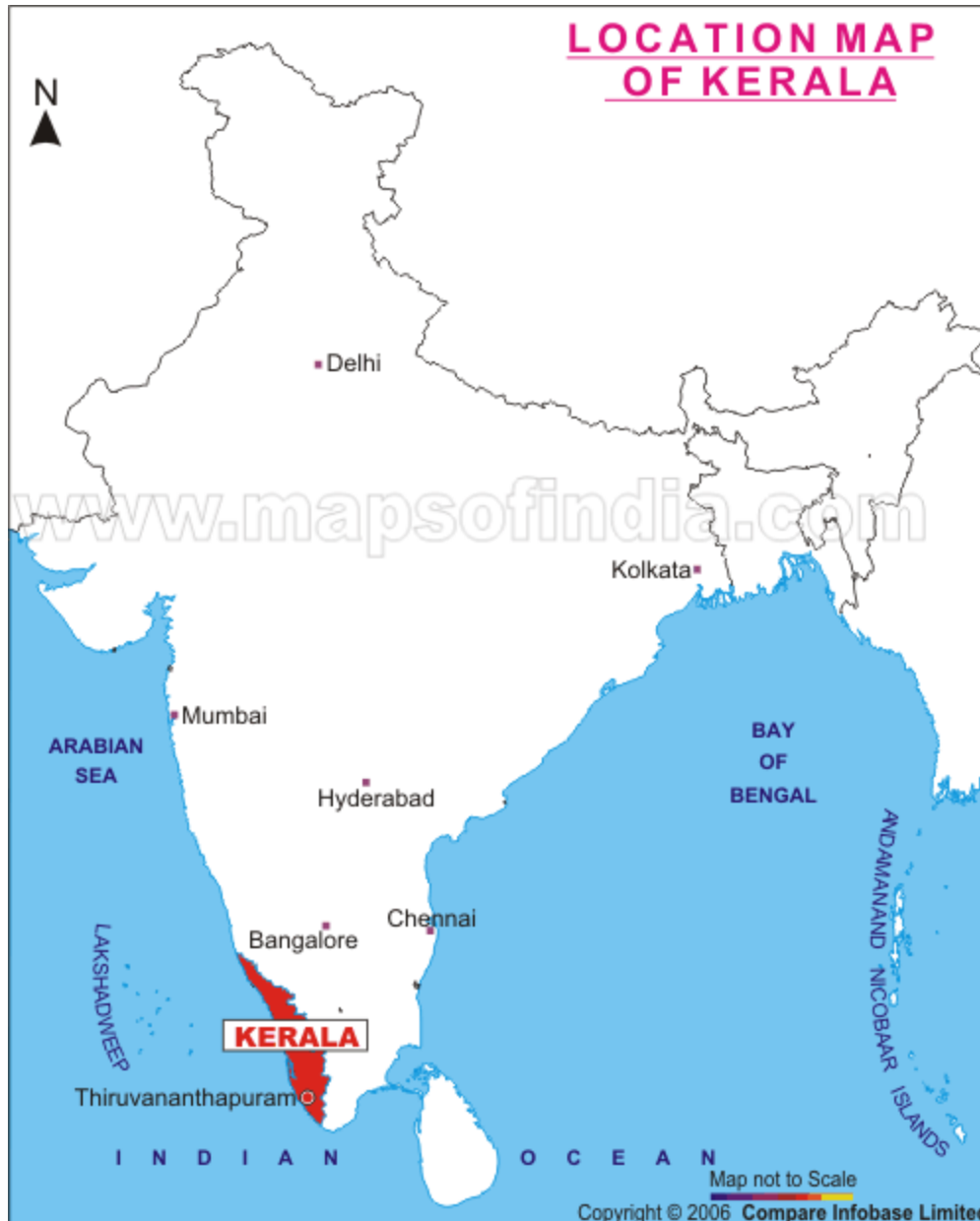# Health inequality by Gender and Wealth status: A special focus on the length of life without diabetes in Kerala, India

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LOCATION MAP OF KERALA

N

Delhi

Kolkata

ARABIAN SEA

Mumbai

BAY OF BENGAL

Hyderabad

ANDAMAN AND NICOBAR ISLANDS

Chennai

LAKSHADWEEP

Bangalore

KERALA

Thiruvananthapuram

INDIAN OCEAN

Map not to Scale

Context

- **Kerala has high social and human development as of many developed countries**(CDS-UN 1975, Nag 1983, Krishnan 1985, Navaneetham and Dharmalingam, 2002)

