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Review Article

Non-communicable disease prevention through social entrepreneurship approaches

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ABSTRACT

Background: Non Communicable Diseases (NCDs) accounts approx 74 % global deaths and approx 66 % deaths in India are estimated due to NCDs. NCDs like- Cancers, Diabetes, and Chronic respiratory diseases not only causes health challenges but pushes population in into poverty due high cost of treatment through out of pocket expenditures. The study mainly aimed to analyze ongoing situation and to find key challenges of NCD services. We aimed how Social enterprises can contribute to fill these gaps through innovative and affordable approaches especially to remote rural area.
Materials and Methods: The Study is based on secondary sources. National Health Policy 2017, Digital Health Mission, WHO data and Similar study reports were consulted to find the field level implementation by Social Enterprise and their analysis on the subject.
Result: There are supply side and demand gaps of services through Public health system and highly costing private providers. Rural India is suffering the most, as Health facilities to cater 70 % Indian are still a big challenge. Social Enterprises has created evidences for affordable solutions.
Conclusion: Role of technology for Social Enterprises to serves the masses for NCD prevention and treatments has been seen as future demand.

1. Introduction

The Indian Health care scenario has observed a positive change over the years. However, due to the immense challenges faced by the policymakers, slow growth in the public health care has been observed. Due to lack of sufficient financial investment, organizational, social and cultural aspects, the accessibility of health care services has been low in the rural areas. Additionally, due to costly health care services and 75% of health care expenditure to be borne by sufferer makes it difficult for the rural population to avail medical facilities.[1] It makes difficult for the policymakers to introduce proper accessible, quality and affordable health care services in rural India. On the other hand food habits and indulging in the risky behaviors like tobacco alcohol, people suffer from a number of diseases in which non-communicable diseases (NCDs) causes 38 million deaths. As per the survey conducted by the World Health Organization - Noncommunicable Diseases (NCD) Country Profiles, 2018, non-communicable diseases has been responsible for 63% deaths in which 27% suffered from cardiovascular diseases, 9% had cancers, 11% have chronic respiratory patients, 3% had diabetes, 26% were infected with communicable, maternal, perinatal or nutritional conditions and 13% experienced other non-communicable diseases. The main risk factors involved with the occurrence of non-communicable diseases are the use of tobacco, alcohol, lack of physical activity, overweight, and high blood pressure.[2] Therefore, it is necessary to introduce information and communication

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technology-based health care services like Technology Enabled Care (TEC), telemedicine and others so that health monitoring, management, and post-operation follow-ups will become feasible.[3] The technological health care will help to lower the cost, enhance the adoption of health care services at low cost and automate the critical processes in hospitals for providing billing, patient records, medicines and administration.[4] In addition to this, initiatives like the introduction of National Health Policy 2017 have also been taken by the government so that primary health care services will be enhanced. The policy targets to achieve an increased life expectancy of infants from 67.5 to 70 and makes improvements in the health expenditure by increasing it from 1.15% to 2.5% of the Gross Domestic Product (GDP) by the end of the year 2015.[5] Therefore, a study in this segment is necessary to be carried out so that a better understanding of public health service delivery mechanism in rural India will be acquired. The research will also help to get insights about the key challenges faced in the process of service delivery for non-communicable diseases. It also provided better learning about the role of social enterprises in rural health. As a result, significant improvements will be brought in the health care segment in rural regions with special reference to the non-communicable disease in a better way.

2. Materials and Methods

The Study is based on secondary sources. Industry Studies, National Health Policy 2017 were consulted to find the policy Initiative taken by the government of India for leveraging digital technology in the health sector. Health information and data of the Ministry of health and family welfare and other agencies like WHO were studies to understand the current situation. Few Similar study reports were consulted to find the field level implementation by Social Enterprise and their analysis on the subject.

