

Original Research Article

Challenges faced by the patients in the management of risk factors of non-communicable diseases in a government primary health care setting of Puducherry

Jayaramachandran Solaimalaichami^{1*}, Surekha Anbalagan¹, Suguna Anbalagan¹,
Seetharaman Narayanan¹, Dhivya Pownraj²

¹Department of Community Medicine, ²Department of General Medicine, Mahatma Gandhi Medical College and Research Institute, Pillaiyarkuppam, Puducherry, India

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*Correspondence:

Dr. Jayaramachandran Solaimalaichami,
E-mail: chandru598@gmail.com

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ABSTRACT

Background: India's current approach for intervention in non-communicable diseases (NCDs) is more in terms of early diagnosis and treatment. The focus should also be on the management of risk factors in the diseased individuals. The objectives of the study are to measure the risk factors of NCDs, lifestyle modification followed by them and to assess the challenges in reducing the risk factors of NCDs faced by the study population.

Methods: The study was conducted between March and June 2017 in 2 government primary health centres (PHCs) in Puducherry. Based on systematic random sampling, 200 patients enrolled in NCD clinic with diabetes mellitus, hypertension, Stroke and myocardial infarction were selected for the study. After obtaining written informed consent, data was collected.

Results: Out of 200 participants, majority of them were in the age group of 51-70 years (60%), females (71%) and living in nuclear family (83%). Among 200 participants, 23.5% of them had diabetes mellitus, 42% had hypertension and 24% had diabetes with hypertension. The risk factors that many of the participants had were excessive salt and sugar intake, overweight and obesity, less vegetable and fruits intake and alcohol consumption. Out of 200 participants, the major challenges in reducing the salt and sugar intake were lack of awareness and no family support.

Conclusions: Most of the participants were oldest females who had diabetes or hypertension. The most common NCD they were suffering from were diabetes and hypertension. The major challenge in the management of NCDs is lack of awareness.

Keywords: Management, Challenges, Non-communicable disease, Risk factor, Primary health centre, Puducherry

INTRODUCTION

The global burden and threat of non-communicable diseases (NCDs) constitutes a major public health challenge that undermines social and economic development throughout the world. According to the Global status report on NCDs 2014 by World Health Organization (WHO), NCDs are the leading cause of death globally and responsible for 38 million (68%) of

the world's 56 million deaths in 2012. More than 40% of them (16 million) were premature deaths under age 70 years.¹ This was taken forward into the Sustainable Development Goals (SDG), with SDG 3.4 aiming to reduce premature mortality from NCDs by one third by 2030. The targets selected to achieve this goal include reducing elevated blood pressure, smoking cessation, reducing salt intake and increasing physical activity.²

Looking at the current scenario in India, the Ministry of Health and Family Welfare's initiatives in the health sector has been so far directed mainly towards the communicable diseases and maternal and child health which constituted high mortality rate. But with changing demographics and lifestyle modifications over the last few years, NCDs are fast surpassing the traditional enemies such as infectious diseases and malnutrition, as the leading causes of disability and premature death. According to the WHO NCDs Country Profiles 2014, out of the total 98.16 lacs deaths, NCDs hold a major share with cardiovascular diseases accounted for 25 lacs deaths, cancer- 6.8 lacs, chronic respiratory diseases- 12 lacs, diabetes- 1.9 lacs, other NCDs- 11 lacs and injuries- 11 lacs. The WHO also figured out that the probability of dying between ages 30 and 70, from four major NCDs for both sexes is as high as 26%. For a country with the largest number of young workers in the world, these statistics point to the loss in economic productivity that would occur if this continues unchecked.²

Common, preventable risk factors underlie most NCDs. Most NCDs are the result of four particular behaviours (tobacco use, physical inactivity, unhealthy diet, and the harmful use of alcohol) that lead to four key metabolic/physiological changes (raised blood pressure, overweight/obesity, raised blood glucose and raised cholesterol).³ While there is increasing agreement about the upstream policies required to combat NCDs and reduce NCD mortality, far less is known downstream about how to deliver and monitor quality services for the prevention, care and treatment of chronic disease for the millions of people in need and focusing on management of risk factors.⁴

India's current approach for intervention is more in terms of screening blood sugar testing and putting the same patients on anti-glycemic agents, indeed for cutting down the burden of type-2 diabetes, there is intervention for the prevention of risk factors such as sugar intake and salt intake which needs a different approach. Indeed for addressing other issues such as healthy eating practices, reduction of alcohol, and complete ban on tobacco consumption, separate health education program is needed for effective intervention of NCDs.⁵

No studies have documented the challenges faced by the patients in the management of risk factors of non communicable diseases (NCDs) in a primary health care setting of Puducherry. Therefore, this study was done with an aim to achieve the following objectives.

