**International Journal of Medical and Health Research**
**www.medicalsciencejournal.com**
**ISSN: 2454-9142**
**Received: 14-09-2025, Accepted: 14-10-2025, Published: 29-10-2025**
**Volume 11, Issue 5, 2025, Page No. 42-45**

# A pictograph of non-communicable diseases burden at most peripheral unit of healthcare in India- a descriptive study

**Javali S B[1], Sunkad M A[2]**
[1] Professor, Biostatistics, Department of Community Medicine, USM-KLE-International Medical Program, Nehrunagar, Belgaum, India
[2] Department of Community Medicine, USM-KLE-International Medical Program, Nehrunagar, Belgaum, India.

**Abstract**
**Background:** Primary Health Care through chains of healthcare centres across the nation has been an ambitious goal for India. Accordingly, infrastructure set up, and staffing done. Over the decades great strides have been made. However, reasons beyond our control metabolic diseases have come in. We aim at finding the burden of non-communicable diseases at the most peripheral unit.
**Method:** A health team consisting of doctor, auxillary nurse, Lab technician, Councillor and health auxillaries visited a village selected by systematic random sampling method. This village has 353 families with a population of 2496.The study procedures were explained to the people and obtained consent before. All the adult persons were encouraged to attend the mobile clinic in their neighbourhood. The demographic details were recorded, blood pressure, blood sugar tested as per standard procedure and clinical examination made.
**Result:** A total of 2,001 persons attended. The results revealed 148 persons having hypertension, 101 persons having high blood sugar, 3 persons having neoplasm, 9 persons having coronary artery stents, 6 persons with stroke and 11 persons with alcohol abuse.
**Conclusion:** We are able to produce a Pictograph of metabolic diseases in a village The non-communicable diseases are at a challenging level at “most peripheral unit” in healthcare affecting 63% of families, necessitating urgent aggressive life style modification efforts.

**Keywords:** Pictograph, Metabolic diseases, ASHA, Unit

## Introduction

India is a vast country with huge population, diverse geography, wide varied socioeconomic conditions and scarce resources. Taking full account of the situation at the dawn of independence, our healthcare experts quickly decided to adopt “Primary Health Care” supported by Secondary healthcare as a most suitable model to achieve “Health” for people. Their understanding was women to get adequate care during pregnancy, Childbirth, children to be vaccinated, attend injuries, minor illnesses, Family planning, give health education and participation in specific national health programs.
Focussed attention: Attention was also focussed on killer diseases like Small-pox, Cholera, Malaria and Tuberculosis. These were vertical, specific, well planned, trained staff and fully funded nationwide. They were conducted with great enthusiasm and over the years, quickly yielded desired results.
There were appreciable changes in all areas like Education, Agriculture, Industry, Dairy, Science, Technology, Textile, Roads, Transport, Irrigation, Communication, Housing and Governance.
Transition: The result is abundance in food, vegetables, fruits, fish, meat, comfortable travel, well paid jobs, protected habitats, clean water supply, controlled population, small family norm, deficit financing, inflation, plenty of money in people hands, have all together ushered in “Metabolic diseases”. Accordingly, we have Obesity, Diabetes, Hypertension, Cardio-vascular diseases, Cancers. The present study looks at the most peripheral unit of Health Care delivery, the burden of these diseases.

## Methods

This is a descriptive study. A village was taken by systematic random sampling method. The necessary permission for this study, was taken from Medical Officer of the parent Primary Health Care centre. The study was explained to the villagers and their consent taken. The participants were all the adults in the village and they were free to withdraw from study anytime.
The study team consisted of two doctors (2), two nurses (2), nursing assistants (2), lab technician and a counsellor. The village was visited for a week, between 8 am to 4 pm. All the adult persons were encouraged to attend the clinic. For each participant the demographic details, height, weight, blood sugar (Finger prick, One Touch Glucometer used), blood pressure (Mercury Sphegmomanometer) recorded by standard procedure and clinical examination made. All the data collected, compiled, confidentiality maintained and anonymized. The data processed using SPSS 2.0
Clinical readings interpretation:

### BMI

A reading ≤ 18.5 is Underweight
A reading 18.6-22.9- Normal
A reading 23- 24.9- Over weight
A reading ≥ 25 -----Obese

### Blood Pressure

A recording of ≤ 120 / 80 mm of Hg—Optimal,
A reading of 121- 129 / 80-84 mm of Hg – Normal
A reading of 130-139 / 85-89 mm of Hg—High Normal

A reading of ≥140 mg / ≥ 90 mm of Hg----Hypertension
Readings are confirmed at the nearest Government Hospital, whenever the reading ≥140 mm of Hg/ 90 mm of Hg

**Random Blood Sugar**
Blood Sugar reading: ≤ 140 mg% Normal,
140- 199 mg---Prediabetes
≥200 mg%-- Diabetes
Readings confirmed at nearest Government Hospital by Fasting venous blood test ≥125 mg%, whenever we record random blood sugar ≥200 mg% in any individual.

**The Village**
This is a small village with 1.3 sqKM, there are 353 families, farmers (202), Bajantri (11), Goudas (8), Merchants (14), Jain (22), Madar (75), Priests (21) having a population 2496. The male and female populations are 1395 and 1101 respectively. The under five years 160 children, while school going children are 431. The adult population between 21 and 60 years are 1604. The people aged 61 years and above are 301.
The village is located 16 KM from nearest urban area, connected by good metal road. The transport is by bus, and private vehicles. The agriculture or farm work is the main occupation of people. The younger persons these days do take up jobs in nearby urban industrial area. The village has one elementary school and a High school. There are two Anganwadi or preschools for children in the age group 2 -5 years. There are three temples in the village. The habitat pattern is contiguous, tiled, having common walls on either side. Only few countable houses are individual concrete buildings. There is a huge natural water tank located on the eastern side of the village. There are 10 small and big shops selling grocery, vegetables, fruits and dairy products. The household and farm house waste is dumped the in open pits and waste water allowed into open gutters. There is no play ground or entertainment hall. However most of houses have cable TV facility. All the houses have piped potable water supply and electricity. Two families have set up cottage industry machines to produce “Roti” and “Vermicelli (Noodles)”. The people are warm and homely.

**Fig 1:** The village Map (Pictograph) showing, Water Tank, Houses, Roads, Temples, Schools, House with Hypertension patient/ Diabetes indicated with colours.

**Health Infrastructure:** This village has a decent Health centre, well furnished, clean, exhibited with visual posters on health and stock full of essential basic medicines. The centre is visited by Community Health officer for one hour daily in the morning. Now and then Auxillary Nurse visits mothers and children regarding vaccination, family planning work. The medical officer from respective Primary Health centre visits infrequently. However, this village is blessed to have a local dedicated, active, articulate, ASHA (Acredited Social Health Activist). She is always available, in touch with community, motivates them, aware of common ailments, government/ private health facilities around and above all a useful resource person to her community. She keeps a wonderful register containing all updated family details. She is a valuable link between local community and Healthcare system [1, 3]. The local health centre has full stock of basic drugs for Hyperension and Diabetes. Though the village has 353 families and need two ASHA volunteers, in reality, there is only one. The ASHA volunteer needs reorientation, strengthening in additional skills, better incentives and encouragement [4].
The private hospitals, industrial houses in the neighbourhood, visit the village under corporate social responsibility to create awareness in the community.

**Healthcare system in India:** The Primary Health Care centre is first point of contact for health care concerns. We have chains and chains of PHC spread evenly across the country. Each PHC caters to the needs of 30,000 population. The PHC has doctors and other assistants. Each PHC has six subcentres. The subcentre has Auxillary Nurse. Each subcentre has six units, approximately for every 200 families, there is one such unit, it is looked after by a community volunteer “ASHA” (Accredited Social Health Activist). The ASHA is the link between community and Healthcare system. The PHC is supported by Secondary care centres (Community Health Centre, District Hospitals) and Tertiary care centres (Medical college hospitals, Specialized hospitals). Besides we have private charitable hospitals, Private hospitals throughout the country. The care is “FREE” in government set up and “Payable” with private hospitals.
In our study, we focussed on community unit served by an ASHA, most peripheral unit.
Since independence, there has been phenomenal increase in the number of medical colleges, large number of doctors trained, these young doctors have little inclination towards Primary Health Care. However, there are good number of Nurses and Technicians available.
The Patients: We have identified 263 persons in this community having few Non-Communicable diseases. The patients with Diabetes and Hypertension are on treatment. They have bundles of doctor prescriptions and box full of medicines. They have made little changes in their life styles, while upgrading to multiple drug therapy.