3. Results

3.1. Genesis of healthcare services in India

According to Arvind Panagariya, (2008) National Rural Health Mission (NRHM) has been introduced to meet the health care demands of rural India. In respect to this, a number of government-run sub-centers, primary health centers (PHCs) and community health centers (CHCs) has been introduced so that the primary health care requirements of the rural population will get fulfilled.[6] As per Banerjee, Joseph, Thachil, Attacheril& Menon, (2014) point of views, due to the shortage of physicians, doctors (skilled workforce) in rural India, the provision of health care services becomes difficult.[7] As a result, Pitchai, Augustine, Badani, Anarthe & Avasare, (2018) examined that prevalence of non-communicable diseases (NCDs) is increasing at an alarming rate among the rural population.[8] On the other hand, Elias, Pati, Aivalli, Srinath, Munegowda, Shroff & Srinivas, (2018) said that due to the poor situation of access to medical facilities and stockouts of medicines in government-run health care centers, the over dependence of the rural and poor people on the private sector gets increased.[9] As a result, the out-of-pocket expenditure and impoverishment of rural people augment impacting the management of NCDs in a negative way. As per Swaminathan, Veerasekar, Kuppusamy, Sundaresan, Velmurugan &Palaniswami, (2017) point of views, the burden of NCDs is rising at a faster rate in South Asia which is exceeding the global levels.[10] For example, every six in ten adults in India in cities like Chennai and Delhi is suffering from diabetes or prediabetes. While making a focus on the burden of non-communicable diseases faced by the rural populations, due to NCDs 40% of deaths are caused by the rural population.[11]As per India State-Level Disease Burden Initiative, NCDs like coronary artery disease, chronic lung diseases are responsible for three of the top five leading causes of disability-adjusted life years (DALYs) in India. As a result, Panda, Mahapatra &Persai, (2018) said that NCD accounts for 53% of deaths in India.[12] On the other hand, Dr. Yogesh Kalkonde, (2018) examined that the Government of India report revealed NCDs accounted for 40% deaths during the years 2001-2003 and 47% deaths during the years 2010-13 in rural India.[13] on the other hand, World Health Organization 2014, recorded that NCD caused 61% deaths in urban regions in the year 2014 which is expected to rise to 67% by the year 2030.[14] Additionally, NCDs accounted for 36 million global deaths in the year 2008 in which 17 million suffered from cardiovascular diseases, 7.6 million had cancers, 4.2 million were infected with chronic respiratory diseases and 1.3 million had diabetes.[15] As a result, due to the high incidence of the disease, the economic burden of NCD has increased in India. As per the National Sample Survey Organization (NSSO), NCD is responsible for very high healthcare expense in the segment of in-patients and out-patients. It accounts for 5–10% of economic burden towards Gross Domestic Product (GDP) resulting in slowing down of economic growth by 5% to 10% and hampering development.[16] While making the focus on trends of NCD in India in last decade/5 years, due to cardiovascular diseases, diabetes, mental health issues, neurological disorders, cancers and so on it has increased from 31% in 1990 to 55% in 2016.[17] Additionally, as per the World Health Organization (WHO), while making focus on the, past trends it was found that 24% females and 28 males in the year 2005, whereas 22% females and 26% males in the year 2010, while, 20% of females and 26% males in the year 2015, suffered from premature death because of the harmful effects of non-communicable diseases (**Fig.1**). On the other hand, 18% of females and 25% males in the year 2020 and 19% females and 20% males in the year 2025

are expected to die because of non-communicable diseases. Therefore, it has become utmost important to introduce preventive measures so that control will be exercised over the increasing incidence of NCDs in rural regions in India.

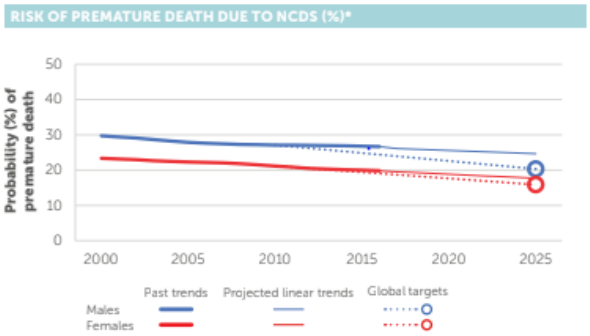

Fig. 1: Risk of Premature Death due to NCD (Source-WHO)

