

## Original Article

# Screening for Non-communicable Diseases and Health Education for Lifestyle Modification in Wellness Clinic at a Tertiary Care Hospital

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**Background :** Non-communicable Diseases (NCD) like, Diabetes and Hypertension are highly prevalent and make a substantive contribution to the global burden of morbidity and mortality in both developing and developed Countries. Because lifestyle behaviors have been shown to be effective in preventing and treating several types of diseases that can ultimately lead to a high prevalence of morbidity and mortality, several widely accepted treatment guidelines for specific diseases include lifestyle modification strategies. In our study, we aim to identify the suspected cases of Diabetes Mellitus and Hypertension & the risk factors among screened participants. To give Health Education for lifestyle modifications.

**Methodology :** It was a cross-sectional study for a period of one year. The participants were patients relatives, caretakers and friends who were admitted to the Hospital. The sample size constitutes 2200 respondents who were screened in wellness Out Patient Department (OPD) for a period of one-year.

**Results :** In the present study by investigating Random Blood Sugar Tests during screening, we found 5% of them were found to be suspected as Diabetics and recording of the Blood Pressure shows 10% of them were suspected to be Hypertension. We observed statistically significant association with Risk Factors between both the known cases and suspected cases of Diabetes Mellitus (DM) and Hypertension.

**Conclusion :** Screening programs can strengthen Healthcare System initiatives and reduce the growing burden of both Diabetes and Hypertension in India.

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**Key words :** Wellness clinic, Lifestyle modification, Risk factors, Screening.

Non-communicable diseases (NCD) like, Diabetes and Hypertension are highly prevalent and make a substantive contribution to the Global Burden of morbidity and mortality in both developing and developed countries. Preventing and treating Chronic Diseases through lifestyle modifications is becoming an important aspect of patient-care regimens<sup>1</sup>. In 2003, the Institute Of Medicine (IOM) published a report outlining its recommendations for educating students in the Health professions. The recommendations describe the need for all programs that Educate Health Care Professionals to integrate five core competencies. One of the five core competencies includes delivering patient-centered care, described as a type of care that continuously advocates for disease prevention, wellness and the promotion of healthy lifestyles<sup>2</sup>.

Organizations outside of Higher Education have also stressed the importance of lifestyle modifications for

### Editor's Comment :

- Screening for Non-communicable Diseases like Diabetes & Hypertension is very essential to identify the risk factors related to NCD
- Early diagnosis and treatment will reduce the morbidity & mortality of NCD
- Health Education and Counseling is required to change lifestyle modification and promotion of well-being of the community.

improving overall Health. Healthy People 2010 (sponsored by the US Department of Health and Human Services) are a set of Health Objectives for the US to achieve over the first decade of the Century<sup>3</sup>.

Because lifestyle behaviors have been shown to be effective in preventing and treating several types of diseases that can ultimately lead to a high prevalence of morbidity and mortality, several widely accepted treatment guidelines for specific diseases include lifestyle-modification strategies. The lifestyle-modification strategies that are most commonly recommended within treatment guidelines include proper nutrition, physical activity, weight control, tobacco cessation, alcohol moderation and health behavior change strategies<sup>1</sup>.

Even small improvements across a large portion of the population would have a greater impact than

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focusing on a small portion of the population that is at the upper end of the risk distribution. In our study, we aim to identify Hypertension and Diabetes among screened participants and also their Risk Factors, so then we can advise them to change their lifestyle modification to reduce the burden of these diseases (Tables 1&2).

### OBJECTIVES

- To identify the suspected cases of Diabetes Mellitus and Hypertension by screening
- To identify the Risk Factors among screened participants
- To give Health Education for lifestyle modifications.

