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Morbidity Differentials in India by Gender and Place of Residence: Evidence from National Sample Survey 2004 and 2017-18

Shewli Shabnam
Nandita Saikia

Abstract

India is experiencing population ageing and a growing burden of non-communicable diseases. This paper analyses age-specific burden of communicable and non-communicable diseases (NCDs) in India by sex and place of residence using the data available from the 60th and the 75th Rounds of National Sample Survey (NSS). We found that, in 2004, prevalence of communicable diseases was higher than that of non-communicable diseases but, in 2017-18, the prevalence of NCDs became higher than that of communicable diseases. The prevalence of both communicable and non-communicable diseases was higher in females than in males. The prevalence of communicable diseases was higher in the rural areas, but the prevalence of NCDs was higher in the urban areas. Communicable diseases are the primary cause of morbidity in childhood, but NCDs are leading cause of illness among older adults. The paper recommends a comprehensive road map to fight both communicable and non-communicable diseases in the country.

Introduction

India is experiencing population ageing as the result of declining fertility and increase in life expectancy. The share of the elderly population was only 5.6 per cent in 1961, which is projected to increase to more than double by 2026 (Government of India, 2020). Therefore, it is anticipated that the prevalence of chronic diseases like diabetes, hypertension etc., will also increase. The available evidence shows that the burden of non-communicable diseases (NCDs) is higher than the burden of communicable diseases (India State-level Disease Burden Initiative Collaborators, 2017). In 1990, the proportion of cardiovascular disease (CVD) burden to total disability-adjusted life years (DALYs) was 6.9 per cent, which soared to 14.1 per cent in 2016 (India State-level Disease Burden Initiative CVD Collaborators, 2018). The latest research on NCDs finds that the increase in the prevalence of diabetes and hypertension is alarming among the middle-aged and the old population in the country (Geldsetzer et al, 2018). On the other

hand, the prevalence of communicable diseases in the country has decreased marginally between 2004 and 2014 (Banerjee and Dwivedi, 2016). In 2017-18, one-third of those who received in-patient care reported communicable diseases (Ram and Thakur, 2022). Moreover, in the last three decades, India has seen several significant outbreaks of infections (Nipah, Chikungunya, HINI influenza, and most importantly, Corona), some of which were of zoonotic origin (Dikid et al, 2013). Against this backdrop, this paper analyses the age-specific burden of communicable and non-communicable diseases (NCDs) in India by sex and place of residence. This type of analysis is vital because appropriate policy measures depend on the information about the share of communicable and non-communicable diseases in a particular age group.

Theoretical Background

The changes in the disease pattern in any part of the world result from various factors. The epidemiological transition theory (Omran, 1971) throws light on the complex interrelationship between the socioeconomic transformation of the society and the changes in health and disease patterns. Omran recognised three different models for epidemiological transition: (a) the classical or western model, (b) the accelerated transition model, and (c) the contemporary or delayed model. The first model is applied to the western European countries where the agricultural and industrial revolutions and modernisation led to the slow progressive transition from high fertility and mortality to low fertility and mortality. The second model exemplified by Japan was associated with a very short period for fertility and mortality transition owing to national and individual aspirations. The third model is applied to most of the developing countries. In these countries, public health intervention and improvement in medical sciences helped in the rapid decline in mortality, but fertility remained high.

Based on historical evidence of changing mortality, Omran identified three successive phases of epidemiological transition: (i) the age of pestilence and famine characterised by high and erratic mortality and slow population growth; (ii) the age of receding pandemics associated with mortality decline and exponential population growth; and (iii) the age of delayed degenerative diseases characterised by stability in mortality at a relatively low level and fertility dependent population growth. In its journey from the first to the third stage, any society experiences specific changes in the patterns of diseases. In the age of pestilence and famine, communicable diseases dominate, the infant mortality and the prevalence of undernutrition remain high, and the proportion of cardiovascular diseases (CVDs) to all diseases ranges between 5-10 per cent. The life expectancy at birth during this period remains 20-40 years. India was in the first stage of epidemiological transition before independence.

In the age of receding pandemics, improved sanitation and a better diet led to the decrease in the prevalence of communicable diseases and a slow increase in the prevalence of degenerative diseases. The life expectancy in this period remains between 30-50 years. After independence, India's health conditions improved, and life expectancy increased due to the expansion of public health facilities and the control of

epidemics and famines. The declining mortality and high fertility led to a population explosion in India. This situation existed till the 1980s.

