

Risk Factors of Non-Communicable Diseases in an Urban Locality of Andhra Pradesh.

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ABSTRACT

Background: Chronic non-communicable diseases (NCDs) have replaced communicable diseases as the most common causes of morbidity and premature mortality worldwide. **Objectives:** To estimate the risk factors of NCDs in an urban locality of India. **Methods:** This cross sectional study was conducted in an Urban Nellore city during 2008-09. The sample size was 933 in the age group of 25-64. Simple random sampling methods used for selecting household and one member from each house. Risk factors were recorded. **Results:** The prevalence of current Smoking and alcoholism were 8.15% [95% CI:6.5%-10.1%] and 4.93% (95% CI:3.7%-6.5%) respectively in both sex. Only 5.14% and 10.5% were consuming more than five servings of fruits and vegetables respectively per day. The prevalence of abdominal obesity was 46.62% using South Asian guidelines and 48.12% obese as per BMI. Low physical activity was recorded in 28.40% of people. The prevalence of hypertension was 29.3 % [95% CI:26.4%-32.3%] (M:30.9% & F: 27.7%). **Conclusion:** Policies with multiple integrated approaches are needed to prevent, detect and treat the NCDs effectively in India.

Keywords: NCD, Risk Factor, Nellore, Prevalence, Body Mass Index.

Introduction:

Non-communicable diseases (NCD) are serious threat to the health of people in developing countries. In 2008, 60% of all deaths in the world, a total of 38 million people, died from the four main NCDs: cardiovascular diseases, diabetes, cancers and chronic respiratory diseases.¹ Risk is defined as “a probability of an adverse outcome, or a factor that raises this probability”. Risk assessment is defined as “a systematic approach to estimating the burden of disease and injury due to different risks”. It involves the identification, quantification and characterization of threats to human health.²

Common, preventable risk factors underlie most NCDs. These risk factors are a leading cause of the death and disability burden in nearly all countries, regardless of economic development. The leading risk factor globally for mortality is raised blood pressure (responsible for 13% of deaths globally), followed by tobacco use (9%), raised blood glucose (6%), physical inactivity (6%), and overweight and obesity (5%). In India Age-standardized death rate per 100 000 due to NCD was 782 in males and 571 in females.³

NCDs are largely preventable by means of effective interventions that tackle shared risk factors, namely: tobacco use, unhealthy diet, physical inactivity and harmful use of alcohol. In addition, improved disease management can reduce morbidity, disability, and death and contribute to better health outcomes.⁴ Understanding the role of these risk factors is the key to developing a clear and effective strategy for

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improving community health.⁵ Hence this community based study on risk factors of non-communicable diseases was taken up.

Material and Methods:

This cross sectional study was conducted in field practice area of Urban Health Centre, Saraswathi Nagar, Narayana Medical College, Nellore, Andhra Pradesh. This study was conducted from June 2008 to May 2009 after Institutional Ethics Committee approval. The sample size of 933 was calculated using the prevalence rate of 16%^a with 15% acceptable (allowable) error at 95% confidence level. Both males and females aged more than 24-64 years included and pregnant women were excluded. If people who migrated from rural area were included once they completed 6months of life there.

A proforma was devised by using STEPS approach of WHO questionnaire and household & individual questionnaire of non-communicable disease risk factor survey prepared by Integrated Disease Surveillance Project (IDSP) and ICMR, New Delhi. Necessary corrections were made in it, after pre-testing the proforma by doing a pilot study among 30 individuals. The questionnaire contains two parts. In first part socio demographic data of the family were collected. The second part individual data were collected. The variables used in this study are height and weight, diet (Veg./mixed), physical activity, Habits – Drugs/smoking / Alcohol , Family h/o hypertension , CHD, stroke, H/o of any non communicable disease like diabetes any medications used, extra salt intake, parental history of hypertension and OCP use in females.

The sampling unit for the study was a household. Firstly 950 houses were selected from 5902 houses by randomly by creating random numbers by World Wide Web (www.random.org). The selected houses were included for present study. If the selected house was closed, next house in the list was selected. From each house one eligible person is selected for study by using random table. In houses had more than one eligible person, one person was selected by random

method. Data collection was done, after obtaining informed consent.