### MATERIALS AND METHODS

It was a cross-sectional study for a period of one year. The participants were patient relatives or friends who were admitted to the hospital. The sample size constitutes 2200 respondents who were screened in wellness OPD for a period of one year. Institutional

Table 1 — Distribution of the participants according to Demographic profile

| Components              | Number      | Percentage   |
|-------------------------|-------------|--------------|
| <b>Gender :</b>         |             |              |
| Female                  | 1100        | 50.0         |
| Male                    | 1100        | 50.0         |
| <b>Place :</b>          |             |              |
| Urban                   | 776         | 35.3%        |
| Rural                   | 1424        | 64.7%        |
| <b>Age (in years) :</b> |             |              |
| < 20                    | 17          | .8           |
| 20 - 29                 | 341         | 15.5         |
| 30 - 39                 | 452         | 20.5         |
| 40 - 49                 | 496         | 22.5         |
| 50 - 59                 | 456         | 20.7         |
| 60+                     | 438         | 19.9         |
| <b>Religion :</b>       |             |              |
| Hindu                   | 1967        | 89.4         |
| Muslim                  | 230         | 10.5         |
| Christian               | 1           | 0.0          |
| Sikh                    | 2           | 0.1          |
| <b>Education :</b>      |             |              |
| Illiterate              | 779         | 35.4         |
| Basic education         | 702         | 31.9         |
| Secondary education     | 290         | 13.2         |
| Graduate                | 285         | 12.9         |
| Postgraduate            | 144         | 6.5          |
| <b>Occupation :</b>     |             |              |
| Business                | 167         | 7.6          |
| Farmer                  | 629         | 28.6         |
| Housewife               | 566         | 25.7         |
| Labour                  | 198         | 9.0          |
| Retired                 | 95          | 4.31         |
| Service                 | 339         | 15.4         |
| Student                 | 206         | 9.4          |
| <b>Total</b>            | <b>2200</b> | <b>100.0</b> |

Table 2 — Distribution of the participants according to risk factors

| Risk factors                            | Number      | Percentage |
|---|-------------|------------|
| <b>Family history of DM :</b>           |             |            |
| Yes                                     | 141         | 06         |
| No                                      | 2059        | 94         |
| <b>Family history of HTN :</b>          |             |            |
| Yes                                     | 101         | 05         |
| No                                      | 2099        | 95         |
| <b>Habits :</b>                         |             |            |
| Yes                                     | 518         | 23.5       |
| No                                      | 1639        | 74.5       |
| Occasionally                            | 43          | 2.0        |
| <b>Use of table salt or pickles :</b>   |             |            |
| Yes                                     | 960         | 40.0       |
| No                                      | 880         | 16.4       |
| Occasionally                            | 360         | 43.6       |
| <b>Diet :</b>                           |             |            |
| Mixed                                   | 1090        | 49.5       |
| Vegetarian                              | 1110        | 50.5       |
| <b>Practice of regularly exercise :</b> |             |            |
| No                                      | 1082        | 49.18      |
| Yes                                     | 1011        | 45.95      |
| Irregular                               | 107         | 4.86       |
| <b>Body Mass Index (BMI) :</b>          |             |            |
| Under weight                            | 179         | 8.1        |
| Healthy                                 | 1201        | 54.6       |
| Over weight                             | 584         | 26.5       |
| Obese                                   | 221         | 10.0       |
| Extremely obese                         | 15          | 0.7        |
| <b>Total</b>                            | <b>2200</b> | <b>100</b> |

Ethical Committee permission and consent from the patient were taken before the start of the study. Screening for Diabetes and Hypertension was done to identify the suspected case. Statistical analysis was done using SPSS VERSION 21.

### Tool for measurement<sup>4</sup>:

**Measurement of Height :** The Stadiometer comprises a rigid vertical backboard and a horizontal headboard running free, perpendicular to the backboard and without cross-play. The top of the head must be in contact with the headboard. A 0.5 kg weight is placed on the headboard. It consists of a ruler and sliding horizontal headpiece which can be fixed above the head to measure height. The subject's shoes and socks are removed. The participants are placed so that their heels, buttocks and shoulders are in contact with the vertical plane of the Stadiometer. The feet must be flat against the floor while either ankles or knees remain in contact.

