

EXECUTIVE SUMMARY

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A. Introduction

India is undergoing a rapid health transition and facing a high burden of Noncommunicable Diseases (NCDs). The total percent of deaths due to NCDs reported in 2018, by the World Health Organization (WHO)* was 63%. With set time-bound national targets adopted by the Ministry of Health and Family Welfare (MoHFW), Government of India, the country needs to monitor progress towards achieving the National NCD monitoring framework and NCD action plan by 2025.** It would guide in policy making and develop strategies for prevention and control of the 10 targets and 21 indicators (*Table 1.1.2*) for NCDs.

The Government of India is committed to addressing the burden of NCDs in the country. The National Programme on Prevention and Control of Cancer, Diabetes, Cardiovascular diseases and Stroke (NPCDCS) launched in 2010, aimed at institutionalizing response to NCDs by setting up of state level NCD cells and integrating it within the National Health Mission (NHM) framework. Thus, increasing the momentum for prevention and management of major NCDs. The National Health Policy, 2017*** recognized the pivotal importance of Sustainable Development Goals (SDGs) and the need to halt and reduce the growing burden of NCDs in the country. The policy aimed to support an integrated approach for screening and prevention of the most prevalent NCDs. Ayushman Bharat, which is flagship scheme of Government of India is working towards strengthening the delivery of primary health care through the establishment of Health and Wellness Centres as the platform. Against this backdrop, the Indian Council of Medical Research (ICMR) was identified as the nodal agency for monitoring, evaluation and surveillance under the national NCD monitoring framework. The National Noncommunicable Disease Monitoring Survey (NNMS) was commissioned by MoHFW to provide information on key indicators to measure progress towards achieving the National NCD targets.

NNMS was conducted during 2017-18 by ICMR-National Centre for Disease Informatics and Research (NCDIR), Bengaluru as the Central Co-ordinating Unit (CCU) for implementation, coordination and monitoring in partnership and collaboration with several institutions across the country. A National Technical Working Group (TWG) was set up to guide the survey which was carried out by ten implementing agencies. The objective of the survey was to generate national level estimates of key NCD related indicators (risk factors and health system response) identified in the national NCD monitoring framework.

B. Methodology

NNMS 2017–18 followed a multistage cluster sampling design covering the age range of 15-69 years. The estimated sample size for the survey was 12000 adults (18-69 years) and 1700 adolescents (15-17 years). To cover the calculated sample size, the required number of households was 12000 equally distributed among urban and rural areas in a total of 600 primary sampling units (PSUs). Twenty households were selected in every PSU and among each household, one adult (using KISH method) and all eligible available adolescents were included.

The survey questionnaires were adapted from standard tools like WHO-STEPs, Global School Student Health Survey (GSHS), Global Adult Tobacco Survey (GATS) – India, Global Youth Tobacco Survey (GYTS), Integrated Disease Surveillance Project – NCD risk factor survey and WHO-Service Availability and Readiness Assessment (SARA). Information on household characteristics, behavioural risk factors (tobacco use, unhealthy diets, alcohol use and physical inactivity) was done by face to face interview with adults and adolescents. Physical measurements (height, weight, waist circumference and blood pressure) and biochemical measurements (fasting blood glucose and spot urine analysis for urinary sodium), history of raised blood pressure, raised blood glucose, raised cholesterol and cardiovascular diseases (CVDs) were obtained only for adults. Anthropometry (height and weight) and school/college related information were specifically captured for adolescents. The survey also addressed the awareness levels and attitudes towards the risk factors. The health facilities (one each of public primary, community health centres, district and primary private hospitals) within and near to the PSUs were included in the survey sample.

The survey was approved by the ICMR-NCDIR institutional ethics committee (IEC) and the respective survey implementing agencies IECs. Informed consent was obtained for all subjects aged 18-69 years, while assent was obtained from the adolescent along with parental consent.

Data were collected electronically using personal digital assistants (PDAs) and cleaned using *IBM Statistical Package for the Social Sciences (SPSS) for Windows version 22.0*. The cleaned data was weighted and analysed in *STATA 14.1* using complex survey analysis. The results have been presented in descriptive statistics as mean and proportions with 95% confidence interval (CI).