**Results:** There are 353 families.
The families with Hypertension 148
The families with Diabetes 71
The families with both Hypertension and diabetes 30,
The families with Neoplasm 3,
The families with burden of non-communicable diseases is 63% Total available adults for study 2,005

**Table 1:** Showing demographic profile.

| Age group | Male | Female |
|---|---|---|
| 20 years –60 years | 944 | 660 |
| 61 years and above | 140 | 261 |
| Total | 1,084 | 921 |

**Table 2:** Showing BMI STATUS

| | Age 20 to 60 years | | | | Age 61 years and above | | | |
|---|---|---|---|---|---|---|---|---|
| | Under Wt | Normal | Over Wt | Obese | Under Wt | Normal | Over Wt | Obese |
| Male | 84 | 723 | 192 | 45 | 15 | 113 | 7 | 5 |
| Female | 97 | 440 | 87 | 36 | 55 | 189 | 9 | 8 |
| Total | 181 | 1163 | 279 | 81 | 70 | 302 | 16 | 13 |

**Table 3:** Showing distribution of Hypertension in Age group

| | Age group 20-60 years | | Age group 20-60 years | |
|---|---|---|---|---|
| | Normal | Hypertension | Normal | Hypertension |
| Male | 883 | 61 | 115 | 25 |
| Female | 621 | 39 | 238 | 23 |

**Table 4:** Showing status of Diabetes

| | Age 20 -60 years | | Age 60 years and above | |
|---|---|---|---|---|
| | Normal | Diabetes | Normal | Diabetes |
| Male | 902 | 42 | 117 | 23 |
| Female | 641 | 19 | 244 | 17 |
| Total | 1543 | 61 | 361 | 40 |

## Discussion

Our healthcare experts were right in their strategy. By now we have achieved our goals. The communicable diseases are manageable. The infant mortality, maternal mortality is appreciably reduced. The family welfare is a familiar word, fully become way of life. With phenomenal development in digital technology health related topics have reached common people. There is transition towards metabolic diseases unknowingly linked to the way we live. There is abundance in ready to eat delicious vegetarian, non-vegetarian food, coupled with ease of work in all spheres due to machinations, heavy stress due to contemporary life. The people who govern us are clever, dole out freebies resulting in migration of people to urban areas and thinning urban rural divide.

There have been number of studies, (small, big, cross sectional, prospective cohort, national family health survey 5) on trend of hypertension in India beginning in 1949 till recently [5, 7]. All these studies show consistent rising curve, both in urban and rural areas, with no sign of decrease anytime. This fact holds good for diabetes too. The studies have been wide and extensive, systematic review studies, across the country beginning in 1963. There have been no signs of fall in number or severity [8, 13]. The prevalence of diabetes is equally rising in rural areas as the trend demonstrates. There are prospective cohort studies, where in "High normal blood pressure and Prediabetes" reading individuals graduated to "Hypertension and Diabetes" over the time [14, 18]. The analogy that "People are living longer, free from other diseases, so rise in hypertension/ diabetes" does not hold correct. Both hypertension and diabetes are burdensome by reason of numbers, cost, complications and co-morbidity. This situation is a reality for individual sufferer, his family and society.

The six persons with residual disability of stroke and nine persons with coronary stents are a fitting testimony to this journey of non-communicable diseases.

Our study shows 63% of families have either Hypertension or Diabetes with them, confirming to rising trend over time. When some member in the family has to attend the doctor, take medicines regularly, needs some particular food, all these add to the cost and psychological burden. We have observed that many people, over the time have to switch to additional drugs for control of blood pressure or diabetes.

## Conclusion

We are able to produce a Pictograph of metabolic diseases in a village the non-communicable diseases are at a challenging level at "most peripheral unit" in healthcare affecting 63% of families necessitating urgent aggressive life style modification efforts.