- **Less social inequality and better women's empowerment**(K Navaneetham and Kabir, 2006)

- **The state has better health care infrastructure(33 beds per 10,000 population,=USA)**

Context

- **But still morbidity is high over the last five decades**(Panikar and Soman, 1984, Kannan et al. 1990, Kumar, 1993).
- **Life style diseases are increasing**
- **Many infectious diseases reported: cholera, chikungunya**
- **Government has many health interventions(Rural health mission, diabetic research institute, Health insurance for poor, health awareness programs)**

Objectives

- **To discuss the levels and patterns of morbidity in Kerala by socio-economic status and gender**

- **To examine the prevalence rate of diabetic across socio-economic status from a demographic perspective.**

- **To compute the diabetes-free life expectancy for both males and females in Kerala using the Sulivan method.**

Data and Methodology

Data

Based on a cross sectional community survey titled "Health Status of Kerala: A life course Perspective" conducted in Kerala in the year 2004.

The survey covered 17071 individuals in all age groups from 3320 households.

This study is the latest community based health survey in Kerala with large sample size other than the National Sample Survey Organisation (NSSO) survey conducted in the same year.

This survey collected details of all diseases from a life course perspective.

Methods

- In order to understand the socio-economic inequality in health a wealth index was constructed using a number of assets indicators. Principle component analysis was employed to construct the wealth index. The significance of using this methodology was well established in previous studies (Filmer and Prichett 2001, McKenzie 2003, Vyas and Kumaranayaka, 2006).

- Life table technique (Sullivan Method) was used to compute diabetes free life expectancy (DFLE). Proportion of diabetic persons was taken from the community survey, while Age Specific Death Rates (ASDR) was collected from Sample Registration System (Registrar General 2004).

Level of Morbidity in Kerala, 2004

	Male	Female	Total
■ Série1	223	258	242

Y-axis: Morbidity rate (per 1000 population)
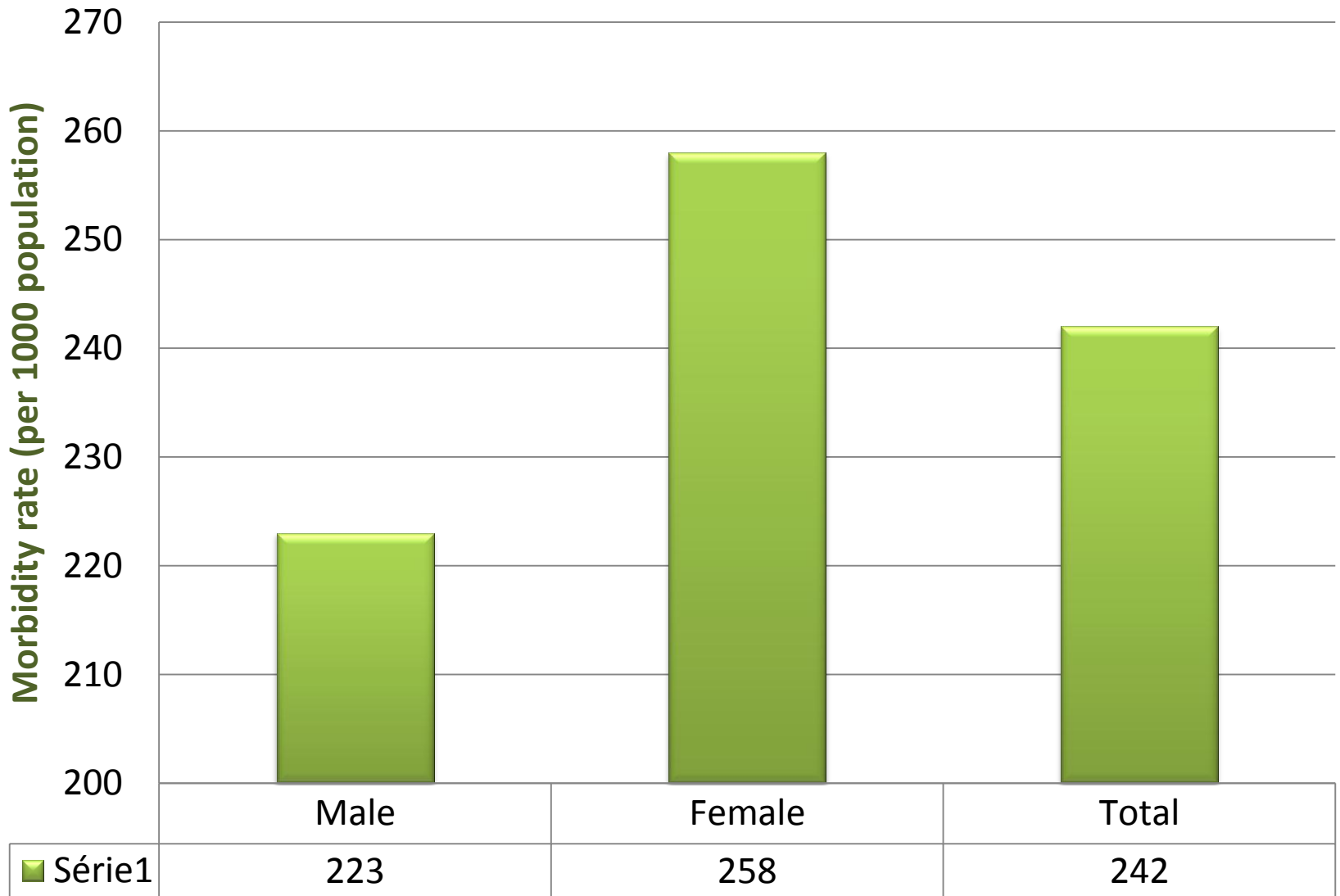
Specific prevalence rate of Morbidity in Kerala, 2004