According to Omran, increased ageing and the rise of lifestyle-related (diet, physical inactivity, etc.) non-communicable diseases are the features of the age of degenerative diseases. India is in this stage at present. Life expectancy at birth in India was estimated at 70 years in the period 2016-20 (Government of India, 2022). In 2016 India reported 63 per cent of deaths due to NCDs, of which 27 per cent were attributed to CVDs (World Health Organization, 2023). Globalisation and increased urbanisation have led to the change in the lifestyle and food habits of the Indians, which are associated with the growing burden of diabetes, hypertension, obesity, and mental stress in the country (Pingali and Khwaja, 2004; Nethan, et al, 2017; Fricchine, 2018).

Data and Method

Our analysis is based on the data from 60th and 75th rounds of the National Sample Survey (NSS). The 60th round was conducted from January to June 2004 whereas the 75th round was conducted from July to June 2018. During these rounds of NSS, data about the 'spells of ailment' of household members during 15 days before the survey were collected. In the 60th Round, 36510 persons reported at least one spell of illness. This number was 39902 in the 75th Round. In both rounds, information about the 'nature of the ailment' and the 'status of the ailment' was also collected. The status of ailment was grouped into the following four categories:

Status 1: Started more than 15 days ago and was continuing on the date of the survey.
Status 2: Started more than 15 days ago but ended before the survey.
Status 3: Started within 15 days and was continuing on the date of the survey.
Status 4: Started within 15 days but ended before the survey.

Status 1 and 3 have been used to estimate the reported prevalence of the ailment, while status 3 and 4 have been used to estimate the incidence of the ailment. Since there were no recall laps, the point prevalence rate is used in the analysis.

The analysis of disease-specific morbidity by age is not possible from the data available from NSSO because of the sample size limitations. Besides, the nature of the ailment reported during the 60th round of the survey was not the same as that during the 75th round of the survey. We have, therefore, grouped ailments reported at the 60th round of the survey into the following four categories: I) communicable diseases; II) non-communicable diseases (NCDs); III) accidents/injuries; and IV) all other diagnosed and undiagnosed ailments. Communicable diseases include tuberculosis, hepatitis/jaundice, diarrhoea/dysentery, amoebiosis, worm infestation, mumps, conjunctivitis, diseases of skin, diseases of mouth/teeth/gum, respiratory disease, diphtheria, sexually transmitted diseases (STDs), filariasis/elephantiasis, malaria, fever of unknown origin, eruptive and whooping cough. Non-communicable diseases include diabetes mellitus, gastritis/gastric/peptic ulcer, goitre, anaemia, cataract, heart disease,

diseases of kidney/urinary system, asthma, psychiatric disorders, neurological disorders, hypertension, under-nutrition, joint and bone disorders, gynaecological disorders, prostatic disorders, glaucoma, tetanus, visual disability (excluding cataract), hearing disability, speech disability, locomotor disability, and cancers and other tumours. Accidents/injuries/burns/fractures/poisoning are put under the broad heading of 'accidents/injuries. Other undiagnosed and diagnosed diseases are considered as a separate category for the analysis.

The nature of ailments in the 75th round of the survey is more complex and detailed. We have, therefore, grouped reported ailments into five categories: I) communicable diseases; II) non-communicable diseases; III) accidents/injuries; IV) childbirth; and V) all other diagnosed and undiagnosed ailments. Communicable diseases include fever with loss of consciousness or altered consciousness, malaria, fever due to diphtheria and whooping cough, all other fevers (including typhoid, fever with rash/ eruptive lesions and fevers of unknown origin), tuberculosis, filariasis, HIV/AIDS, other sexually transmitted diseases, jaundice, diarrhoea/dysentery/increased frequency of stools with or without blood and mucus in stools, worms infestation, discomfort/pain in the eye with redness or swelling/boils, earache with discharge/ bleeding from ear/infections, acute upper respiratory infections, cough with sputum with or without fever and not diagnosed as TB, skin infection (boil, abscess, itching) and other skin diseases, pain in pelvic region/ reproductive tract infections/pain in male genital area and diseases of mouth/teeth/gum. Non-communicable diseases included tetanus, cancers and occurrence of any growing painless lump in the body, anaemia, bleeding disorders, diabetes, under-nutrition, goitre and other diseases of thyroid, except the previous two other nutritional/metabolic/endocrine disorders (including obesity), mental retardation, mental disorders, headache, seizures or unknown epilepsy, weakness in limb muscles and difficulty in movements, stroke/hemiplegia/sudden loss of speech, other psychiatric and neurological disorders including memory loss and confusion, cataract, glaucoma, decreased vision (chronic), other eye problems including disorders of eye movements (strabismus, nystagmus, ptosis and adnexa), decreased hearing or loss of hearing, hypertension, heart disease including chest pain and breathlessness, bronchial asthma, gastric and peptic ulcer/acid reflux/acute pain in abdomen, lump or fluid in abdomen or scrotum, gastrointestinal bleeding, joint or bone disease/pain or swelling in any of the joints, back or body ache, any difficulty or abnormality in urination, and change/irregularity in menstrual cycle or excessive bleeding/pain during menstruation and any other gynaecological and andrological disorders including male/female infertility. The category 'accidents/ injuries' includes accidental injury, road traffic accidents and falls, accidental drowning and submersion, burns and corrosions, poisoning, intentional self-harm, assault and contact with venomous/harm-causing animals and plants. childbirth is not considered as disease but a physiological process. It is kept as a separate category.

