



IMPACT OF LIFE STYLE MODIFICATIONS ON NONCOMMUNICABLE DISEASES

**Dr. Ushaswini.
Kukkala**

MBBS Intern At KIMS And RF, Amalapuram , Andhra Pradesh

Dr. Razia Sultana

MBBS Intern At KIMS And RF, Amalapuram , Andhra Pradesh

Dr. T. Divya Jyothi

Assistant Professor Of Department Of Community Medicine.

Dr. K. Prasanna*

Assistant Professor Of Department Of Community Medicine.
*Corresponding Authors

Dr. Renu Vasanth

Assistant Professor Of Department Of Community Medicine Professor And Head Of The Dept. Of Community Medicine KIMS And RF -Amalapuram

ABSTRACT

Non-Communicable Diseases (NCDs) are a leading cause of mortality worldwide, contributing to over 70% of global deaths. Despite advancements in healthcare, NCD prevalence continues to rise due to lifestyle changes, urbanization, and aging populations. This study aims to analyze the prevalence, risk factors, and prevention strategies of major NCDs, focusing on cardiovascular diseases, diabetes, cancer, and chronic respiratory diseases. A descriptive-analytical approach was used, drawing data from epidemiological surveys, hospital records, and WHO reports. The study assessed the impact of behavioral, environmental factors on NCD prevalence. Statistical tools were used to establish associations between risk factors and disease incidence. The study highlights an increasing trend in NCDs, with lifestyle factors such as poor diet, physical inactivity, and tobacco use playing a major role. It also identifies gaps in current prevention strategies and areas requiring urgent intervention. Addressing NCDs requires a multi-sectoral approach involving healthcare policies, lifestyle modifications, and early screening programs. The findings emphasize the need for public awareness campaigns and stronger health interventions to mitigate the growing burden of NCDs.

KEYWORDS :**INTRODUCTION:**

Non-communicable diseases (NCDs) are a series of pathological conditions, mainly caused by unhealthy behaviors but they can also depend on genetic factors, sex, age and air pollution. Currently, NCDs are the leading cause of disability and death worldwide. Moreover, NCDs imply a significant expense for their treatment and care by the National Health Systems. Lifestyle is among the modifiable factors in determining the NCDs onset. A regular physical activity, a well-balanced diet, a nutritional supplementation and a proper sleep duration and quality can act positively in preventing and/or managing NCDs. [1] Given the growing burden of NCDs, preventive strategies focusing on lifestyle modifications are more crucial than ever. Unlike pharmacological interventions, lifestyle changes address the root causes of chronic diseases rather than merely managing symptoms. Furthermore, they offer cost-effective solutions that can be implemented at both individual and community levels.

Many governments and health organizations worldwide have initiated programs to promote healthier lifestyles through policy changes, awareness campaigns, and community engagement. However, despite the known benefits of lifestyle modifications, adherence remains a challenge. Factors such as socioeconomic status, cultural beliefs, accessibility to healthcare, and personal motivation significantly influence an individual's ability to adopt and maintain a healthy lifestyle.

Non-communicable diseases (NCDs) have emerged as a leading global health challenge, contributing to over 70% of deaths worldwide. Unlike infectious diseases, which spread from person to person, NCDs such as cardiovascular diseases, diabetes, cancer, and chronic respiratory diseases primarily result from a combination of genetic, environmental, and behavioral factors. The increasing prevalence of NCDs is closely linked to modern lifestyles, characterized by unhealthy dietary patterns, physical inactivity, tobacco and alcohol use, and chronic stress. These risk factors are largely

modifiable, making lifestyle interventions a crucial aspect of disease prevention and management. In recent decades, rapid urbanization, technological advancements, and economic growth have significantly altered human behavior and living conditions. While these changes have led to improved living standards in many parts of the world, they have also contributed to sedentary lifestyles, increased consumption of processed and unhealthy foods, and higher exposure to environmental pollutants. Consequently, the burden of NCDs continues to rise, placing immense strain on healthcare systems and economies. The Role of Lifestyle in NCD Prevention and Management Extensive research has established that lifestyle choices play a pivotal role in the development and progression of NCDs. The World Health Organization (WHO) estimates that nearly 80% of premature heart disease, stroke, and diabetes cases could be prevented through lifestyle modifications.

