

Original Article**A STUDY ON PREVALENCE OF LIFE-STYLE DISEASES AND ITS RISK FACTORS IN URBAN AREA OF JAMNAGAR CITY**Kishor M Sochaliya¹, Dipesh V Parmar², Sudha B Yadav³**Financial Support:** Non declared**Conflict of interest:** Non declared**Copy right:** The Journal retains the copyrights of this article. However, reproduction of this article in the part or total in any form is permissible with due acknowledgement of the source.**How to cite this article:**

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E-mail: drkishor_1512@yahoo.com**Date of Submission:** 25-6-12**Date of Acceptance:** 1-10-12**Date of Publication:** 30-12-12**ABSTRACT****Introduction:** Chronic diseases of life-style particularly Hypertension, DM and CHD account for millions of deaths each year globally. These diseases share similar modifiable risk factors, including tobacco smoking, alcohol consumption, hyperlipidaemia, physical inactivity, obesity etc. so that identifying and modifying these risk factors have been recommended as a strategy for their prevention and control in various settings.**Aim-** To find out the prevalence of common life style diseases and their risk factors**Method:** A cross sectional study was done, which was containing 450 male respondents in the age group of 35-45 years from Patel colony in Jamnagar city. Predesigned and prestructured questionnaires covering socio-economic aspects, dietary pattern, smoking, alcohol intake, physical activity, personality and parental history of hypertension and diabetes were reviewed. In addition some anthropometric measurements (e.g., height, weight and BMI) and clinical measurements (e.g., blood pressure) were also done.**Result:** The overall prevalence rate for the common life-style diseases was observed to be 33.56% for hypertension, 10.44% for diabetes mellitus and 44.44% for overweight/obesity. The few major risk factors noted among participants were high fatty diet (99.11%), high salt intake (96.67%) and Type A personality (71.33%). About 2/5th (38 %) of them were current smokers and only 2% were consuming alcohol. 42.22% of the target population were physically inactive based on work and leisure time activities. While around 69.33% of the respondents were having a positive family history of hypertension and/or diabetes.**Conclusion:** The study demonstrated a high prevalence of life-style diseases and their risk factors. Serious consideration should be given to this escalating burden of lifestyle diseases in the study population. The development and implementation of relevant health promotion and intervention programmes that will improve the general health and reduce the risk for NCDs in this population are advised.**Keywords:** Life-style disease, socio-demographic profile, NCD, GLV, sedentary habits, type A Personality**INTRODUCTION**Lifestyle diseases (also called *diseases of longevity* or *diseases of civilization*) are diseases that appearto become ever more widespread as countries become more industrialized.¹ Lifestyle diseases are a result of an inappropriate relationship of

people with their environment. The onset of these lifestyle diseases is insidious, they take years to develop, and once encountered do not lend themselves easily to cure.¹Non-communicable diseases (NCDs), especially cardiovascular diseases, cancers and type 2 diabetes mellitus, account for 53 and 44% of all deaths and disability-adjusted life years (DALYs) respectively in India.²

Most of these non communicable diseases share common preventable risk factors, such as tobacco use, high alcohol consumption, anxiety, raised cholesterol level, sedentary life style and obesity. Clustering of these risk factors significantly increases the risk of morbidity and mortality from cardiovascular disease. These factors are interrelated to each other, so much so that appearance / occurrence of one factor paves the way for the other, thereby leading to the development of NCDs. The greater the number of risk factors found to be causally related to disease, the greater the power to reduce the disease burden in community by reducing the level of such pathogenic risk factors.³

Therefore, primordial prevention of occurrence of risk factors along with their early identification and management can help to delay the progress to non-communicable diseases. Similarly, since the underlying (risk) factors for all the NCDs are common, identifying and modifying these risk factors have been recommended as a strategy for their prevention and control in various settings.

MATERIALS AND METHODS

Study Area: The present study was conducted in the Patel Colony which comes under the urban areas of Jamnagar city, covered under, Jamnagar Municipal Corporation. Total population under Jamnagar municipal corporation is 4, 45,397 (census 2001, Jamnagar Municipal Corporation).

Type of Study: Cross sectional study

Study Population: It contains 450 male respondents in the age group of 35 to 45 years. Study subjects were taken between the ages of 35-45 years, which is supposed to be the prime age for economic productivity as well as vulnerability to risk factors of life style disease. As well as we had also referred some studies related to the topic of our article did in Jamnagar city, which shows that this age group is more

vulnerable for the life-style diseases and its risk factors.