	Male	Female	Combined
0-4	268	183	225
5-12	170	155	163
13-18	116	100	109
19-34	95	116	106
35-44	198	285	247
45-59	352	447	406
60-74	582	642	614
75+	649	682	668
Total	223	258	242

Morbidity rate by Socio-Economic Conditions and Place of Residence in Kerala, 2004

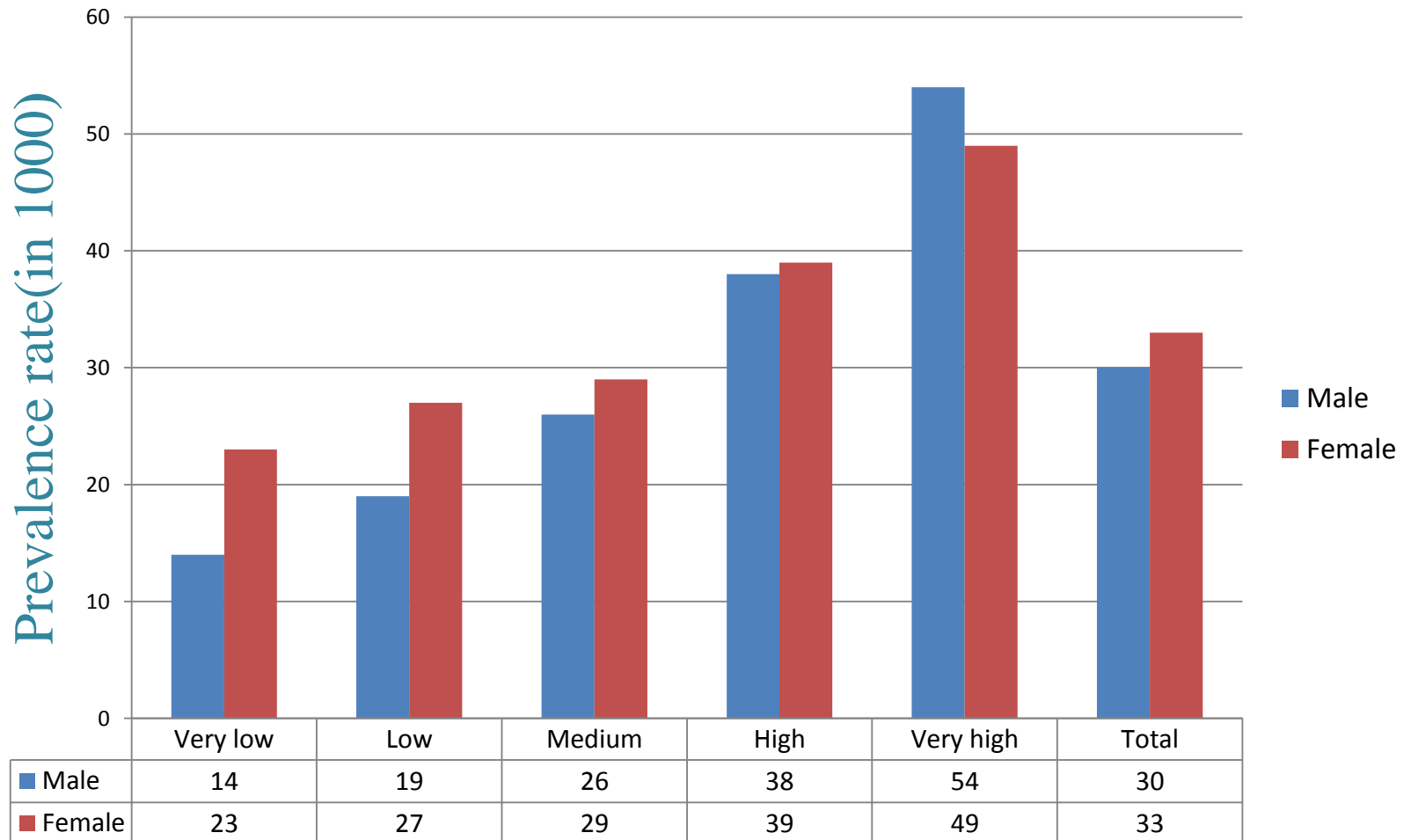| Wealth status	Rural		Urban	
	Male	Female	Male	Female
Very Low	239	293	227	355
Low	226	278	191	270
Medium	203	241	254	249
High	226	237	236	251
Very High	214	217	233	270
Combined	222	255	230	272