The appendix tables 1 and 2 give details of the reported prevalence of the four categories of ailments at the 60th round of NSS whereas appendix tables 3 and 4 gives the reported prevalence of the five categories of ailments at the 75th round of NSS. It may be emphasised here that data on morbidity available through the NSS are based

on the ailments reported by the respondents and, therefore, may be associated with respondent bias which may under-estimate or over-estimate the reported prevalence of different categories of ailments.

Results and Discussion

Table 1 presents reported prevalence of different categories of ailments by age in 2004 as revealed through the 60th round of NSS. The all-cause morbidity prevalence rate in India was 5.7 per cent in the year 2004. The prevalence was the lowest in the age group 5-14 years and very high in population aged 60 years and above. In the population aged 60 years and above, the prevalence of non-communicable diseases was substantially higher than the prevalence of communicable diseases. Table 1 also shows that the prevalence of other diagnosed and undiagnosed ailments was 1.0 per cent which is considerably high. Proper identification of these ailments into communicable and non-communicable diseases can alter the prevalence rates of both communicable and non-communicable diseases.

Table 1: Age-specific reported prevalence rate by broad ailment types, India, 2004.

Age	Prevalence rate (Per cent)	Ailment type			
		Communicable diseases (Per cent)	Non-communicable diseases (Per cent)	Accidents/ injuries (Per cent)	Others (Per cent)
0-4	4.9	3.85	0.18	0.07	0.80
5-14	2.0	1.39	0.19	0.07	0.35
15-29	2.6	1.32	0.60	0.10	0.58
30-44	5.0	1.98	1.77	0.18	1.07
45-59	9.4	2.86	4.66	0.26	1.62
60-74	24.9	4.51	16.75	0.44	3.20
75 +	35.6	4.27	26.12	0.65	4.56
All ages	5.7	2.51	2.03	0.16	1.00

Source: Computed from unit-level data of 60th round of NSS.

Table 2 shows the age-specific morbidity prevalence of different ailment categories in 2017-18. The prevalence of all-cause morbidity in the country decreased to 4.6 per cent in 2017-18. During the 75th round of NSS, the surveyors were provided with the working definitions of different ailments/main symptoms. The response on questions related to morbidity, therefore, seems more accurate compared to the 60th round of NSS. In the 60th round and in earlier round surveys on health, persons with disabilities were regarded as ailing persons. In the 75th round of NSS, however, pre-existing disabilities were classified as chronic ailments if the duration of the treatment of the ailment was at least one month long. Otherwise, these disabilities were not considered as ailments (Government of India, 2019). These changes in the classification of ailments between 60th and 75th rounds of NSS appears to be a factor in the lower prevalence of all cause morbidity in 2017-18 compared to 2004.

Table 2: Age-specific morbidity prevalence rate by broad ailment types, India, 2017-18.

Age	Prevalence rate (Per cent)	Ailment type				
		Communicable diseases (Per cent)	NCDs (Per cent)	Accidents/ Injuries (Per cent)	Others (Per cent)	Childbirth (Per cent)
0-4	2.4	2.27	0.11	0.01	0.01	0.00
5-14	1.2	1.07	0.10	0.02	0.01	0.00
15-29	1.1	0.81	0.24	0.02	0.03	0.01
30-44	3.4	1.53	1.76	0.06	0.04	0.00
45-59	8.8	2.16	6.49	0.10	0.06	0.00
60-74	22.7	3.52	18.70	0.14	0.34	0.00
75+	31.5	4.31	26.59	0.30	0.30	0.00
All ages	4.6	2.08	2.41	0.06	0.05	0.00

Source: Computed from unit-level data from the 75th round of NSS.
*Non-communicable Diseases

The data available from the 75th round of NSS suggest that the prevalence of non-communicable diseases in India is now higher than the prevalence of communicable diseases. An earlier study has also concluded that between 1990 and 2016, the proportion of DALYs attributed to non-communicable diseases and accidents/injuries increased in India while DALYs attributed to communicable diseases decreased significantly (India State-level Disease Burden Initiative Collaborators, 2017). Another important observation of tables 1 and 2 is that the prevalence of ailments categorised as 'others' decreased considerably between 2004 and 2017-18. The reason for this decrease may be attributed to the fact that the 75th round of NSS used a more comprehensive framework than the 60th round to identify reported ailment/main symptom.

