus out of 45885

Basic Diagnosis	Diabetic		Non Diabetic	
	No.	%	No.	%
Diabetic Nephropathy	14331	79.4	0	0.0
Undetermined	1285	7.1	6005	21.6
Others	973	5.4	4261	15.3
Hypertensive Nephrosclerosis	632	3.5	5409	19.4
CGN	247	1.4	6066	21.8
TID	244	1.4	2943	10.6
Obstructive Uropathy	134	0.7	1452	5.2
ADPKD	114	0.6	1238	4.4
Reno vascular Disease	62	0.3	323	1.2
Graft Dysfunction	27	0.1	139	0.5
Total:	18049		27836	

18049 (39.3%) had Diabetes Mellitus out of 45885

TYPE AND DURATION OF Diabetes

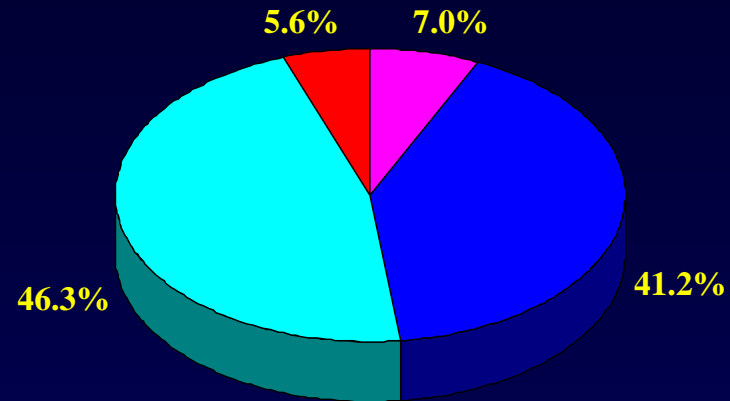
DM	<5 Y	5-10 Y	10-15 Y	15-20 Y	>20 Y	Duration N/A	Total
Type I	134	82	69	46	42	63	436
Type II	2400	3468	3432	2098	2030	1144	14572
Type N/A	88	175	142	103	72	2461	3041
Total:	2622	3725	3643	2247	2144	3668	18049

- **6347 (42.2%) / 15008 with diabetic nephropathy had less than 10 years duration of known diabetes.**
- **14572 (97.1/ 15008 patients with diabetic nephropathy had Type II diabetes.**

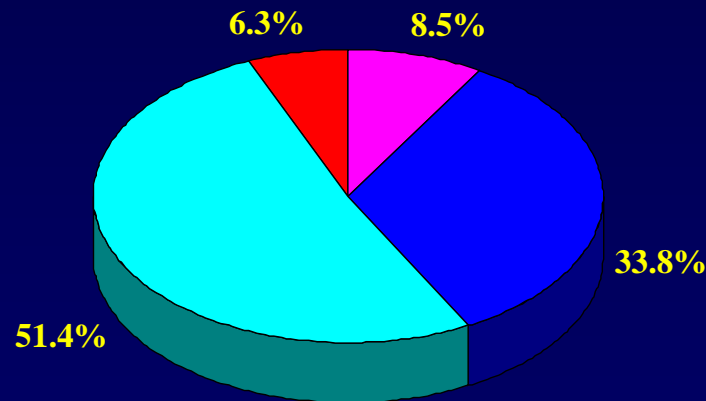
18049 (39.3%) had Diabetes Mellitus out of 45885