Objectives

- To assess the socio-demographic profile of the study population.
- To measure the risk factors of NCDs of the study population.
- To assess the challenges in reducing the risk factors of NCDs faced by the study population.

- To study the functioning of NCD clinic in government PHC.

METHODS

A cross sectional study was carried out between March to June 2017 in two government Primary Health Centres (PHCs) namely Kirumampakkam and Thavalakuppam which are served by Mahatma Gandhi Medical College and Research Institute, Puducherry under public private partnership. Puducherry is an union territory with four districts in 3 states viz. Karaikal in Tamilnadu, Mahe in Kerala, Yanam in Andhra Pradesh and Puducherry itself. Puducherry is located 185 kilometres away from Chennai, Tamil Nadu. Puducherry has high literacy status with best health care indicators in the country.

Sample size and inclusion criteria

The study population comprised of those with diabetes mellitus, hypertension, Stroke and myocardial infarction enrolled in NCD clinic which was functional on every Tuesday and Thursday of every week. The sample size was calculated to be 200 based on the prevalence of previous studies. The list of patients enrolled in NCD clinic was obtained from the NCD register. NCD patients were selected by systematic random sampling and the details of them were collected from the NCD Card provided under national programme for prevention and control of cancer, diabetes mellitus, cardiovascular diseases and stroke (NPCDCS).

Ethical considerations

Permission was obtained from concerned authorities and we made sure that data collection did not interfere with the daily routine of the patients attending NCD clinic. After obtaining the written informed consent, the study participants were interviewed to collect necessary information. All the details were collected using Epicollect 5 android application after preparing a pre-designed and pre-tested semi structured questionnaire.

Variables studied

The following data were collected. Socio-demographic data-age, sex, education, occupation, per-capita income, marital status, type of family and religion. Modifiable risk factors profile of NCD patients-obesity, overweight, alcohol consumption, use of smoking and smokeless forms of tobacco, high salt intake, high sugar intake, hypercholesterolemia, less fruits / vegetable intake. Life style modification adopted by NCD patients-walking, decrease alcohol intake, decrease smoking or chewing tobacco, less consumption of salt, Less intake of sugar, avoid oily foods, adequate consumption of fruits and vegetables, regular exercise and yoga. Challenges in the life style modification by the NCD patients-general and specific challenges. General and specific challenges addressed were-no motivation, no time, low awareness

and no family support. Specific challenges-walking: no safe space, knee problem and low backache; exercise-low backache and no consistent effort; alcohol intake-peer pressure, habitual, low cost and easy availability; smoking tobacco-peer pressure, habitual, low cost and easy availability; diabetic diet-joint family, type of work, not palatable and habitual consumption of unhealthy food; salt restricted diet-joint family, not palatable food and habitual to more salt; fruits and vegetables consumption - financial constrain and unhealthy food – habitual, no self-control, easy availability and palatable.

Operational definitions

The following were the operational definitions followed in the study were standard definitions using under NPCDCS programme. Tobacco-user was defined as those who have ever smoked cigarettes or used oral tobacco products in the past. Alcohol consumer was defined as a person who reported consuming alcohol within the past 1 year. Consumption of <5 servings of fruits and/or vegetables/day was considered as a risk factor. Physical inactivity was defined as <10 min of activity at a stretch, during leisure, work or transport. One serving of fruit was defined as 1 medium size piece of apple, banana or orange, ½ chopped, cooked, canned fruit or ½ cup of fruit juice, not artificially flavored. One serving of vegetable was defined as 1 cup of raw green leafy vegetable, ½ cup of other vegetables (cooked or chopped) or ½ cup of vegetable. Overweight was defined as BMI ≥ 25 kg/m². Abdominal obesity was defined as WC ≥ 90 cm for the men or ≥ 80 cm for women. Hypertension was defined as systolic blood pressure (SBP) of ≥ 140 mmHg or diastolic blood pressure (DBP) ≥ 90 mmHg and prehypertension were defined as SBP 120-139 mmHg or DBP 80-89 mmHg and frequencies.