Period of Study: July to December 2008.

Sample Size: Based on prevalence of risk factors as 48% (referred from pilot study of 50 subjects) sample size was calculated by applying the formula as below,

$$n = Z^2_{1-\alpha/2} (1-P) / \epsilon^2 P$$

Where,

n = Sample size

1- α = Confidence level

Z_(1- $\alpha/2$) = Represent the no. of standard errors from the mean (Z_{1- $\alpha/2$} is function of confidence level)

P = Anticipated population proportion

ϵ = Relating precision

At p = 0.48 (48%), ϵ = 10% of p (0.048) & 95% confidence level, a sample size of 451 would be needed according to table given in WHO practical manual on sample size determination in health studies (1991). For convenience, the sample size 450 has been taken instead of 451.

Sampling Method: There are 17 wards in the Jamnagar city out of which ward no. 3 was selected randomly. Patel colony comes under ward no. 3, which has a huge locality having 12 streets. Through each street 37 study subjects were chosen which comes to 444 & to complete the targeted sample size of 450 subjects, remaining 6 subjects were taken from Last Street.

Data Collection and Statistical Analysis: All the participants were interviewed by using the pre-designed, pre-tested and structured questionnaire. The questionnaire includes socio-demographic profile, dietary patterns, physical activity, type of personality, history of stress, history of tobacco and alcohol consumption, family history of life style diseases like HT, DM etc. Various physical measurements like height, weight, body mass index and clinical measurement like blood pressure were also carried out. In the dietary habit oil, salt and sugar intake in gm/day/person was measured in terms of total consumption of the contents by whole family either weekly/monthly/according to the use, which is then converted into daily intake and then it is divided by total family members.

Blood pressure was measured after 10 minutes of rest using left arm in supine position. Three readings were taken at the interval of 10 min. for

each person and the mean of the three measurements was used for analysis. The person was considered hypertensive as per the 7th report of JNC.

All the newly diagnosed patients of Hypertension/Obesity or Overweight were advised to consult and take treatment for the disease as per their choice (Govt./Private institute). The diseased people were also encouraged to measure their BP/Blood sugar/Weight and take medicines regularly. Apart from these, all the participants either diseased/not diseased were educated about the NCDs & their risk factors and also about healthy life-style habits.

The data collected were compiled in MS Excel 2007.

RESULTS

Table 1: Socio-demographic profile of the study subjects (n=450)

Variables	Subjects (%)
Age	
35-40	284 (63.11)
41-45	166 (36.89)
Marital status	
Married	442 (98.22)
Unmarried	8 (01.78)
Divorced / Separated	0 (00.00)
Education status	
Illiterate	3 (00.67)
Primary	16 (03.55)
Secondary	48 (10.67)
Higher secondary	102 (22.67)
Graduate and above	281 (62.44)
Occupation	
Laborer	6 (01.33)
Own business	194 (43.11)
Service	245 (54.45)
Other	5 (01.11)
Socio-economic status*	
I	360 (80.00)
II	75 (16.67)
III	13 (02.89)
IV	2 (00.44)
V	0 (00.00)

*Modified Prasad's Classification

The socio-demographic characteristics of study participants are shown in Table 1. So age break up of total 450 subjects studied shows that; age groups of 35-40 years was the most represented (63.11%) compared to 41-45 years of age group (36.89%). While on asking their marital status,

majority (98.22%) were found to be married. As per the literacy status, 99.33% were literate; of which around 2/3rd (62.44%) of the subjects was educated upto graduate level and above.

Regarding the respondent's profession, it was noted that more than half, i.e. 54.45% of subjects were doing service, which is followed by private business (43.11%). Very rare participants (around 1%) were categorized as laborer and other; e.g., rickshaw driver, retired, not working at all etc. And as per the modified Prasad's classification⁴, most of the respondents were categorized in socio-economic class-I (80.0%).

Table2: Distribution of the study subjects according to the life-style diseases (n=450)

Life-style diseases	Subjects	Percentage
Hypertension	151	33.56 %
Diabetes Mellitus	47	10.44 %
Overweight/Obesity	200	44.44 %

Table 2 suggests the prevalence of life-style diseases among the study subjects. From which it was found that 1/3rd of the participants (33.56%) were suffering from hypertension, 10.44% were having diabetes mellitus and 44.44% had overweight/ obesity.