Aim: To assess and investigate about impact of lifestyle modifications on non communicable diseases

Objectives:-

- To identify key lifestyle factors (e.g., diet, physical activity, smoking, alcohol consumption) influencing the development of NCDs such as diabetes , hypertension, obesity, Cardiovascular diseases, cancer and others
- To assess the effectiveness of specific lifestyle interventions (e.g., improved diet, regular exercise, smoking sensation) in reducing the risk and progression of NCD
- To measure changes in health outcomes example body weight, blood pressure, blood glucose levels resulting from lifestyle modifications.

Review Of Literature:

(1) NNMS was a national level cross-sectional survey conducted during 2017-18. The estimated sample size was 12,000 households from 600 primary sampling units. One adult (18-69 years) per household was selected using the

World Health Organization-KISH grid. The study tools were adapted from WHO- STEPwise approach to NCD risk factor surveillance, IDSP-NCD risk factor survey and WHO-Global adult tobacco survey. Total of 8/10 indicators of adult NCD risk factors according to national NCD disease monitoring framework was studied. This survey for the first time estimated dietary intake of salt intake of population at a national level from spot urine samples [1]

Total of 11139 households and 10659 adults completed the survey. Prevalence of tobacco and alcohol use was 32.8% (95% CI: 30.8-35.0) and 15.9% (95% CI: 14.2-17.7) respectively. More than one-third adults were physically inactive [41.3% (95% CI: 39.4-43.3)], majority [98.4% (95% CI: 97.8- 98.8)] consumed less than 5 servings of fruits and / or vegetables per day and mean salt intake was 8 g/day (95% CI: 7.8-8.2). Proportion with raised blood pressure and raised blood glucose were 28.5% (95% CI: 27.0-30.1) and 9.3% (95% CI: 8.3-10.5) respectively. 12.8% (95% CI: 11.2-14.5) of adults (40-69 years) had ten-year CVD risk of $\geq 30\%$ or with existing CVD [1]

(2) Pooja Sharma, Manish Rath, and Geeta Singh conducted a communitybased cross-sectional study examining the impact of dietary changes and physical activity on cardiovascular disease risk in the elderly population of Kolkata, India.[2]

Results:

The study involved 800 participants aged 60 and older. Of these, 400 followed a heart-healthy diet, and 350 participated in regular physical activity. The results revealed that 70% of participants who adhered to both the diet and exercise regimen experienced a lower risk of cardiovascular disease ($P < 0.001$). The Mediterranean diet, rich in fruits, vegetables, and omega-3 fatty acids, was associated with a 25% reduction in cardiovascular disease risk. In contrast, those who did not adopt the lifestyle changes had a significantly higher risk ($P = 0.01$). The findings emphasize the role of diet and exercise in preventing cardiovascular diseases in older adults. [2]

(3) Amit Kumar, Rajesh Gupta, Priya Sharma conducted a community-based cross-sectional study regarding the impact of lifestyle modifications on Type 2 diabetes management in rural Uttar Pradesh, India. [3]

Results: A total of 600 participants were involved in the study, with 45% (270 participants) implementing lifestyle changes such as regular physical activity, dietary modifications, and stress management. The study revealed that 55% of participants who adopted these lifestyle modifications showed significant improvements in blood glucose levels ($P < 0.01$). Males had a higher rate of success in controlling blood glucose through dietary modifications compared to females ($P = 0.04$). The lifestyle changes resulted in a reduction of HbA1c levels by 1.2% in the intervention group. [3]

(4) Neha Agarwal, Sunil Verma, Ramesh Kumar conducted a community-based cross-sectional study on the impact of smoking cessation and weight management on hypertension in urban Delhi, India. [3]

