NON-COMMUNICABLE DISEASES

Prevalence of cardiovascular risk factors in a rural population in Tamil Nadu, India, 2007

Background:

The huge burden of CVD in Indian sub-continent is the consequence of the large population and high prevalence of cardiovascular risk factors. These risk factors include smoking, alcohol, lower fruit and vegetable intake, physical inactivity, obesity, high blood pressure, raised blood glucose and abnormal blood lipids. Majority of the surveys in past few years on prevalence of these risk factors have been carried out in urban population. There are limited data on prevalence of cardiovascular risk factors in rural population. Therefore, we conducted a survey to determine prevalence of cardiovascular risk factors in a select rural population in Tamil Nadu.

Methods:

Study design, setting and participants: It was cross-sectional survey. We purposely selected study population; as this survey provided baseline data for the population that will be followed up longitudinally for minimum of 5 years. We included rural population from eleven villages in SriPerumbudur and Ponnamalle taluks in districts Kancheepuram and Thiruvallur (Tamil Nadu state), respectively. All adults aged 25-64 years were considered eligible for the study.

Methods of assessment: The risk factors included in the survey were selected as per WHO-STEPS recommendations. We used questionnaire to collect data on demographic and behavioral risk factors including tobacco,alcohol and consumption of fruit and vegetables. Anthropometric measurements included weight, height, waist and hip circumference. Blood pressure was measured from the right arm after the subject had been sitting for at least five minutes using digital automatic blood pressure apparatus.(Omron MX3)

Definitions: *Smoker:* Smoker was defined as a person who had smoked at least 100 cigarettes over their lifetime. In addition, current smoker was defined as person who continued to smoke at the time of survey daily or occasionally and ex-smoker was defined as a person who had quit smoking.

Alcohol consumption: Current consumer was defined as person who has consumed alcohol in the past 12 months.

Fruit and vegetable intake: One serving of fruit/ vegetable was equivalent to 80 gm.

Body mass index (BMI) classification: Categories as per WHO classification are <18.5 kg/m2 underweight, 18.5-24.99 kg/m2normal, 25.0-29.99 kg/m2as overweight and >=30.0 kg/m2as obese. Categories as per Asian classification are <18.5 kg/m2 underweight, 18.5-22.99 kg/m2normal, 23.0-27.49 kg/m2as overweight and >27.5 kg/m2as obese.

Central obesity: Central obesity was defined as either WC>=90 cm men and WC>= 80 cm for women.

Hypertension: Hypertension was defined as systolic blood pressure (SBP) of ^{3}140 mmHg or diastolic blood pressure (DBP) ^{3}90 mmHg as per WHO criteria or history of previously known disease.

Results:

We carried out survey in eleven villages covering 5919 households. We enumerated these villages and total population was 25513 of which 11514(45%) were in 25-64 years of age-group. Among the eligible subjects, data are available for 10500 (91.2 %) subjects.

Socio-demographic characteristics: Among households included in the survey, 1863 (31.5%) households lived in Kutcha house. Family size was less than 5 for 3350(56.6%) households. Based on the religion, 5281 (89.2%) were Hindus, 580 (9.8%) were Christians and 58 (1.0%) were Muslims.

We collected data for 10,500 subjects of which 4927 (47%) were males. The age distribution showed 3758 (35.8%) were 25-34 years, 3185 (30.3%) were 35-44

years, 2179 (20.8%) were 45-54 years and 1378 (13.1%) were 55-64 years. (Table 1) Marital status of males showed 4472 (90.8%) were married, 389 (7.9%) were unmarried and 56 (1.1%) were widowed. On the other hand, 4466 (80.1%) females were married, 978 (17.5 %) were widowed and 92 (1.7%) were unmarried.

