

**ROLE OF HEALTH CHECK-UPS IN THE EARLY DETECTION OF
NON-COMMUNICABLE DISEASES**

Dissertation Submitted to



The IIHMR University, Jaipur

for the partial fulfillment for the reward for the award of the degree of

Master of Business Administration (MBA)

in

Hospital and Health Management

by

SALONI GOEL

Under the Supervision and Guidance of

Mr. Ashish Bandhu

2022

ROLE OF HEALTH CHECK-UPS IN THE EARLY DETECTION OF NON-COMMUNICABLE DISEASES

Dissertation Submitted to



The IIHMR University, Jaipur

for the partial fulfillment for the reward for the award of the degree of

Master of Business Administration (MBA)

in

Hospital and Health Management

by

SALONI GOEL

Under the Supervision and Guidance of

Mr. Ashish Bandhu

2022

DECLARATION

I hereby declare that this dissertation titled Study on “Role Of Health Check-Ups In The Early Detection Of Non-Communicable Diseases” is the bonafide record of my original research work. I declare that it has not been submitted to any other university or institution for the award of any degree or diploma. Information derived from the published or unpublished work of others has been duly acknowledged in the text.



Saloni Goel

20th June, 2022

1st July 2022

To whomsoever it may concern

This is to certify that Ms. Saloni Goel has successfully completed her internship from 21st March 2022 to 19th June 2022 with Seva at Home India Pvt. Ltd. During her internship she worked on the Project “Role of health check-ups in the early detection of non-communicable diseases”.

She was found to be hardworking and sincere during this period. We wish her the very best in all her future endeavours.

For **Seva at Home India Pvt. Ltd.**



Ms. Bindiya Reddy

General Manager – Human Resources

CERTIFICATE

This is to certify that dissertation titled Study on Role Of Health Check-Ups In The Early Detection Of Non-Communicable Diseases is a record of the research work undertaken by Saloni Goel in partial fulfillment of the requirements for the award of the degree of MBA (Hospital and Health Management) from the IIHMR University, Jaipur under my guidance and supervision and her approach to the research study has been sincere, scientific, and analytical.

Faculty Guide

IIHMR University, Jaipur

School Dean

IIHMR University, Jaipur

Date: 20th June 2022

Date: 20th June 2022

ABSTRACT

Title - Role Of Health Check-Ups In The Early Detection Of Non-Communicable Diseases

Background Of the Study - India is home to 1.38 nearly close to 1.4 billion people. In India, out of all fatalities 58.7 lakh people are affected by noncommunicable diseases. As a result, the goals of this research are to collect baseline data on diverse NCD risk factor coverage and determine trends in India. NCDs claim the lives of 4.1 crore people each year, accounting for 71% of all deaths worldwide. More than 1.5 crore people between the ages of 30 and 69 die each year from an NCD, with 85 percent of these "premature" deaths occurring in low- and middle-income countries.

The health check-up consists of routine health tests and examinations that can aid in early diagnosis of medical conditions when treatment and cure options are more favorable. They are intended to detect not just medical disorders, but also risk factors and illnesses, as well as their repercussions. It also aids in making lifestyle modifications for a long-term healthy life.

Objective -

- a. To understand the current scenario of non-Communicable diseases in the residents of the residential societies of Delhi, Mumbai, Pune, Bengaluru and Hyderabad.
- b. To assess the most common factors leading to NCD's of those individuals.
- c. To understand how lifestyle and diet changes are affecting overall general health of those individuals.

Methodology – The study duration was 90 days i.e., 21st March'2022 – 19th June 2022. The camps were organized by Seva at Home. The data was collected during the health checkup camp held in various residential societies in 5 metropolitan cities i.e., Delhi, Mumbai, Pune, Bengaluru and Hyderabad on various dates. Survey was done with respect to specific objectives through an online questionnaire consisting of 16 questions. Lifestyle and Mental health-based questions were set in the questionnaire.

Results – A total of 184 (53.3% males & 46.2% females) residents participated in the study and the participants had an average age of 47 +/- 15 years. For every second or third participant, the median number of NCD risk factors was two (one to two). The most

prevalent risk variables for NCDs were insufficient physical activity (40.8%) and dyslipidemia (16%). Others included obesity (32.8%), alcohol use (61.7%) and cigarette smoking (30.8%). With 38.9%, the most prevalent NCD was hypertension or High B.P., followed by thyroid (19.4%) and diabetes mellitus (32.2%). The prevalence of NCD varied by both age and gender. i.e., males above 50 years are more prone to have a NCD as compared to females of same age group.

Conclusion – In accordance with this research study, NCDs and its associated risk factors are particularly widespread in the group. Policies that support the adoption of healthy lifestyles are crucial to an organization. To overcome and reduce this numbers of NCD incidence, people need to change their lifestyle habits such as physical inactivity, alcohol consumption, cigarette smoking, eating habits, etc.

Keywords – Risk Factors, Diabetes, Hypertension, Non- Communicable Diseases, Obesity, Physical inactivity, dyslipidemia

ACKNOWLEDGEMENTS

On the very beginning of this report, I would like to extend my sincere gratefulness and heartfelt appreciativeness towards all the respected personages who have helped me to attempt this endeavor. Without their active guidance, assistance, cooperation, and motivation, I would not have made advancement in the report. It is a privilege to have a wonderful 90 days (22nd March – 19th June) internship in India's leading home healthcare organization. The internship experience I had with the **SEVA AT HOME, GURUGRAM** was a great chance for growth, learning and professional evolution. I am appreciative for this chance and for getting an opportunity to meet such countless brilliant individuals and experts who directed me through this internship.

I would like to take this moment to express my deepest acknowledgment and special recognition to the Chief Operating Officer, **Mr. Arun Datta sir**, who despite being outstandingly busy with his work schedule, took time to listen, direct and keep us on the rightful path and permitting us to carry our internship at the organization and guiding throughout the internship.

It is my deepest emotion to place on record my best compliments and deep sense of gratitude to Ms. **Bindiya Reddy** (HR - General Manager) for providing necessary advice, guidance, and information during every step. I am using this opportunity to admit their contribution delightfully.

I would like to express genuine thanks to **Dr. P.R. Sodani** (President, IIHMR university, Jaipur) for giving me a chance to do summer internship. Now, I would like to express my honest gratitude towards my mentor at IIHMR University, **Mr. Ashish Bandhu Sir** (Assistant Professor) for his support, invaluable instructions, and supervision. This report is the result of his meticulous and generous outlook.

I would also like to express a deep sense of gratitude to the Placement Cell of my esteemed university for guiding me throughout the internship process and for providing time to time internship guidelines.

Table of Contents

CHAPTER 1: INTRODUCTION	14
Purpose of research	14
Research Question	18
Objectives of the study	18
CHAPTER 2: REVIEW OF LITERATURE	20
CHAPTER 3: METHODOLOGY	27
Research question	27
Research design	27
Study Setting	27
Duration of the Study	27
Study population	27
Research procedures/ approaches	28
Sample size Calculation	29
Sampling Technique	29
Ethical considerations	29
CHAPTER 4: RESULTS	31
CHAPTER 5: DISCUSSION	41
CHAPTER 6: CONCLUSION & RECOMMENDATION	44
REFERENCES	47
ANNEXURE	52
Questionnaire	52

LIST OF FIGURES

SL. No.	Description	Page No.
Figure 1.1	List of Non- Communicable diseases (NCDs)	16
Figure 1.2	A model for categorizing NCD risk factors	17
Figure 3.1	Health Checkup Camp photo	28
Figure 3.2	Health Checkup Camp photo	28
Figure 4.1	Age distribution	31
Figure 4.2	Gender distribution	32
Figure 4.3	History of NCD	32
Figure 4.4	Number of participants diagnosed with NCD during health camp	33
Figure 4.5	The distribution of study participants with NCD before the camp and during the camp	33
Figure 4.6	Family history of NCD	35
Figure 4.7	Physical inactivity in participants	36
Figure 4.8	Change in body weight	36
Figure 4.9	Tobacco use	37
Figure 4.10	Alcohol Consumption	38
Figure 4.11	Junk Eating frequency	38
Figure 4.12	Mental health of participants	39
Figure 6.1	Global NCD targets for 2025	45

LIST OF TABLES

S. No.	Description	Page No.
Table 2.1	Review of literature	20-25
Table 4.1	Analysis of participants suffering from NCD before and during the camp	34

ABBREVIATIONS

S. No.	Abbreviation	Full Form
1.	NCDs	Non-Communicable Diseases
2.	WHO	World Health Organization
3.	RBS	Random Blood Sugar
4.	BP	Blood Pressure
5.	BMI	Body Mass Index
6.	HTN	Hypertension
7.	DM	Diabetes Mellitus
8.	UN	United Nations

CHAPTER - I

CHAPTER 1: INTRODUCTION

Purpose of research

The purpose of this research is to identify the role that preventive health checkups are playing in combating non-communicable diseases at an early stage and to identify the common risk factors.