The functioning of the NCD clinic was studied by observation and in-depth interview with the medical officer, staff nurse, lab technician, pharmacist and axillary nurse midwifery (ANM). Study was done after obtaining permission from the institute human ethical committee. Statistical analysis of the data was done using Microsoft Excel. Results were expressed in frequency and percentages.

RESULTS

Socio-demographic details

Out of 200 participants, the socio-demographic profile is described as follows. 60% of them were in the age group of 51-70 years, 71% of them were females, 83% were living in nuclear family, 79% were married 98% were Hindus, 69.5% were unemployed and 58.5% belonged to lower middle and lower class (Table 1).

Risk factor profile

Among 200 participants, 23.5% of them had diabetes mellitus, 42% had hypertension, 24% had diabetes with

hypertension. The various modifiable risk factors for NCDs that the many of the participants had were excessive salt intake (28.5%), overweight and obesity (23.5%), less vegetable intake (19%), less fruits intake (18.5%), excessive sugar intake (18%), alcohol consumption (14.5%). Few of them had following risk factors for NCDs viz. chewing tobacco, stress, physical inactivity, hypercholesterolemia, unhealthy eating habits, smoking tobacco and family history of NCDs. Majority of them had two or more risk factors for NCDs (Table 2).

Table 1: Socio-demographic profile (n=200).

Variables	Frequency (%)
Age (in yrs)	
<40	8 (4)
41-50	45 (22.5)
51-60	68 (34)
61-70	53 (26.5)
>70	26 (13)
Gender	
Male	71 (36)
Female	129 (64)
Type of family	
Nuclear family	166 (83)
Joint family	32 (16)
Others	2 (1)
Marital status	
Married	158 (79)
Widow / widower	40 (20)
Others	2 (1)
Religion	
Hindu	196 (98)
Others	4 (2)
Occupational status	
Unemployed	139 (69.5)
Unskilled	16 (8)
Semi-skilled	24 (12)
Skilled	13 (6.5)
Professionals	4 (2)
Socio-economic status	
Upper class	7 (3.5)
Upper middle class	22 (11)
Middle class	54 (27)
Lower middle class	53 (26.5)
Lower class	64 (32)

Challenges in the management of risk factor

Out of 200 participants, 74.5% had some challenges in the management of risk factors of NCDs. The following were the challenges faced by the participants-reducing the salt intake (43%), walking daily (39%), reducing sugar intake (30%), reducing oily foods (18.5%), reducing substance abuse (15.5%), eating adequate vegetables (13%) and eating adequate fruits (11.5%). The reasons for challenge in the management of risk factors for NCDs were lack of awareness (55%), no family support (33%),

no motivation to reduce unhealthy lifestyle and no time to do physical activity (Table 3).

Table 2: NCD and risk factor profile (n=200).

Variables	Frequency (%)
NCD profile	
Diabetes mellitus (DM)	47 (23.5)
Hypertension (HTN)	84 (42)
DM with HTN	68 (34)
Others	7 (3.5)
Risk factor profile	
Excessive salt intake	(28.5)
Overweight/obesity	(23.5)
Less vegetable intake	(19)
Less fruits intake	(18.5)
More sugar intake	(18)
Alcohol consumption	(14.5)
Chewing tobacco	(11.5)
Stress	(11)
Physical inactivity	(10)
Hypercholesterolemia	(8)
Unhealthy eating habits	(6.5)
Smoking tobacco	(6)
Family history of NCDs	(6)
No. of risk factors	
One	94
Two	92
Three	45
Four	27
Five	16

Table 3: Challenges faced by the patients in the management of NCDs (n=200).