C. Results

C.1 Participation and response

The response rates for the survey were, household 95.5% and adults 96.3%. The response rates for biochemical testing among adults for fasting blood glucose was 89.5% and urinary sodium estimation was 85.7%. The adolescent response rate was 93.2%. A total of 537 public primary care facilities, 415 community health centres (CHCs) and 335 districts hospitals (DHs) serving the selected PSUs were surveyed in the public health care system. Besides, 512 private primary care facilities were surveyed in the same PSUs.

C.2 Household characteristics

Of the total number of households (N = 10659) surveyed, 45.1% were pucca houses, 38.2% of rural households had no access to a toilet facility. More than two-third (69.6%) of the households used solid fuels for cooking, with a proportion of 86.5% in rural areas. More than half of the households (54.3%) used mustard oil for cooking (36.1% urban and 63.0% rural), while more than one-fourth (28.7%) reported using pure ghee for cooking (35.3% urban and 25.5% rural).

C.3 Tobacco use

Of the total number of adult respondents (N = 10659), the prevalence of current tobacco use was 32.8% (only smoked 8.1%, only smokeless 20.2% and both forms 4.5%) and 28.0% used tobacco daily. Among those who used tobacco daily, 65.8% smoked bidis in rural areas, while 36.6% smoked manufactured cigarettes in the urban areas and 68.6% chewed smokeless tobacco. Nearly one-third respondents at home (32.1%), a quarter at the workplace (24.6%) and during travel (24.4%) reported exposure to second hand smoke during the past 30 days. The mean age of initiation and cessation of any form of tobacco use in adults was 21.1 years and 31.7 years, respectively.

Of the total number of adolescent respondents (N = 1402), the prevalence of current daily tobacco use was 3.1% (boys 5.5% and girls 0.4%). Amongst them, 89.2% smoked manufactured cigarettes while 79.7% chewed gutkha. The mean age of initiation of tobacco use in adolescents was at 14.2 years (boys 14.2 years and girls 14.4 years). Nearly half (44.7%) of adolescents reported presence of shop selling tobacco within 100 metres of school/college.

C.4 Alcohol use

Four out of five adult respondents (81.1%) were lifetime abstainers of alcohol. A total of 15.9% (men 28.3% and women 2.4%) of respondents reported drinking alcohol in the past 12 months, and only one in every 20 respondents (5.9%) was an episodic heavy drinker. The proportion of episodic heavy drinking in men (10.9%) was twenty times that in women (0.5%). As many as 20.1% adults consumed alcohol procured from unauthorized sources in the past 7 days. The mean age of initiation of alcohol was 22.2 years (men 22.2 years and women 21.1 years).

3.5% adolescents were ever users of alcohol, 1.3% reported consuming alcohol in the last 12 months and amongst them more than half of the respondents (57.8%) reported consuming countryside liquor. The mean age of initiation of alcohol use was 13.4 years (boys 13.5 years and girls 12.8 years).

C.5 Diet

The consumption of fruits and/or vegetables was inadequate with 98.4% adult reported consuming less than five servings per day (men 98.0% and women 98.8%). The mean number of servings of fruit and/or vegetables per day was 1.7, which did not meet the WHO recommendations. The estimated mean salt intake per day was 8.0g (8.9g in men and 7.1g in women per day); and 45.4% practiced some steps (any) to lower daily salt intake. Mustard oil was the most frequently used oil for cooking (48.8%).

One-third (33.9%) of the adolescent respondents reported consuming fresh fruits/fruit juices daily or at least once a week, while nearly half of them consumed fried items, chips/namkeen and chocolates daily or at least once a week.

C.6 Physical activity

Almost half of the adult respondents (41.3%) did not meet WHO recommendations on physical activity of 600 Metabolic equivalents (METs) per week; urban and rural (51.7% and 36.1%); men and women (30.9% and 52.4%). The mean minutes spent being sedentary in a day were 308.9 minutes (men 290.5 minutes and women 328.5 minutes). A total of 3.5% of the surveyed adults practiced yoga, with a majority from the urban areas (6.3%) than rural areas (2.1%).

