

Original Research Article

Screening for retinopathy, risk factors, adherence to treatment and complications among diabetic and hypertensive individuals attending a primary care centre in Puducherry, India

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ABSTRACT

Background: The increasing prevalence and incidence of diabetes and hypertension with increasing age and adult age group are at high risk of developing diabetic and hypertensive retinopathies.

Methods: The study was conducted in a rural area of Puducherry, data collection was carried over a period of six months. Self-reported patients of diabetes and hypertension were included in the study and predesigned questionnaire was used to collect the information about socio-demographic details, risk factors, physical activity, history related to DM/HTN and history of fundus examination.

Results: Majority of patients screened for diabetes 56% and hypertension 47% was by government hospital. The proportion of diabetics and hypertensives who had undergone fundus examination to rule out diabetic and hypertensive retinopathy was found to be 29.3% (12) and 14.5% (10). Complications such as neuropathy and retinopathy were given by 36.5% (15) and 2.4% (1) of diabetic patients Two third of the patients 64.1% had sedentary life style.

Conclusions: Health care providers need to plan for larger coverage of fundus examination among diabetic and hypertensive patients.

Keywords: Diabetic retinopathy, Sedentary lifestyle, Screening

INTRODUCTION

Globally, there is an increasing prevalence of non-communicable diseases (NCD) especially diabetes and hypertension with the risk of vision-threatening retinopathies. An estimated 26% of the world's population (972 million people) has hypertension, and the prevalence is expected to increase to 29% by 2025, driven largely by increases in economically developing nations.¹ The prevalence of diabetes is predicted to double globally from 171 million in 2000 to 366 million in 2030 with a maximum increase in India. It is predicted

that by 2030 diabetes mellitus may afflict up to 79.4 million individuals in India.² There is an increasing prevalence and incidence of diabetes with increasing age and adult age group are at high risk of developing diabetic retinopathies.³ Alcohol, smoking, level of physical activity along with family history, duration and adherence to treatment of NCD are potential risk factors for development of retinopathies. This paper reports on risk factors, adherence to treatment and complications among known diabetic and hypertensive individuals attending a primary care centre in a rural area of Puducherry.

Objectives

- To estimate the proportion of individuals who underwent screening for retinopathy among diabetics and hypertensives in a rural community.
- To identify the risk factors associated with the study participants.
- To find the level of adherence to treatment and self-reported complications among the study participants.

METHODS

The Government of Pondicherry has public private partnership initiative with Pondicherry Institute of medical sciences in which certain remote health centres are supported by a medical team consisting of Medical officer, staff nurse and auxiliary staff. This study was conducted in the sub-centre at Alankuppam village which is part of the field practice area of Sedurapet PHC in Puducherry. Alankuppam is situated in a rural area of Puducherry which is surrounded by villages of Villupuram district of Tamil Nadu. A total of about 5023 population is covered by the sub-centre. The Sub centre has OPD run by medical team for 6 days in the week. Patients in and around the village come to the health centre for treatment and referral to higher health facilities.

A cross sectional study design was used to gather information from the diabetics and hypertensives residing in the rural area. It was decided to use purposive sampling technique to enroll all the diabetics and hypertensives attending the outpatient services of the health centre. The duration of data collection was for a period of 6 months (June - Dec 2017). All self-reported patients who were known cases of diabetes and hypertension were included in this study. A predesigned questionnaire was used to collect the information about socio-demographic details, risk factors, physical activity, history related to DM/HTN and history of fundus examination. The health centre receives an average of 80-100 patients per day. The interview of the known Diabetics and Hypertensives was conducted by the medical officer during the day to day outpatient department time in the forenoon. Each interview lasted for approximately 20-30mins. The collected information was entered in proforma and checked for completeness.

Statistical analysis

This data was entered in MS excel sheet regularly during at the end of the day. At the end of the period of data collection analysis was done in MS excel. Statistical analysis of the data was done using frequency and proportions.

RESULTS

A total of 92 subjects were included in the study of which 41 (44.5%) and 69 (75%) had diabetes mellitus and

hypertension. The females 73% (68) were found to have higher number of diabetes and hypertension. The socio-economic status of participants according to modified updated BG Prasad scale for the month and year of October 2017, majority of the participants fall under class II, followed by 27.11% and 11.11% come under class III and IV (Table 3).

Table 1: Socio-demographic profile of study participants having Diabetes/Hypertension (n=92).

Socio demographic characteristics	Frequency	Percentage
Age		
30-39	3	3.26
40-49	14	15.21
50-59	20	22.22
60-69	34	36.49
70-79	12	13.04
80-89	9	9.78
Sex		
Male	24	26.1
Female	68	73.9
Education		
Illiterate	56	60.9
Primary school	18	19.6
Middle school	10	10.9
High / Hr. sec school	6	6.5
Graduate and above	2	2.2
Occupation		
Farmer	7	7.6
Home maker	61	66.3
Unemployed	13	14.2
Others	11	12.1
Socio economic: BG Prasad classification: CPI: 305 (Oct-2017)		
Class V (<1044)	2	2.17
Class IV (1044-2047)	10	11.11
Class III (2088 - 3479)	25	27.17
Class II (3480-6960)	48	52.17
Class I (>6961)	7	7.38

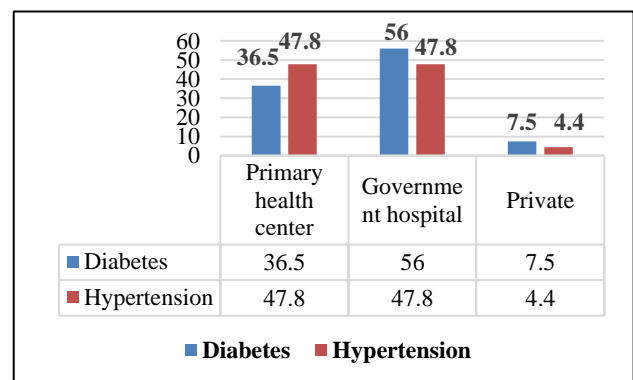


Figure 1: Place of screening among Diabetes and Hypertension: (n=92).