Height and weight were measured by using stadiometer and calibrated weighting machine respectively. Weight was measured with. Body mass index (BMI) was calculated using the formula: weight (Kg)/height (m²). Waist was measured using a non-stretchable fiber measuring tape. The subjects were asked to stand erect in a relaxed position with both feet together on a flat surface; one layer of clothing was accepted. Waist girth was measured as the smallest horizontal girth between the costal margins and the iliac crests at minimal respiration.⁶

Measurement of blood pressure (BP) was carried out on each participant by using the standard technique.⁷ Before BP measurement; it was made sure that the subjects had not consumed either tea or coffee, smoked or exercised vigorously in the last 30 min. Both blood pressure measurements were recorded after the subject had rested for atleast 5 min in a sitting position. It was measured in left arm in the sitting position on the upper arm with the arm supported, with the palm facing upward and sphygmomanometer at the level of the heart by using appropriate cuff size. The average value of two consecutive BP readings was taken. In case where the initial two readings differ by over 10mm of mercury, a third reading was obtained and the last two measurements were averaged.⁶ All the instruments had been calibrated daily before starting the survey.

The diagnosis and classification of hypertension was done according to the JNC-VII report.⁸ Generalized obesity was defined using the new WHO Asia Pacific guidelines i.e. BMI ≥ 25 kg/m² and abdominal obesity as waist circumference ≥ 90 cm for men and ≥ 80 cm for women.⁹

The data of this study was analyzed by using standard statistical package. A measure of central tendency was used to quantify risk factors. Charts and tables were prepared using Microsoft Excel. P value < 0.05 was considered as significant.

Results:

Among 933 study subjects, 463 (49.6%) were males and 470 (50.4%) were females. Age and sex distribution of study subjects is shown in Figure- 1.

Figure 1. Bar diagram showing Age and Sex distribution of study subjects

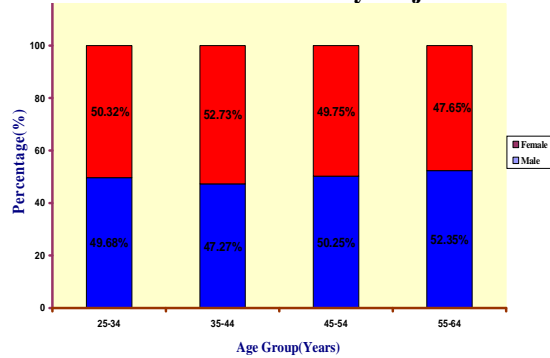


Table 1. Risk factors of Study Subjects (n=933)

Risk Factors	Present (%)	Absent (%)
Current smoking	76(8.15)	857(91.85)
Current Alcoholic	46(4.93)	887(95.70)
Vegetable Intake <5 serving	835(89.50)	98(10.50)
Fruits intake <5 serving/day	885(94.86)	48(5.14)
Extra Salt intake	595(63.77)	338(36.23)
Waist Circumference-Obese	435(46.62)	498(53.38)

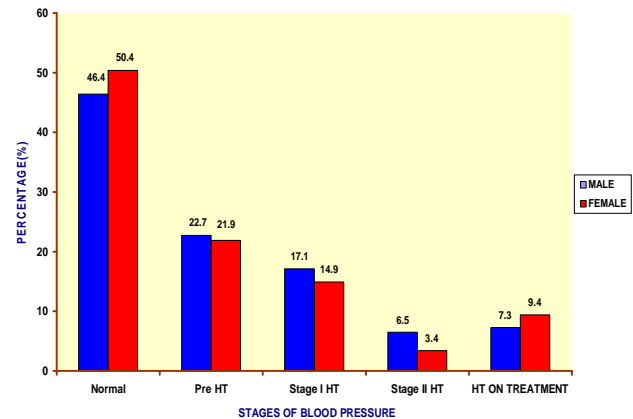
Smokers were 76(95% CI: 6.5%-10.1%) and among them 80% smoking more than 10 years. Among males 16% were smokers. There were 46(95% CI: 3.7%-6.5%) subject found to be current alcoholic. The mean number of servings of vegetable per day was 2.72. Only 98(95% CI: 8.7%-12.6%) persons consumed more than five servings. The mean number of servings of fruits per day was 1.36. Only 48(95% CI: 3.9%-6.8%) study subjects were consumed more than five servings of fruits per day. Extra salt was consumed by 595(95% CI: 61%-67%) subjects. And 435(95% CI: 43.4%-49.8%) study subjects who were detected having abdominal obesity by waist circumference (Table 1).

