

Prevalence and Risk Factors Associated with Various Types of Diseases in Sikkim

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Abstract

Health as one of the fundamental values is the foundation for the quality of human life, the welfare of one's family, and also of society as a whole. A healthy society is the substance for a productive and efficient economy and the development of the state. Biological, psycho-emotional, social, economic, environmental, as well as lifestyle factors influence the health of each individual and therefore, the public health. People with a quality education, stable employment, safe homes and neighbourhoods and access to high quality preventive services tend to be healthier throughout their lives and live longer. When organizations, whether they are governmental, private, or non-profit succeed in meeting these basic needs, people are more likely to exercise, eat healthy foods and seek preventive health services. Diseases (microbial and chronic) are increasing in global prevalence and seriously threaten developing nations' including India's ability to improve the health of their populations. The rise of lifestyle-related chronic disease in poor countries is the result of a complex constellation of social, economic, and behavioural factors. Diseases (e.g., cardiovascular diseases, mental health disorders, diabetes, and cancer) and injuries are the leading causes of death and disability in India and it is ventured to have pronounced increase in their contribution to the burden of disease during the next 25 years. These rights, opportunities and factors have been taken as the basis in the drafting of this policy planning document.

A survey and study on the various diseases prevailing in Sikkim was done. The main objective of the study was to check the prevalence and risk factors associated with various types of diseases in Sikkim and the design was based on random selection among 2000 individuals from different areas of Sikkim. Prevalence of diseases with respect to gender, age group and population type was evaluated. Also the various risk factors viz diet type, physical activity, water consumed and type of addictions was assessed for every disease concerned. The data was collected and analyzed statistically.

Diseases considered are more or less equally prevalent in both the sexes. The rural populations are more affected as per the results obtained. The 15-25 years old and >65 years old age groups showed higher occurrence of most disease and therefore it is matter of concern. It was also found that the prevalence of respiratory disease, gastrointestinal diseases, eye/ear, dermal and general (non-microbial) diseases are high. Although, all the risk factors considered in this study affect all the diseases in some or other way, however, it was shown that the type of addictions viz alcohol consumption, smoking and recreational drug use poses the greater risk to the population of Sikkim especially young generation which is indulged in such activities the most, this may be due to the impact of rapidly embracing western lifestyles. Other risk factors like diet, water consumed and physical activity also augments the occurrence of relative diseases significantly and thus might be considered as the risk factors for various diseases considered in Sikkim. Keeping all this in view, for the better health and hygiene, effective prevention and control measurements (by strengthen social and policy frameworks) should be implemented or the already implemented measures should be substantially increased.

Keywords: Liver diseases; Sexual transmitted diseases; Gastrointestinal infections; Alcohol

Introduction

Diseases account for the greatest share of early death and disability worldwide. Chronic diseases are serious threat to health and longevity in developing countries. In all but the poor countries, the death and disability from chronic diseases now exceeds that from communicable diseases comprising 49%, compared with about 40% for communicable disease and 11% for injuries [1]. Recent projections by World Health Organisation (WHO) show that chronic diseases will be the biggest contributor to mortality in low-income countries before 2015 and in terms of disability of life years (DALYs) before 2030 [2]. The share of chronic conditions is predicted to rise to 65% by 2030 [3]. The Global Burden of Disease (GBD) project (2005) estimated that as of 2002, chronic or non-communicable conditions accounted for 54% of deaths in low- and middle-income countries, compared with 36% attributed to communicable (i.e. infectious) diseases, maternal, perinatal conditions and nutritional deficiencies [2]. Asiatic Indians display a high prevalence of diseases linked to changes in diet and environment that have arisen as their lifestyle has become more westernized [4].