Non-communicable diseases, also known as chronic diseases, are long term illnesses. It means that you cannot catch them from another individual. They are the most common cause of mortality and morbidity globally with slow progression and long duration. WHO identified these as “Group II Diseases”, this category includes those which constitutes the below mentioned causes/situations of mortality:^[14]

- Cancerous neoplasms along with other neoplasms
- Endocrine disorders
- Neuropsychiatric disorders
- Diabetes Mellitus
- Endocrine disorders
- Sense organ disorders
- Heart & Lung diseases
- Congenital anomalies

They are different from both Group I category of diseases which includes communicable, paternal, maternal, and nutritional situations and Group III category of diseases which includes intentional and unintentional injuries.^[14] There are four most common non-communicable diseases that are responsible for the highest morbidity and mortality i.e., Cancer, Heart diseases, Diabetes and Chronic respiratory diseases. In addition to these four primary diseases, mental illnesses are thought to play a significant role in the economic losses caused by NCDs.^[14]

It impacts people disproportionately in low- and middle- income nations, which account for 31.4 million (more than three quarters) of the world's NCD deaths.^[1] NCD impacts people of all ages, from all walks of life, from all areas, and from all countries. Although these illnesses are frequently associated with older age groups,

research suggests that more than 15 million of all NCD-related fatalities occur between the ages of 30 and 69. Children, adults and the elderly are all susceptible to the risk factors that contribute to NCDs, whether they are bad diets, lack of physical exercise, tobacco smoke exposure, or problematic alcohol consumption. ^[1] Below attached Figure 1.1 represents the list of major non-communicable diseases. Raised blood pressure, increased blood glucose levels, high level of fat in blood, and obesity are all symptoms of poor diet and lack of physical activity. These are known as metabolic risk factors, and they can contribute to cardiovascular disease, which is the major cause of early mortality among NCDs. ^[2]

Health Checkup aid in the early detection and identification of diseases or warning symptoms of imminent sickness. As a result of this, treatment becomes much more effective, less expensive, and less invasive. Such frequent examinations provide a complete update on numerous health factors such as cholesterol levels, blood sugar levels, blood pressure, and body weight, in addition to detecting such disorders before patient becomes dangerously ill. ^[14]

The key facts as per WHO^[1] are:

- Noncommunicable diseases (NCDs) claim the lives of 4.1 crore people each year, responsible for 71% of all deaths globally. ^[1]
- More than 15 million people between the ages of 30 and 69 die each year from an NCD, with 85 percent of these "premature" deaths occurring in low- and middle-income countries. ^[1]
- Low- and middle-income nations account for 77% of all NCD mortality. ^[1]
- The most common NCD is cardiovascular disease, which kills 17.9 million people each year, followed by cancer (9.3 million), respiratory disorders (4.1 million), and diabetes (1.5 million). ^[1]
- Over 80% of all premature NCD fatalities are caused by these four disease types. ^[1]
- Tobacco use, inactivity, problematic alcohol use, and poor diet all raise the chance of dying from an NCD. ^[1]
- NCD detection, screening, and therapy, as well as palliative care, are all important parts of the NCD response. ^[1]

Key Risk factors of NCDs

Several factors can raise the likelihood of developing NCDs, and they are categorized in a variety of ways. The non-communicable disease is related to some common risk factors: ^[2]

- Social determinants of health (it is the environment/surroundings in which an individual is born, and grew up and all the opportunities he got in those surroundings)
- Alcohol
- Tobacco
- Poor Nutrition
- Lack of Physical Activity

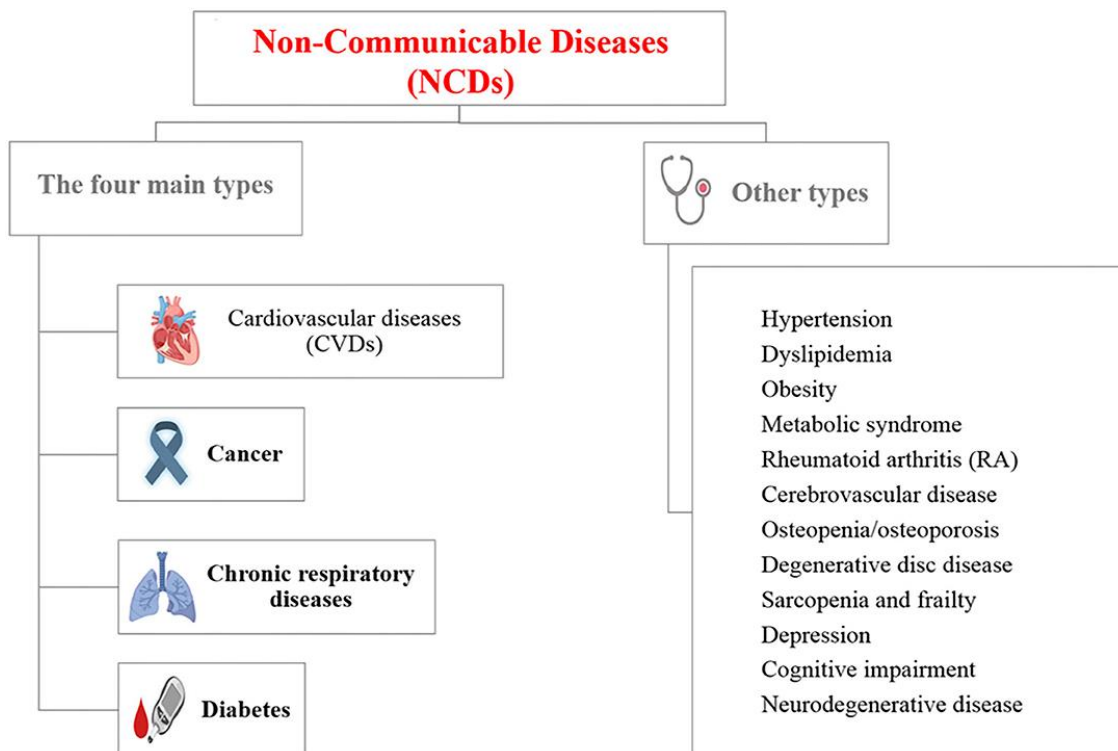


Figure 1.1 – List of Non- Communicable diseases (NCDs)^[2]

Risk factors are classified as modifiable or non-modifiable factors, depending on whether they can have changeable or non-changeable conditions. High blood Pressure, Diabetes, Smoking, Alcohol consumption, physical inactivity, obesity/overweight and high blood

cholesterol comes under modifiable risk factors, whereas on the other hand non-modifiable risk factors includes age, gender, genetic factors, race, and ethnicity. ^[2]