Figure 1 compares the prevalence of communicable diseases and non-communicable diseases by age in 2004 and 2017-18. In both 2004 and 2017-18, females had higher prevalence of communicable and non-communicable diseases compared to males. However, the prevalence of communicable diseases was higher in males compared to females in population less than 15 years of age. This observation is not unexpected as it is well-known that females have immunological advantages compared to males during infancy and childhood so that the prevalence of communicable diseases is lower in females below 15 years of age as compared to males below 15 years of age (WHO, 2007). On the other hand, the prevalence of non-communicable diseases is found to be higher in females compared to males in the age group 15 to 74 years but, in the age group 75 years and above, the prevalence of non-communicable diseases was higher in males compared to females in 2004. In 2017-18, the prevalence of non-communicable diseases was higher in females compared to males, although the sex-difference in the prevalence of non-communicable disease in 2017-18 was at best, marginal. The prevalence of communicable diseases was, however, higher in females aged 75 years and above compared to males aged 75 years and above in both 2004 and 2017-18.

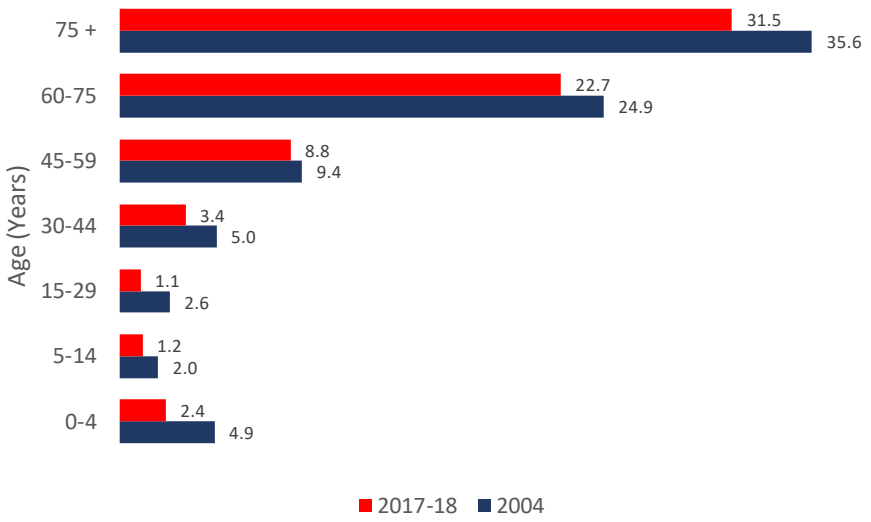

Figure 1: Reported prevalence of ailments (per cent) in India, 2004 and 2017-18.
Source: Author

A better idea about the change in the reported prevalence of ailments or morbidity by age can be made in terms of odds ratios. Figure 2 shows that for all ages combined, the odds of reporting an ailment at the 75th round of NSS was 20 per cent lower than the odds of reporting an ailment at the 60th round of NSS. In different age groups, the odds of reporting an ailment at the 75th round compared to the 60th round varies widely. In the age group 0-4 years, the odds of reporting an ailment at the 75th round was 52 per cent lower than that at the 60th round of NSS. On the other hand, in the age group 45-59 years, the odds of reporting an ailment at the 75th round of NSS was only 7 per cent lower than that at the 60th round which suggests that there has been only a marginal decrease in the reported prevalence of ailments in population of this age group between the 60th and the 75th round of NSS. It may also be seen from the figure that in population aged at 45 years and above, the odds of reporting an ailment at the 75th round of NSS was only marginally lower than that at the 60th round whereas in population aged younger than 45 years, the odds of reporting an ailment at the 75th round was substantially lower than that at the 60th round. This suggests that the reported prevalence of ailments had decreased more rapidly in the population younger than 45 years of age as compared to the reported prevalence of ailments in the population aged at least 45 years.

It may also be seen from the figure 2 that the odds of reporting a communicable disease at the 75th round was lower than that in the 60th round of NSS in all age groups. This is, however, not the case in the reporting of non-communicable diseases. In population aged 45 years and above, the odds of reporting a non-communicable disease at the 75th round was higher than that in the 60th round of NSS.

More specifically, in the age group 45-59 years, the odds of reporting a non-communicable disease at the 75th round of NSS was more than 40 per cent higher than that at the 60th round. However, in population aged less than 45 years, the odds of reporting a non-communicable disease at the 75th round of NSS was lower than that at the 60th round. For example, in the age group 15-29 years, the odds of reporting a non-communicable disease at the 75th round was 60 per cent lower than the odds of reporting a non-communicable disease at the 60th round of NSS. Figure 2 suggests that the increase in the reported prevalence of non-communicable diseases in the country between the 60th round and the 75th round of NSS has been the result of the increase in the reported prevalence of these diseases in the population aged 45 years and older.