**Measurement of Weight :** The weight was measured in kilograms (kg) using a Standardized Weighing Machine with the study subject standing erect on the center of the platform with the body weight evenly distributed between both the feet together and toes apart without footwear with accepted clothing

and looking straight ahead. The weight was recorded to the nearest 0.5 kg.

**Body Mass Index (BMI)** : In this study, BMI the Classification proposed by the WHO, Western Pacific Regional Office in collaboration with International Obesity Task Force (IOTF) Steering Committee (2000) for Asian People was used to assess obesity and is computed by

$$\text{BMI} = \text{Weight (in kg)} / \text{Height (in meter)}^2$$

It is classified as BMI <18.5 (Underweight), 18.5-22.9 (Normal), 23.0-24.9 (At Risk Obesity), 25.0-29.9 (Obese I) and > 30 (Obese II).

Random Blood Glucose Sugar (RBS) testing was using the Glucometer Method. In the present study a value of 200 mg/dl or above indicates that a person may have Diabetes Mellitus (DM). Less than 140 mg/dl is normal & 140 to 199 mg/dl indicates Prediabetes<sup>5</sup>.

Blood Pressure (BP) was measured by using a Sphygmomanometer. Reading the value of Systolic Blood Pressure of 120 mmHg & Diastolic Blood Pressure 80 mmHg classified as normal, Pre-hypertension as - > 120 -130/ >80 - 85 mmHg and Hypertension as 140/ 90 mm Hg<sup>6</sup>.

## RESULTS

In the present study, both males and females were in equal distribution and the maximum numbers of them were Hindus (89%) followed by Muslims. The mean duration of the age group is 45.24±14.402. Majority of their in the age group of 40-49 years followed by >50 years. and >30 years. 35% of them are illiterate & 65% of them were literate. 29% of them were farmers by occupation and 26% of them were homemakers among females.

16% of the participants have a family history of Diabetes Mellitus (DM) and 13% of them have a family History of Hypertension (HTN). It was good to know that 75% of the participants did not have any habits. Multiple answers were found with regard to habits. The majority of them were having the habit of tobacco chewing (14%) followed by smoking and alcohol (3%).

some of them had mixed habits also, but the range is from 3%- 0.9 %. The duration observed of all their habit was in a range of 5-10 years. (37%). followed by 1-5 years.

Respondents said in their routine diet, 44% of them use pickle, table salt or chutney. But no association was observed with an intake of pickle, table salt or chutney with Hypertension. 46% of the participants have the habit of doing regular exercise and only 5% of them do irregular physical exercise .among the exercise majority of them preferred walking (95%) followed by jogging (2%). The maximum number of them practiced for a duration of 1 hour (70%). Family history of Diabetes Mellitus and Hypertension was observed in 16% and 13% of the respondents respectively.

Among the participants, 17% of them were known cases of Diabetes, 13% of them were known cases of Hypertensive and 6% of them were Cardiac Diseases. The duration of diseases both for Diabetes and Hypertension was between 1-5 years. followed by 5-10 years but for the Cardiac Disease, it was observed reverse pattern. 85% of them were on regular treatment for both Diabetes and Hypertension and but for Cardiac Disease it was observed 92%.

The mean weight of the participant is 63.080±20.4637. The majority of them were healthy (54.6%) and more than 10% were obese.

In our study, 7% of they were known cases of both DM and Hypertension, Diabetes and Cardiovascular Disease was 0.64%, similarly Hypertension and Cardiovascular Disease was 0.55%. All three together was 0.55%.

We found in our study a statistical significance association between all the risk factors like Modifiable and Non-modifiable factors with related to Diabetes, but for Hypertension except for diet and habits, all other risk factors was observed significant association. Similarly for Cardiovascular Disease only age and Body Mass Index was found a significant association (Table 3).

