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Surveillance on the Cardiovascular Disease Threat in India: the Scope and Need

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ABSTRACT

In present time the growing of the non-communicable diseases (NCDs) freight, which is imputable to increasing morbidity & premature impermanence in growing countries. In the era of the 90's, cardiovascular diseases accounted for 64 % of every death & India donated 17 % to worldwide impermanence. Then some surveys accompanied across the all above the country over the previous 2 decades that has shown the rising generality of the main risky element for the CVD in rural and urban population. So, this investigation must be limited by the generalizability to different parts of a country, & more was needed to spin out of the action plans. There was the absence of an assembled national systems for controlling these risk elements over the time so that they could inform policy & programmers for suitable interventions. So the Indian Council of Medical Research (ICMR) grabbed its research in the NCD risky element surveillance to a development of a national scheme under the Integrated Disease Surveillance Project (IDSP) in which it will contain State-based generality of choosing risk elements. In this review paper provides the framework of the CVD in India & the required surveillance systems. By examining the similar incident globally, it gives outlines for the scope of surveillance of CVD in India.

KEY WORDS: CARDIOVASCULAR DISEASE (CVD), CANCER, INDIAN COUNCIL OF MEDICAL RESEARCH (ICMR), PUBLIC HEALTH, SURVEILLANCE.

INTRODUCTION

The healthcare required of the world population that are probable to experience dramatic changes because of the ongoing demographic of transition. The non-communicable diseases such as diabetes, heart disease, cancer or depression are quickly replacing the infectious diseases & malnutrition, the leading source of disability & premature death. 81 % of the total deaths because of non-communicable diseases that occur in lower income countries. The men & women are equivalently affected. Cancer, diabetes & CVD are becoming a serious concern, accounting for 54 % of deaths & 40 & of disease freight in the South East Asia Region (SEAR). With the present trend, the top 5 causes of the disability life years (DALYs) lost in the 2020 are probably ischaemic heart disease, cerebro-vascular diseases, unipolar manic depression, road traffic injuries & chronic obstructive lung disease. There will be approximately a 4 % reduction in the chronic diseases death ratio per year all over the world which could result in the saving of about 37 million untimely deaths in 2015(B. Shah et. al. (2010)).

While impermanence due to the communicable diseases reducing, that for the non-communicable diseases that are rising at the rapid pace. The health strategy makers accept the freight of providing assets for the prevention and control for both the presenting communicable diseases, & increasing numbers of the non-communicable diseases. So this will become strenuous since the program for the control and prevention of the communicable diseases evacuate the inadequate resources. It is, consequently, not astonishing that India has faced a serious handicap while planning & initiating programs & activities to battle for non-communicable diseases, and that includes CVD's (E. P. Havrenek et. al. (2015).

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Disease & risk factors surveillance required the systematic collection, interpretation and analysis of data. The changes in the population health & behavior are also controlled over time. This data is used to notify the public & decision-makers for the planning & evaluating prevention & control programs & designing the health policy & legislation. This paper deliberates the need & scope of CVD risk factors surveillance in India.

1. Cardiovascular Disease Risk Factors And Surveillance: 'Risk' is explained as a prospect of an unfavorable health outcome, where the 'risk factor' mentions a feature or exposure or characteristic of a separately whose absence or presence elevate the chances of the adverse outcomes. According to the World Health Report 2004 recognize the top 25 leading risk elements in the words of the freight of diseases according to the correctness status of the population. The extensively accepted method of the surveillance public health is the analysis, continuing systematic collection, and explanation of health information essential for the planning, evaluating and implementing, public health pursuit, closely desegregated with timely spreading of the information to enable efficient and effective activity must be taken to control and prevent disease. It scales from the obligatory notifiable diseases, (hospital-based, population-based), specific disease enrolment, repeated or continuous contemplation of the representative of a population, to collection data for the recording tendency on economic activity and consumption patterns (T. E. Vanhecke (2006), R. Gupta (2011).

The requirement for the CVD surveillance emerges from the population based transition being conveyed by the "risk transition". So in the context of a population, public health quantification of the risky attributes will describe the dissemination of the future disease freight in the population, sooner than forecast the population health of the specific separately. Knowledge of the risk elements that can be petitioned to shift the population of population dissemination of these elements. Information on the disease incident is important for assisting the determining public health priorities, health service planning, and monitoring long term efficacy of disease protective activities. Where resources are permitted, surveillance disease will also be included in the surveillance systems.