Table 3: Dietary history of study population (n=450)

Dietary history	Subjects	Percentage
Type of diet		
Vegetarian	402	89.33
mixed	48	10.67
Oil intake		
≤ 20 gms	04	0.89
21-40 gms	244	54.22
≥ 40 gms	202	44.89
Salt intake		
≤ 5 gms	15	3.33
6-10 gms	270	60.00
≥ 10 gms	165	36.67
Sugar intake		
≤ 20 gms	36	8.00
21-30 gms	116	25.78
≥ 30 gms	298	66.22
GLV intake		
No	78	17.33
Occasional	63	14.00
Regular	309	68.67
Fruit intake		
No	114	25.33
Occasional	151	33.56
Regular	185	41.11

Mean intake of oil - 41.02 grams per day per person; Mean intake of salt - 10.01 grams per day per person; Mean intake of sugar - 37.65 grams per day per person

Table 3 shows the dietary history of the respondents. It was seen that majority, i.e. 89.33% were strict vegetarian, while 10.67%

were taking mixed diet (partially vegetarian and partially no vegetarian).

More than 2/3rd (68.67%) of the study subjects were consumed green leafy vegetables regularly in their diet. The intake of fruits was also low; i.e., around 1/4th of the participants ate/rarely ate fruits in their daily diet.

Table 4: Prevalence of various risk factors in study population(n=450)

Risk factors	n	%
Smoking	171	38.00
Alcohol intake	9	2.00
Sedentary habits	190	42.22
Type A personality	321	71.33
Fatty diet	446	99.11
High salt intake	415	96.67
Positive family history of HT/DM/both	312	69.33

The prevalence of various risk factors is presented in table 4, which shows that about 38% of the subjects were smokers using tobacco in various forms. Alcohol was consumed by only 2%. It was observed that 42.22% of the study subjects had sedentary habits. 71.33% of the subjects were having Type A Personality. Consumption of fatty diet and salt intake of > 5 gm/day was very high i.e., 99.11% and 96.67% respectively. While positive family history of hypertension and diabetes mellitus contributes 69.33%.

DISCUSSION

In the present study, the medical history revealed the prevalence of hypertension to be 12.44%. And when the clinical profiles were looked into, it was seen that as much as 23.29% hypertensive subjects were unaware about their high blood pressure.

In Multicentric Sentinel Surveillance System for Cardiovascular diseases in Indian Industrial populations conducted by Reddy KS et al⁵ (2006), documented 29.3% overall prevalence of hypertension (criteria: =JNC VII) & 11.2% overall prevalence of diabetes (which is 10.44% in present study) from 10 regions of the country in the age group 20-69. Another study carried out in 1998 among industrial population in the Bharat Electronics Limited (BEL) ⁶, India using

the same criteria for hypertension illustrated a prevalence of 30% among men. While as per the WHO⁷ data, the prevalence of overweight / obesity (BMI \geq 25kg/m²) in the age group of above 20 years in India (2003) is 61.7% as compare to the present study (44.44%) which was much higher.

MeenakshiBakshiMehant al⁸ (2006), noted 91% of the subjects as vegetarian in her study, which is almost similar to the present study. And according to the NFHS-3⁹ data, in India overall 33% women and 24% men are vegetarians, while in Gujarat state the prevalence of people taking non vegetarian food at least once a week is 11-15% in women (15-49 years) and 9-16% in men (15-49 years) as compare to 10.67% in the present study.

S. S. Reddy and G. R. Prabhu¹⁰ (2003) in their study found that almost 93% of the subjects in their study were taking the salt more than the normal level (5 gm/day/person) which was almost similar to the present study i.e. 96.67%. As per Dietary Guideline for Indian man by National Institute of Nutrition, Hyderabad, India,¹¹ daily salt consumed vary from 5 grams to 30 grams in different states with almost 40% of the family consumed about 10 grams of salt which was similar to the present study.

Regarding the intake of sugar, according to National Nutrition Monitoring Bureau¹² (1979) daily intake of sugar / jaggery is 40 grams. 40% subjects were taking up to 20 grams of sugar, 45% were taking between 20-30 grams of sugar & as many as i.e. 22% were taking more than 30 grams of sugar.

According to NFHS-3⁹, almost two third (64.2%) of women consume dark green leafy vegetables daily and an additional 28.7% consume them weekly which was almost similar to the current study i.e.68.67%. The expert committee of Indian Council of Medical Research¹³ recommends minimum intake of 100 grams of fruits regularly, which prevent atherosclerosis, cancer, diabetes and act as a good source of antioxidants. As per NFHS-3⁹ report, 60% of women in Gujarat do not consume fruits even once a week, 49.6% of women (age 15-49) consume fruits at least once a week and the similar prevalence for man (age 15-49) is 48.4% which is higher than the 33.56% in the current study.