Variables	Frequency (%)
Proportion with challenge	
Yes	149 (74.5)
No	51 (25.5)
Challenges faced in	
Reducing salt intake	86 (43)
Walking daily	78 (39)
Reducing sugar intake	60 (30)
Reducing oily foods	37 (18.5)
Reducing substance abuse	31 (15.5)
Eating adequate vegetable	26 (13)
Eating adequate fruits	23 (11.5)
Others	16 (8)
Reasons for the challenges	
Lack of awareness	110 (55)
No family support	66 (33)
No motivation for healthy lifestyle	106 (53)
No time for physical activity	70 (35)

Functioning of NCD clinic in government PHC

Under NPCDCS, NCD clinic was started with an intension to prevent and control the morbidity and mortality of NCDs like cancer, diabetes, cardiovascular diseases and stroke. NCD clinic functions on Tuesday and Wednesday of every week from 08.30 AM to 02.00 PM. In an average, the number of patients who get treated in a NCD clinic is around 300-400. All the patients are attended by only 2 medical officers who are assisted by 4-5 interns and supported by staff nurse, lab technician and pharmacist. The NCD staff team attend one NCD clinic in one PHC in rotation to cover all the PHCs in Puducherry. All those who are 40 years and above are screened for hypertension and diabetes. Those newly detected patients are referred with a NCD referral card to Indira Gandhi Government General Hospital and Postgraduate Institute (IGGGH & PGI) for further evaluation and management. Those who had got evaluated come back to their respective PHC with the back referral card in which the details of investigation (lipid profile, ECG, ECHO-if required) and treatment protocol would be mentioned by the specialist at IGGGH & PGI, Puducherry. The same would be followed in the PHC by the Medical officer and drugs are issued for 1 month. But, in case the patients don't have controlled blood pressure and blood sugar levels, then the drugs would be titrated accordingly. Drugs that are available were glibenclamide, metformin, insulin, amlodipine, enalapril and atorvastatin. Patients would be advised to take the medications regularly, reduce salt consumption, reduce sugar consumption and walk daily irrespective of their disease status. This would be again reinforced when the PHC ANM goes to the field along with the sub-centre ANM. Under these 2 PHCs, there were 5-6 sub-centres. The patients would be also advised to come to the PHC on any day if they develop any health issue with respect.

DISCUSSION

This study has addressed the challenges faced by the patients in the management of risk factors of NCDs in government PHCs under NPCDCS. Majority of the patients studied were females which is comparable to the studies done by Thakur et al and Oommen et al.^{6,7} But Chauhan et al reported similar proportion of males and females among the study population.⁸ Female study participants were more as they were more compliant to treatment and their health seeking behaviour is better as compared to males. The compliance is poor among males as most of them were alcoholics in this study which is as comparable to a study done by Kavitha et al, hence the females formed the majority of the study participants.⁹ As majority of the study participants were in the age group of 51-70 years, many were unemployed either due to their illness or age factor.

Like various studies the modifiable risk factors for NCDs that the many of the participants had were excessive salt intake, overweight and obesity, less vegetable intake, less

fruits intake, excessive sugar intake and alcohol consumption.^{6-8,10} Few of them had following risk factors for NCDs viz. chewing tobacco, stress, physical inactivity, hypercholesterolemia, unhealthy eating habits, smoking tobacco and family history of NCDs. Majority of them had two or more risk factors for NCDs. Nethan et al in his study concluded that a relative lack of adequate risk factor data in its entirety, inadequate coverage (geographically and demographically) and absence of a standardized methodology are the major deficiencies which need to be overcome for a superior and more effective NCD control in the country, which in turn would facilitate reduction of the overall NCD burden by 2025.¹¹ But, a study done by Anand et al concluded that, considering the burden of NCDs risk factors in the population, there is urgent need to work out community-based interventions at different levels including health promotion, prevention, early diagnosis, treatment, and rehabilitation.¹² The challenge is to prevent acquisition of harmful health behaviours during the course of socio-economic development, especially among the younger populations. Hence, there is no point in listing the risk factors of NCDs as it is more or less the same among the Indian population.