The data claim from the ongoing health data systems that may be useful for surveillance when analyzed systematically & applied to the policy in a timely sequence. While the surveys that can be one-off the exercise, surveillance necessitate commitment to information collection of ongoing (continuous, repeated) basis, as the information for informing the programs & public health policies. There are several aspects of the ongoing periodic information collections that are required to be contemplated in the planning of NCD surveillance (K. Yeaes et. al. (2015).

Surveillance of CVD necessitate of the human & financial assets for its affordability. Further focusing the disease in identifying separately at the potentially and downstream limits intervention. The Risk elements are represented for a long time during a natural history CVD. It will help in manufacturing projections of drift of disease generality. Since risk elements are compliant to interventions, attempting to equipment these will reduce the complete disease freight & promote health. The surveillance that can be attacked at the complete population, in the higher risk population, & special settings (schools, hospitals, workplace) (T. Nag et. al. (2014)).

2.Cardiovascular Diseases In India: CVD accounts for the higher morbidity & mortality overall the world. Countries where epidemics start early manifest a reduction due to main public health intermediation. On the other side, CVD is contributing regarding an ever-increasing quantity of the non-communicable diseases in developing countries.

CVD has assumed the epidemic quantity in India. The Global Burden of Diseases (GBD) learning reported the approximately mortality from coronary heart disease (CHD) in India at 1.7 million in 2000. A total of nearly 64 million cases of CVD are likely in the year 2015, of which nearly 61 million that would be CHD in cases and (Endure would contain rheumatic heart disease, congenital heart diseases and stroke) (D. K. Raut et. al. (2014). CHD is much widespread in Indian the urban populations & clear declining slope in its generality from the semi-urban to the rural populations. The epidemiology shows a sizable freight of coronary heart disease in adults rural (5–7%) & urban (8–12%) populations. The 31 million convalescent with coronary heart disease in India, this would be 15 million of the urban & 17 million in the rural areas. So in India over 55% of coronary heart disease related deaths happen in people younger than the 72 yr juxtapose with only 23% in the West.

The weighted of the average generality for ischaemic heart diseases was approximately 6.6 % in the urban areas & 2.7% in the rural areas. The combined rural and urban pooled approximation of generality rate of hypertension amongst adults (>21 yr) was 160 per thousand. The increase of 18.5 % in the numbers of the stroke manifestation in India happened throughout the last 1 & half decade. Impermanence expected for strokes has been increased by 8.1 % from 1997 to 2005. Available confirmation suggests that over the 9.1 million of stroke cases & about 6.6 million years has been stray due to disorder during 2004. So the increase in the CVDs will be deductible to; (i) Growing in the population size due to the natural growth. (ii) Senescent of the populations which makes the people much endangered to chronic the diseases at the older ages. (iii) increased endangered due to the lifestyle changes (R Smith et. al. (2015).

2.1. Cardiovascular Disease Surveillance: All over the world surveillance systems have addressed the high risk elements of CVD. Repeated observation assessed the collision of the group of intermediation programs for danger factor reduction & thus assisted in fine calibrate the strategy. It signifies the profit of developing connections with important collaborators. Till the 1997 24yr the smoking generality among the men had reduced from 52% to 31%, whereas it expanded in the women from 10% to 16%. During this time the CVD associated deaths decrease by

68% among the men at the age of 30–60 yr. The World Health Organization (WHO) put together the Global STEP wise method for the NCD risk element surveillance directed at collecting the data on risk elements in stepwise sequence conforming to the complication involved that will be similar across inconsistent sites in all over the world. It highlights 'core', & 'optional' & 'expanded' inconsistent which gives the common manifesto for comparability & flexibility to incorporate variables for the local indispensable. Thus, the requirement for the surveillance of a CVDs & their risk elements are as follows (R. D. Brook et. al. (2010)).