Twelve patients (29.3%) with history of diabetic mellitus had undergone fundus examination. History of complications such as neuropathy and retinopathy were given by 36.5% (15) and 2.4% (1) of the patients, as shown in (Table 2).

Majority of the patients 72.5% (50) were found to be suffering HTN for less than 5years, 18.8% (13) had hypertension for 5 to 10 years, 8.7% (6) were found to be hypertensive for over 10 years, given in (Table 3). Most of the diabetic and hypertension patients had undergone screening in government hospital 36.5%, 47.8% and in primary health centre 56%, 47.8% when compare to private sector 7.5 % and 4.4% respectively (Figure 1).

Physical activity

Almost two-thirds of them 64.1% (59) had sedentary lifestyle while 35.9% (33) had moderate level of physical activity. More than half of them 53.2% (49) were doing household activities, 34.7% (32) were going for walks, some were involved in brisk walking 7.6% (7) and jogging 4.4% (4). Approximately two-third 64.1% (59) did not given history of stress or strain.

Table 2: Diabetes history, screening of fundus, adherence to treatment and complications among the study participants (n=41).

History of diabetes	Frequency	Percentage
Age of detection		
30-39	4	9.7
40-49	12	29.3
50-59	15	36.6
60-69	3	7.3
70-79	7	17.1
Duration of diabetes		
1-5 years	22	53.7
5-10 years	17	41.5
>10 years	2	4.8
Adherence to treatment		
Regular	40	97.6
Occasionally irregular	1	2.4
Fundus examination		
Done	12	29.3
Not done	29	70.7
Complications of diabetes		
Neuropathy	14	34.1
Retinopathy	1	2.4
No complications	26	63.5

Among those who reported stress the highest was financial 17.4% (16) followed by medical 7.6% (7), workplace 5.4% (5), and relationship 4.4% (4) and death 1.1% (1). More than three-fourths 19.6% (18) were tobacco users and alcoholics, 79.3% (73) were addicted to caffeine (Table 4).

Table 3: Hypertension history, screening of fundus, adherence to treatment and complications among the study participants (n=69).

History of hypertension	Frequency	Percentage
Age of detection		
30-39	4	5.8
40-49	16	23.2
50-59	15	21.8
60-69	20	28.9
70-79	14	20.3
Duration of hypertension		
1-5 years	50	72.5
5-10 years	13	18.8
>10 years	6	8.7
Adherence to treatment		
Regular	66	95.65
Irregular	2	2.89
Occasionally irregular	1	1.46
Fundus examination		
Done	10	14.5
Not done	59	85.5
Complications of hypertension		
CVD	1	1.5
Nephropathy	1	1.5
No complications	67	97.0

Table 4: Distribution of level of physical activity, addictions and stress among the diabetes and hypertension patients.

History of risk factor	Frequency	Percentage
Level of Physical activity		
Sedentary	59	64.1
Moderate	33	35.9
Type of physical activity		
Household activities	49	53.2
Walking	32	34.7
Brisk walking	7	7.6
Jogging	4	4.4
Frequency of physical activity		
Daily	26	28.3
3 days in a week	36	39.1
More than 3 days in a week	30	32.6
Addictions		
Tobacco	15	16.3
Alcohol	3	3.3
Both	1	1.1
Caffeine	73	79.3
Stress and strain		
Financial	16	17.4
Workplace	5	5.4
Relationship	4	4.4
Medical	7	7.6
Death	1	1.1
Nil	59	64.1

DISCUSSION

In this study, the known cases of diabetes and hypertension attending the NCD clinic of health centre in a rural area of Puducherry aged 50 or more constitutes 61% and 71%, respectively. Majority of DM (53%) and HTN (72.5%) were diagnosed in the previous 5 years. Similar prevalence was found in a study done by Narendaran et al, the mean age of diabetics was 61.7 years (range 50-86 years) and 84% of the self-reported diabetics had diabetes for up to 5 years.⁴

The proportion of diabetics and hypertensives who had undergone fundus examination to rule out diabetic and hypertensive retinopathy was found to be 29.3% and 14.5%^{10,12} Similar observation was made by Rani PK et al, the prevalence of diabetic retinopathy in a self-reported cohort of people with diabetes, in the rural population of India, was 17.6%.⁵ The independent risk factor for diabetics and hypertensives mostly likely to develop vision-threatening conditions like retinopathies etc., are longer duration of the diseases, strong genetic factors, level of physical activity, intake of alcohol and tobacco etc. Such an association has been observed by several other investigators, longer duration of diabetic and hypertension, addictions and level of physical activity.^{4,6-8} The similar observation found by Raman R et al, increasing the age, duration of diabetes, and male gender are prone to develop diabetic retinopathy.⁹ A study done by Nadarajan B et al, diabetic retinopathy prevalence was more among >60years age group and lesser education level.¹⁰

The limitation of the present study is the self-reported diabetic and hypertensive population to health care and so the possibility of a selection bias.

CONCLUSION

Periodic screening awareness needs to be incorporated for retinopathies among diabetic and hypertensive patients with longer duration and other potential risk factors in rural areas to ensure that blindness due to retinopathies does not become a public health problem.

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Ethical approval: Not required

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