The major challenges faced by the participants were reducing the salt intake, walking daily, reducing sugar intake, reducing oily foods, reducing substance abuse, eating adequate vegetables and eating adequate fruits. Many of the participants mentioned that the food prepared by the family members are not complying with the advice given by the health care workers. Since they are dependent on the family members for their food, they are forced to eat the food which is not less salt and oil. Most of the times carbohydrate rich foods are cooked which the participants had to consume. The cost factor plays a major role in having adequate amounts of fruits and vegetables as these are not affordable by the participants. Other major reason were lack of awareness about the various ways to reduce the risk factors of NCDs and time for practicing it even if they were aware. The same was concluded by a study done by Daar et al promote healthy lifestyle and consumption choices through effective education and public engagement.¹³

Therefore, the focus should be on educating the patients and their care takers about the reducing the risk factors of NCDs and its benefits. If we don't address the management of risk factors the patients will develop complications earlier and the objective of NPCDCS will not be achieved. The government should investment and efforts to prevent and control NCDs and their risk factors, specific measures at individual and family level, early diagnosis through screening and better diagnostic facilities, improved capacity for management and universal access to health services. Public awareness program, integrated management and strong monitoring system are required for successful implementation of the program and making services universally accessible in the country.¹⁴

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REFERENCES

1. Mendis S. World Health Organization. Global status report on non-communicable diseases. 2014.
2. Jaitley FA. Facing the future. PFCD India Newsletter [newspaper on the internet]. 2016. Available at: <http://fightchronicdisease.in/wp-content/uploads/2016/03/Facing-the-Future-%E2%80%93PFCD-India-Newsletter-March-2016.pdf>. Accessed on 15 April 2019.
3. World Health Organization. Global action plan for the prevention and control of noncommunicable diseases: 2013-2020. Available at: http://apps.who.int/iris/bitstream/10665/94384/1/9789241506236_eng.pdf. Accessed on 3 January 2019.
4. Manjomo RC, Mwangomba B, Ade S, Ali E, Ben-Smith A, Khomani P, et al. Managing and monitoring chronic non-communicable diseases in a primary health care clinic, Lilongwe, Malawi. *Public Health Action*. 2016;6(2):60–5.
5. Mote B. A regional epidemiology of India's "NCD's risk factors" focusing particularly on Maharashtra: A call for "Health promotion" once again. *Int J Med Public Health*. 2016;6(1):26.
6. Thakur JS, Jeet G, Pal A, Singh S, Singh A, Deepti SS, et al. Profile of Risk Factors for Non-Communicable Diseases in Punjab, Northern India: Results of a State-Wide STEPS Survey. Baradaran HR, editor. *PLOS ONE*. 2016;11(7):e0157705.
7. Oommen A, Abraham V, George K, Jose Vj. Prevalence of risk factors for non-communicable diseases in rural & urban Tamil Nadu. *Indian J Med Res*. 2016;144(3):460.
8. Chauhan R, Natesan M, Purty A, Singh Z, Velavan A. Risk factors profile for noncommunicable diseases among adult urban population of puducherry in India. *J Obesity Metabol Res*. 2014;1(4):201.
9. Kavitha S, Nalini GK, Suresh RM, Sahana GN, Deepak P, Nagaral JV. Treatment adherence and

factors contributing to non-adherence among type 2 diabetes mellitus patients in a tertiary care hospital: a cross sectional study. *Int J Basic Clin Pharmacol.* 2017;6(3):689.

10. Tripathy JP, Thakur JS, Jeet G, Chawla S, Jain S, Pal A, et al. Prevalence and risk factors of diabetes in a large community-based study in North India: results from a STEPS survey in Punjab, India. *Diabetol Metabol Syndrome.* 2017;9(1):8.
11. Nethan S, Sinha D, Mehrotra R. Non Communicable Disease Risk Factors and their Trends in India. *Asian Pac J Cancer Prev.* 2017;18(7):2005-10.
12. Anand T, Chakraborty M, Garg A, Ingle G, Kishore J, Ray P, et al. Prevalence of risk factors for chronic non-communicable diseases using who steps approach in an adult population in Delhi. *J Family Med Primary Care.* 2014;3(2):112.
13. Daar AS, Singer PA, Leah Persad D, Pramming SK, Matthews DR, Beaglehole R, et al. Grand challenges in chronic non-communicable diseases. *Nature.* 2007;450(7169):494–6.
14. Bachani D, Srivastava R. Burden of NCDs, Policies and Programme for Prevention and Control of NCDs in India. *Indian J Community Med.* 2011;36(5):7.

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