A quarter of (25.2%) adolescent respondents were insufficiently active and 64.2% reported being taught the benefits of physical activity at schools/colleges. The mean minutes of physical activity spent in school were 16.1 minutes per day, with 20.1 minutes spent by boys and 11.8 minutes by girls. The mean minutes spent being sedentary in a day were 340.7 minutes.

C.7 Anthropometric measurements

The mean body mass index (BMI) was 22.5 Kg/m² [(urban 24.3 Kg/m² and rural 21.6 Kg/m²) and (men 22.3 Kg/m² and women 22.8 Kg/m²)]. As per the WHO cut-off, 54.7% [(urban 46.4% and rural 58.7%) and (men 57.5% and women 51.5%)] were of normal BMI (18.5-24.9 Kg/m²), one in every five (19.9%) and more than one in twenty (6.2%) were overweight and obese, respectively. In urban and rural areas, the prevalence of overweight with BMI ≥ 25.0 Kg/m² was 42.5% and 18.0%, respectively and obesity with BMI ≥ 30.0 Kg/m² was 11.2% and 3.7% correspondingly, while 19.2% were underweight (11.1% urban and 23.3% rural). The mean waist circumference (WC) was 79.6 cm and 32.2% were found to be centrally obese (men 24.4% and women 40.7%). Nearly half (48.2%) of the surveyed urban population were centrally obese than rural (24.2%).

Among the surveyed adolescent population for physical measurements, the mean BMI was 18.8 Kg/m² and 6.2% were overweight (including obesity) and 1.8% were obese. The prevalence of overweight and obesity in urban areas was found to be more than three times that of rural areas, respectively.

C.8 Blood pressure measurement

The mean systolic and diastolic blood pressure (including people taking medication for hypertension) among adult respondents was 124.1 mmHg and 80.9 mmHg, respectively. Nearly three out of ten respondents (28.5%) had raised blood pressure. An increase in proportion of population with raised blood pressure was observed in urban areas and with increasing age. Newly detected cases with raised blood pressure were 20.6%, while 7.9% were reported being diagnosed previously.

C.9 Blood glucose measurement

The mean fasting blood glucose (including those on medication for diabetes) was 96.7 mg/dl. Nearly one in ten respondents (9.3%) had raised blood glucose. The proportion of respondents with fasting blood glucose level of 100 mg/dl to 125 mg/dl were 25.4% (men 22.6% and women 28.4%). Newly detected cases with raised blood glucose were 5.0%, while 4.3% reported being diagnosed previously.

Assessment of management of hypertension

Amongst the 10592 adult respondents aged 18-69 years, 28.5% had raised blood pressure, of which 27.9% were aware of their raised blood pressure status. Of those who were aware, 52.1% were on treatment and of those who were on treatment, 44.4% had their blood pressure in control (Systolic BP <140 mm Hg and Diastolic BP <90 mm Hg). (Figure a)

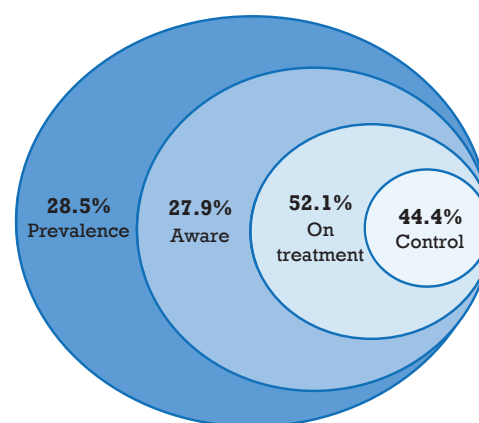


Figure a Assessment of management of hypertension among adults (18-69 years)

Assessment of management of diabetes mellitus

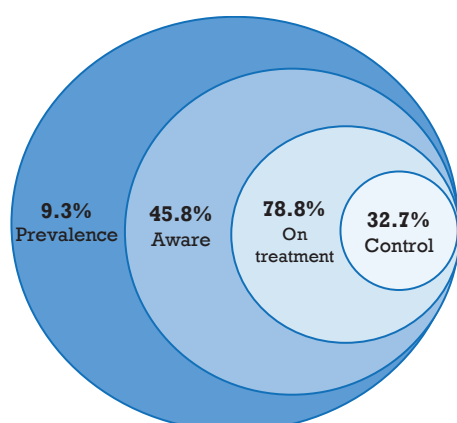


Figure b Assessment of management of diabetes mellitus among adults (18-69 years)