3.2. Prevalence of risk factors for non-communicable diseases in rural India

As per Banerjee, (2019) point of views, due to market forces like junk food, high use of sugar-sweetened beverages (SSBs) and others India is experiencing the threatening outbreak of NCDs.[18] For example, Krishnan, Shah, Lal, Shukla, Paul & Kapoor, (2008) examined that behavioral risk factors like the high level of tobacco or alcohol consumption among men, obesity among women and low intake of fruits & vegetables have increased the incidence of NCDs in the rural areas in Haryana.[19] On the other hand, Kinra, Bowen, Lyngdoh, Prabhakaran, Reddy, Ramakrishnan & Smith, (2010) said that the presence of hypertension, dyslipidemia, diabetes, underweight and central adiposity NCDS increased among the rural population in India.[20] For example, 21% men in North India and 33% men in South India suffered from dyslipidemia, whereas, 13% of women in North India and 24% of women in South India had obesity. As per Bhagyalaxmi, Atul & Shikha, (2013) point of views, decreased physical inactivity has also been one of the major causes of the high incidence of NCDs among the rural population in India.[21] Due to low physical activity (reduced body movement for less than 150 minutes), 5.7% of the men and 22.3% of the women have a high risk of NCDs. As per Sathish, Kannan, Sarma, Razum, Sauzet&Thankappan, (2017), PLOS ONE staff. (2017) point of views, physical inactivity is referred to as a lack of moderate or vigorous bodily actions at work and leisure by not practicing walking or bicycling for travel.[22,23] Due to a decrease in the physical activity, a two-thirds increase in the daily calories intake has been recorded in Kerala resulting in the high incidence of NCDs. As per Anand and Shah, (2008) point of views, the biochemical factors like fasting blood glucose, total cholesterol, HDL and triglyceride levels also play a major role in increasing the NCDs among the rural population in India.[24] In respect to this, Srivastav, Mahajan, Goel & Mukherjee, (2017) said that a cross-sectional study was done by taking 420 rural households from Uttar Pradesh into consideration. While analyzing the facts it was found that 6.5% of males and 3.8% of females had elevated FBS levels whereas 5.2% of men and 13.8% of women have been recorded to be suffering from Hypercholesterolemia and 14.3% men and 18.5% women have been recorded to have raised levels of serum.[2] Hence, it can be said that due to the presence of high levels of biochemical differences the rise of NCDs has increased among the men and women residing in rural section in Uttar Pradesh. Hence, Munoz, Steiner & Farmer, (2014) said that there is an emergent need for implementing rural community-based intervention measures with the help of community capabilities and entrepreneurial skills.[25] It will help in creating social enterprises within the field of health and care and preventing the onset of NCDs progressively.

3.3. Role of technology in managing rural health

As per Kavitha, (2013) point of views, healthcare services that are practiced in India are accepted internationally and held a 128th position among the 177 countries registered with the United Nations Development Programme (UNDP).[26] However, the primary healthcare practices done in rural India are mostly based on preventive type health care services. As a result, the rural population has to move to urban regions to avail the curative healthcare services. Therefore, the introduction of information and technology in healthcare services is necessary so that the issues faced by the rural segment will get reduced. The implementation of information and technology will help in the provision of acute, chronic, preventive and predictive care services necessary to provide quality of healthcare practices in India. For example, Singh, Lichter, Danzo, Taylor & Rosenthal, (2012) said that Health information technology (HIT) has been introduced to conduct healthcare assessments in rural primary care offices by taking electronic medical record (EMR), capabilities used and future adoption plans into consideration.[27] EHR acts as a powerful medium through which enhanced health care services are gained by reducing the cost to a minimum.[28] Accredited Social Health Activist (ASHA) in the village are also provided with Mobile Medical Units, community outreach services so that doorstep delivery of health care services will be provided to the rural people.As per Vijay Ramnath Jayaraman, (2014) point of views, only 5% of the patients in India avail health care insurance facilities whereas, 70% of the people pay the high out-of-pocket expenditure.[29] As a result, the saving propensities of the rural people get reduced impacting the attainment of health care services in a negative way. Therefore, the intervention of social enterprises is necessary