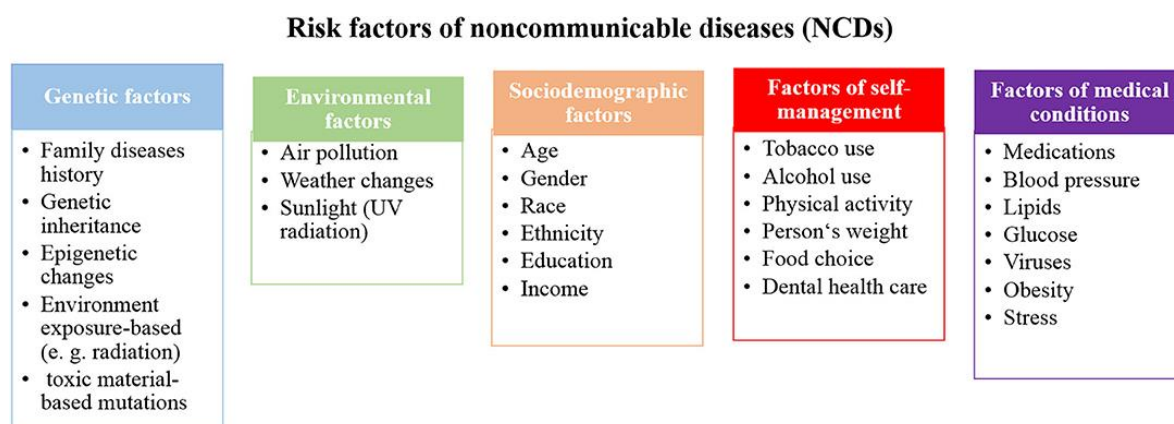


Figure 1.2 – A model for categorizing NCD risk factors ^[2]

Fact Sheet for Risk Factors:

Modifiable behavioral risk factors

Modifiable behaviours, such as tobacco use, physical inactivity, unhealthy diet, and the harmful use of alcohol, all increase the risk of NCDs.

- Tobacco accounts for over 7.2 million deaths every year (including from the effects of exposure to second-hand smoke) and is projected to increase markedly over the coming years. ^[1]
- 4.1 million annual deaths have been attributed to excess salt/sodium intake. ^[1]
- More than half of the 3.3 million annual deaths attributable to alcohol use are from NCDs, including cancer. ^[1]
- 1.6 million deaths annually can be attributed to insufficient physical activity. ^[1]

Metabolic risk factors

Metabolic risk factors contribute to four key metabolic changes that increase the risk of NCDs:

- raised blood pressure
- overweight/obesity
- hyperglycemia (high blood glucose levels) and
- hyperlipidemia (high levels of fat in the blood).^[1]

In terms of attributable deaths, the leading metabolic risk factor globally is elevated blood pressure (to which 19% of global deaths are attributed), followed by overweight and obesity, and raised blood glucose.^[1]

Research Question

How are health checkups helping in overcoming the burden of non-Communicable diseases in India with such modernization and changing lifestyle?

Objectives of the study

- a. To understand the current scenario of Non-Communicable diseases in the residents of the residential societies of Delhi, Mumbai, Pune, Bengaluru and Hyderabad.
- b. To assess the most common factors leading to NCD's of those individuals.
- c. To understand how lifestyle and diet changes are affecting overall general health of those individuals.

CHAPTER - II

CHAPTER 2: REVIEW OF LITERATURE

Table 2.1 – Review of literature

S. No.	Title	Authors/ Year	Study location	Sample size	Salient features
1.	Non-Communicable diseases and their risk factors in India	Suzanne Nethan, Dhirendra Sinha and Ravi Mehrotra, 2017	India	NA	1. The goals of this study are to gather baseline data on various NCD risk factors' coverage and determine trends in India. 2. Overweight and obesity were found to be on the rise, whereas cigarette and alcohol usage were on the fall throughout the same time period.
Reference: Nethan S, Sinha D, Mehrotra R. Non-Communicable Disease Risk Factors and their Trends in India [Internet]. PubMed Central (PMC). 2022 [cited 20 June 2022]. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5648412/#:~:text=India%20is%20a%20populous%20country,of%20all%20deaths%20in%20India. Keywords: Chronic disease, India, risk factors					

2.	A survey of non-communicable diseases and their risk factors among university employees	Agaba Emmanuel, 2017	University of Jos, Nigeria	883	1. This study evaluated the prevalence of NCDs and their risk factors among members of a university community. 2. This study identified that NCDs and their modifiable risk factors are highly prevalent in this community. Workplace policy to support the adoption of healthy living is needed.
Reference: Agaba E, Akanbi M, Agaba P, Ocheke A, Gimba Z, Daniyam S et al. A survey of non-communicable diseases and their risk factors among university employees: a single institutional study [Internet]. 2022 [cited 20 June 2022]. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5885043/ Keywords: Diabetes mellitus, hypertension, non-communicable disease, obesity, physical inactivity					
3.	National representative	Yarlani Balarajan , Eduar	India	161755	1. Overweight obesity was

	surveys show recent increases in the prevalence of overweight and obesity among women of reproductive age in Bangladesh, Nepal and India	do Villamor, 2009			positively related to age, higher socioeconomic status, and urban residence in all countries. 2. While the prevalence of underweight in Bangladesh, Nepal, and India has remained high, the prevalence of overweight obesity in women of reproductive age has increased between 1996 and 2006.
Reference: Balarajan Y, Villamor E. Nationally Representative Surveys Show Recent Increases in the Prevalence of Overweight and Obesity among Women of Reproductive Age in Bangladesh, Nepal, and India [Internet]. 2022 [cited 20 June 2022]. Available from: https://pubmed.ncbi.nlm.nih.gov/19776182/ Keywords: Obesity, prevalence, overweight					
4.	Prevalence of and risk	A Bhansali, 2015	Tamil Nadu,	14059	1. Age, male gender, urban

	factors for hypertension in urban and rural India		Maharashtra, Jharkhand, Chandigarh		location, generalized obesity, diabetes, physical inactivity, and alcohol intake were all found to be strongly linked to hypertension in the study. 2. In India, the frequency of undetected hypertension is significant, necessitating regular screening.
Reference: Bhansali A, Dhandania V, Deepa M, Anjana R, Joshi S, Joshi P et al. Prevalence of and risk factors for hypertension in urban and rural India: the ICMR–INDIAB study [Internet]. 2022 [cited 20 June 2022]. Available from: https://pubmed.ncbi.nlm.nih.gov/25078490/#:~:text=Overall%20age%2Dstandardized%20prevalence%20of,and%2024.0%25%2C%20respectively). Keywords: Hypertension, Physical inactivity, Obesity					
5.	A study on the utility of the preventive health	Ramesh R., Yuri Gagarin P., Senthil Murugan R., Rizwan S. A.,		262	1. The findings of the study are encouraging in terms of

	checkups in early detection of disease states	Virgin Joena M., Aravind A.			educating the public about the need of using preventive health services, as a large percentage of disease states were discovered for the first time during the preventive health check-up.
Reference: R. R, Gagarin P. Y, Murugan R. S, S. A. R, A. A Joena M. V. Preventive Health Check-Up: Benefits, Tax Deductions [Internet]. Acko General Insurance. 2022 [cited 20 June 2022]. Available from: https://www.acko.com/health-insurance/preventive-health-check-up/ Keywords: Preventive health check-up, Diabetes, Hypertension, Dyslipidemia, NAFLD, NASH					
6.	Effect of preventive health screening on long-term primary health care utilization. A randomized controlled trail	Janus Laust Thomsen, 2005		3464	1. The rate ratios for daytime consultations had a strong pattern, with an initial increase followed by a gradual drop. More research is needed to validate and

					investigate the causes of this tendency.
Reference: Thomsen J, Parner E, Karlslose B, Thulstrup A, Lauritzen T, Engberg M. Effect of preventive health screening on long-term primary health care utilization. A randomized controlled trial [Internet]. 2022 [cited 20 June 2022]. Available from: https://pubmed.ncbi.nlm.nih.gov/15814585/ Keywords: Preventive health screenings, Randomized controlled trial					

CHAPTER - III

CHAPTER 3: METHODOLOGY

Research question

How are health checkups helping in overcoming the burden of non-Communicable diseases in India with such modernization and changing lifestyle?