Amongst the 9581 adult respondents aged 18-69 years, 9.3% had raised blood glucose including those on medication, of which 45.8% were aware of their raised blood glucose status. Of those who were aware, 78.8% were on treatment for raised blood glucose, and amongst them 32.7% had their blood glucose in control (fasting blood glucose <126 mg/dl). (Figure b)

Figures (c and d) summarize the prevalence of risk factors associated with NCDs amongst adults and adolescents.

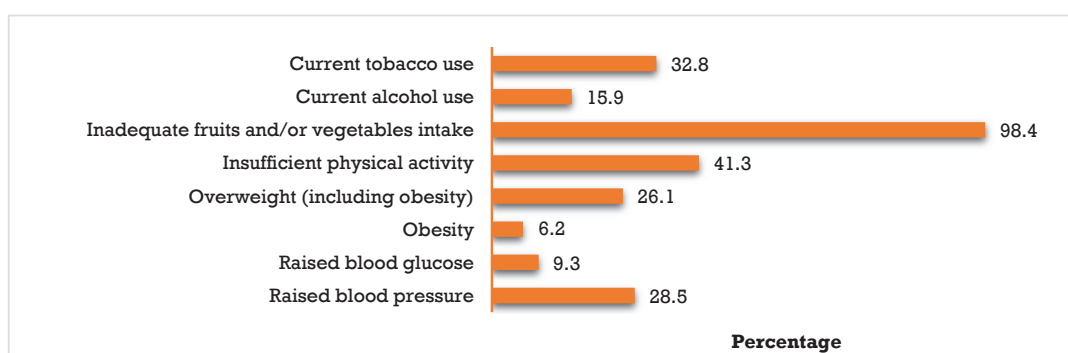


Figure c Summary of prevalence of risk factors associated with NCDs among adults (18-69 years)

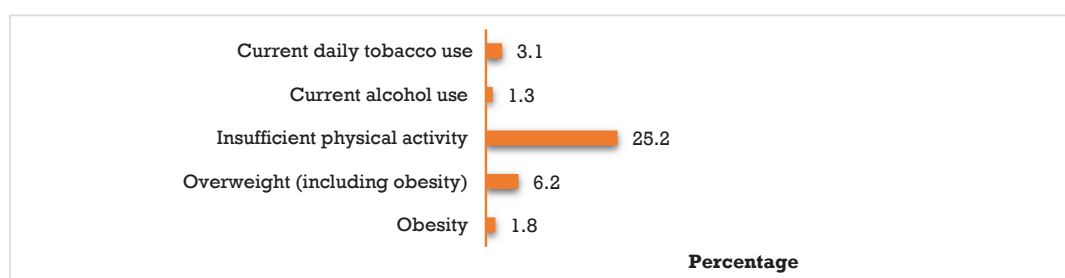


Figure d Summary of prevalence of risk factors associated with NCDs among adolescents (15-17 years)

C.10 Composite risk assessment and Health seeking behaviours and management indicators

The survey showed that 40.2% of the adult respondents aged between 18–69 years had clustering of ≥ 3 risk factors (daily tobacco use, inadequate fruits and/or vegetable intake, insufficient physical activity, overweight of BMI ≥ 25.0 Kg/m², raised blood pressure and raised fasting blood glucose including those on medication) for NCDs and this figure increased proportionately with age. The risk in the urban areas was 52.8% and in rural areas was 34.2%.

Among the surveyed adults aged between 40-69 years, 12.8% had ten-year CVD risk of $\geq 30\%$ or with existing CVD. A total of 29.3% received drug therapy and counselling to prevent heart attack and stroke, the percentage in urban areas was 40.6% and rural areas was 21.9%.