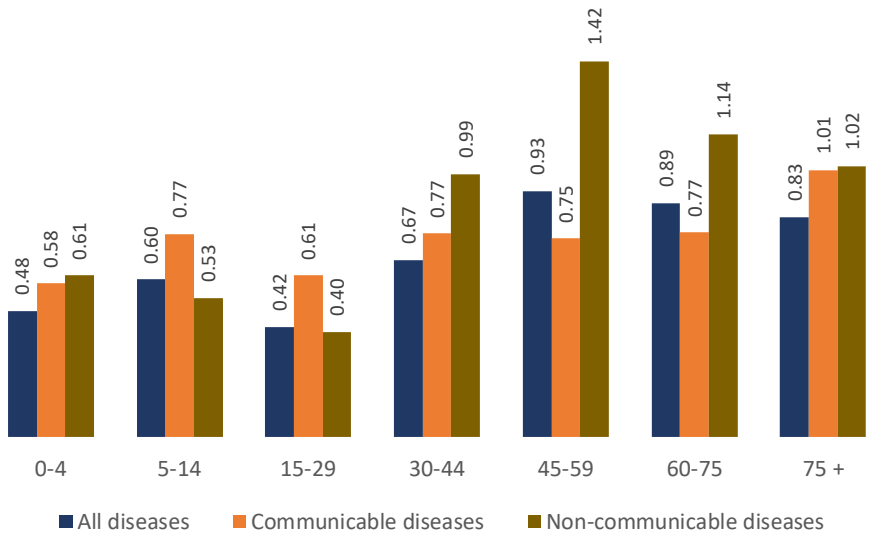

Figure 2: Odds of reporting an ailment at the 75th round of NSS relative to the 60th round of NSS.
Source: Author

In both rounds of the National Sample Survey, the odds of reporting an ailment were higher in females relative to males and the odds ratio has increased over time (Figure 3). At the 60th round, females were 16 per cent more likely to report an ailment compared to males. This proportion increased to 28 per cent at the 75th round. This increase in the odds ratio has largely been due to the increase in the odds ratio of reporting a non-communicable disease. At the 60th round of NSS, females were 28 per cent more likely to report a non-communicable disease compared to males but, at the 75th round of NSS, female were 46 per cent more likely to report a non-communicable disease compared to males. By contrast, the likelihood of a female reporting a communicable disease relative to a male increased only marginally between the 60th and the 75th rounds of NSS.

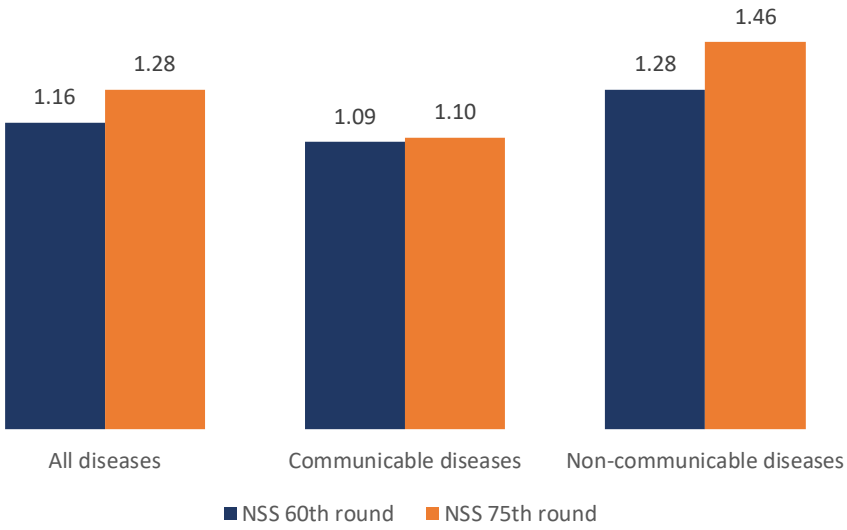

Figure 3: The odds ratio of the gender difference in the reporting of ailments at the 60th round and the 75th round of NSS.
Source: Authors