Research design

This study was Cross-sectional survey based Descriptive research design.

Study Setting

The study was conducted in the residential societies through the health checkup camps. The organization setting who organized these camps was “SEVA AT HOME INDIA PVT. LTD.”

Duration of the Study

The study was done from March 21st till June 19th, 2022 (90 days).

Study population

In this study, health checkup camps were organized in various residential societies in five metropolitan cities – Delhi NCR, Hyderabad, Pune, Bengaluru, and Mumbai.

– Inclusion criteria

The study population consists of individuals living in those societies who participated in the camps, it included – kids, adults, elderly people.

– Exclusion criteria

The individuals who were not living in those societies were excluded from the study.

– **Study tools**

Primary data was collected through the online questionnaire from individuals who attended the health checkups camps.

– **Data Analysis tool**

All the categorical variables were reported in counts and percentages & continuous variables were reported in mean & SD.

Research procedures/ approaches

Quantitative Assessment was done from the data collected.

To evaluate the trends of Non-Communicable Diseases and its risk factors, the following steps were used:

- i. The various datapoints such as RBS, BP, BMI were analyzed to know the health status of the individual.
- ii. The major risk factors were identified for further improvement



Figure 3.1



Figure 3.2

Sample size Calculation

The prevalence of study population was 0.14.*

The sample size was calculated by applying the following formula:

$$n = \frac{z^2 p (1 - p)}{d^2}$$
$$n = \frac{(1.96)^2 \times 0.14 (1 - 0.14)}{(0.05)^2}$$
$$n = \frac{3.8416 \times 0.14 \times 0.86}{0.0025}$$
$$n = \frac{0.4625}{0.0025}$$
$$n = 184$$

To obtain a confidence level of 95% that the real value is within +/-5 percent of the measured/ surveyed value, a sample size of at least 184 is required.

Sampling Technique

Purposive Sampling

Ethical considerations

Consent was taken from the organization - “Seva at Home” to use their confidential data for research purpose without hampering any of their privacy and confidentiality. Participants participated voluntarily in the health checkup camp and the questionnaire was filled by taking their consent and it has been ensured that the personal details were not shared in any of the section of this research paper, hence confidentiality was maintained.

*Provided by TPA.

CHAPTER - IV

CHAPTER 4: RESULTS

Surveys were conducted to measure the prevalence of the major NCD risk factors i.e., tobacco use, alcohol consumption, high blood pressure, and overweight and obesity. From now on, specific details for each risk factor is presented.

Socio – Demographic Status of the study population-

The demographic status like age and gender were analyzed through the graphs below-

Age in years

Q1. Age

184 responses

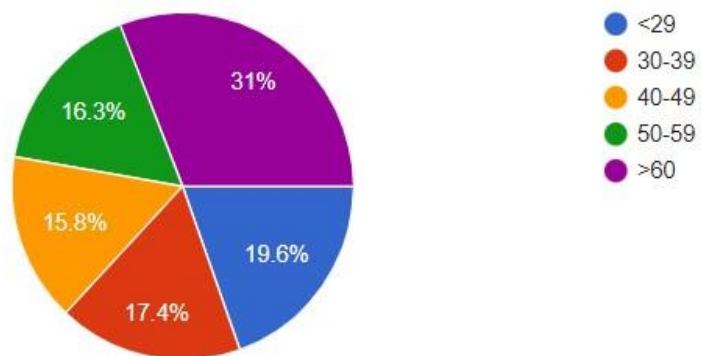


Figure 4.1 – Age distribution of the study population

The above graph depicts majority of the participants i.e., 31% were of age 60 years & more. 19.6% belonged to the age group below 29 years and 17.4% belonged to the age group of 30-39 years. Similarly, 16.3% fell in the age group of 50-59 and 15.8% belonged to 40-49 years.

Gender

Q2. Gender

184 responses

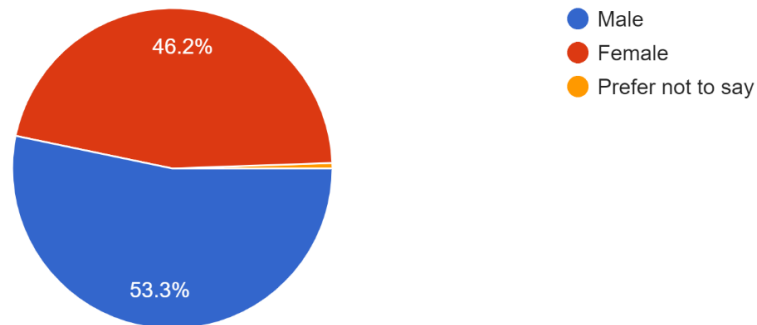


Figure 4.2 – Gender distribution of participants

The graph represents the gender distribution among 184 participants i.e., 53.3% were male and 46.2% were female. This was done to see whether the age and gender has any association with the risk of acquiring NCD.

Medical history of NCD

Q3. Are you suffering/ diagnosed from any 1 (or more) of these illnesses?