Logistic regression showing the impact of gender and socio-economic status on morbidity across the life stages in Kerala, 2004

Variable	Childhood (0-4 years)	Adolescents (5-18 years)	Young adults (19-34 years)	Adults (35-54 years)	Old age (55+ years)
Sex					
Male(Reference)	1.00	1.00	1.00	1.00	1.00
Female	0.61**	0.88	1.26**	1.60	1.23**
Wealth status					
Very Low	1.63**	1.15	1.49**	1.24*	1.25
Low	1.53**	1.12	1.27	1.09	1.00
Medium	0.95	0.90	1.09	1.34*	0.98
High	1.12	1.02	0.94	1.30*	0.93
Very High (Reference)	1.00	1.00	1.00	1.00	1.00
Constant	0.18**	0.11**	0.02**	0.06**	0.73
-2LL Model chi-square	1466.8	3507.7	3104.5	4274.8	3057.4
N	1437	4489	4745	3632	2309

Prevalence rate of Diabetic in Kerala (per 1000 pop), 2004

Age Group	Male	Female	Total
35-39	23	14	18
40-44	43	35	38
45-49	53	79	68
50-54	99	111	105
55-59	95	113	105
60-64	154	117	135
65-69	145	143	144
70-74	133	140	137
75-79	247	117	174
80-84	125	111	115
85+	49	143	100
Total	30	33	32

Prevalence rate of Diabetics, Kerala 2004

	Very low	Low	Medium	High	Very high	Total
■ Male	14	19	26	38	54	30
■ Female	23	27	29	39	49	33

Prevalence rate(in 1000)