The likelihood of reporting an ailment has, however, decreased in both males and female at the 75th round of NSS compared to the 60th round of NSS. The odds of a male reporting an ailment at the 75th round of NSS were around 24 per cent lower compared to the odds of a male reporting an ailment at the 60th round of NSS. Similarly, the odds of a female reporting an ailment at the 75th round of NSS were around 15 per cent lower than the odds of female reporting an ailment at the 60th round of NSS. Similarly, a male was 17 per cent less likely to report a communicable disease at the 75th round compared to the 60th round whereas a female was 16 per cent less likely to report a communicable disease at the 75th round relative to the 60th round of NSS. However, the likelihood of reporting non-communicable diseases by both males and females increased at the 75th round of NSS relative to the 60th round of NSS. At the 75th round, males were 11 per cent more likely while females were almost 27 per cent more likely to report a non-communicable disease compared to the 60th round of NSS. In the age group 45-59 years, males were at least 33 per cent more likely to report a non-communicable disease at the 75th round of NSS compared to the 60th round whereas females were 50 per cent more likely to report a non-communicable disease at the 75th round of NSS compared to the 60th round. By contrast, in the age group 5-29 years, both males and females were less likely to report a non-communicable disease at the 75th round of NSS compared to the 60th round of the survey. In case of communicable diseases, however, the likelihood of reporting a communicable disease by both males and female has been lower at the 75th round of NSS compared to the 60th round in all age groups with the only exception of males aged 75 years and above. Table 3 suggests that there has been an increase in the self-reported prevalence of non-communicable

diseases in population aged 45 years and above in the 75th round of NSS when compared to the 60th round of NSS. This has, however, not been the case with communicable diseases. There has been a decrease in the self-reported prevalence of communicable diseases by both males and females at the 75th round of NSS compared to the 60th round of NSS.

Table 3: Odds ratios of reporting an ailment at the 75th round of NSS relative to the 60th round of NSS by males and females.

Age	All diseases		Communicable diseases		Non-communicable diseases	
	Male	Female	Male	Female	Male	Female
0-4	0.467	0.477	0.565	0.558	0.499	1.000
5-14	0.559	0.607	0.747	0.767	0.499	0.499
15-29	0.449	0.426	0.664	0.596	0.399	0.570
30-44	0.632	0.663	0.702	0.823	1.000	0.915
45-59	0.860	1.011	0.687	0.801	1.335	1.500
60-74	0.900	0.873	0.730	0.793	1.173	1.107
75 +	0.815	0.857	1.072	0.949	0.995	1.059
All ages	0.764	0.844	0.830	0.843	1.113	1.269

Source: Authors

A similar situation appears to have prevailed in the reporting of ailments in rural areas of the country as compared to the urban areas. At the 60th round of NSS, the odds of reporting an ailment in the urban areas of the country were 24 per cent higher than the odds of reporting an ailment in the rural areas of the country. This proportion increased to 56 per cent at the 75th round of NSS primarily because the odds of reporting a non-communicable disease in the urban areas relative to the rural areas increased from 57 per cent at the 60th round of NSS to 98 per cent at the 75th round of NSS. According to the 75th round of NSS, the odds of reporting a non-communicable disease in the urban areas of the country is now almost two times the odds of reporting a non-communicable disease in the rural areas of the country. The odds of reporting a communicable disease in the urban areas of the country relative to the odds of reporting a communicable disease in the rural areas has also increased between the two rounds of NSS but the increase was not as marked as in case of non-communicable diseases. At the 60th round, the odds of reporting a communicable disease in the rural areas was marginally higher than the odds of reporting a communicable disease in the urban areas. However, at the 75th round of NSS, the odds of reporting a communicable disease in the urban areas was higher than the odds of reporting a communicable disease in the rural areas, although the difference has been marginal.

The odds of reporting an ailment have decreased in both rural and urban areas in all age groups at the 75th round of NSS compared to the 60th round of NSS (Table 4). This has also been the case in the odds of reporting a communicable disease with the only exception of population aged 75 years and above in the rural areas. However, the odds of reporting a non-communicable disease in the rural areas was just around 5 per cent higher at the 75th round than at the 60th round of NSS whereas the odds of

reporting a non-communicable disease at the 75th round was more than 37 per cent higher than that in at the 60th round in the urban areas. In the age group 45-59 years, the odds of reporting a non-communicable disease at the 75th round was almost 43 per cent higher than that in the 60th round in the rural areas. In the urban areas, the odds of reporting a non-communicable disease at the 75th round of NSS was more than 37 per cent higher than that at the 60th round of NSS. Table 4 suggests that the reported prevalence of non-communicable diseases has increased between 2004 and 2017-18 in both rural and urban areas.