Personal and family medical history: Personal history of hypertension, diabetes, heart attack and stroke was present for 565 (5.4 %), 417 (4 %), 56 (0.5%) and 27 (0.3%); respectively. Family history of hypertension, diabetes, heart attack and stroke was present for 1246 (11.9%), 1420 (13.5%), 539 (5.1%) and 477 (4.5%) subjects respectively. (Table 2)

Behavioral risk factors: Tobacco consumption defined as ever used tobacco in the lifetime was prevalent among 2993 (60.7%) of the males and 841 (15.1%) of the females. Among male users, type of tobacco use was smoking for 2309 (46.9%) and chewing for 577(11.7%) subjects. Mean (SD) age at which males started smoking was 19.9 (6.2) years. The proportion of current, daily and ex-smoker was computed using total number of males as denominator. Number of ex-smokers were 457 (9.3%) and current smokers 1852(37.6%) of which 1765 (35.8%) were daily smokers.

Alcohol consumption defined as ever used alcohol in the lifetime, was prevalent among 3438(69.8%) of the males and 70 (1.3%) of the females. Current consumption in past 12 months was prevalent among 3073 (62.4%) males and 15 (<1%) females. Among males, frequency of current alcohol consumption was; at least once a week for 1437 (29.2%) and less than once a week for 1636(33.2%) subjects.

Generalized and central obesity: The results of anthropometric measurements are expressed as mean (SD) among males and females. Mean BMI was 21.5 (3.75) kg/m2 and 22.1 (4.44) kg/m2 and waist circumference was 79.03 (10.931) and 72.05(10.621) cm respectively for males and females. Based on classification recommended for Asians, overweight (23.0-27.4 kg/m2) and obesity (>=27.5 kg/m2) was present for 1320(26.8 %) and 298 (6.0 %) males and 1460 (26.2%) and 666(12.0 %) females. Central obesity using waist

circumference cut offs was present for 867 (17.6 %) males and 1323 (23.7%) females. (Table 3)

Hypertension: Prevalence of hypertension was computed after excluding subjects for whom blood pressure readings were not available. Readings were available for 4900(99.5%) males and 5563 (99.8%) females. Hypertension was present for 1062(21.7%) males and 1185 (21.3%) females. Among the subjects with hypertension, 1682(74.9%) were newly detected during the survey.

Age specific prevalence of risk factors: Prevalence of current smoking and regular alcohol use among males increased from 25-34 to 35-44 age-group and declined thereafter. Prevalence of chewing tobacco decreased across age-groups among males and increased across age-groups among females. (Table 4) Prevalence of overweight declined in both males and females after 44 years. Central obesity reached a plateau after 44 years in females and declined in males. (Figure 1)

Conclusion

Prevalence of cardiovascular risk factors is high in this rural population. There are several modifiable risk factors such as smoking, alcohol and overweight that can be addressed by life style modification. The interventions such as health promotion at population level and targeted interventions for those with hypertension will be needed to prevent cardiovascular morbidity and mortality in this population. We recommended health education campaigns to increase awareness regarding harmful effects of smoking, alcohol, low fruit and vegetable intake and overweight. Reorientation of primary health care system is needed to increase hypertension detection rates and initiation of early treatment.

Table 1: Socio-demographic characteristics of study population in Thiruvallur/ Kancheepuram districts in Tamil Nadu, 2006-07.