180 responses

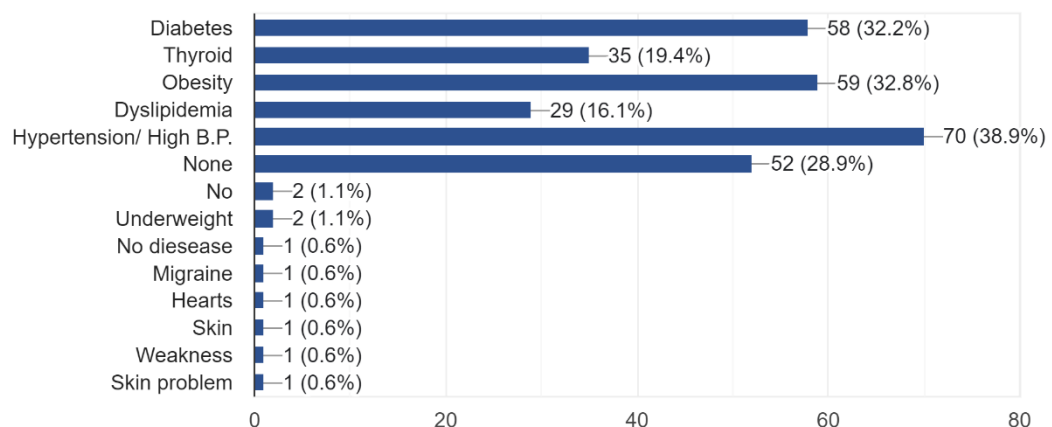


Figure 4.3 – History of NCD in participant

Diagnosed during health checkup camp

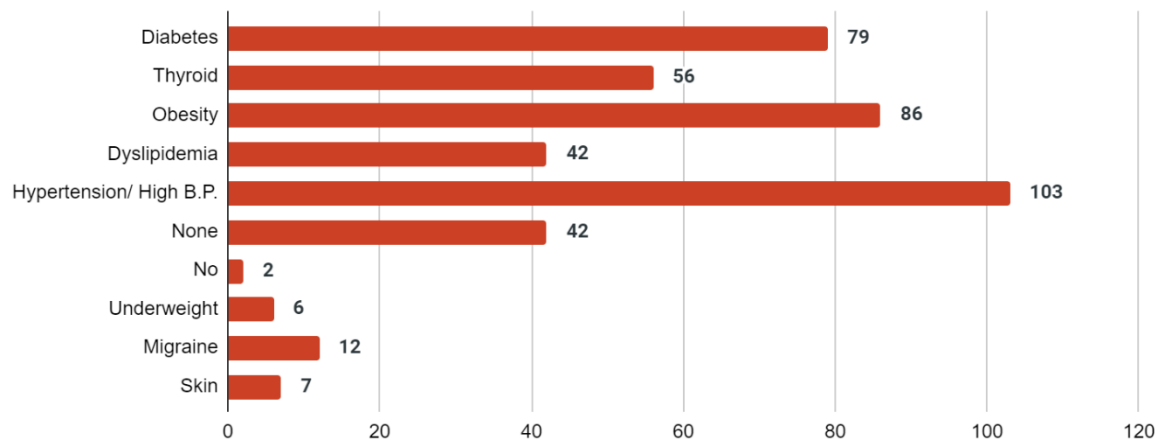


Figure 4.4 – Number of participants diagnosed with NCD during health camp

During Camp and Before Camp

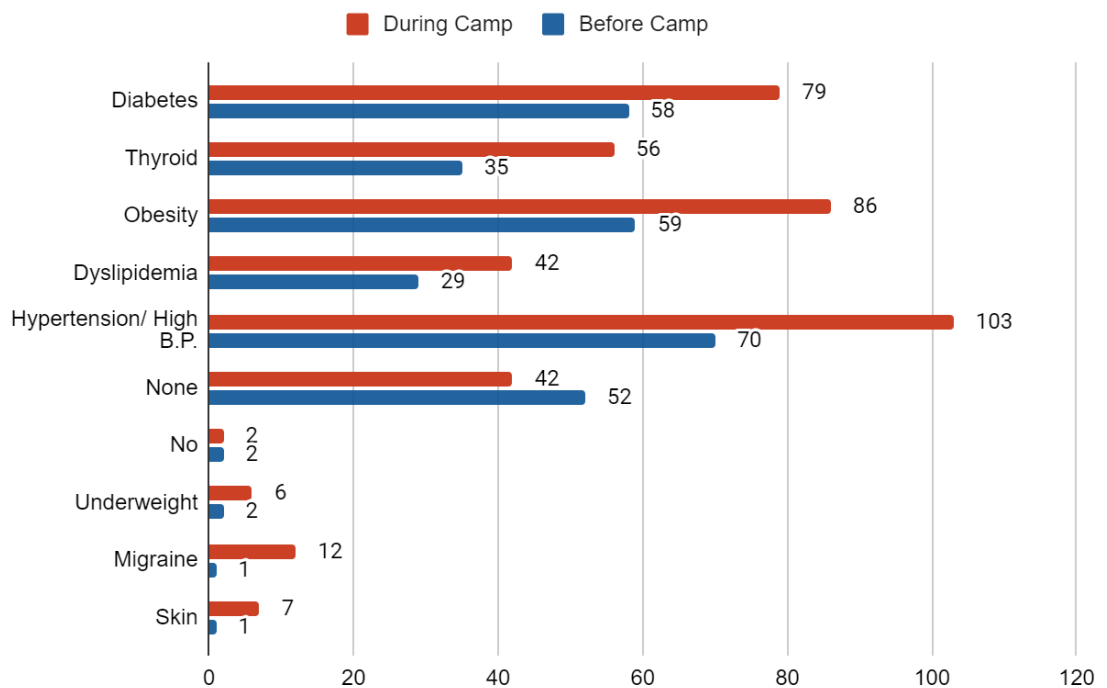


Figure 4.5 – The distribution of study participants with NCD before the camp and during the camp

Table 4.1 – Analysis of participants suffering from NCD before and during the camp

Non-Communicable diseases (NCDs)	No. of NCDs before the camp	No. of NCDs during the camp	No. of NCDs diagnosed during the camp
Diabetes	58	79	21
Thyroid	35	56	21
Obesity	59	86	27
Dyslipidemia	29	42	13
Hypertension/ High B.P.	70	103	33
None	52	42	10
Migraine	1	12	11
Total	304	420	116

The above graphs represent the number of participants already suffering from the NCDs and the ones who diagnosed during the health checkup camp. As it is clearly seen from the given table that the number of participants that were diagnosed from NCD during the camp are highly significant.

This supports the study that how the preventive health checkups are assisting in the tackling the burden of non-Communicable diseases in India. The participants who were not aware of the fact that they are having a NCD became aware of this and started maintaining a healthy lifestyle. They will take precautions from now onwards to make sure that the condition does not become worse. As also said in a famous proverb “Prevention is better than Cure”, so these health checkups are playing a vital role in identifying the NCDs in an individual at a very early stage which can be in fact reversible in some of the situations like the pre diabetic stage that can be reversed by maintaining a healthy lifestyle.

There are many factors that lead to these NCDs, thus they are described in the following graphs.

Family History of NCD

Q4. Did anyone in your family have any long term health problems - diabetes, High BP, Heart disease?

184 responses

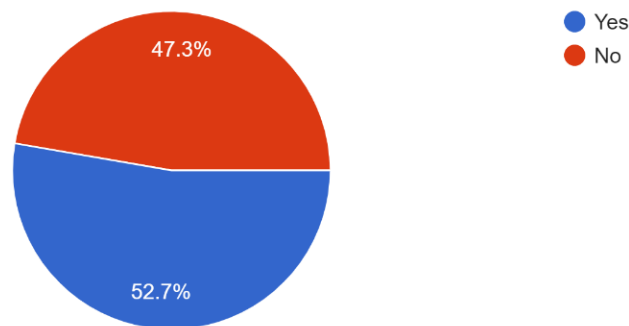


Figure 4.6 – Family history of NCD

Genetic factors have a major affect on NCD. For example, it is evident from the previous studies that individuals whose family history has NCDs like diabetes and hypertension are more likely to acquire these in any phase of their life. So, these individuals have to be more careful and should go for regular screening to know their health status. The graph shows that out of 184 individuals, 52.7% had a family history of NCD and thus they are more likely to acquire these NCDs in their lifespan whereas on the other hand 47.3% did not have any family history of NCD but also this does not make them unlikely to acquire these NCDs.

Physical Inactivity

Q5. Daily walking: Walking (or an equivalent amount of physical activity) for more than one hour a day

184 responses

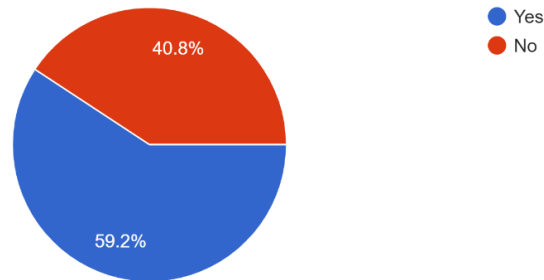


Figure 4.7 – Physical Inactivity in the participants

The graph depicts the analysis on the amount of physical activity that was done by an individual. As it is clearly visible, out of 184 participants, 59.2% i.e., 109 individuals do daily walking or an equivalent amount of any other physical activity for more than one hour a day whereas on the other hand 40.8% i.e., 75 individuals do not have routine in their daily life for any sort of physical activity.

Change in body weight within the last one year

Q6. Body weight change: Change in weight of +/-5kg in a year

184 responses

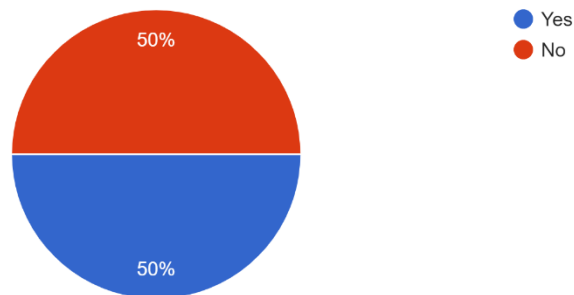


Figure 4.8 – Change in Body Weight

NCD like diabetes and obesity cause a major change in body weight within a very short period. It is evident from the above graph that 50% of the participants undergo a +/- 5 kg of change in their bodyweight within a last one year.