to go beyond the limits of government or private service providers to manage rural health. In respect to this, Mackintosh, Chaudhuri &Mujinja, (2011) said that the non-governmental organizations (NGOs) also play a major role in promoting healthcare services in India.[30] The NGOs help in availing incentives while purchasing medicines, improves accessibility to necessary medications, and conducting medicine wholesaling so that medical services will be availed by the rural people in an effective way. Additionally, the social enterprise along also adopt different marketing strategies, patterns, and market segmentation techniques so that effective channels of health care provisions get created and medical services are provided at subsided rates.

3.4. Role of social enterprise to leverage rural health care

As per Wilson, (2012) point of views, social enterprise is referred as the business activity that is performed for the social cause with an aim to serve the common good.[31] As per Madan, (2017) point of views, social entrepreneurs (SE) play a major role in improving the healthcare conditions in rural sections in India.[32] The social entrepreneurs shift the economic resources from low productivity zones to higher productivity regions so that the effective channelization of capital and resources (medical services) takes place. As per Steinerowski & Steinerowska-Streb, (2012) the collaboration of governmental and public endeavors results in the formation of social enterprise activities.[33] It helps in promoting healthcare services by enhancing the role of communities in the provision of service and conducting co-production activities. According to Asian Development Bank, (2012) social entrepreneurs (SE) are responsible for providing affordable healthcare services in the rural section of India.[34] They help in meeting the healthcare development needs by maintaining sustainable revenue which accounts for up to $1.1 to $2.2 million. Additionally, SE uses innovative operating models like leased premises, hub-and-spoke setups so that the cost of service delivered in the primary, secondary, and tertiary care get reduced. As a result, the glaring gap in rural healthcare services in India gets diminished and affordable organized health care services will place effectively. It also helps in the establishment different models like India Health Alliance partners, Breast cancer screening organization UE life, chikistics, and others through which affordable preventive screening for the intervention of non-communicable disease can be done. In addition to this, Narayana Health (NH) has been initiated to provide an affordable delivery model and engage idle waiting time into structure training fir conducting rehabilitative care. Narayana Health also initiated the Yeshaswini scheme through which medical services are provided to more than 3 million farmer families and out-patient at a monthly premium of Rs 18, up from Rs 5 at inception. Moreover, Aravind Eye Care System (AECS) has been set up with a network of 6 hospitals, an intraocular lens factory, eye bank, and a training institute to provide eye care services. As a result, more than 370,000 surgeries and eye care solution have been provided to the people. Furthermore, Vaatsalya Healthcare had been established to meet good quality, affordable primary and secondary care in rural and semi-urban India. It provides its services to 130,000 OPD patients and 5,000 inpatient department (IPD) every month by using cost efficiency, talent strategy, local stakeholder engagement and extending outreach to the masses which is not possible for the public care units because of lack of adequate resources. In addition to this, in order to meet the threat of NCDs constitutes one of the major challenges, Healthy India Alliance has been established to prevent and control NCD in India. It works in collaboration with health and non-health Civil Society Organizations (CSOs) to curb and control the high incidence of NCD by initiating policies and programs. As a result, due to effective tackling of NCDs the premature deaths are expected to reduce by 25% till the end of the year 2015.

Furthermore, two components of Ayushman Bharat, the Health & Wellness Centers (HWC) and the PM Jan Aarogya Yojana (AB-PMJAY) and recent National DigitalHealth Mission has been as latest approach of public health services for poor and rural India. It is expected that Ayushman Bharat will help in strengthening, prevention and management of disease along with reducing the risk factors in an efficient way.[35,36] In respect to this, the National Multisectoral Action Plan has been introduced so that the increasing burden of NCD and their risk factors will be controlled effectively. The government of India has also launched India's National Monitoring Framework for Prevention and Control of NCD so that aim of 50% reduction of use of solid household fuel, 30% decrease in tobacco use will be achieved by the year 2025. Moreover, the Global Monitoring Framework has been established by the World Health Organization (WHO) so that prevention and control over the non-communicable diseases will be exercised. Furthermore, under the framework, implementation of the WHO Framework Convention on Tobacco Control is done by India so that the aim of reduction in demand for tobacco products will take place significantly.