	Male		Female		Total	
	No.	%	No.	%	No.	%
Age distribution (yrs)	**4927**	**100**	**5573**	**100**	**10500**	**100**
25-34	1788	36.3	1970	35.3	3758	35.8
35-44	1499	30.4	1686	30.3	3185	30.3
45-54	1050	21.3	1129	20.3	2179	20.8
55-64	590	12.0	788	14.1	1378	13.1
Education	**4927**	**100**	**5573**	**100**	**10500**	**100**
Never attended school	620	12.6	1851	33.2	2471	23.5
Primary	1343	27.3	1892	33.9	3235	30.8
Middle	1085	22.0	977	17.5	2062	19.6
Secondary	1591	32.3	763	13.7	2354	22.4
Diploma/Degree	288	5.8	90	1.6	378	3.6
Occupation (n=10431)	**4878**	**100**	**5553**	**100**	**10431**	**100**
Unemployed/Retired	78	1.6	27	0.5	105	1.0
Farmer	277	5.7	36	0.6	313	3.0
Agri Labour	854	17.5	965	17.4	1819	17.4
Other labour	1161	23.8	482	8.7	1643	15.8
Artisan	193	4.0	36	0.6	229	2.2
Govt. Employee	206	4.2	99	1.8	305	2.9
Private	1364	28.0	546	9.8	1910	18.3
Self employed	561	11.5	243	4.4	804	7.7
Home maker		0.0	3072	55.3	3072	29.5
Student	1	0.0	3	0.1	4	0.0
Others	183	3.8	44	0.8	227	2.2

Table 2: Personal medical history and family history of diseases for study population in Thiruvallur/ Kancheepuram districts in Tamil Nadu, 2006-07.

	Males (n= 4927)		Females (n=5573)		Total (N=10500)	
	No	**%**	**No**	**%**	**No**	**%**
Personal history						
Hypertension	207	4.2	358	6.4	565	5.4
Diabetes	198	4.0	219	3.9	417	4.0
Heart attack	36	0.7	20	0.4	56	0.5
Stroke	18	0.4	9	0.2	27	0.3
Family history						
Hypertension	603	12.2	643	11.5	1246	11.9
Diabetes	640	13.0	780	14.0	1420	13.5
Heart attack	247	5.0	292	5.2	539	5.1
Stroke	224	4.5	253	4.5	477	4.5

Table 3: Body mass index distribution using WHO and Asian classification and Waist circumference distribution of study population in Thiruvallur/ Kancheepuram districts in Tamil Nadu, 2006-07.

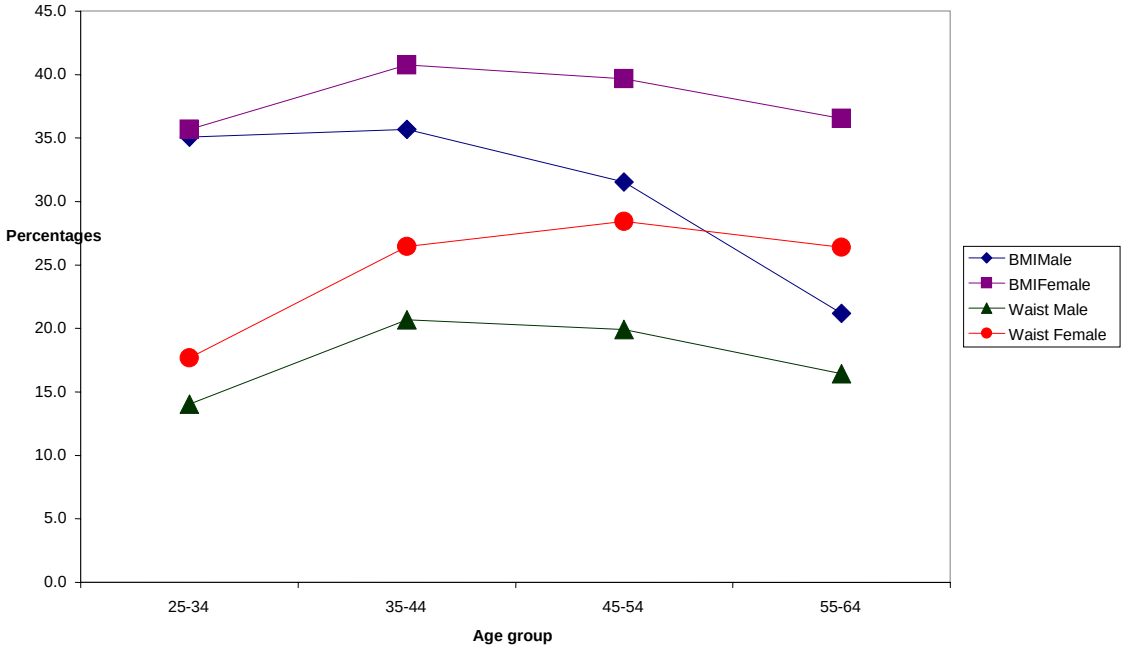
	Male		Female		Total	
	No	**%**	**No**	**%**	**No**	**%**
BMI (kg/m^2)-WHO						
<18.5	1168	23.7	1246	22.4	2414	23.0
18.5 - 24.9	2896	58.8	3024	54.3	5920	56.4
25.0 - 29.9	771	15.6	1006	18.1	1777	16.9
>=30.0	92	1.9	297	5.3	389	3.7
BMI (kg/m^2)						
Asian						
<18.5	1168	23.7	1246	22.4	2414	23.0
18.5 – 22.9	2141	43.5	2201	39.5	4342	41.4
23.0 – 27.4	1320	26.8	1460	26.2	2780	26.5
> 27.5	298	6.0	666	12.0	964	9.2
Waist cir						
Normal	4060	82.4	4250	76.3	8310	79.1
Obese	867	17.6	1323	23.7	2190	20.9
Total	**4927**	**100**	**5573**	**100**	**10500**	**100**