Tobacco consumption

Q10. Current smoker: Smoked over 100 cigarettes or have smoked over 6 months, and have been smoking over a month
182 responses

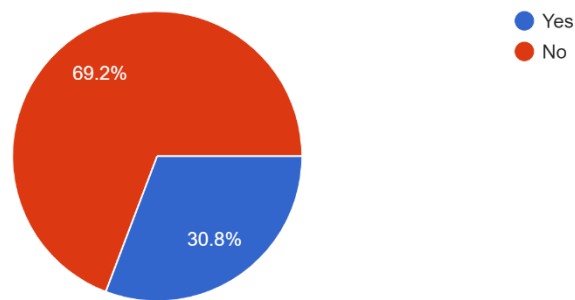


Figure 4.9 – Tobacco use

Tobacco use is a key modifiable risk factor for major noncommunicable diseases (NCDs) such as cancer, cardiovascular disease, chronic respiratory disease, and diabetes, accounting for one in every six deaths from NCDs. Every year, almost 6 million people die because of tobacco use, including both direct and secondhand smoke. The results of this graph are that 69.2% of participants have not smoked over 100 cigarettes or have not smoked over 6 months and not have been smoking over a month whereas 30.8% of them are in the smoker's category.

Alcohol use

Q11. Frequency of alcohol consumption
183 responses

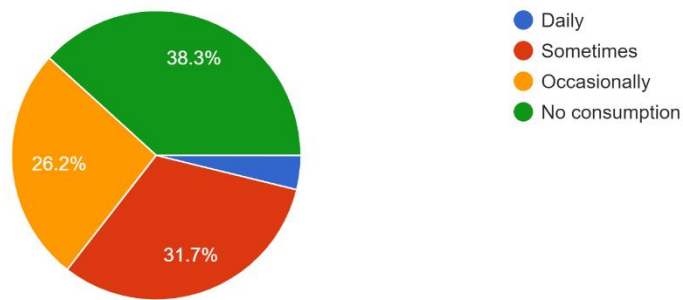


Figure 4.10 – Alcohol Consumption

Similar is the case with alcohol consumption, it is one of the main modifiable risk factors for major non communicable diseases. From the study, we have found out that only 38.3% of participants are non-alcoholic whereas a major number i.e., 61.7% consumes alcohol either occasionally or sometimes or even daily.

Junk eating habits

Q13. Junk habits: Eating frequency
184 responses

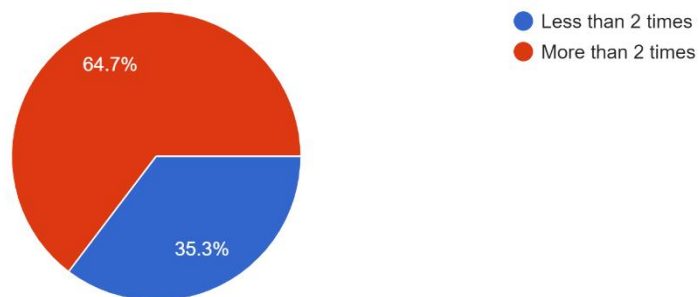


Figure 4.11 – Junk eating frequency

Out of 184, 86 people are suffering from obesity. This number is huge as it constitutes 47% of the total population of study. Junk food or eating junk very frequently has been found a major risk factor of causing Obesity in individuals. Obesity further leads to the risk of developing other NCDs such as diabetes, cardiovascular disease, and hypertension. Also, it increases the chances of an individual from getting a heart attack.

Mental Health Analysis

Q14. Do you have any kind of work/ academic stress?
183 responses

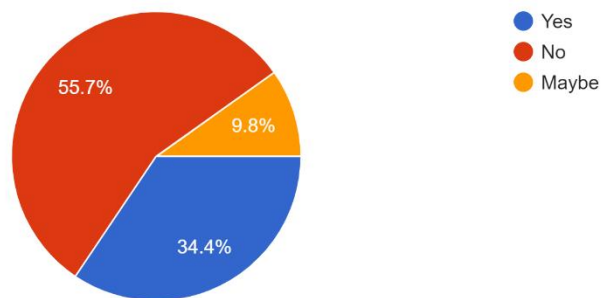


Figure 4.12 – Mental Health of participants

People tend to ignore the mental health and focus only on their physical health. But it is evident from the studies that the mental health is also important to live a healthy life. Out of 184 participants, 44.2% are suffering from some kind of academic or work stress which makes them more prone to acquire NCD.

CHAPTER - V

CHAPTER 5: DISCUSSION

The associations between age and gender and noncommunicable disease (NCD) risk factors were investigated in this study. However, no significant association has been found. Out of 184 participants 47% (86) were above age 50 years and likewise 53% (97) of total participants were males among them and rest were females. In a study conducted in the West of Iran in 2017, it was concluded that major risk factors of non-communicable diseases were found to be more common in elderly people and male participants. In this study, 77 participants of age above 50 years were suffering from one or more than one NCDs i.e., nearly 45% which is a significant number and among 98 males, 67 were suffering from NCDs whereas out of 85 females, 56 were suffering from NCDs. The percentage of males suffering from NCDs was 68% and that of females was 65%. From this, we can infer that the people above 50 years of age and specially males are slightly more prone of acquiring non-communicable diseases. Calculated values of χ^2 comes to 47.19 and on referring to χ^2 table, as 4 degree of freedom, the value of χ^2 under probability 0.05 is 9.49 and under $P = 0.001$ is 18.47. Calculated values were higher than 18.47, hence the association between age and NCD is highly significant at 0.1% level.

The health checkups conducted had really helped in diagnosing the individuals from the NCDs of which they were not aware about. This will help them to maintain a healthy lifestyle and to some extent manage their NCD for a better purpose. It is evident from the graphs and this study that the number of participants diagnosed during the health checkup are quite significant.

Out of total 184 participants, 84 of them had a family history of NCD i.e., 46% of total participants and only 41 of them were those who did not have any family history of NCD i.e., only 23% of total participants. This signifies the association of genetic factors and the NCD in an individual. Genetic factors are a non-modifiable risk factor and thus cannot be avoided.

Some of the facts for physical inactivity are that over 80% of the world's adolescents are not physically active enough. It is closely linked to NCD as in this study out of 184 participants 71 were those who did not have any routine for physical activity and were suffering from NCD whereas 56 were those who had a routine for physical activity and

were suffering from NCD. The χ^2 (chi-square) value comes to be 40 and on referring to χ^2 table, as 1 degree of freedom, the value of χ^2 under probability 0.05 is 3.841 and under $P = 0.001$ is 10.83. Calculated values of χ^2 is higher than 10.83, hence the association is highly significant at 0.1% level.

Tobacco kills around 6 million people each year, or one every six seconds. Over 0.5 crore of these deaths were caused by direct tobacco use, whereas over 6 lakhs were caused by nonsmokers being exposed to secondhand smoke. Out of 184 participants 57 were the smokers who had the NCD and 72 were those who were not a smoker but were suffering from NCD. This is in contrast of previous studies which states that tobacco is a major risk factor of non-communicable disease.

85 participants consumes alcohol either occasionally or sometimes or daily and were suffering from NCD and only 38 are those who does not consume alcohol but were suffering from the non-communicable diseases. Alcohol is linked to several NCDs, including liver disease, cancer, heart disease, diabetes, and pancreatitis and these findings back up WHO demands for evidence-based policies to limit harmful alcohol use. On referring to χ^2 table, as 1 degree of freedom, the value of χ^2 under probability 0.05 is 3.841 and under $P = 0.01$ is 6.64. Calculated values of χ^2 comes to 8.06, higher than 6.64, hence the association it is highly significant at 1% level.

One of the most common types of noncommunicable diseases is mental illness, and they are important in efforts to control and prevent them. Diabetes, respiratory disorders, cardiovascular and other NCDs are all linked to mental health. 61 participants i.e., 33% of total participants were suffering from some sort of either academic stress or work stress that may have a contribution in their NCD.