On the other hand, Chikitsak is a Bengaluru based organization which delivers basic health care medical services related to NCDs among the rural sections of the society by collaborating with NGO and providing door to door service at affordable prices. In order to make focus on India Health Alliance, it has collaborated with a number of non profit partners. UE life Sciences provides innovative science and technology for conducting affordable Breast cancer detection actions.

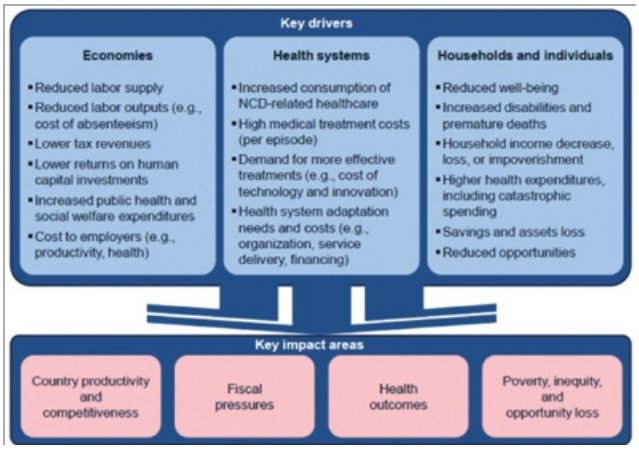

Fig. 2: Conceptual framework for NCD prevention

4. Discussion

Social enterprises has been seen as innovative technology enabled solution for – affordable, and reaching to rural masses where public health system is facing major challenges. They can play complementary roles in all aspect of service delivery. Health promotion for behaviors changes for prevention of NCDs can easily done my these enterprises by reaching the remote masses. Regular screening of NCDs with affordable and door steps services will other major area of services. As non-communicable diseases are highly deadly in nature and are responsible for creating mass deaths and mortality in India and there are limitations of public health systems and high rate of private providers hence role of SE is to bridge these gaps. The various diseases caused due to the occurrences of non-communicable diseases like heart attacks, stroke, cancer, chronic respiratory diseases which are caused by taking tobacco, alcohol, lack of physical activity, overweight, and high blood pressure. Social Enterprises can create knowledge and awareness in the public with remote reach.While analyzing the facts related to the prevalence of risk factors for non-communicable diseases in rural India, the researcher found that three major factors behavioral (eating pattern, exercising), physical (low physical activity and no physical activity) and biochemical (fasting blood glucose, total cholesterol, HDL) highly impact the occurrence of NCD among the rural population in India. While analyzing the facts related to the role of technology in managing rural health, the researcher found that information and technology plays a major role in promoting health care services in India and SE can do many Innovations if government provides incentives to such enterprises. Health information technology (HIT) helps in meeting the health care requirements of the people living in rural areas in an effective way by providing acute, chronic, preventive and predictive care services. While analyzing the facts related to the role of social enterprise to leverage rural health care, the researcher found that various organizations like India Health Alliance, UE life, and others help in meeting the requirements of the medical service of the rural by collaborating with social entrepreneurs. The social entrepreneurs enhance the communities' role in the provision of service and conducting co-production activities. As a result, the preventive methods of NCDs and the provision of better medical services to rural people will be provided in India. Social enterprises can impact on key impact area of framework of NCD Prevention (Figure 2)-Productivity, competitiveness, health outcomes, poverty reduction and reduce inequality of services.

5. Conclusion

Role of Social Enterprises for NCD prevention has been seen crucial in present situation. The people residing in rural areas are highly deprived of NCD services. The digitalization of the health care services by using information and technology, introducing Electronic Health Records (EHR) practices will help to enhance the health care practices in rural India where social enterprises can bring many innovative solutions. While analyzing key challenges and shortage of preventing care in a rural area, it was found that lack of adequate professional medical staff, improper medical infrastructure, lack of medical insurance policies, low level of Education and Communication Initiatives (IEC) highly impact the health care services in India. Social Enterprises can play a role of – innovators, Catalyst of Behaviors change communication, affordable Screening of NCDs, digitization of health records and many more which current demand for NCD service.