Diabetes Mellitus Treatment

Treatment	No's
Diet Only	499
OHA	2889
Insulin	3314
Combination	492
Total:	7194



CKD Stage IV



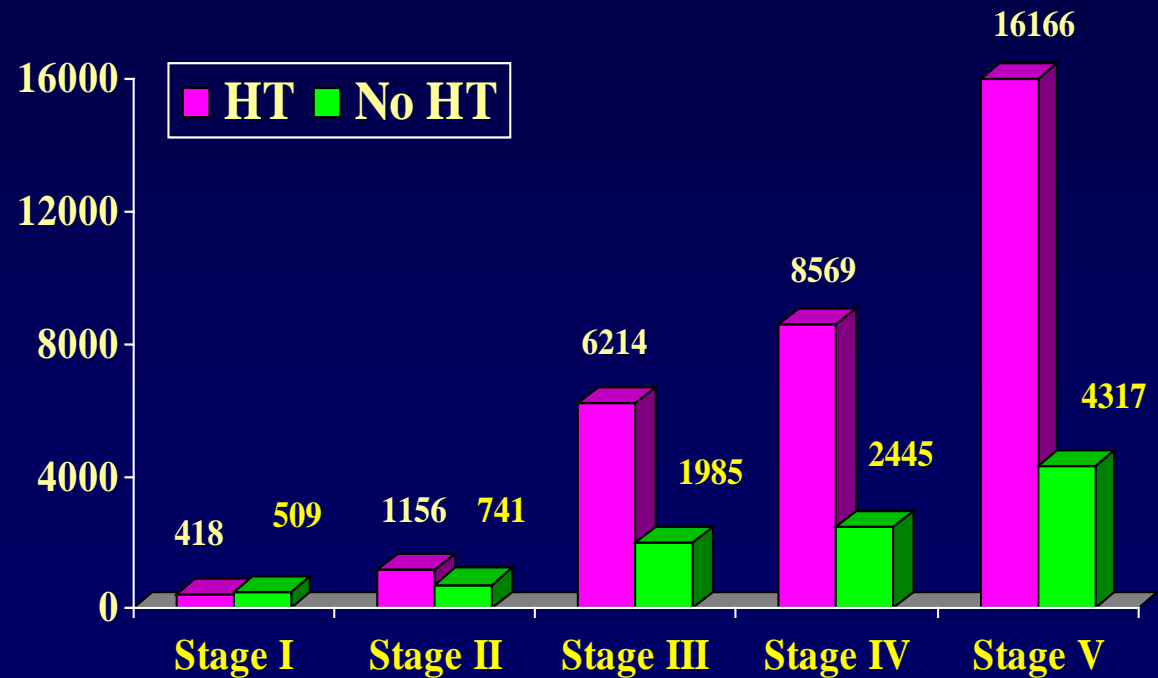
CKD Stage V

34461 (75.1%) had Hypertension out of 45885

Basic Diagnosis	No.	%
Diabetic Nephropathy	11751	34.1
Hypertensive Nephrosclerosis	6041	17.5
Undetermined	5364	15.6
CGN	4328	12.6
Others	3120	9.1
TID	1830	5.3
ADPKD	883	2.6
Obstructive Uropathy	723	2.1
Reno vascular Disease	300	0.9
Graft Dysfunction	121	0.4
Total:	34461	100.0

34461 (75.1%) had Hypertension out of 45885

	Hypertensive	Non Hypertensive	Total
Stage I	418	509 (54.9%)	927
Stage II	1156	741 (39.1%)	1897
Stage III	6214	1985 (24.2%)	8199
Stage IV	8569	2445 (22.2%)	11014
Stage V	16166	4317 (21.1%)	20483

