

## REVIEW ARTICLE

# Lower Socio-economic Status and Cardiovascular Disease: Role of Healthcare Facility and Policy in India

Arti Singh<sup>1</sup>, Shikha Dixit<sup>2</sup>

<sup>1</sup>Research Scholar, <sup>2</sup>Professor, Department of Humanities and Social Sciences, Indian Institute of Technology Kanpur, India

<a href="#">Abstract</a>	<a href="#">Introduction</a>	<a href="#">Methodology</a>	<a href="#">Results</a>	<a href="#">Conclusion</a>	<a href="#">References</a>	<a href="#">Citation</a>	<a href="#">Tables / Figures</a>
--------------------------	------------------------------	-----------------------------	-------------------------	----------------------------	----------------------------	--------------------------	----------------------------------

## Corresponding Author

Address for Correspondence: Arti Singh, Department of Humanities and Social Sciences, Indian Institute of Technology Kanpur-208016, India.

E Mail ID: [aartis@iitk.ac.in](mailto:aartis@iitk.ac.in)

## Citation

Singh A, Dixit S. Lower Socio-economic Status and Cardiovascular Disease: Role of Healthcare Facility and Policy in India. Indian J Comm Health. 2016; 28, 3: 215-221.

**Source of Funding:** Nil **Conflict of Interest:** None declared

## Article Cycle

**Received:** 22/08/2016; **Revision:** 25/08/2016; **Accepted:** 30/08/2016; **Published:** 30/09/2016

This work is licensed under a [Creative Commons Attribution 4.0 International License](#).

## Abstract

**Background:** Cardio-vascular disease (CVD) is one of the main cause of mortality Worldwide and India is no exception. Unlike developed countries, where both CVD prevalence and mortality has been established to affect lower socio-economic status (SES), in India there is no consensus among researchers over socio-economic patterning of CVD prevalence but the mortality rate has been reported to disproportionately affect the economically weaker sections. **Aims & Objectives:** This article, focuses at the issue of how lack of good healthcare facilities and non-supportive health policies are affecting CVD mortality positively among lower SES of India. Challenges of the Indian healthcare system in context of lower SES can be described in terms of the issue of availability, accessibility and affordability. Inadequate policy and public healthcare system either leads to the problem of high Out-of-Pocket Payments (OPP) or opting out of the treatment, which further increases poverty and mortality among them. Moreover, limited insurance coverage and inadequate regulatory policies for alcohol and tobacco-leading CVD risk factors among lower SES groups – do little to discourage its use among them. **Conclusion:** Since, lower SES people in India are already under the burden of communicable diseases, government should take immediate steps to control the mortality among them by creating a supportive environment through pro-poor health policies and healthcare facilities.

## Keywords

India; socio-economic status; health policies; CVD mortality; healthcare and treatment facilities.

## Introduction

Cardiovascular diseases are responsible for causing highest number of deaths worldwide in the category of Non-Communicable Diseases (NCDs). In 2012 alone, around 17.5 million people died worldwide from this disease and 80% of these deaths occurred only in developing countries (1). India also bears the burden of cardiovascular disease (CVD) in the form of 24% deaths annually (2). Once considered as a disease of affluent class only, CVD is now commonly

prevalent among weaker sections of developed countries (3). Unlike developed countries where reversal of social gradient has been documented in the context of CVD, in India, there is no consensus over this relationship among scholar. Some studies have reported a positive association between CVD and socio-economic status (SES) (4,5,6,7,8,9) while others have reported a negative association (10,11,12,13,14). In a systematic review of CVD and its risk factors on Indian population, it has been