The study was limited to the rural sector of India and rapid urbanization, pollution growths, high risk behaviors like food habits in urban population were not covered in detail where SE may also play a major roles.

6. Source of Funding

None.

7. Conflict of Interest

None.

References

1. Kasthuri A. Challenges to healthcare in India-The five A's. Indian journal of community medicine: official publication of Indian Association of. *Prevent Soc Med*. 2018;43(3):141–3.
2. Srivastav S, Mahajan H, Goel S, Mukherjee S. Prevalence of risk factors of noncommunicable diseases in a rural population of district Gautam-Budh Nagar, Uttar Pradesh using the World Health Organization STEPS approach. *J Fam Med Prim care*. 2017;6(3):491–7.
3. Tiwari A. The Roadmap For Quality Healthcare In Rural India Through Technology; 2018. Available from: http://www.businessworld.in/article/The.

4. Sajanlal S. How technology plays a critical role in transforming; 2019. Available from: Indiahttps://yourstory.com/2019/03/technology-critical-role-transforming-healthcare-india.
5. Singh H. The National Health Policy, 2017: Key Targets at a Glance.; 2017. Available from: https://www.jagranjosh.com/general-knowledge/key-targets-of-the-national-health-policy-2017-1527145688-1.
6. Panagariya A. India: The Crisis in Rural Health Carehttps; 2008. Available from: //www.brookings.edu/opinions/india-the-crisis-in-rural-health-care/.
7. Banerjee A, Joseph J, Thachil A, Attacheril TV, Menon J. Abstract P362: Surveillance Of Non-Communicable Diseases By Non-Physician Health Workers In Kerala: the Epidemiology of Non-communicable Diseases in Rural Areas (ENDIRA) study. *Circulation*. 2014;129(1):362.
8. Pitchai P, Augustine A, Badani HR, Anarthe NH. Prevalence of non-communicable diseases among the rural population in Maharashtra: a descriptive study. *Int J Commun Med Pub Health*. 2018;5(12):5259–64.
9. Elias MA, Pati MK, Aivalli P, Srinath B, Munegowda C, Shroff ZC. Preparedness for delivering non-communicable disease services in primary care: access to medicines for diabetes and hypertension in a district in south India. *BMJ Glob Health*. 2018;2(3):1–12.
10. Swaminathan K, Veerasekar G, Kuppusamy S, Sundaresan M, Velmurugan G, palaniswami NG. Noncommunicable disease in rural India: Are we seriously underestimating the risk? The Nallampatti noncommunicable disease study. *Indian J Endocrinol Metab*. 2017;21(1):90–5.
11. Kalkonde Y. https://www.livemint.com/Sundayapp/N1GWJGNkdaLcXkfr0o6wcI/Rural-India-faces-epidemic-of-noncommunicable-diseases.html; 2018. Available from: diseaseshttps://www.livemint.com/Sundayapp/N1GWJGNkdaLcXkfr0o6wcI/Rural-India-faces-epidemic-of-noncommunicable-diseases.html.
12. Panda R, Mahapatra S. Health system preparedness in noncommunicable diseases: Findings from two states Odisha and Kerala in India. *J Fam Med Prim Care*. 2018;7(3):565.
13. Kalkonde Y. Rural India faces an epidemic of non-communicable diseases; 2018. Available from: Diseaseshttps://idronline.org/rural-india-is-facing-an-epidemic-of-non-communicable-diseases/.
14. Habib SH. Non-communicable diseases in urban India: Challenges for public health. *Diab Metab Syn: Clin Res Rev*. 2016;4(1):41–7.
15. Global Burden of Non Communicable diseases; 2019. Available from: https://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases.
16. Thakur JS, Prinja S, Garg CC, Mendis S. Social and economic implications of noncommunicable diseases in India. *Indian J Community Med*. 2011;36(1):13–22.
17. Comprehensive health study in India finds rise of non-communicable diseases; 2017. Available from: https://www.healthdata.org/news-release/comprehensive-health-study-india-finds-rise-non-communicable-diseases.