Table 3 — Association between risk factors & known case of diabetes mellitus, hypertension and cardiovascular disease

| Risk factors          | DM                      |           | HTN                      |           | CVD                     |           |
|-----------------------|-------------------------|-----------|--------------------------|-----------|-------------------------|-----------|
|                       | Chi-square value        | P value   | Chi-square value         | P value   | Chi-square value        | P value   |
| Age                   | x <sup>2</sup> =186.220 | P=0.0001* | x <sup>2</sup> = 173.186 | P=0.0001* | x <sup>2</sup> = 20.597 | P=0.0001* |
| Gender                | x <sup>2</sup> =8.834   | P=0.01*   | x <sup>2</sup> =6.430    | P=0.01*   | x <sup>2</sup> =2.588   | P=0.089   |
| Diet                  | x <sup>2</sup> =4.385   | P=0.036*  | x <sup>2</sup> =9.030    | P=0.003   | x <sup>2</sup> =1.078   | P=0.221   |
| Habits                | x <sup>2</sup> =10.093  | P=0.006*  | x <sup>2</sup> =1.219    | P=0.544   | x <sup>2</sup> =1.985   | P=0.371   |
| Occupation            | x <sup>2</sup> =91.442  | P=0.001*  | x <sup>2</sup> =59.913   | P=0.001*  | x <sup>2</sup> =9.364   | P=0.228   |
| BMI                   | x <sup>2</sup> =31.483  | P=0.0001* | x <sup>2</sup> =51.888   | P=0.0001* | x <sup>2</sup> = 7.617  | P=0.07*   |
| Place                 | x <sup>2</sup> =15.751  | P=0.001   | x <sup>2</sup> =12.947   | P=0.001*  | x <sup>2</sup> =0.355   | P=0.551   |
| Physical exercise     | x <sup>2</sup> = 23.957 | P=0.0001* | x <sup>2</sup> = 14.232  | P=0.0001* | x <sup>2</sup> =4.173   | P=0.124   |
| Family history DM/HTN | x <sup>2</sup> =112.574 | P=0.001*  | x <sup>2</sup> =89.439   | P=0.001*  | x <sup>2</sup> =6.693   | P=0.035*  |

In the present study by investigating Random Blood Sugar test during screening, we found 5% of them were found to be suspected as Diabetics (>200mg/dl) and recording of Blood Pressure shows 10% (140/90mmhg) of them were suspected to be Hypertension.

Similarly, we found 21% of them were Pre-diabetic and 25% of them were Pre-hypertensive during screening.

We observed the mean duration of Systolic Pressure is 124.68±17.628 and Diastolic Pressure is 79.83±10.279 of the participants. Similarly, the mean duration of Blood Sugar level is 144.38±69.823.

Our study observed a statistically significant difference was found between Diabetes Mellitus with related Gender (P=0.022), Occupation (P= 0.0001) and Body Mass Index (P=0.012).

Also for Hypertension, we found a significant association with related to Gender (P=0.023), habits (P=0.013), Occupation (P= 0.0001), Physical Exercise (P=0.017) and BMI (P=0.0001).

We found a highly statically significant association between Rural and Urban with related both Hypertension (at P=0.0001) and DM (P=0.0001)

No statistically significant association was observed for other risk factors like diet and family History for both Diabetes Mellitus and Hypertension (Table 4).

### DISCUSSION

In the present scenario, Non-communicable Diseases (NCD)are accounts for 71% of death Worldwide and also about 48% of healthy life years lost<sup>7</sup>. They are the major cause of mortality and morbidity among adults. In the present study during screening, we observed that many of our respondents were not screened before in their lifetime for diseases like Diabetes Mellitus and Hypertension. The majority of them are not aware of the risk factors for developing these diseases.

We found a majority of them were Hindu by Religion and belongs to the age group of 40-49 years. This could be due to the geographic distribution of the population as the majority belongs to Hindu by Religion in this area. With regards to age, all of them were patient attenders who are matured to take care of patients at the Hospital. The majority of them were farmers by the occupation because the patients who come to this Tertiary Center are usually from surrounding villages and their main occupation is mainly farming.