reported that in India, majority of modifiable cardiovascular risk factors (CVRFs) are associated with higher SES, and proportion of deaths among them is also higher but the rate of mortality is higher among lower SES (15). However, the cause of this higher mortality rate among lower SES has not been discussed. In a landmark study, same trend of CVD mortality rate has been reported and the cause of this difference in CVD mortality trend has been attributed to differences in availability of treatment facilities to the patients of higher and lower SES (14). This study concluded that if equal treatment facilities were provided to both SES, the disparity in mortality rate will disappear. Thus, the importance of treatment facility in determining CVD mortality among various SES of India has been suggested (14). Prevalence of a disease and its mortality rate depends on a number of factors and one of them is the availability of treatment facilities. Availability of treatment facilities in turn depends on health policy of that country. Even though India is now a world capital of diabetes (a CVD risk factor) (16) and a quarter of deaths in India are attributable to CVD only (2), Indian health policies still have acute diseases as priority and not chronic diseases (17).

### Aims & Objectives

1. To discuss and explore the role of healthcare facilities in influencing CVD mortality and prevalence among lower SES in India.
2. To look at how health policies that are influencing it for lower SES.

### Healthcare System for CVD and Socio-economic Status

In the context of chronic diseases, Indian health care system can be characterized by “*Heterogeneity*”; where on one hand some people have all the access to treatment and care and on the other hand some people have difficulty in getting even basic treatment facilities (18). International Heart Protection Summit, (2011), has described the problems related to Indian healthcare system in three terms: lower availability, lower accessibility and lower affordability (19). Lower availability refers to the problem of absence of efficient and quality healthcare facilities in the form of specialist healthcare centres, sufficient number of doctors and nurses and cheaper evidence-based medicines for cardiac patients. It is notable that in India, only 150 cardiologists are trained every year, which is clearly

not sufficient for India’s huge population (20). Moreover, the ratio of availability of general doctors to the number of people is 1:1700, which is against WHO recommended ratio of 1:1000.

Lower accessibility of Indian healthcare system refers to the unequal distribution of healthcare facilities. Majority of hospitals are located in urban India only, leading to problem of accessibility for rural and suburban population. Only 30% population of India lives in urban areas but they have the facility of 60% of hospitals (19). Lastly, the issue of lower affordability refers to the capability of common people to have quality care at affordable price. The treatment for any chronic disease is generally very expensive and CVD is no exception. Its treatment requires longer time period, costly drugs and sometimes hospitalization too, resulting into the problem of affordability for lower SES strata. The affordability to treatment facility is also affected by insurance facility available to patients but, in India, “The issue of affordability is further magnified by the low penetration of health insurance in India” (19).

A prospective registry study in 50 cities and 89 centres across India for acute coronary syndromes undertook 20,937 patients who were categorized into four socio-economic group viz. rich, upper-middle, lower middle and poor class (14). It was found that the mortality rate due to acute coronary syndromes is higher among poor patients (8.2%) than rich patients (5.5%). They have attributed the reason for differential mortality to differences at the level of treatment. As rich patients can afford more costly drugs and interventional procedure than their counterparts, mortality rate among them is lower. It was found that the use of key treatments (both drug and coronary vascularization) differed significantly according to socio-economic status. Except antiplatelet drugs there was a socio-economic gradient in the intake of drugs (thrombolysis, beta blockers, lipid-lowering drugs, ACE inhibitor and anticoagulants drugs). Similarly, there was a significant difference for revascularization between patients of different SES. In comparison to 15.3% and 7.5% of rich patients who received percutaneous coronary intervention (angioplasty) and coronary artery bypass graft surgery respectively, only 2.0% and 0.7% poor patients received the same. Another interesting finding reported in the same study is the mode of transportation for reaching hospital. They

reported that many poor patients die before reaching hospital due to the lack of proper ambulance services as well as due to the greater distance of hospitals, suggesting the actual mortality rate of poor patients might be higher than the reported one in their study. However, they have suggested that if both strata receive similar treatment facilities and reaches hospital on time, then mortality would be reduced and especially for lower socio-economic strata.