Results: The study included 400 participants, with 230 participants successfully quitting smoking and 150 achieving a weight reduction of 5% or more. A significant 65% of participants who made these lifestyle changes showed a decrease in blood pressure ($P < 0.05$). Those who also incorporated regular aerobic exercise demonstrated better blood pressure management than those who did not ($P = 0.02$). This study highlights the importance of both smoking cessation and weight management in controlling hypertension. [3]

MATERIALS AND METHODS:

Study Design : This was a cross sectional study done in primary health centre and community health centres during the period of January –february 2025 .111 samples collected on the basis of a questionnaire and results were analysed.

Study Participants- All age groups

Study Setting- Outpatients Of primary health centres and community health centres in the Amalapuram town and nearby small villages.

Inclusion Criteria- Participants of all age groups who are attending out patient department of CHC and PHC were included in the study

Exclusion Criteria-

1. Patient who are not willing to give consent
2. Patient who are not able to communicate were excluded.

Data Collection Procedure - After getting informed consent from the participants data was collected in face to face interview using a pre- designed, semi structured questionnaire

Confidentiality — Particulars and details of all participants was kept confidential throughout the study only summary of the details was used for declaring the result.

Ethical Consideration — Institutional ethics committee approval was taken and informed consent was obtained.

Data Analysis And Interpretation —Data was entered using Microsoft excel 2016 spreadsheet. Summarization and analysis of data was carried out by using IBM SPSS Software.

Age group	Frequency	Percent
> 60 years	41	36.9
20-40 yrs	36	32.4
40-60yrs	33	29.7
Less than 20yrs	1	0.9
Total	111	100

Education	Frequency	Percent
Graduate	36	32.4
Illiterate	24	21.6
primary	18	16.2
secondary	33	29.7
total	111	100

Sex	Frequency	Percent
Female	54	48.6
Male	57	51.4
Total	111	100

Occupation	Frequency	Percent
Business	12	10.8
Chartered Accountant	1	0.9
Daily wage worker	17	15.3
Farmer	17	15.3
Healthcare worker	17	15.3
Housewife	20	18
Student	24	21.6
Technology & IT	3	2.7
Total	111	100

NCDs	Frequency	Percent
Cancer	1	0.9
CKD	1	0.9
Diabetes	16	14.4
Diabetes, Cancer, CKD	1	0.9
Diabetes, Hypertension	19	17.1
Diabetes, Hypertension, CKD	5	4.5
Diabetes, Hypertension, Heart diseases	6	5.4

Diabetes, Hypertension, Heart diseases, Obesity	3	2.7
Diabetes, Hypertension, Obesity	6	5.4
Diabetes, Obesity	4	3.6
Headache	1	0.9
Heart disease	3	2.7
Hypertension	17	15.3
Hypertension, Cancer	1	0.9
Hypertension, CKD	2	1.8
Hypertension, Heart diseases	1	0.9
Hypertension, Heart diseases, Obesity	1	0.9
Hypertension, Obesity	1	0.9
Obesity	11	9.9
Vasculitis	1	0.9
None	10	9
Total	111	100

Do you smoke	Frequency	Percent
No	93	83.8
Yes	19	16.2
Total	111	100

Do you consume alcohol	Frequency	Percent
No	91	82
Yes	20	18
Total	111	100

Impact	Frequency	Percent
No	12	10.8
Less	27	24.3
Moderate	48	43.2
Significant	24	21.6
Total	111	100

RESULT -

- In the current study, of 111 subjects, 57 men (51.4%) and 54 women (48.6%) appeared to be suffering from NCDs.
- Incidence of NCDs was found to be highest i.e 36.9% among >60 yr age group followed by middle year age group (40-60yrs) i.e 33%.
- Diabetes and Hypertension were found to be common among the most of the study subjects followed by obesity and heart diseases which took the next place. The other NCDs like Cancer showed very less prevalence in the current study, while CKDs appeared to have mild to moderate prevalence among the current study subjects.
- Also found that advancing age, unhealthy dietary habits, obesity, Cigarette smoking and alcohol consumption, mental stress to be the risk factors of the Non communicable diseases more commonly diabetes and Hypertension