CHAPTER - VI

CHAPTER 6: CONCLUSION & RECOMMENDATION

The findings of the study highlighted high prevalence of modifiable and non-modifiable risk factors of the non-communicable diseases both in males and females and it demands a sound public-health approach and more of a change in a lifestyle of an individual. The modifiable risk factors such as physical inactivity, tobacco use, harmful alcohol consumption, and unhealthy eating habits can be avoided by implementing a slight change in our daily lives. Below mentioned are some of the recommendations to manage these risk factors and prevent the risk of NCDs.

NCDs are the leading cause of health-care costs in modern society and managing their risk factors is critical to their treatment. The strategy for its management includes:

1. Should be individual centered, in which an individual takes the responsibility for his wellbeing by following a healthy lifestyle.
2. Combining recent scientific advances with new judgments is crucial in terms of diet rationality and positive effects on human health.
3. To provide a safe and a healthy place to everyone, governments and concerned international bodies should create awareness about the benefits of health and the environment in the people.
4. Improvement in food biotechnology research should be supported more and more.
5. Finding quick and sensitive diagnostic methods to detect NCDs at the point of service would be immensely advantageous to both healthcare personnel and the system.

To improve people's lives and make them healthy, further improvements are required. It is important to manage the risk factors to prevent the risk of NCDs. The following recommendations are suggested:

1. being more physically active,
2. choosing healthy diets and avoiding junk food,
3. saying no to tobacco,
4. reducing harmful use of alcohol,
5. have adequate amount of sleep every day,

6. at least 2 hours of gap between dinner and sleeping,
7. avoiding any kind of academic, work or personal stress,
8. promoting cleaner cities,
9. through universal health coverage schemes.

Efforts by government and other organizations to tackle NCDs

The slogan "25 by 25" was coined by the United Nations and the World Health Organization to encourage a 25% reduction in NCD mortality by 2025. In order to achieve this goal, the following issues must be addressed:

- i. Burden of the disease
- ii. Effects on Economy
- iii. Risk Factors' prevalence
- iv. Infectious illnesses, malnutrition, and other poverty-related ailments that have a role in NCDs.



Figure 6.1 – Global NCD targets for 2025

The four most common NCDs, Heart Disease, Cancer, Chronic Respiratory Disease, and Diabetes, are the emphasis of this action plan, but it also highlights the four of the most common risk factors that are related to an individual's behavior, "Tobacco Use, Unhealthy Diet, Physical Inactivity, and Harmful Use of Alcohol."

REFERENCES

1. Non communicable diseases [Internet]. Who.int. 2021 [cited 15 June 2022]. Available from: <https://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases#:~:text=Key%20facts,%2D%20and%20middle%2Dincome%20countries>.
2. Budreviciute A, Damiani S, Sabir D, Onder K, Schuller-Goetzburg P, Plakys G et al. Management and Prevention Strategies for Non-communicable Diseases (NCDs) and Their Risk Factors [Internet]. 2022 [cited 29 June 2022]. Available from: <https://www.frontiersin.org/articles/10.3389/fpubh.2020.574111/full>
3. Nathan S, Sinha D, Mehrotra R. Non Communicable Disease Risk Factors and their Trends in India [Internet]. PubMed Central (PMC). 2022 [cited 15 June 2022]. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5648412/#:~:text=India%20is%20a%20populous%20country,of%20all%20deaths%20in%20India>.
4. [Internet]. 2022 [cited 17 June 2022]. Available from: https://www.researchgate.net/publication/337677794_Is_Master_Health_Checkup_the_Answer_to_Tackle_the_Rising_Non-Communicable_Disease_Burden_in_India_-_A_Cross-Sectional_Study
5. [Internet]. 2022 [cited 17 June 2022]. Available from: https://www.researchgate.net/publication/7921141_Effect_of_preventive_health_screening_on_long-term_primary_health_care_utilization_A_randomized_controlled_trial
6. [Internet]. Apps.who.int. 2022 [cited 17 June 2022]. Available from: https://apps.who.int/iris/bitstream/handle/10665/94384/9789241506236_eng.pdf
7. Anjana R, Pradeepa R, Das A, Deepa M, Bhansali A, Joshi S et al. Physical activity and inactivity patterns in India – results from the ICMR-INDIAB study (Phase-1) [ICMR-INDIAB-5] [Internet]. 2022 [cited 20 June 2022]. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3974063/>

8. Agaba E, Akanbi M, Agaba P, Ocheke A, Gimba Z, Daniyam S et al. A survey of non-communicable diseases and their risk factors among university employees: a single institutional study [Internet]. 2022 [cited 20 June 2022]. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5885043/>
9. Kataria I, Siddiqui M, Gillespie T, Goodman M, Dhillon P, Bann C et al. A research agenda for non-communicable disease prevention and control in India [Internet]. 2022 [cited 20 June 2022]. Available from: <https://health-policy-systems.biomedcentral.com/articles/10.1186/s12961-020-00639-0>
10. Bhansali A, Dhandania V, Deepa M, Anjana R, Joshi S, Joshi P et al. Prevalence of and risk factors for hypertension in urban and rural India: the ICMR–INDIAB study [Internet]. 2022 [cited 20 June 2022]. Available from: [https://pubmed.ncbi.nlm.nih.gov/25078490/#:~:text=Overall%20age%2Dstandardized%20prevalence%20of,and%204.0%25%2C%20respectively\).](https://pubmed.ncbi.nlm.nih.gov/25078490/#:~:text=Overall%20age%2Dstandardized%20prevalence%20of,and%204.0%25%2C%20respectively).)
11. NCDs ". Noncommunicable Diseases - PAHO/WHO | Pan American Health Organization [Internet]. Paho.org. 2022 [cited 17 June 2022]. Available from: <https://www.paho.org/en/topics/noncommunicable-diseases#:~:text=The%20term%20NCDs%20refers%20to,diabetes%20and%20chronic%20lung%20illnesses.>
12. Non-communicable diseases [Internet]. Unicef.org. 2022 [cited 17 June 2022]. Available from: <https://www.unicef.org/health/non-communicable-diseases>
13. Non-communicable Diseases | National Health Portal Of India [Internet]. Nhp.gov.in. 2022 [cited 17 June 2022]. Available from: <https://www.nhp.gov.in/healthyliving/ncd2019>
14. Non-Communicable Diseases [Internet]. Physiopedia. 2022 [cited 17 June 2022]. Available from: https://www.physio-pedia.com/Non-Communicable_Diseases
15. [Internet]. 2022 [cited 17 June 2022]. Available from: https://www.cdc.gov/globalhealth/healthprotection/fetp/training_modules/new-8/overview-of-ncds_ppt_qa-revcom_09112013.pdf

16. Thomsen J, Parner E, Karlsmose B, Thulstrup A, Lauritzen T, Engberg M. Effect of preventive health screening on long-term primary health care utilization. A randomized controlled trial [Internet]. 2022 [cited 20 June 2022]. Available from: <https://pubmed.ncbi.nlm.nih.gov/15814585/>
17. Khademi N, Babanejad M, Asadmobini A, Karim H. The Association of Age and Gender with Risk Factors of Noncommunicable Diseases among Employees in West of Iran [Internet]. PubMed Central (PMC). 2022 [cited 20 June 2022]. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5343616/>
18. Noninfectious Diseases [Internet]. Biology LibreTexts. 2022 [cited 20 June 2022]. Available from: [https://bio.libretexts.org/Bookshelves/Human_Biology/Book%3A_Human_Biology_\(Wakim_and_Grewal\)/21%3A_Disease/21.6%3A_Noninfectious_Diseases](https://bio.libretexts.org/Bookshelves/Human_Biology/Book%3A_Human_Biology_(Wakim_and_Grewal)/21%3A_Disease/21.6%3A_Noninfectious_Diseases)
19. Parry C, Patra J, Rehm J. Alcohol consumption and non-communicable diseases: epidemiology and policy implications [Internet]. 2022 [cited 20 June 2022]. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3174337/#:~:text=There%20is%20a%20strong%20link,reduce%20harmful%20use%20of%20alcohol.>
20. Editor R, Page O, 2022 B, Quotes S, Sports O, gardens H et al. About 70 per cent Indians live in rural areas: Census report [Internet]. Thehindu.com. 2022 [cited 21 June 2022]. Available from: <https://www.thehindu.com/news/national/About-70-per-cent-Indians-live-in-rural-areas-Census-report/article13744351.ece>
21. Noncommunicable Diseases List: 50 Non-infectious Diseases [Internet]. Healthline. 2022 [cited 21 June 2022]. Available from: <https://www.healthline.com/health/non-communicable-diseases-list>
22. Kishore S, Reddy K. Non-Communicable Diseases: Equity, Action and Targets (PDF) — Sandeep Kishore [Internet]. Sandeep Kishore. 2022 [cited 21 June 2022]. Available from: <http://sunnykishore.org/writing/articles/non-communicable-diseases-equity-action-and-targets-pdf>
23. Reddy K, Shah B, Varghese C. [Internet]. 2022 [cited 21 June 2022]. Available from: [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(05\)67343-6/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(05)67343-6/fulltext)