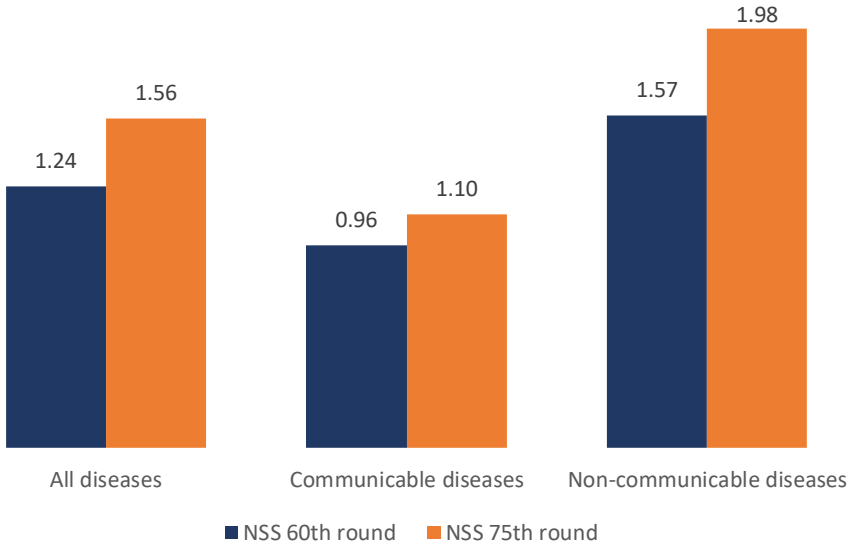

Figure 4: Odds ratio of the urban-rural difference in the reporting of ailments at the 60th round and the 75th round of NSS.
Source: Authors

Table 4: Odds ratios of reporting an ailment in rural and urban areas at the 75th round of NSS relative to the 60th round of NSS.

Age	All diseases		Communicable diseases		Non-communicable diseases	
	Rural	Urban	Rural	Urban	Rural	Urban
0-4	0.446	0.553	0.543	0.710	0.499	1.000
5-14	0.545	0.540	0.711	0.783	0.499	0.499
15-29	0.417	0.493	0.612	0.690	0.332	0.599
30-44	0.588	0.779	0.746	0.840	0.881	1.146
45-59	0.897	0.981	0.781	0.672	1.428	1.374
60-74	0.835	0.860	0.741	0.970	1.108	1.005
75 +	0.737	0.929	1.140	0.707	0.899	1.132
All ages	0.730	0.919	0.796	0.915	1.057	1.334

Source: Authors

Discussion and Conclusions

This paper has analysed morbidity transition in India between 2004 and 2017-18 based on the data available from the 60th and the 75th round of the National Sample Survey (NSS). The analysis suggests that the reported prevalence of the communicable diseases has decreased in the country but that of non-communicable diseases has increased, especially in the urban areas of the country so that the burden of non-communicable diseases in the country is now more than the burden of the communicable diseases. There are many studies that have observed that the prevalence of non-communicable diseases such as diabetes, hypertension, and obesity are much higher in the urban areas as compared to that in the rural areas (Aroor et al, 2013; Anjana et al, 2014; Oommen et al, 2016). The increase has particularly been marked in population aged 45 years and above. On the other hand, the reported prevalence of communicable diseases has decreased in the country with the remarkable reduction in children below five years of age. The analysis also indicates that the reported burden of diseases on the females has always been higher than that on the males of the country and the difference between reported female and male burden of diseases has increased over time. Similarly, the reported burden of diseases has always been higher in the urban areas as compared to that in the rural areas. More specifically, between 2004 and 2017-18, the decrease in the reported prevalence of communicable diseases has been much higher in the rural areas than in the urban areas in the population below 45 years of age. On the other hand, in population aged 75 years and above, the reported prevalence of communicable diseases has increased in the rural areas but decreased in the urban areas leading to the widening of the rural-urban gap in the reported prevalence of communicable diseases.

The analysis suggests that the burden of non-communicable diseases has increased in the country, especially in population aged 45 years and above. This observation has implications for the health policy and suggests that the health care services delivery system in the country should be oriented towards dealing with the non-communicable diseases. On the other hand, the burden of communicable diseases appears to be on the decline in the country, but the prevalence of these diseases appears to have increased in population aged 75 years and above probably because of antibiotic resistance and lower immunity power (Bijkerk et al, 2010). There is, therefore, a need of formulating a comprehensive road map to address the burden of both communicable and non-communicable diseases in the country. It is important that only balanced policies and resource allocations can contribute towards reducing the burden of communicable and degenerative diseases in the country simultaneously.

An important limitation of the present analysis is that it is based on reported ailments both communicable and non-communicable and, therefore, are subject to reporting bias. There are many factors that influence reporting of ailments. It is also well-known that reporting of non-communicable diseases is more difficult than that of communicable diseases, especially, in the absence of diagnostic facilities. For example, diagnosis of diabetes is not possible in the absence of testing of blood glucose levels. The same is the case with hypertension and other similar diseases. If the necessary

diagnostic facilities are not available, there may be possibility of low reporting of non-communicable diseases. This may be one reason why the reported prevalence of non-communicable diseases is found to be lower in the rural population as compared to that in the urban population and the increasing urban-rural gap in the reported prevalence of these diseases.

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Appendix Table 1: Prevalence of four categories of ailments by sex in India, 2004.