Among those with raised blood glucose (30-69 years), 47.6% reported being known or aware of their condition, 38.5% were currently on allopathic treatment and 16.3% had their blood glucose in control. Among those with raised blood pressure (30-69 years), 29.2% reported being known or aware of their condition, 16.0% were currently on allopathic treatment and in 12.3% blood pressure was under control. Among those with known (1.8%) raised cholesterol (30-69 years), 38.4% were currently on treatment, 11.2% and 4.8% consulted and currently received treatment from Ayurveda, Unani, Siddha and Homeopathy practitioners, respectively.

C.11 Cancer screening

Among the surveyed population aged 30-69 years, the proportion who had ever undergone screening for oral cancer (men and women) were 1.7%. Only 1.6% women had been screened for breast cancer by clinical examination and 2.2% for cervical cancer. Screening for cervical cancer in rural areas was three times lesser than urban areas.

C.12 Health system response indicators

Of the total public primary care facilities (urban, n=257 and rural, n=280), emergency services were being provided in 34.2% urban and 46.4% rural public primary care facilities. A total of 49.0% and 26.1% of the surveyed public primary care facilities in the urban and rural areas, reported availability of written standard treatment guidelines under NPCDCS for NCDs. More than seven in ten urban (76.7%) and rural (77.9%) public primary care facilities offered NCD services to patients daily. More than two-thirds (68.1% urban and 70.4% rural) public primary care facilities had laboratory facilities available for diagnosis and management of NCDs. Nearly one out of four and one out of three facilities in urban and rural areas, respectively were providing inpatient care for diabetes and hypertension. More than 65.0% of urban and rural public primary care facilities had medical officers, nurses, pharmacist, auxiliary nurses and laboratory technician. Only 2.3% and 1.1% of public primary care facilities in urban and rural areas had all the essential technologies and medicines as per WHO guidelines.

Among the total public secondary health care facilities surveyed (CHCs-NPCDCS implemented 281 and 105 NPCDCS non-implemented); and (DHs-NPCDCS implemented 290 and 44 NPCDCS non-implemented), most of them were providing out-patient and in-patient care. However, provision of Cardiac Care Unit/Intensive Care Unit services was observed to be available only in one out of ten in CHCs and six out of ten DHs. In general, availability of services for cancer care at the CHCs and DHs were low. Among the NPCDCS implemented CHCs and DHs (n=281 and n=290 respectively), the NCD clinics were being run in 49.5% and 60.3% of the facilities, while NCD counselling services were available in 37.7% and 64.1%, respectively. Availability of cardiologist (16.9%), medical oncologist (7.2%) and cytopathologist (15.2%) was proportionately low in DHs. Only 1.7% of NPCDCS implemented district hospitals had all the essential medicines and technologies as defined by NPCDCS guidelines.

D. Conclusion

The National Noncommunicable Disease Monitoring Survey has established a comprehensive data set for the selected indicators of the National NCD monitoring framework. Further progress can be assessed against it. The presence of NCD risk factors at high proportions among adults and adolescents residing in urban and rural areas calls for stepping up of response to provide affordable healthcare in accessible manner universally to all. Such surveys should be conducted periodically through committed funding and mandate. Efforts to strengthen surveillance of NCDs needs to be put in place and strong multi-sectoral actions will help in mitigating several NCD risk factors.

*Noncommunicable diseases country profiles 2018 [Internet]. World Health Organization. 2019 [cited 7 June 2019]. Available from:

<https://www.who.int/nmh/publications/ncd-profiles-2018/en/>

**National action plan and monitoring framework for prevention and control of noncommunicable diseases (NCDs) in India. Ministry of Health and Family Welfare, Government of India. Developed through the WHO-Government of India 2012-2013 biennial work plan. [Internet]. SEARO World Health Organization. 2019 [cited 11 July 2018]. Available from:

http://www.searo.who.int/india/topics/cardiovascular_diseases/National_Action_Plan_and_Monitoring_Framework_Prevention_NCDs.pdf

***National Health Policy 2017, Ministry of Health and Family Welfare. [Internet] Government of India [cited 12 July 2018]. Available from:

<https://mohfw.gov.in/sites/default/files/9147562941489753121.pdf>