24. Gupta R. Trends in hypertension epidemiology in India [Internet]. 2022 [cited 21 June 2022]. Available from: <https://pubmed.ncbi.nlm.nih.gov/14730320/>
25. M V, AV B. Practices and perceptions of physical activity in urban, employed, middle-class Indians [Internet]. PubMed. 2022 [cited 21 June 2022]. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/10976151>
26. Shah B, Mathur P. Surveillance of cardiovascular disease risk factors in India: The need & scope [Internet]. PubMed Central (PMC). 2022 [cited 21 June 2022]. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3028945/>
27. SL C, N G, S S. Urban-rural differences in the prevalence of coronary heart disease and its risk factors in Delhi [Internet]. PubMed. 2022 [cited 21 June 2022]. Available from: <https://pubmed.ncbi.nlm.nih.gov/9141748/>
28. Obesity: preventing and managing the global epidemic. Report of a WHO consultation [Internet]. PubMed. 2022 [cited 21 June 2022]. Available from: <https://pubmed.ncbi.nlm.nih.gov/11234459/>
29. Epping-Jordan J, Galea G, Tukuitonga C, Beaglehole R. Preventing chronic diseases: taking stepwise action [Internet]. 2022 [cited 21 June 2022]. Available from: <https://pubmed.ncbi.nlm.nih.gov/16271649/>
30. Armocida B, Monasta L, Sawyer S, Bustreo F. <https://www.iiste.org/Journals/index.php/CER/article/view/48663>. Civil and Environmental Research [Internet]. 2019;. Available from: [https://www.thelancet.com/journals/lanchi/article/PIIS2352-4642\(22\)00073-6/fulltext](https://www.thelancet.com/journals/lanchi/article/PIIS2352-4642(22)00073-6/fulltext)
31. Villegas R, Kearney P, Perry I. The cumulative effect of core lifestyle behaviours on the prevalence of hypertension and dyslipidemia [Internet]. 2022 [cited 21 June 2022]. Available from: <https://pubmed.ncbi.nlm.nih.gov/18554385/>
32. Lachat C, Otchere S, Roberfroid D, Abdulai A, Seret F, Milesevic J et al. Diet and Physical Activity for the Prevention of Noncommunicable Diseases in Low- and Middle-Income Countries: A Systematic Policy Review [Internet]. 2022 [cited 21 June 2022]. Available from: <https://pubmed.ncbi.nlm.nih.gov/23776415/>

33. Zaman M, Rahman M, Rahman M, Bhuiyan M, Karim M, Chowdhury M. Prevalence of risk factors for non-communicable diseases in Bangladesh: Results from STEPS survey 2010 [Internet]. 2022 [cited 21 June 2022]. Available from: <https://pubmed.ncbi.nlm.nih.gov/26911213/>
34. Ordinioha B. The prevalence of hypertension and its modifiable risk factors among lecturers of a medical school in Port Harcourt, south-south Nigeria: Implications for control effort [Internet]. 2022 [cited 21 June 2022]. Available from: <https://pubmed.ncbi.nlm.nih.gov/23377460/>
35. Thakur J, Jeet G, Nangia R, Singh D, Grover S, Lyngdoh T et al. Non-communicable diseases risk factors and their determinants: A cross-sectional state-wide STEPS survey, Haryana, North India [Internet]. 2022 [cited 21 June 2022]. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6881003/>
36. Thakur J, Jeet G, Pal A, Singh S, Singh A, Deepti S et al. Profile of Risk Factors for Non-Communicable Diseases in Punjab, Northern India: Results of a State-Wide STEPS Survey [Internet]. 2022 [cited 21 June 2022]. Available from: <https://pubmed.ncbi.nlm.nih.gov/27389020/>
37. Zaman M, Bhuiyan M, Karim M, MoniruzZaman, Rahman M, Akanda A et al. Clustering of non-communicable diseases risk factors in Bangladeshi adults: An analysis of STEPS survey 2013 [Internet]. 2022 [cited 21 June 2022]. Available from: <https://pubmed.ncbi.nlm.nih.gov/26169788/>

ANNEXURE

Questionnaire: Google form used for collecting the responses of the participants –

6/14/22, 2:37 PM

Non Communicable Diseases

Non Communicable Diseases

Lifestyle habits and eating habits is a common cause for acquiring Non-Communicable diseases. Modifiable behaviors such as high salt intake, physical inactivity, tobacco use, unhealthy diet and harmful use of alcohol, all increase the risk of NCD's. To identify these in the study population, the questionnaire is prepared.

***Required**

1. Name *

2. Q1. Age *

Mark only one oval.

☐ <29

☐ 30-39

☐ 40-49

☐ 50-59

☐ >60

3. Q2. Gender *

Mark only one oval.

☐ Male

☐ Female

☐ Prefer not to say

4. Q3. Are you suffering/ diagnosed from any 1 (or more) of these illnesses?

Tick all that apply.

☐ Diabetes

☐ Thyroid

☐ Obesity

☐ Dyslipidemia

☐ Hypertension/ High B.P.

☐ None

☐ Other:

5. Q4. Did anyone in your family have any long term health problems – diabetes, High BP, Heart disease?

Mark only one oval.

- ☐ Yes
☐ No

Lifestyle Questionnaire

6. Q5. Daily walking: Walking (or an equivalent amount of physical activity) for more *
than one hour a day

Mark only one oval.

- ☐ Yes
☐ No

7. Q6. Body weight change: Change in weight of +/-5kg in a year

Mark only one oval.

- ☐ Yes
☐ No

8. Q7. Not having breakfast: Not having breakfast over 3 times a week

Mark only one oval.

- ☐ Yes
☐ No

9. Q8. Eating before sleep: Eating within 2 hours before sleeping over 3 times a week

Mark only one oval.

- ☐ Yes
☐ No

10. Q9. Midnight meals: Eating again after dinner over 3 times a week

Mark only one oval.

☐ Yes

☐ No

11. Q10. Current smoker: Smoked over 100 cigarettes or have smoked over 6 months, and have been smoking over a month

Mark only one oval.

☐ Yes

☐ No

12. Q11. Frequency of alcohol consumption

Mark only one oval.

☐ Daily

☐ Sometimes

☐ Occasionally

☐ No consumption

13. Q12. Sleep duration: 7-8 hours at least 5 day a week

Mark only one oval.

☐ Yes

☐ No

14. Q13. Junk habits: Eating frequency

Mark only one oval.

☐ Less than 2 times

☐ More than 2 times

Mental Health

15. Q14. Do you have any kind of work/ academic stress?

Mark only one oval.

- ☐ Yes
☐ No
☐ Maybe

16. Q15. Are you satisfied with working hours and is it fits with your personal life?

Mark only one oval.

- ☐ Satisfied
☐ Neutral
☐ Dissatisfied

17. Q16. Do you feel like you should consult someone for your mental health?

Mark only one oval.

- ☐ Yes
☐ No
☐ Maybe

This content is neither created nor endorsed by Google.

Google Forms