A finding of the present study has provided a useful screening tool for the detection and prevention of diabetes and Hypertension at our Wellness Clinic. We found 5% of them were suspected as Diabetics (>200mg/dl) in our study. A similar study of a population -based study conducted by Bharthi *et al*<sup>8</sup> observed 47% of study subjects were suspected of DM. This is more than our study. In another study of screening of DM in a Rural area of North India found, 2.9% were Diabetic (RBS > 200 mg/dl), which is lower than our study. These differences could be due to the lifestyle behavior of the different study populations.

Family History of DM is one of the risk factors for Diabetes Mellitus (DM), as though there was no significant association in our study with related to family history & DM. in the present study, 16% of the participants have a family history of DM. A similar finding of Positive Family History of DM (16.9%) was observed in a study conducted by Ram Chandra *et al*<sup>9</sup>.

A significant association was observed between DM & Body Mass Index (BMI) in the present study. A similar observation was found in the study conducted by Bharthi *et al*<sup>8</sup> and Vasanthakumar *et al*<sup>10</sup>.

For Hypertension, we found a significant association with related to Gender, Habits, Occupation, Physical Exercise and BMI. The study conducted by Shikha .S *et al*<sup>11</sup> and Vanitha D, *et al*<sup>12</sup> observed similar finding like Gender, occupation, BMI,

and tobacco use were significantly associated with Hypertension.

This shows that both for DM and Hypertension risk factors are very important and also strengthen the importance of risk factors responsible for the causation of Non-communicable Diseases.

### CONCLUSION AND RECOMMENDATION

From our study, we conclude that screening programs can strengthen Healthcare System initiatives and

Table 4 — Association between risk factors and suspected case of Diabetes Mellitus and Hypertension

| Risk factors              | DM (N=1832)      |           | HTN (N=1914)     |           |
|---------------------------|------------------|-----------|------------------|-----------|
|                           | Chi-square value | P value   | Chi-square value | P value   |
| Age                       | $\chi^2= 31.847$ | P=0.001*  | $\chi^2= 81.325$ | P=0.001*  |
| Gender                    | $\chi^2=5.219$   | P=0.022*  | $\chi^2=1.323$   | P=0.01*   |
| Diet                      | $\chi^2=0.697$   | P=0.404   | $\chi^2= 2.871$  | P=0.090*  |
| Occupation                | $\chi^2=28.320$  | P=0.0001* | $\chi^2=84.843$  | P=0.0001* |
| Habits                    | $\chi^2=5.284$   | P=0.625   | $\chi^2=10.519$  | P=0.005*  |
| BMI                       | $\chi^2=12.920$  | P=0.012*  | $\chi^2=39.743$  | P=0.0001* |
| Place                     | $\chi^2=0.679$   | P=0.410   | $\chi^2=0.150$   | P=0.699   |
| Physical exercise         | $\chi^2=1.733$   | P=0.420   | $\chi^2= 8.202$  | P=0.017*  |
| Family history of DM/ HTN | $\chi^2=6.472$   | P=0.039*  | $\chi^2=7.263$   | P=0.026*  |

reduce the growing burden of DM and Hypertension in India. The current cross-sectional study was formulated to screen individuals for Diabetes and Hypertension to obtain the trends of distribution of Blood Glucose Level and Blood Pressure Record, also identifying modifiable and Non-modifiable Risk Factors.

Based on the finding of our analysis report, those who were Pre-diabetic and Pre-hypertension for them also, we are advising to adopt lifestyle modification so that they should not suffer from both DM and Hypertension in future days. It is recommended to adopt screening programmes to strengthen the Health System for early detection of both DM and Hypertension at the Community level. Also, awareness programmes to educate them about risk factors and adoption of a Healthy Lifestyle like daily Physical Exercise, Yoga and Meditation to Reduce Body Weight, reduce or quit the habits of Smoking, Tobacco, Alcohol, reduce the Salt intake and Oil consumption. The practice of a Healthy balanced diet and regular intake of treatment and follow up for the known cases of Diabetes and Hypertension

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