■ Male
■ Female

Percentage distribution of diabetics persons by Wealth Status, Kerala 2004

Economic Status	Very low	Low	Medium	High	Very high
Rural	13,9	16,2	18,5	23,7	27,8
Urban	6,4	10,3	14,7	25,0	43,6
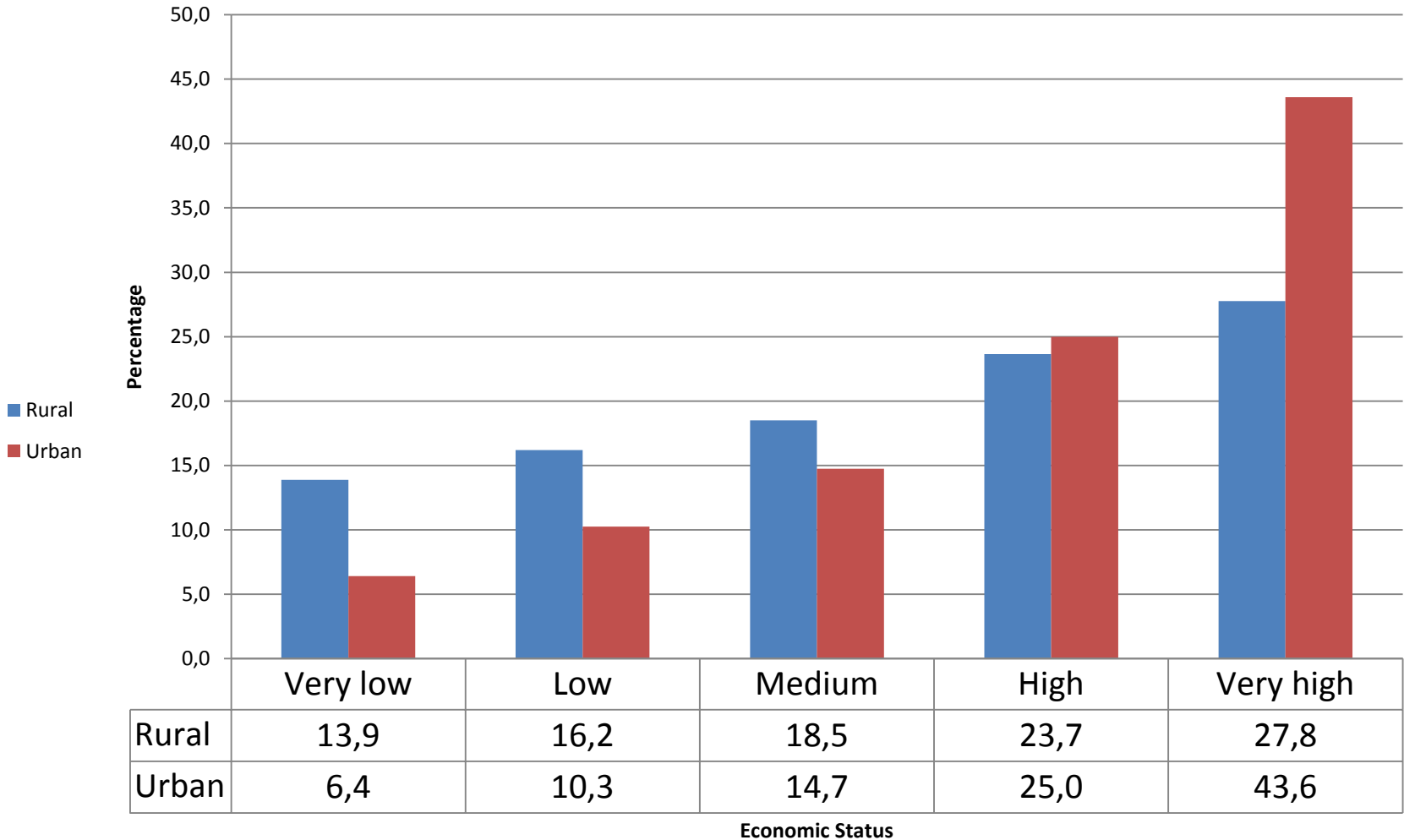
Diabetes and Co-existing ailments

Co-existing disease	Share (%)
None	2.6
Hypertension	42.2
Diseases of bones and joints	11.7
Cardiovascular diseases	8.3
Asthma,Esnophelia	5.3
Diseases of nerve system	3.1
Viral Fever/Influenza/Non specific fevers of short duration	1.7
Dysentry, Diarrhoea, Cholera/Gastroenteritis	1.7
Other Diseases	23.5

Life expectancy, Diabetes-free Life expectancy by sex in Kerala, 2004

Ages	Life expectancy		Diabetes-free Life expectancy		Absolute Difference	
	Male	Female	Male	Female	Male	Female
35	39.1	45.5	35.3	41.1	3.8	4.4
40	34.7	40.7	31.0	36.3	3.7	4.4
45	30.1	35.8	26.5	31.6	3.6	4.2
50	25.9	31.2	22.5	27.3	3.4	3.8
55	21.9	26.6	18.9	23.2	3.1	3.3
60	18.2	22.3	15.4	19.4	2.8	2.9
65	14.9	18.2	12.7	15.8	2.3	2.4
70	11.8	14.5	10.0	12.6	1.8	1.8
75	9.3	11.2	7.7	9.8	1.5	1.4
80	6.7	7.9	6.1	6.9	0.6	1.0
85	4.8	5.8	4.6	5.0	0.2	0.8

Summing up

- **The state has high socio-demographic achievements, as of many developed countries.**

- **One in every four persons have morbidity.**

- **The government has many health interventions to reduce the level of morbidity. It is not based on disease specific and thus goes ineffective.**

- **The state health intervention is not based on evidences, not considering the effects of wealth status, and gender.**

Suggestions

- **Health policies, and programs should be formulated on proper evidences**

- **It should be disease specific, and the impact of wealth and gender should be considered.**

Thank You

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