Table 4: Age-specific prevalence of behavioral risk factors and hypertension in study population in eleven villages in Thiruvallur/ Kancheepuram districts in Tamil Nadu, 2006-07.

	25-34		35-44		45-54		55-64		Total	
All	**3758**	**35.8**	**3185**	**30.3**	**2179**	**20.8**	**1378**	**13.1**	**10500**	**100**
Males	**1788**	**36.3**	**1499**	**30.4**	**1050**	**21.3**	**590**	**12.0**	**4927**	**46.9**
Current smoker	415	23.2	632	42.2	511	48.7	294	49.8	1852	37.6
Chewing	286	16.0	170	11.3	87	8.3	34	5.8	577	11.7
Regular alcohol	408	22.8	508	33.9	355	33.8	166	28.1	1437	29.7
Hypertension	214	12.0	308	20.6	318	30.5	222	38.1	1062*	21.7
Females	**1970**	**35.3**	**1686**	**30.3**	**1129**	**20.3**	**788**	**14.1**	**5573**	**53.1**
Chewing	78	4.0	219	13.0	279	24.7	264	33.5	840	15.1
Hypertension	141	7.2	285	16.9	352	31.3	407	51.8	1185*	21.3

*BP reading available for 4900 Males and 5563 females. Trend chi square significant for all the risk factors($P<0.01$)

Figure 1: Overweight according to BMI and Obesity according to waist circumference among males and females in study population in eleven villages in Thiruvallur/ Kancheepuram districts in Tamil Nadu, 2006-07.



Completed

Prevalence rates and pattern of epilepsy in the South East Asia region of WHO

Objectives:

1. Review existing data on the prevalence rate and pattern of epilepsy in all 11 Member countries of South East Asia Region (SEAR) of WHO;

2. On existing data, conduct a meta-analysis after correction for heterogeneity in these studies to estimate the pooled prevalence rate of epilepsy for WHO/SEAR.

3. To identify treatment gaps for those identified with epilepsy

Methods: We attempted to identify previously published and unpublished studies on the prevalence rate of epilepsy in each WHO/SEAR Member country. The studies were assessed with regard to methods and definitions. The crude prevalence rate with its 95% confidence interval (CI) was computed for each Member country. For those countries where the data on age structure, age-sex specific rates, and patterns of epilepsy were available, detailed analysis (age and sex standardized prevalence rates and their pooled estimate with 95% CI after correction for heterogeneity) was carried out. The estimated pooled prevalence rate and its 95% CI after accounting for heterogeneity, was computed for the entire WHO South-East Asia Region.