Similarly, in one study, which was conducted by Salim Yusuf et al¹⁴ in 52 countries to know the

effect of modifiable risk factors associated with myocardial infarction, the prevalence of current smoking reported 45.17% and prevalence of current and former smoking was 65.19% which is much higher than the present study. While as per National Sample Survey Organization (NSSO)¹⁵, India, the age specific prevalence of regular tobacco users among male (25-44 years) was found 61.3% in rural and 40.7% in urban as compare to 38.0% of the present study.

Salim Yusuf et al¹⁴ (2004) in their study also observed that the prevalence of alcohol was 24.01%, which was much higher than the prevalence of present study.

The prevalence of Type A personality among the study subjects in this study was 71.33% which was much higher than that reported by Jasim N Al-Asadi et al¹⁶ (21.1%) in his study on cardiovascular risk factors among college students of three colleges.

In the 57th World Health Assembly on the topic of Global strategy on diet, physical activity and health,¹⁷ it is declared that at least 30 minutes of regular, moderate-intensity physical activity on most days reduces the risk of cardiovascular disease and diabetes, colon cancer and breast cancer. Culter et al¹⁸ (1996), in their study observed that prevalence of sedentary life style was 81% in Indian males while as per Bas et al¹⁹ (2004) 29.6% males and 37.6% females to be physically inactive in contrast to 42.22% observed in present study. This reveals the fact that physical activity levels are low in the study area and there is a need to encourage the people to engage in any type of physical activities like walking, running, cycling, swimming, aerobic exercise, outdoor sports, walking or cycling to reach their workplace etc..

In the present study it was seen that 17.07% of the hypertensive subjects were having positive family history of hypertension compare to 15.20% of the hypertensive subjects who were having no such history. Lt Col VK Agrawal et al²⁰ (2008) in their study on Prevalence and Determinants of Hypertension in a Rural Community, reported that out of total hypertensive person 26.7% had a hypertension in 1st degree relatives.

Prevalence of diabetes was also positively associated with the positive family history of diabetes. As the prevalence of DM was 17.65% in the subjects having positive family history of diabetes than 5.32% among the subjects having

negative family history of diabetes. In the recent population based study called Chennai Urban Population Study (CUPS)²¹ the prevalence of type 2 diabetes was found higher among subjects who had a positive family history of diabetes (18.2%) compared to those without (10.6%).

In the present study it was found that hypertension was more prevalent in diabetic subjects. It was 23.40% in diabetic subjects and 15.38% in non-diabetic subjects. Obesity is associated with increased morbidity and mortality by influencing lipid levels, blood pressure, glucose tolerance and inflammatory markers. The high prevalence of hypertension (55.56%) and diabetes (22.22%) was found in obese participants compared to 11.29% and 8.87% in normal and below normal BMI subjects respectively.

LIMITATIONS

1. One of the limitations of our study was the study area, as the study was done in urban populations of Patel colony which may not be representative and so not applicable to the general population.
2. Only male participants were selected for the study as because majority of the life-style diseases risk factors are commonly seen among male like habits of smoking or tobacco chewing, stress related to occupation/economic burden, physical inactivity due to busyness in work etc.
3. To know the burden of diabetes in the study population, only diagnosed cases of diabetes were taken.
4. To determine the type of personality only some selected questionnaires about time consciousness, competitive nature, type of speech, future attitude, temperament and stress was asked. No any standard protocol was used.

CONCLUSION AND RECOMMENDATION

In conclusion, our findings indicated a high prevalence of various life-style diseases and their risk factors particularly more consumption of fatty diet, high salt intake, high sugar intake, type A personality, tobacco smoking and physical inactivity. The presence of such a high burden of these risk factors among participants

is a cause of concern and requires urgent interventions in order to prevent and control the future morbidity burden of non-communicable diseases. Most of these risk factors are modifiable and can be improved by encouraging the patients to adopt a healthy life style such as reducing daily salt and fat intake, quitting smoking and engaging in more physical activities. Furthermore safe walking tracks, playgrounds, and relaxation avenues should also be made available to allow more people to engage in physical activities and relaxation programs. Besides this, screening the community for presence of diabetes & hypertension and their proper and timely intervention can definitely reduce the morbidity and mortality from this disease.

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