### **CVD Healthcare Facilities and Out-of-Pocket Payment**

Poor section of India is still dependent on government hospitals for their treatment of CVD (6). As government healthcare sector is not in a good state, those who opt it have to wait long to see doctors and sometimes doctors are also not present. Even to avail basic facilities such as diagnostics or free medicines one needs to invest considerable amount of time. Some public hospitals do not have these basic facilities and issue of quality is also associated with government hospitals. Due to these limitations of public healthcare sector, people now have started opting for the private sector more. In a study done by IMS Institute for Healthcare Informatics in twelve states found that now people choose private healthcare over public system because of above mentioned causes (21). Similar findings were reported in a survey in Shimla, India and its adjacent area. People were found to use public services more for consultation but for diagnostic tests and drugs they are more depended on private sector (22). But choosing private healthcare can increase Out-of-Pocket-Payments (OPP) for patients and their families, especially for poor families. Chronic diseases such as CVD and its associated risk factors such as diabetes or hypertension have been found to cause high OPP, sometimes it even leads to borrowing of money, reduction in essential goods and/or services and in worst cases it leads to opting out of treatment (6). According to the reports of Government of India, in 2004-05 alone, approximately 72% expenditure in healthcare was OPP ([Figure 1](#)) (23). It has been reported in a study that in India lowest income group bears the highest burden of healthcare expenditure on chronic disease (24). Low income group have to spend 70% of their average monthly income on treatment in case of a chronic disease while for high income group it is 45%. In the same study, it has also

been reported that around 28% rural population opt out of treatment for chronic disease due to financial constraints. In worst situation, this OPP expenditure causes catastrophic expenditure which pushes already financially weak strata into poverty. Around 39 million Indians are pushed to poverty due to this catastrophic expenditure (25). In a study role of OPP was analyzed w.r.t. caste and it has been reported that OPP is responsible for increasing the percentage of Below Poverty Line (BPL) among scheduled caste and scheduled tribe patients more than others (24). Moreover, it has also been found that due to high percentage of OPP for CVD treatment, poor people who already have limited financial resources are forced to reduce expenditure on food and education, which affects negatively their health as intake of nutritious food is important in CVD (26).

### **Healthcare Policies for CVD**

India still has no national registry or data for recording the number of CVD cases and its related deaths. India's CVD surveillance data collection is limited to only some states (27). There are many states for which there is no data including all north-eastern states of India. Majority of surveys and surveillance data cannot be generalized to whole of India as they generally cover small number of sites. As rightly put that, 'Many of these (studies) are repeated surveys in the same population at random time intervals' (28).

In 2009, Government of India launched its first program on chronic diseases including CVD, named, National Programme for Prevention and Control of Diabetes, Cardiovascular Diseases and Stroke (NPDCS). This is a welcoming move, even though a little late. *Objectives* of NPDCS include prevalence assessment of CVD and its risk factors, developing intervention modules and to establish a weekly CVD/stroke specialty clinic in each district. A pilot program has been started in ten districts of ten states with a budget allocation of Rs. 4,9160,000 per state (28). However, predicting anything about NPDCS will be quite early.

Since, a high percentage of treatment expenditure is borne by patients themselves leading to high OPP, government health insurance scheme can play an important role for poor strata. A health insurance scheme named Rashtriya Swasthya Bima Yojana (RSBY) was launched by government in 2007 for BPL

(Below Poverty Line) people (29). Insurance coverage under this scheme is INR 30,000 for a family of 5 members. Though this program has been chosen as one of the top 18 successful and effective programs for social security by United Nations Development Programme (UNDP) and International Labour Organization (ILO), this scheme is under scrutiny by many people and agencies and it has been reported to be misused by many and has increased the level of fraud (30). Moreover, higher percentage of OPP made by poor people shows its inadequacy.

Loopholes and drawbacks in Governments' policies are evident from the fact that India is not just far behind developed countries but also from developing countries like China, Brazil and Thailand in the context of important health indicators (31). Government unwillingness to spend more on healthcare is also apparent from the fact that even after nearly 70 years of Independence, percentage GDP share of health sector is just 1.4 against global median of 5.0. Even in the draft of 12<sup>th</sup> Five Year Plan (2012-2017), health sector is still neglected by Government. With many drawbacks, it does not talk about any action to control OPP and there is a leaning towards private healthcare instead of strengthening Government healthcare system (32).