Results: Information on 1,541,952 people was available from eight countries. Among these people 7264 had epilepsy. This resulted in a crude prevalence rate of 4.7 per 1,000. The crude prevalence rate varied from 0.99 per 1000 for Bangladesh to 7.3 per 1000 for Nepal. After correction for heterogeneity due to inter-study variation, the pooled prevalence rate per 1,000 (and its 95% CI) was 4.5 (2.4 to 6.6). Age-specific prevalence rates were higher in the younger age group, with the onset of epilepsy reported mostly in the first three decades of the population. The treatment gap (i.e., the percentage of those with epilepsy who were not receiving or receiving inadequate treatment) was more than 70% in all countries put together.

Conclusion: The pooled prevalence rate per 1,000 (and its 95% CI) was 4.5 (2.4 to 6.6) for eight WHO/SEAR Member countries Based on the mid-2008 population from these countries, the number of people with epilepsy is estimated to be approximately 7.6 million (95% CI 4.0 - 11.0 million). Approximately three-fourths of the cases of epilepsy are not getting any specific treatment. Assuming the same prevalence rates in the three remaining WHO/SEAR Member countries, the total number of persons with epilepsy in SEAR is estimated to be 7.7 million (95% CI 4.1 – 11.3 million).

Micronutrient deficiencies (MDS) and adverse pregnancy outcomes – a hospital based pilot study

Introduction: Micronutrient deficiencies (MDs) among pregnant women are reported to be associated with adverse pregnancy outcomes e.g. iodine with stillbirths, zinc with low birth weight, folic acid, B6 and B12 with birth defects. In Tamilnadu malnutrition among non pregnant women is >50%. The prevalence of Iron deficiency anemia among pregnant women in Tamilnadu is reported to be 53% (urban: 57%: rural: 50.5%) and in Chennai it is 58.7% (NFHS, 2005-06) Therefore it is likely that prevalence of other MDs among these women will be high. Current literature on prevalence of MDs among pregnant women and their impacts on pregnancy outcomes in Tamilnadu is limited. Most studies have looked at one or two or three micronutrients in India. Studies addressing multiple micronutrient deficiencies among pregnant women in India are few. Therefore a study to assess the prevalence of MDs among pregnant women and their association with adverse pregnancy outcomes women in Tamilnadu is undertaken.

Objectives:

1. Estimate the prevalence of multiple micronutrient deficiencies among pregnant women attending the Kasturba Womens hospital in Triplicane, Chennai
2. Suggest appropriate corrective measures based on the findings of (1).

Methods: This study will be conducted among pregnant women around 28 -30 weeks' gestation. These women will be followed till confinement and their pregnancy outcomes ascertained. This pilot study will enable planning of a larger study. A *cross sectional survey* will be carried out to estimate the prevalence of MDs among pregnant women. Nearly 98% of deliveries in Chennai are hospital based and most of the pregnant women at risk of suffering from MNDs go to the Govt health facility for deliveries. Therefore this pilot study will be hospital based and will be carried out at the Institute for Social Obstetrics and Kasturba Gandhi Government Hospital for women, Triplicane, Chennai. Approximately 250 -300 pregnant women will be included in the study

to arrive at a rough estimate of the prevalence of MDs among pregnant women. Micronutrients for assessment include: Vitamins: A, B6, B12,; minerals and trace elements : Iron, Folic acid, Copper, Magnesium, Calcium, Iodine, selenium and zinc.

Project Achievements: NIE SAC and IEC approvals have been obtained. Permission from Govt of Tamin Nadu (DME) to conduct the study at Kasturba Hospital has been obtained. Instruments have been pilot tested and modified. The study has been shared with NIN who have agreed to carry out lab tests. All field investigators & OB/GYN specialists have been trained. The study will commence in January 2009.