1. Identify cases and their bunch so as the mount a suitable response,
2. Recognized tendency of diseases & their risk elements based on the previously collected data,
3. Monitor the efficacious of intervention policies/ programs,
4. Map revealed the dissemination of cases & risk factors & pickup regional & sub-group dissimilarity,
5. Recognized new research problem depend on the discovery of surveillance & to strengthen,
6. Policy guidance, Facilitate advocacy, prioritization of allotment of resources.
7. In order to fulfill the above aims, surveillance should:
8. Assess the existing systems (private and public sectors) for its usage & delivery
9. Identify & involve every collaborator from the organization of policy for implementation,
10. Start by estimate modest parameters timely, accurately and reliably & construct up on accomplishment with time,
11. be flexible, adaptable and sensitive to the exchange needs & multiple users,
12. Undertake training & periodic refresher assembly with the involved in the present program me.

Table 1. Profile to announce the behavioral, biochemical and anthropometric risk elements for CVD in India

CITY	DELHI	JAIPUR	CHENNAI	UTTER PRADESH	RAJASTHAN	MADHYA PRADESH	PUNJAB	GUJRAT	MAHARASTRA
YEAR	2000	2005	2002	2007	2004	2003	2001	2006	2008
TOBACCO SMOKING %	25	20	38	14	25	28	35	32	28
ALCOHAL CONSUMER %	23	25	31	31	26	31	21	37	41
PHYSICAL INACTIVE 38.7 %	43	21	23	23	14	27	34	32	39
OVERWEIGHT %	24	40	22	14	27	34	12	19	40
OBESE %	36	32	32	17	28	42	17	26	30
INCREASED WAIST CIRCUMFERENCE %	15	42	21	18	31	3	24	27	38
HYPERTENSION %	26	15	16	15	24	29	17	34	37
DIABETES %	27	17	18	17	13	17	18	18	19
HIGH TOTAL CHOLESTEROL %	31	24	20	16	17	15	20	19	41
HIGH LDL CHOLESTEROL %	15	31	22	21	18	19	21	20	44
HIGH HDL CHOLESTEROL %	16	21	24	24	20	16	19	30	43

2.2. Risk Factors for Cardiovascular Diseases: Traditionally, the risk element for CVDs has been designated as behavioral, biochemical and anthropometric. Respective epidemiological studies on the generality of CVD risk elements have designated an increasing tendency. At different locations across all over the country, in several time periods & using differing study methodologies. A compendium of the description of behavioral, biochemical and anthropometric risk elements as obtainable from the present literature that has been assembled (B. Shah (2010), R. D. Brook (2010)). These surveys show that the urban populations have a higher generality of the CVD risk elements as juxtaposed to the rural populations.

The Risk element prevalence from peri-urban/slum areas imposed somewhere in between the rural & urban citizens, but more disposed towards urban tendency. Alcohol at a risk element was announced by few studies. Vegetable and Fruit expending of slightest at least 5 to 6 portions every day was low. Overweight, central obesity and obesity were further then the urban and rural populations. The women showed much more obesity generality than men. Hypertension is the most studied in more than 20% subjects. Hyperlipidemia and Diabetes generality also followed common patterns shown in table 1. The information from the present lack of equivalence due to the methodological variations (D. Prabhakaran et. al. (2016).

2.3. Surveillance For Cardiovascular Disease Risk Factors: The ICMR accompanies the study at Delhi, Jaipur, Chennai, Uttar Pradesh, Rajasthan, Madhya Pradesh, Punjab and Maharashtra on risk elements for the non-communicable diseases with WHO support of (unpublished data). The aimed at growing guard sites for the NCD risk elements surveillance across all over the country and as well as they assessing the practicability of modifying the STEPS

of WHO implement for use the surveillance in all over the country. So, the sites & investigators were premeditatedly selected that include interest, regional variability, institutional support and expertise, into the survey design shown in table 2. The exam was translated & piloted into a local language by the chosen investigators.

Table 2. ICMR survey: profile for reported behavioral, biochemical and anthropometric risk elements among women and men aged 14–65 year in rural, urban and slum /peri-urban populations in unpublished data and collected this data through the survey.