#### **Policies for Alcohol and Tobacco (CVD risk factors)**

In a recent systematic review, it has been reported that out of seven reviewed major modifiable risk factors of CVD, in India, lower SES was found to be higher on tobacco and less fibre diet only (15). This suggesting an important role of tobacco in higher CVD prevalence among lower SES. Other studies have also reported that prevalence of tobacco (33,34) and alcohol (35,36) is higher in poor and less educated population than rich and educated population. However, in India policies for alcohol and tobacco (CVD risk factors) are not in the favour of the health of the poor people. In contrast to developed countries, in India there is a high percentage of abstinence rate for alcohol among both genders, but the incidence and amount of alcohol consumption have been found to be higher among lower strata (37). Moreover, lower strata have been found to use desi/country liquor more because of its lower price and easy availability (38), which is sometimes adulterated with hazardous level of ethanol. But still there are no strict rules or policies for monitoring

desi liquor in India leading to its higher consumption by poor people. It has been rightly noted by (35) that, The politics of alcohol in India is complex. Prohibition, a popular option for many women's groups, is often used as a strategy by many political parties to campaign for elections. However, the associated loss of revenue and jobs, the increase in production and sale of illegal alcohol, and the crime and deaths due to methanol poisoning often lead to less stringent and more permissive sale of alcohol without enforcement of existing laws (related to the sale of alcohol, drunk driving and domestic violence).

In a study, it has been suggested that in India smokeless tobacco is more used by poor and rural population both, followed by bidi while cigarette is more used by educated population. Bidi is also used by the poor sections of urban areas (34). However, from the governmental perspective, bidi industry is a small-scale industry and is thus supported by policy also (40). As smoking in public places is banned by the government of India, there is a shift in using the smokeless form of tobacco more, such as Khaini (34). As the percentage of Khaini addiction is higher in lower SES, policy makers need to take care of this aspect of tobacco also. Tobacco control policies in India lack rural orientation and as all strata of the rural population are equally affected by tobacco use (41), it has been proposed that government should also have rural orientation in tobacco control programs.

Some researchers have proposed that those with low education are more prone to use alcohol and tobacco as they are generally not aware of the ill effects as compared to their counterparts thus increasing engagement in such activities (38,40). In India, where tobacco is used in various forms, there are many regional and religious variations for alcohol usage; thus, explanation in terms of only this proposition is not justifiable. Cultural factors which are sometimes regional and sometimes religious also play an important role. Such as, in Sikh community where tobacco usage is prohibited its prevalence rate is very low in comparison to other communities (34); similar is the case with alcohol consumption in Muslim community (42). Government needs to formulate policies keeping the above stated factors in perspective so that CVD mortality caused by these two preventable and modifiable risk factors can be

controlled with minimum burden on already financially crunched health sector.

## Conclusion

Thus, we conclude that while tailoring CVD policies government should consider factors responsible for higher mortality rate among lower SES such as poor treatment facility, higher OPP and higher alcohol and tobacco addiction. Without considering these factors, it will be an impossible task to control CVD epidemic in near future in India.

## Recommendation

Lower SES of India is prone to have high CVD mortality rate due to non-supportive policies and poor and unaffordable treatment facilities. Lower SES depends on public healthcare facilities for CVD treatment but due to non-availability and non-accessibility of public health facilities, they tend to go for private treatments. As private treatments are costly and issue of affordability exists for weaker sections, it leads to either high OPP, which further increases poverty among them or opting out of the treatment, leading to increase in the mortality rate (Figure 2). In order to control CVD epidemic an implementation of appropriately designed policies are required which can help weaker strata to have better CVD treatment.