18. Banerjee A. Noncommunicable diseases in India: Challenges and the way forward. *J Postgraduate Med*. 2019;65(1):5–6.
19. Krishnan A, Shah B, Lal V, Shukla DK, Paul E, Kapoor SK. Prevalence of risk factors for non-communicable disease in a rural area of Faridabad district of Haryana. *Indian J Public Health*. 2008;52(3):117–41.
20. Kinra S, Bowen LJ, Lyngdoh T, Prabhakaran D, Reddy KS, Ramakrishnan L. Sociodemographic patterning of non-communicable disease risk factors in rural India: a cross sectional study. *BMJ*. 2010;341:c4974. doi:10.1136/bmj.c4974..
21. Bhagyalaxmi A, Atul T, Shikha J. Prevalence of risk factors of non-communicable diseases in a District of Gujarat, India. *J Health Popul Nutr*. 2013;31(1):78–85.
22. Sathish T, Kannan S, Sarma SP, Razum O, Sauzet O, Thankappan KR. Seven-year longitudinal change in risk factors for non-communicable diseases in rural Kerala, India: The WHO STEPS approach. *PloS One*. 2017;12(6):e0178949. doi:10.1371/journal.pone.0178949.
23. Correction: Seven-year longitudinal change in risk factors for non-communicable diseases in rural Kerala, India: The WHO STEPS approach. *PLOS ONE*. 2017;12(8). doi:10.1371/journal.pone.0183379.
24. Anand K, Shah B. Profile of Biochemical Risk Factors for Non Communicable Diseases in Urban, Rural and Periurban Haryana, India. *Indian Council Med Res*. 2008;56:166–70.
25. Munoz SA, Steiner A, Farmer J. Processes of community-led social enterprise development: learning from the rural context. *Commun Dev J*. 2014;50(3):478–93.
26. Kavitha G. Impact of information technology in Indian healthcare system; 2013. Available from: http://www.enggjournals.com/ijet/docs/IJET13-05-01-049.pdf.
27. Singh R, Lichter MI, Danzo A, Taylor J, Rosenthal T. The adoption and use of health information technology in rural areas: results of a national survey. *The Journal of Rural Health*. 2012;28(1):16–27.
28. Berner ES. Clinical Decision Support Systems: Theory and Practice. vol. 233. 2nd ed. Springer Science+ Business Media; 2007.
29. Jayaraman VR. Things to know about India's Healthcare Systemhttp; 2014. Available from: //www.forbesindia.com/blog/health/5-things-to-know-about-the-indias-healthcare-system/.
30. Mackintosh M, Chaudhuri S, Mujinja PG. Can NGOs regulate medicines markets? Social enterprise in wholesaling, and access to essential medicines. *Global Health*. 2011;7(1). doi:10.1186/1744-8603-7-4.
31. Wilson TA. Supporting social enterprises to support vulnerable consumers: the example of community development finance institutions and financial exclusion. *J Consumer Pol*. 2012;35(2):197–213.
32. Madan P. Innovative Social Enterprise Models for Rural Healthcare; 2017. Available from: https://www.swissnexindia.org/wp-content/uploads/sites/5/2016/05/Social-Entreprenuership-Report.pdf.
33. Steinerowski AA. Can social enterprise contribute to creating sustainable rural communities? Using the lens of structuration theory to analyse the emergence of rural social enterprise. *Local Econ*. 2012;27(2):167–82.
34. India Social Enterprise Landscape Report; 2012. Available from: http://www.sankalpforum.com/wp-content/uploads/2013/05/india-social-enterprise-landscape-report.pdf.
35. Toppo A. All You Need to Know about 'Ayushman Bharat - Pradhan Mantri Jan Arogya Yojana'; 2019. Available from: https://awbi.org/pradhan-mantri-ayushman-yojana.
36. Bhargava B, Paul VK. Informing NCD control efforts in India on the eve of Ayushman Bharat. . *Lancet*. 2018;399(10331):E17–E19.

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