## References


1. Dhaliwal BK, Gupta M, Nadda A, Singh S, *et al*. Urban community health workers in Punjab, India: a qualitative study of ASHAs' roles in the health system. medRxiv, 2025. https://doi.org/10.1101/2025.05.03.25326377
2. Magotra A, Sheetal D. A study on the role of ASHA and its contribution to the health care system. Journal of Ayurveda and Integrated Medical Sciences,2020:5(02):269–272.
3. Agarwal S, Curtis SL, Angeles G, Singh K, Tsui A, Speizer IS, *et al*. The impact of India's accredited social health activist (ASHA) program on the utilization of maternity services: a nationally representative longitudinal modelling study. Human Resources for Health,2019:17:68.
4. Shrivastava R, Sharma L, Jolly M, Ahuja R, *et al*. "We are everyone's ASHAs but who's there for us?" A qualitative exploration of perceptions of work stress and coping among rural frontline workers in Madhya Pradesh, India. Social Science & Medicine,2023:336:116234.
5. Agrawal VK, Bhalwar R, Basannar DR. Prevalence and determinants of hypertension in a rural community. Medical Journal Armed Forces India,2008:64(1):21–25.
6. Singh PS, Singh PK, Zafar KS, Sharma H, Yadav SK, Gautam RK, *et al*. Prevalence of hypertension in rural population of Central India. International Journal of Research in Medical Sciences,2017:5(4):1451–1455.
7. Uthakalla VK, Naidana PS, Yendapu RS, Pissey SS, Devireddi CUS. Prevalence of hypertension among the rural adult population in India: a systematic review and meta-analysis. Cureus, 2025. https://doi.org/10.7759/cureus.69942
8. Mohammad R, Bansod DW. Hypertension in India: a gender-based study of prevalence and associated risk factors. BMC Public Health,2024:24:2681.
9. Thrift AG, Ragavan RS, Riddell MA, Joshi R, *et al*. Hypertension in rural India: the contribution of socioeconomic position. Journal of the American Heart Association,2020:9(7). https://doi.org/10.1161/JAHA.119.014486
10. Saxena T, K H R. Prevalence of hypertension in a rural community of coastal Karnataka: a cross sectional study. International Journal of Community Medicine and Public Health,2017:4(8):2774–2777.

11. Kokiwar P, Gupta SS, Durge PM. Prevalence of hypertension in a rural community of Central India. Journal of the Association of Physicians of India,2012:60(6):26–29.
12. Longkumer I, Yadav S, Rajkumari S, Sharma A, Jha R, Singh V, *et al*. Trends in hypertension prevalence, awareness, treatment, and control: an 8-year follow-up study from rural North India. Scientific Reports,2023:13:9910.
13. Pradeepa R, Mohan V. Epidemiology of type 2 diabetes in India. Indian Journal of Ophthalmology,2021:69(11): 2932–2938.
14. Anjana RM, Deepa M, Pradeepa R, Mahanta J, Narain K, Das HK, *et al*. Prevalence of diabetes and prediabetes in 15 states of India: results from the ICMR–INDIAB population-based cross-sectional study. The Lancet Diabetes & Endocrinology,2017:5(8):585–596.
15. Ranasinghe P, Jayawardena R, Gamage N, Sivanandam N, Misra A. Prevalence and trends of the diabetes epidemic in urban and rural India: a pooled systematic review and meta-analysis of 1.7 million adults. Annals of Epidemiology,2021:58:128–148.
16. Singh PS, Sharma H, Zafar KS, Singh PK, Yadav SK, Gautam RK, *et al*. Prevalence of type 2 diabetes mellitus in rural population of India: a study from Western Uttar Pradesh. International Journal of Research in Medical Sciences,2017:5(4):1363–1367.
17. Chow CK, Penmetcha K, Raju R, Neal B. The prevalence and management of diabetes in rural India. Diabetes Care,2006:29(7):1717–1718.
18. Jahagirdar SS, Bant DD, Bathija GV. Study of prevalence of diabetes mellitus in the rural areas of Hubballi, Karnataka, India. International Journal of Community Medicine and Public Health,2016:4(1):104–109.