Some pertinent measures for the same are: (i) increasing the number of trained cardiologists, (ii) providing cheaper medication facilities for poor patients, (iii) providing better ambulance services for such patients, (iv) providing better health insurance coverage and (v) having strict alcohol and tobacco control policies by taking into account economic, rural and regional variations. Also, there is a need to develop awareness programs and campaigns for various risk factors of CVD. Similar to HIV/AIDS and Tuberculosis awareness programs in which media (print and electronic) played an important role, government should formulate and launch awareness programs for CVD and its related risk factors also. There should be separate awareness programs for less educated and poor people. Every major district of India has a public Tuberculosis health centre and an ART centre but same is not true for public hospitals for cardiology; thus, restricting the availability of CVD treatment to poor people. Moreover, Rashtriya Swasthya Bima Yojana (RSBY) should have special provisions for CVD.

## References

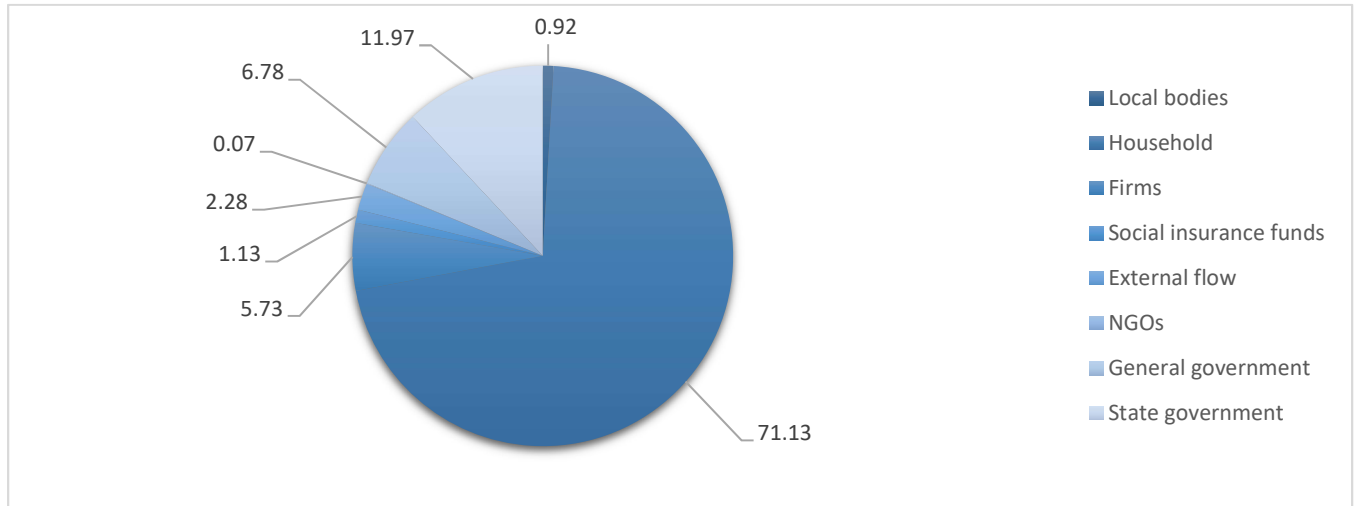
1. World Health Organisation [Internet]. Global Health Observatory (GHO) Data: NCD mortality and morbidity; 2016. Retrieved from [http://www.who.int/gho/ncd/mortality\\_morbidity/cancer/en/](http://www.who.int/gho/ncd/mortality_morbidity/cancer/en/)
2. NCD Country Profiles – India [Internet]. World Health Organisation online; 2011. Retrieved from [http://www.who.int/nmh/countries/ind\\_en.pdf](http://www.who.int/nmh/countries/ind_en.pdf)
3. Kaplan GA, Keil JE. Socioeconomic factors and cardiovascular disease: a review of the literature. *Circulation*. 1993 Oct 1;88(4):1973-98. [PubMed]
4. Joshi P, Idris MZ, Saran RK, Natu SM. A study of coronary heart disease and the associated risk factors in lucknow district , India. *Int J Biol Med Res*. 2013;4(1):2966-72. [http://www.ijmedph.org/sites/default/files/IntJMedPublicHealth\\_2015\\_5\\_4\\_259\\_165941.pdf](http://www.ijmedph.org/sites/default/files/IntJMedPublicHealth_2015_5_4_259_165941.pdf)
5. Patil SS, Joshi R, Gupta GA, Reddy MV, Pai MA, Kalantri SP. Risk factors for acute myocardial infarction in a rural population of central India: a hospital-based case-control study. *The National medical journal of India*. 2004 Jul 1;17(4):189-94. <http://www.ncbi.nlm.nih.gov/pubmed/15372760>
6. Rao KD, Bhatnagar A, Murphy A. Socio-economic inequalities in the financing of cardiovascular & diabetes inpatient treatment in India. *The Indian journal of medical research*. 2011 Jan 1;133(1):57. <http://www.ncbi.nlm.nih.gov/pubmed/21321420>