Age group	Prevalence rate (Per cent)		Ailment type							
			Communicable diseases (Per cent)		Non-communicable diseases (Per cent)		Accidents/ Injuries (Per cent)		Others (Per cent)	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
0-4	5.2	4.5	4.0	3.7	0.2	0.1	0.1	0.0	0.9	0.7
5-14	2.3	1.8	1.6	1.3	0.2	0.2	0.1	0.0	0.4	0.3
15-29	2.2	3.0	1.2	1.5	0.5	0.7	0.2	0.0	0.4	0.8
30-44	3.9	6.2	1.7	2.3	1.2	2.4	0.2	0.1	0.8	1.4
45-59	8.5	10.2	2.6	3.1	4.1	5.2	0.3	0.2	1.5	1.8
60-75	24.4	25.5	4.6	4.5	16.3	17.3	0.5	0.4	3.0	3.4
75 +	36.7	34.4	4.4	4.1	26.6	25.6	0.6	0.7	5.2	3.9
All ages	5.3	6.1	2.4	2.6	1.8	2.3	0.2	0.1	0.9	1.1

Source: Computed from unit-level data from 60th round of NSS.

Appendix Table 2: Prevalence of four categories of ailments by sex in India, 2017-18.

Age group	Prevalence rate (Per cent)		Ailment type							
			Communicable diseases (Per cent)		Non-communicable diseases (Per cent)		Accidents/ Injuries (Per cent)		Others (Per cent)	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
0-4	2.5	2.2	2.3	2.1	0.1	0.1	0.0	0.0	0.0	0.0
5-14	1.3	1.1	1.2	1.0	0.1	0.1	0.0	0.0	0.0	0.0
15-29	1.0	1.3	0.8	0.9	0.2	0.4	0.0	0.0	0.0	0.0
30-44	2.5	4.2	1.2	1.9	1.2	2.2	0.1	0.0	0.0	0.1
45-59	7.4	10.3	1.8	2.5	5.4	7.6	0.1	0.1	0.0	0.1
60-75	22.5	23.0	3.4	3.6	18.6	18.8	0.2	0.1	0.3	0.4
75 +	32.1	31.0	4.7	3.9	26.5	26.7	0.4	0.2	0.4	0.2
All ages	4.1	5.2	2.0	2.2	2.0	2.9	0.1	0.0	0.0	0.1

Source: Computed from unit-level data from 75th round of NSS.

Appendix Table 3: Prevalence of four categories of ailments by residence in India, 2004.

Age group	Prevalence rate (Per cent)		Ailment type							
			Communicable diseases (Per cent)		Non-communicable diseases (Per cent)		Accidents/ Injuries (Per cent)		Others (Per cent)	
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
0-4	4.8	5.3	3.8	3.9	0.2	0.2	0.1	0.1	0.7	1.1
5-14	2.0	2.2	1.4	1.4	0.2	0.2	0.1	0.1	0.3	0.5
15-29	2.6	2.6	1.3	1.3	0.6	0.5	0.1	0.1	0.5	0.7
30-44	5.0	5.2	2.0	1.9	1.7	2.1	0.2	0.2	1.1	1.0
45-59	8.4	11.8	2.8	2.8	3.7	7.1	0.2	0.3	1.6	1.6
60-75	22.7	32.2	4.8	3.4	14.3	25.1	0.4	0.5	3.2	3.2
75 +	32.5	43.5	4.5	3.5	22.4	35.7	0.7	0.7	4.9	3.6
All ages	5.4	6.6	2.5	2.4	1.8	2.8	0.1	0.2	1.0	1.1

Source: Computed from unit-level data from 60th round of NSS.

Appendix Table 4: Prevalence of four categories of ailments by residence in India, 2017-18.

Age group	Prevalence rate (Per cent)		Ailment type							
			Communicable diseases (Per cent)		Non-communicable diseases (Per cent)		Accidents/ Injuries (Per cent)		Others (Per cent)	
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
0-4	2.2	3.0	2.1	2.8	0.1	0.2	0.0	0.0	0.0	0.0
5-14	1.1	1.2	1.0	1.1	0.1	0.1	0.0	0.0	0.0	0.0
15-29	1.1	1.3	0.8	0.9	0.2	0.3	0.0	0.0	0.0	0.0
30-44	3.0	4.1	1.5	1.6	1.5	2.4	0.1	0.1	0.0	0.1
45-59	7.6	11.6	2.2	1.9	5.2	9.5	0.1	0.1	0.0	0.1
60-75	19.7	29.0	3.6	3.3	15.6	25.2	0.2	0.1	0.3	0.4
75 +	26.2	41.7	5.1	2.5	20.6	38.6	0.3	0.3	0.3	0.3
All ages	4.0	6.1	2.0	2.2	1.9	3.7	0.1	0.1	0.0	0.1

Source: Computed from unit-level data from 75th round of NSS