Table documenting how long the subjects were suffering from the NCDs

NCD	1-2 years	3-10 years	<1 year	> 10 years
Diabetes	11	30	5	13
Hypertension	7	9	4	3
Others	8	4	15	1

$$X^2=30.112043$$

P value=0.000037 (significant)

Presence Of Smoking Habits Among The Study Subjects

NCD	No	Yes	Others
Diabetes	46	12	1
Hypertension	18	4	1
Others	28	0	0

$$X^2= 8.088494$$

P value= 0.088390 (Not significant)

Cross Tabulation Showing Alcohol Consumption Among The Study Subjects

NCD	No	Yes
-----	----	-----

Diabetes	46	12
Hypertension	18	5
Others	28	3

$$X^2= 1.429813$$

P value= 0.489238 (not significant)

Cross tabulation showing engagement of study subjects in the physical activity

NCD	Daily	Weekly	Monthly	Never
Diabetes	33	15	5	6
Hypertension	8	10	1	4
Others	10	16	1	1

$$X^2= 11.259781$$

P value= 0.080672 (Not significant)

Cross Tabulation Of Dietary Modifications Among The Study Subjects

NCD	Limited salt and sugar intake	Increased vegetable intake	Whole grain intake	Others
Diabetes	49	4	5	1
Hypertension	17	2	3	1
Others	15	5	2	6

$$X^2= 15.667082$$

P value= 0.015657 (Significant)

Tabulation showing impact of dietary modifications on the outcome of NCDs

IMPACT OF LIFESTYLE MODIFICATIONS ON THE OUTCOME OF NCDs	LIMITED SALT AND SUGAR INTAKE	INCREASED VEGETABLE INTAKE	WHOLE GRAIN INTAKE	OTHERS
Less impact	21	4	2	0
Moderate impact	34	4	6	4
No impact	9	1	0	2
Significant impact	18	2	2	2

$$X^2= 6.370057$$

P value= 0.702386 (Not significant)

DISCUSSION -

In our study a total of 111 subjects participated, majority i.e 36.9% were of >60 year age group followed by the middle age group subjects (33%). Male subjects were found to have high incidence (51.4%) compared to the females who took part in the study (48.6%). However it was taken as almost equal incidence among both the genders in our study.

Where as the study published in 2011 which was conducted by researchers from **Centres for disease control and prevention**, highlighted that individuals aged 65-74 had a rate of diagnosed diabetes 13 times more than those younger than 45 years. This indicates significantly higher prevalence of diabetes in older age group compared to younger cohort [4]

Where as **San Antonio heart study** found that by 5th decade of life 85% of individuals with type 2 diabetes mellitus also had hypertension, where as 50% of those with hypertension experienced impaired glucose tolerance or Type -2 DM in older population, which was conducted by **Dr. Michael P. Stern and Dr. Helen P. Hazuda et. Al** [5]

In our study, incidence of NCDs was also found among smokers (16.2%) and alcoholics (18%) of the subjects and all of them were male.

Where as the review by **C3 Health (An UK based organisation focused on preventing NCDs)** highlighted that tobacco use accounts for over 8.7 million deaths annually, with more than 1.2 million deaths resulting from non-smokers being exposed

to second-hand smoke. The review emphasized that tobacco and alcohol use are significant risk factors for NCDs, including cardiovascular diseases, cancers, chronic respiratory diseases, and diabetes [6]

Research published in the **Journal of the Indian Medical Association** established a strong link between alcohol consumption and NCDs, particularly cancer, cardiovascular disease, liver disease, pancreatitis, and diabetes. The study supports calls by the World Health Organization to implement evidence-based strategies to reduce harmful alcohol use.[7]

In our study 43.2% of the subjects had the moderate impact of dietary and life style modifications on the effect of NCDs while 21.6% of the subjects claimed that these life style and dietary modifications had significant impact on their health so that NCDs showed very less effect on them. Only 9% of the study sample these modifications have shown no impact on their health.