7. Sarvotham SG, Berry JN. Prevalence of coronary heart disease in an urban population in northern India. *Circulation*. 1968 Jun 1;37(6):939-53. <http://circ.ahajournals.org/content/37/6/939.long>
8. Singh RB, Sharma JP, Rastogi V, Niaz MA, Ghosh S, Beegom R, Janus ED. Social class and coronary disease in a rural population of north India. *European heart journal*. 1997 Apr 1;18(4):588-95. <http://www.ncbi.nlm.nih.gov/pubmed/9129887>
9. Singh RB, Niaz MA, Thakur AS, Janus ED, Moshiri M. Social class and coronary artery disease in a urban population of North India in the Indian Lifestyle and Heart Study. *International journal of cardiology*. 1998 Apr 1;64(2):195-203. <http://www.sciencedirect.com/science/article/pii/S016752739800485>
10. Jeemon P, Reddy KS. Social determinants of cardiovascular disease outcomes in Indians. *The Indian journal of medical research*. 2010 Nov 1;132(5):617. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3028951/>
11. Pais P, Pogue J, Gerstein H, Zachariah E, Savitha D, Jayprakash S, Nayak PR, Yusuf S. Risk factors for acute myocardial infarction in Indians: a case-control study. *The Lancet*. 1996 Aug 10;348(9024):358-63. <http://www.ncbi.nlm.nih.gov/pubmed/8709733>
12. Pednekar MS, Gupta R, Gupta PC. Illiteracy, low educational status, and cardiovascular mortality in India. *BMC Public Health*. 2011 Jul 15;11(1):1. <http://bmcpublichealth.biomedcentral.com/articles/10.1186/1471-2458-11-567>
13. Reddy KKR, Rao AP, Reddy TPK. Socioeconomic status and the prevalence of coronary heart disease risk factors. *Asia Pac J Clin Nutr*. 2002; 11(2):98–103. <http://www.ncbi.nlm.nih.gov/pubmed/12074188>
14. Xavier D, Pais P, Devereaux PJ, Xie C, Prabhakaran D, Reddy KS, Gupta R, Joshi P, Kerkar P, Thanikachalam S, Haridas KK, Jaison TM, Naik S, Maity AK, Yusuf S; CREATE registry investigators.. Treatment and outcomes of acute coronary syndromes in India (CREATE): a prospective analysis of registry data. *Lancet*. 2008 Apr 26;371(9622):1435-42. doi: 10.1016/S0140-6736(08)60623-6. PubMed PMID: 18440425. [PubMed]
15. Subramanian SV, Corsi DJ, Subramanyam MA, Smith GD. Jumping the gun: the problematic discourse on socioeconomic status and cardiovascular health in India. *International journal of epidemiology*. 2013 Oct 1;42(5):1410-26. <http://www.ncbi.nlm.nih.gov/pubmed/23563358>
16. Joshi SR, Parikh RM. India; The Diabetes Capital of the World: Now heading Towards Hypertension. *Journal-Association of Physicians*