CHARACTERISTICS	MEN			WOMENS		
	URBAN (N=7600)	RURAL (N=6778)	SLUM/PERIURBAN (N=7846)	URBAN (N=7778)	RURAL (N=7000)	SLUM/PERIURBAN (N=8615)
DAILY TOBACCO SMOKERS %	27	27	35	0.9	4.9	3
MEAN AGE AT INITIATION OF SMOKING (Yr) (SE)	24	23	22	0.8	32.6	32.9
DAILY SMOKELESS TOBACCO CONSUMPTION %	20	37	38	36	20.3	20.5
EVER CONSUMPTION OF ALCOHOL %	42	50	56	7.9	8.6	13.9
MEAN NUMBER OF DAYS/WEEK OF FRUIT CONSUMPTION(SE)	3	2	2.1	3.6	1.5	2
MEAN NUMBER OF DAYS/WEEK OF VEGETABLE CONSUMPTION (SE)	6	5.8	5.6	2.9	5.7	6
SUBJECT CONSUMING <5 SERVING OF FRUITS AND VEGETABLES PER DAY %	80	84	85.8	85.1	87.6	90.8
MEAN FASTING BLOOD GLUCOSE LEVELS, mg/dl (SE)	83.7	78	78	85.9	82	81
MEAN FASTING TOTAL CHOLESTEROL, mg/dl (SE)	179.6	164	157.9	182	170	170
PROPORTION WITH BLOOD GLUCOSE ≥ 126 mg /dl,n (%)	144.4	79	78.5	136	75	140
PROPORTION WITH TOTAL CHOLESTEROL≥ 250 mg/dl, n (%)	397	256	239	435	355	334

3. Scope For Surveillance In India: The extent for accomplishment of the surveillance program depends on its flexibility, sustainability, appropriateness of the data collected & timely spreading to its people for actions. In India, different reports on the CVD risk elements have been conducted in several populations and regions. Several repeated studies in the common population at unsystematic time interlude. There are studies conducted by different agencies, and the information prevail un-utilized for the action connected to the CVD risk elements. This study has been fit to demonstrate swap in the risky element profile. Comprehensively, these must be useful in mutiny an alarm amid health planners & policy makers & for manufacturing cases to begin intermediation. Efforts to coordinate these local studies that make it useful for the surveillance system improving efficiency. It will help to overcome the limited comprehension of the surveillance systems amid policy makers & health planners. Dissemination & Advocacy in peaceful formats may be needed to motivate utilization of information for the activity at the lower level of health systems. Building neighborhood partnerships would intensify the acceptability & accountability of the surveillance data (B. Shah (2010), T. E. Vanhecke (200).

In India, different researchers have been ingenious to build the network that carries out the CVD associated public health pursuit. ICMR has organized formal connections with the several governments, institutions, universities, agencies covering the world to encourage biomedical research. The Surveillance for a non-communicable disease that has been recognized as a compelling area with some (Canadian Institutes of Health Research, CIHR, University of Minnesota, USA, International Clinical Epidemiology Network, INCLEN). Similar attempts have been conducted

to attention by several other agencies, organizations and institutions. All these attempts will alleviate sharing of incidents internationally.

Surveillance that must be organized at the Regional, National, Local and State levels by connecting the data collection from all the activities of policy development & interventions. It will be contemplated as an interconnection between the takers and givers, with turnaround of the character from time to time. A continual dialogue to evaluate the required should be systematized so that the surveillance system can alter to the needs. Although the power would give the 'fields' for the data assemblage to the examine, but in reverse will expect outputs, cooperation in developing & implementing intermediation activities for population under contemplation, e.g., the industries would agree to do risk factor surveys, but they will look towards the researcher for guidance on how and what actions to be taken, so that this becomes a mutually beneficial exercise. A required for the more rapid & advanced data assembly tools that would be needed, like telephone surveys, internet surveys and e-mail. The using the technology required to be assessed against recognition protection, costs & validity of data collected (T Nag (2014), D. Gupta (2020).

CONCLUSION

The freight of the CVD & its risk attributes in India calls for the sound of public health methods to trunk the epidemic. This paper helps to find the CVD risk elements and provides the framework of the CVD in India and required the surveillance systems. It will help to find the average of CVD risk through the survey and after doing survey it will provide the data collection but they do not publish that data and it will provide the framework for CVD surveillance systems. The efforts will be put into place & intervention programs that will be accompanied with robust surveillance equipment so as to evaluate, monitor programs and guide policies. It can be demonstrated in the pilot manner that is practicable to demonstrate surveillance for the CVD risk elements at the community levels. It can be scaled up with national level, & is now incorporated in a National Programming for the Control and Prevention of Diabetes, Stroke and Cardiovascular Diseases. In the future of the surveillance systems recline in the timeliness, system approach & enduring partnerships. The combine on the obtained should cover the path for the way forward.

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