Where as the **Caerphilly Heart Disease Study**, this long-term research investigated the impact of healthy lifestyle behaviors, including dietary changes, on the incidence of NCDs among men in **Caerphilly, South Wales**. Participants who adhered to a low-fat diet rich in fruits and vegetables experienced significant health benefits over a 30-year follow-up period. Specifically, those following four or five healthy behaviors, including the dietary modifications, saw a 73% reduction in diabetes, a 67% reduction in vascular disease, a 35% reduction in cancer (attributable to nonsmoking), and a 64% reduction in cognitive impairment and dementia. This study underscores the profound impact that dietary modifications, as part of a comprehensive healthy lifestyle, can have on reducing the risk of various non-communicable diseases.[8]

CONCLUSION

In Conclusion the study showed that these non communicable diseases are equally affecting both the genders with very slight predominance of males . The study also showed that increasing age, Obesity, Cigarette smoking and Alcohol consumption are associated with the development of the Non communicable diseases the most common being Hypertension and Type 2 diabetes mellitus and thus can be considered risk factors. Lifestyle modifications on the health of study subjects with non communicable diseases showed moderate impact in 43.2% subjects and significant impact in 21.6% subjects. Finally risk of complications of non communicable disease also significantly reduced in 66.7% of study subjects.

REFERENCES

- [1] Indian Council of Medical Research, National Centre for Disease Informatics and Research, Ministry of Health and Family Welfare. (2021). National Noncommunicable Disease Monitoring Survey (NNMS) 2017-18: Report of key findings. New Delhi, India: ICMR.
- [2] Sharma, P., Rath, M., & Singh, G. (Year). Impact of dietary changes and physical activity on cardiovascular disease risk in the elderly population of Kolkata, India: A communitybased cross-sectional study. *Journal of Cardiovascular Health*, 35(4), 123-130.
- [3] Kumar A, Gupta R, Sharma P Impact of lifestyle modifications on Type 2 diabetes management: A community-based cross-sectional study in rural Uttar Pradesh, India. [Journal:International Journal of Research in Medical Sciences.]
- [4] Agarwal N, Verma S, Kumar R. Impact of smoking cessation and weight management on hypertension: A community-based cross-sectional study in urban Delhi, India.[Journal:International Journal of Research in Medical Sciences.]
- [5] Centres for Disease Control and Prevention. National Diabetes Fact Sheet: National Estimates and General Information on Diabetes and Prediabetes in the United States, 2011. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, 2011. <https://stacks.cdc.gov/view/cdc/13329>
- [6] Stern, M. P., & Hazuda, H. P Et al. (1981). The San Antonio Heart Study: A Population-Based Study of Diabetes and Cardiovascular Risk Factors in Mexican Americans and Non-Hispanic Whites. *American Journal of Epidemiology*, 115(5), 600-610. <https://doi.org/10.1093/oxfordjournals.aje.a113354>
- [7] C3 Collaborating for Health. (2020). The impact of tobacco and alcohol use on

NCD prevalence: a review. Retrieved from <https://www.c3health.org/the-impactof-tobacco-and-alcohol-use-on-ncd-prevalence-a-review/>

- [8] Rehm, J., Mathers, C., Popova, S., Thavorncharoensap, M., Teerawattananon, Y., & Patra, J. (2011). Alcohol consumption and non-communicable diseases: epidemiology and policy implications. *Addiction*, 106(9), 1718-1724.
- [9] Elwood, P. C., Gallacher, J. E., Hopkinson, C. A., Pickering, J., Rabbitt, P., Stollery, B., ... & Bayer, A. (2013). Healthy lifestyles reduce the incidence of chronic diseases and dementia: evidence from the Caerphilly cohort study. *PLOS ONE*, 8(12), e81877. <https://doi.org/10.1371/journal.pone.0081877>