- of India. 2007 May 12;55(Y):323. <http://www.japi.org/may2007/E-323.pdf>
17. Mohan S, Prabhakaran D. Non-communicable diseases in india: challenges and implications for health policy. India Infrastructure Report. Retrieved from: <https://www.idfc.com/pdf/report/2013-14/Chapter-17.pdf>
  18. Karthikeyan G, Xavier D, Prabhakaran D, Pais P. Perspectives on the management of coronary artery disease in India. *Heart*. 2007 Nov 1;93(11):1334-8. <http://www.ncbi.nlm.nih.gov/pubmed/17933988>
  19. International Herat Protection Summit, Deloitte. Cardiovascular diseases in India: Challenges and way ahead. 2011;1–32. Retrieved from <http://www2.deloitte.com/content/dam/Deloitte/in/Documents/life-sciences-health-care/in-lshc-cardio-noexp.pdf>
  20. Jamatia B. Bridging the Gap between Community and Cardiologists. *Journal of Learning for Development*. 2015 Mar 20;2(1). <http://oasis.col.org/handle/11599/851/browse?value=Jamatia%2C+BiLab&type=author>
  21. Kannan, R. More people opting for private healthcare. *The Hindu*. 2013, August 1. Retrieved from <http://www.thehindu.com/todays-paper/tp-national/more-people-opting-for-private-healthcare/article4976179.ece>
  22. Nagarajan, R. Diabetes , heart disease treatment costs crippling poor and middle class : Survey. *The Times of India*. 2013, October 08. Retrieved from <http://timesofindia.indiatimes.com/india/Diabetes-heart-disease-treatment-costs-crippling-poor-and-middle-class-Survey/articleshow/23724601.cms>
  23. Ministry of Health and Family Welfare. National Health Accounts-India (2004–05)–with provisional estimates from 2005-06 to 2008-09). Retrieved from [http://planningcommission.nic.in/reports/genrep/health/National\\_Health\\_Account\\_04\\_05.pdf](http://planningcommission.nic.in/reports/genrep/health/National_Health_Account_04_05.pdf)
  24. Balarajan Y, Selvaraj S, Subramanian SV. Health care and equity in India. *The Lancet*. 2011 Feb 11;377(9764):505-15. <http://www.ncbi.nlm.nih.gov/pubmed/21227492>
  25. Selvaraj S, Karan AK. Deepening health insecurity in India: evidence from national sample surveys since 1980s. *Economic and Political Weekly*. 2009 Oct 3:55-60. <http://re.indiaenvironmentportal.org.in/files/Deepening%20Health%20Insecurity%20in%20India.pdf>
  26. Mukherjee K, Koul V. Economic burden of coronary heart disease on households in Jammu, India. *The Health Agenda*. 2014 Jan;2(1):29-36. <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.714.9916&rep=rep1&type=pdf>
  27. Shah B, Mathur P. Surveillance of cardiovascular disease risk factors in India: The need & scope. *The Indian journal of medical research*. 2010 Nov 1;132(5):634. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3028945/>
  28. Ministry of Health & Family Welfare. Press Release. 2014. p. 3627. Retrieved from <http://www.mohfw.nic.in/index1.php?lang=1&level=2&sublinkid=2527&lid=1808>
  29. Ministry of Labour and Employment, Government of India. Rashtriya Swasthya Bima Yojana. Retrieved on 21 January 2016 from [http://www.rsby.gov.in/about\\_rsby.aspx](http://www.rsby.gov.in/about_rsby.aspx)
  30. Misra U. Will Rashtriya Swasthya Bima Yojana take us the US Health Care Way ? *Forbes India Magazine*. March;2013;1–7. Retrieved from <http://forbesindia.com/article/universal-health-care/will-rashtriya-swasthya-bima-vojana-take-us-the-us-health-care-way/34903/1>