Table 2. Quantification of BMI and physical activity of study subjects (n=933)

BMI	Number of subjects (%)	Physical Activity	Number of subjects (%)
Obese	449(48.12)	High	216(23.15)
Overweight	171(18.33)	Moderate	452(48.45)
Normal	313(33.55)	Low	265(28.40)

As per Table 2, 449(95% CI:44.9%-51.33%) were obese and 171(95% CI:15.9%-20.9%) overweight. And this study identified 265(95% CI: 25.6%-31.4%) persons with low and 452(95% CI:45.2%-51.66%)moderate physical activity.

Figure 2. Bar diagram showing prevalence of hypertension of study population(n=933)



And 273 found to be hypertensive and giving the prevalence of hypertension 29.3 %;95% CI:26.4%-32.3%(Male:30.9%& Female:27.7%). Among hypertensives 149(54.58%) had stage I hypertension, 46(16.85%) had stage II hypertension and 78(28.57%) had already diagnosed as hypertensives and on anti hypertensive medication. Among study subjects 208(22.3%) were in the stage of pre-hypertension (Figure 2).

DISCUSSION:

Overall, NCD risk factors were prevalent across all the socioeconomic and demographic categories of Study population. Tobacco use alone accounts for

one in six of all deaths resulting from NCD's¹⁰. The prevalence of current daily use of smoked tobacco was 8.15% in both sex and 16% in males. The smoking prevalence was around 22% in males in Haryana study.¹¹ The percentage of current daily smokers varied between a low 9% in Maharashtra and high 42% in Mizoram.¹² As per the Global Adult Tobacco Survey (GATS-India) 2009-10 the prevalence of tobacco use among adults (15 years and above) was 35%.¹⁰

Alcohol is a risk factor for oesophageal cancer, liver cancer, cirrhosis of the liver, homicide, stroke, psychiatric illness and motor vehicle accidents worldwide.¹⁰ In the current study the prevalence of alcoholism was 4.93%. Community based studies have reported that alcohol use ranges between 25% and 40% in north India and 33% and 50% in south India.¹⁰ In IDSP survey the percentage of the respondents reported to have consumed alcohol in past 12 months ranged from a low 11% in Mizoram to high 20% in Andhra Pradesh.¹²

Among dietary components, fruits and vegetable are protective against several NCDs but their intake is grossly inadequate among Indians.¹⁰ Only 5.14% and 10.5% were consuming more than five servings of fruits and vegetables respectively per day in the present study. The percentage of respondents of IDSP study consumed less than five servings of fruits and vegetables per day ranged from a low 76% in Maharashtra to high 99% in Tamil Nadu.¹²

The lack of physical activity leads to obesity, hyperlipidemia, diabetes mellitus, hypertension, and coronary heart disease.¹² Low physical activity was recorded in 28.40% of people in this study. The proportion of respondents reporting low physical activity was lowest (42%) in Madhya Pradesh and highest (81%) in Maharashtra.¹²

Obesity is considered to be the link between insulin resistance and metabolic abnormalities inclusive of diabetes, hypertension and dyslipidaemia, all of which are risk factors for coronary artery disease.¹³ The prevalence of abdominal obesity was 46.62% using South Asian guidelines and 48.12% obese as per BMI, in this study. Almost 30-65% of adult

urban Indians were reported to be either overweight (BMI \geq 25) or obese (BMI \geq 30) or have central obesity.¹⁰

In present study, the overall prevalence of hypertension was 29.3%. Pooling of epidemiological studies shows that hypertension was present in 25% urban and 10% rural subjects in India.¹⁰

This study concentrated only the behavioural and anthropometric risk factors of major NCDs only. Bio-chemical indicators and risk factors of other NCDs were not included in this study.

WHO has developed a new goal in 2005 of "to reduce death rates from all chronic diseases by 2% per year over and above existing trends during the next 10 years". A comprehensive approach would be required for both prevention and management of NCDs in the country. It is proposed in 12th five year plan to expand various schemes for NCDs to all 640 districts in a phased manner including screening and treatment of NCDs and Legislation, Population based interventions, Behaviour Change Communication using mass media, mid-media and interpersonal counselling and public awareness programmes of NCDs in different settings.

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