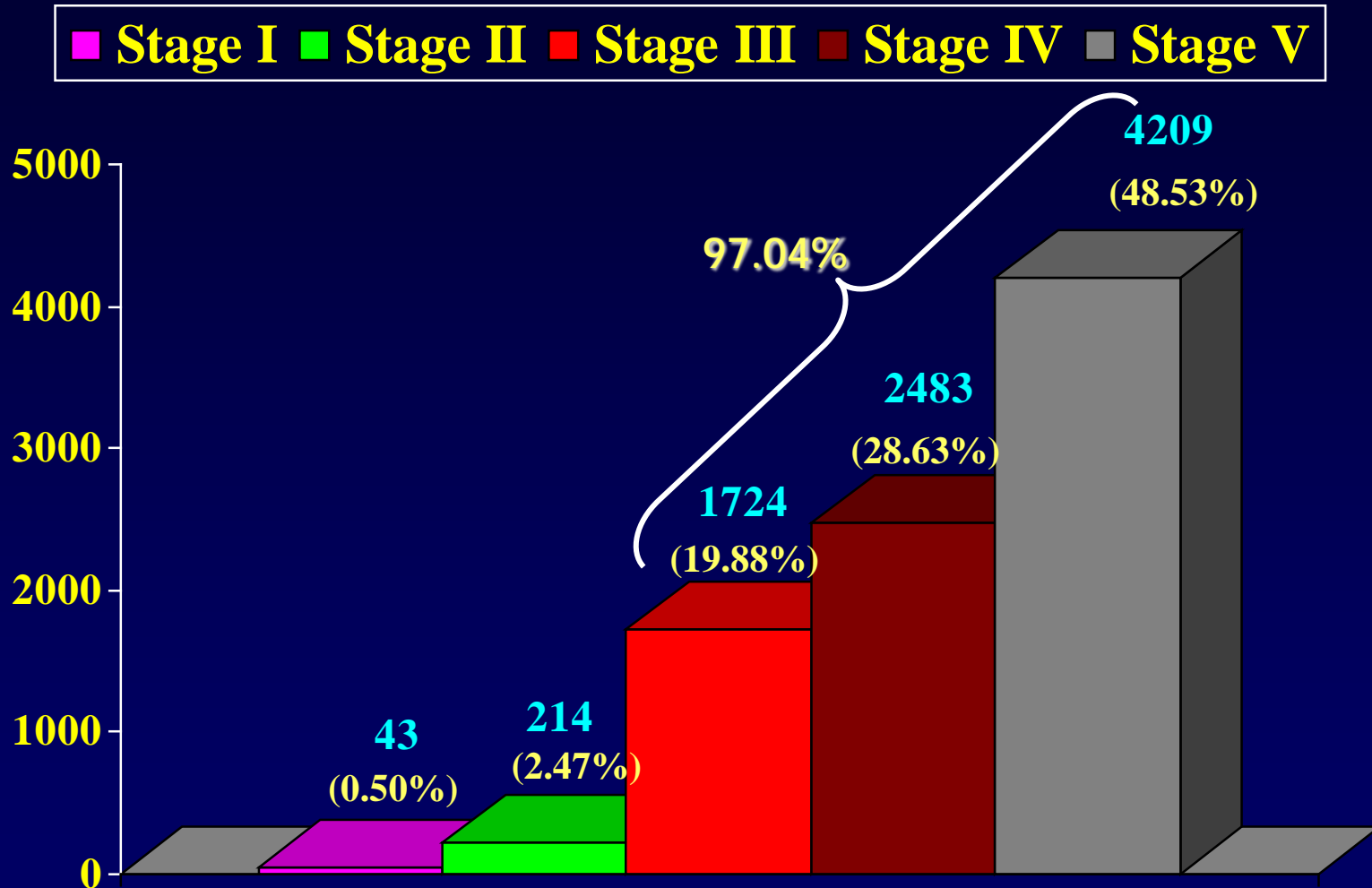


CARDIOVASCULAR DISEASE IN CKD

- 15864 (73.9%) / 21458 : Not checked for CVD
- 9230 (66.5%) / 13884 : Checked had CVD.

Type of CVD	No's	%
IHD	4538	49.2
LVH	3005	32.6
IHD + LVH	309	3.3
Other	1378	14.9
Total	9230	100.0

CARDIOVASCULAR DISEASE IN CKD ACCORDING TO STAGE



- The incidence of CVD dramatically increases with CKD stage.

CKD Registry of India (n=13884)
(Indian Society of Nephrology)

CARDIO-VASCULAR DISEASE (CVD) IN CKD

Results of Univariate Analysis

Sr.No.	Covariate	Odds-Ratio
1	Gender	1.15
2	Income	1.51
3	Diabetes Mellitus	2.20
4	Hypertension	1.68
5	Diabetes Mellitus + Hypertension	2.11
6	Family History Diabetes Mellitus	1.73
7	Family History Hypertension	1.41
8	Family History Kidney Disease	2.64
9	Family History Cardiovascular Disease	2.13
10	Tobacco Abuse	2.09
11	Alcohol	1.34

• P<0.0001**

Cardiovascular Disease : 8988 / 13252 (67.8%)

CARDIO-VASCULAR DISEASE (CVD) IN CKD

Results of Multiple Logistic Regression Analysis

Sr.No.	Covariate	Risk factor for CVD	β - Coefficient	Exp (β) Odds-Ratio	95% CI for Exp (β)		P -value
					Lower	Upper	
1	Family Income	> Rs.20,000/-	0.319	1.375	1.219	1.551	<0.0001**
2	Diabetes Mellitus	Presence	0.740	2.096	1.937	2.269	<0.0001**
3	Hypertension	Presence	0.191	1.210	1.139	1.286	<0.0001**
4	FH_Hypertension	Presence	0.206	1.228	1.106	1.364	<0.0001**
5	FH_Diabetes Mellitus	Presence	0.042	1.043	0.938	1.160	0.436
6	FH_Kidney Disease	Presence	0.865	2.375	1.997	2.825	<0.0001**
7	FH_CVD	Presence	0.548	1.729	1.345	2.222	<0.0001**
8	Tobaco_Abuse	Presence	0.628	1.873	1.694	2.071	<0.0001**
9	Habit_Alcohol	Absence	-0.078	0.925	0.795	1.076	0.313

Cardiovascular Disease : 8988 / 13252 (67.8%)

FUTURE PLANS

- COLLABORATION WITH OTHER REGISTRIES.
- COLLECT FOLLOW UP DATA.
- PUBLISH IN REPUTED JOURNALS.
- USE DATA FOR ADVOCACY.

ACKNOWLEDGEMENT

CKD REGISTRY GROUP INDIAN SOCIETY OF NEPHROLOGY

We are grateful to:

- **Janssen Cilag India, J & J for providing unrestricted research grants for:**
 - a. Computer hardware, software & its maintenance,
 - b. Website development, security & its maintenance,
 - c. Office expense,
 - d. Printing & postage,
 - e. Travel
 - f. Co-ordination etc.

- **Muljibhai Patel Society for Research in Nephro-Urology, Nadiad for:**
 - a. Office space & furniture
 - b. Personnel Services for : Biostatistics & Computer Expertise

- **C-Cube Software, Vallabh Vidyanagar, for computer software and website development, maintenance & security.**

- **All members of the project & their teams for contributing valuable data.**