  31. World Health Organization. World Health Statistics. 2015. Retrieved from [http://www.who.int/whosis/whostat/EN\\_WHS08\\_TOCintro.pdf](http://www.who.int/whosis/whostat/EN_WHS08_TOCintro.pdf)
  32. Rajalakshmi TK. Private leaning. *Frontline*. January, 2013 Retrieved from <http://www.frontline.in/the-nation/private-leaning/article4275904.ece>
  33. Bhan N, Srivastava S, Agrawal S, Subramanyam M, Millett C., Selvaraj S, Subramanian SV. Are socioeconomic disparities in tobacco consumption increasing in India? A repeated cross-sectional multilevel analysis. *BMJ Open*. 2012;2(5):1348. <http://bmjopen.bmj.com/content/2/5/e001348.long>
  34. Bhawna G. Burden of smoked and smokeless tobacco consumption in india - results from the global adult tobacco survey india (GATS-india)- 2009-2010. *Asian Pacific Journal of Cancer Prevention*. 2013; 14(5): 3323–3329. <http://www.ncbi.nlm.nih.gov/pubmed/23803124>
  35. John A, Barman A, Bal D, Chandy G, Samuel J, Thokchom M. et. al. Hazardous alcohol use in rural southern India: nature, prevalence and risk factors. *The National Medical Journal of India*. 2009; 22(3): 123–5. <http://www.ncbi.nlm.nih.gov/pubmed/19764687>
  36. Ganesh Kumar S, Premarajan KC, Subitha L, Suguna E, Vinayagamoorthy, Kumar V. Prevalence and Pattern of Alcohol Consumption using Alcohol Use Disorders Identification Test (AUDIT) in Rural Tamil Nadu, India. *Journal of Clinical and Diagnostic Research*. 2013;7(8): 1637–9. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3782918/>
  37. Pednekar MS, Sansone G, Gupta PC. Association of alcohol, alcohol and tobacco with mortality: Findings from a prospective cohort study in Mumbai (Bombay), India. *Alcohol*. 2012;46(2):139–146. <http://www.ncbi.nlm.nih.gov/pubmed/21908155>
  38. Gupta PC, Saxena S, Pednekar MS, Maulik PK. Alcohol consumption among middle-aged and elderly men: a community study from western India. *Alcohol and Alcoholism*. 2003 Jul 1;38(4):327-31. <http://www.ncbi.nlm.nih.gov/pubmed/12814899>
  39. Sansone GC, Raute LJ, Fong GT, Pednekar MS, Quah ACK, Bansal-Travers M et al. Knowledge of health effects and intentions to quit among smokers in India: Findings from the Tobacco Control Policy (TCP) India Pilot Survey. *International Journal of Environmental Research and Public Health*. 2012;9(2):564–578. <http://www.ncbi.nlm.nih.gov/pubmed/22470310>
  40. Gupta V, Yadav K, Anand K. Patterns of tobacco use across rural, urban, and urban-slum populations in a north Indian community. *Indian Journal of Community Medicine*. 2010;35(2): 245–251. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2940179/>
  41. Subramanian SV, Nandy S, Irving M, Gordon D, Smith GD. Role of socioeconomic markers and state prohibition policy in predicting alcohol consumption among men and women in India: A multilevel statistical analysis. *Bulletin of the World Health Organization*. 2005; 83(11): 829–836. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3121273/>

**Figures**

**FIGURE 1 SOURCE OF FUNDS FOR HEALTHCARE IN INDIA, 2004-05 (SOURCE: NATIONAL HEALTH ACCOUNTS, GOVERNMENT OF INDIA, 2009)**



**FIGURE 2 VICIOUS CIRCLE OF POVERTY AND TREATMENT OF CVD. FIGURE SHOWING HOW ALREADY POOR SECTION OF INDIA ARE PUSHED TOWARDS FURTHER POVERTY DUE TO POOR TREATMENT FACILITY AND POLICY**