Indians embrace the worst of both Eastern and Western ways is sending lifestyle illnesses such as obesity and diabetes sky rocketing [5]. Chronic diseases (including cardiovascular and respiratory diseases, mental disorders, diabetes, and cancers) and injuries are the leading causes of death and disability in India and their burden will continue to increase during the next 25 years as a consequence of the rapidly ageing population in India [6]. Besides the need to avert these chronic disease for enhancing the quality of life, neglect can have adverse consequences

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Received July 12, 2013; Accepted October 28, 2013; Published October 30, 2013

Citation: Najar IN, Sachdeva S, Thakur N (2013) Prevalence and Risk Factors Associated with Various Types of Diseases in Sikkim. J Community Med Health Educ 3: 245. doi:10.4172/2161-0711.1000245

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on the wellbeing of affected families-social, psychological as well as economic. Diseases that are heavily concentrated among working age adults or the poor, as is the case with HIV/AIDS, cardiovascular disease (CVD), tuberculosis (TB) etc, can have a ruinous impact as such diseases are extremely expensive to treat, especially due to lack of insurance mechanisms. The overwhelming impact of TB, asthma, chronic obstructive pulmonary disease (COPD), heart diseases, etc. on individual household is similar with children having to discontinue schooling and/or take up employment to provide an additional source of income [7]. In countries such as India where there are limited resources and competing demands, not all chronic conditions can be treated and not every medication provided at public expense. At some point prioritization of interventions or population groups that need to be supported with public funding will become inevitable. Apart from these medical and nutritional interventions, there are other non-health interventions that also need to be considered in policy design, such as reducing inequitable practices towards the girl child, enhanced schooling of females, better roads, access to clean drinking water, electricity and other infrastructure, as these are known to have a beneficial impact on the IMR, widening access to timely care, etc. [7].

India is a great and vast country with diverse and multiple castes, ethnic groups, religions, occupations, economic strata, languages, socio-cultural traditions, genetic heritages and life-styles and practices [8]. One of the most beautiful and peaceful state of India is Sikkim. Sikkim is a small, remote, mountainous, landlocked state and lies in the North-Eastern region of India with an area of about 7,096 square kilometres. As per 2011 census, Sikkim has a population size of 6,07,688 and the density of population is 86 persons per km² and more than 20% of the population classified as tribal [9]. The population of Sikkim is a unique blend of multi-tribal and metropolitan culture. Its geographical location has a very significant socio-cultural influence on its population.

Although, the people of Sikkim are hale and hearty but like any other urban lifestyle, high risk behaviours like addictions are seen in this population too. Also due to inaccessibility of rugged hilly terrain and lack of adequate hospital, health care centres accessibility of health services to people especially for rural people in Sikkim is poor [10]. Keeping this in view, the state government has taken fruitful steps and the main thrust has been made towards consolidation in strengthening of health system in 11th five year plan 2007-2012. Sikkim has made substantial progress in health detriments over the past decades. The critical indicators of health, including IMR, MMR, Disease prevalence, morbidity as well as mortality rates have shown consistent decline over the last 15 years [11]. Inadequate environmental sanitation, worm trouble, goitre, tuberculosis and alcoholism are the major public health problems occupying an important place in State Healthy profile. New problems HIV/ AIDS and reappearance of malaria are very disturbing [10]. Also the infectious and non-infectious diseases are very much common in Sikkim. There are various known and unknown risk factors contributing to various infectious and non-infectious diseases in Sikkim. However, the data regarding the prevalence of various diseases in Sikkim and their associated risk factors is very scary and hence it requires a great attention.

Recently, a cross-sectional study was done by the research scholars of Department of Microbiology, Sikkim University in order to generate the base line data. We took various parameters like prevalence of Sexually transmitted diseases, Liver diseases, gastrointestinal diseases, Dermal, Oral, Respiratory diseases, and General (chronic) diseases and risk factors associated with these diseases.

Materials and Methods

Study place

The present study was conducted in Sikkim, at random locations in and around Gangtok (State capital). Sikkim is located in North-Eastern part of India.

Study design and participants

The study was conducted on a randomly selected, equally distributed population by direct interview using questionnaire. The data was sampled which covers four districts of Sikkim comprising of North, South, East, West. Various random locations like villages, panchayats, markets, cinema halls, colleges, offices, schools, hotels, taxi stands, hydro-power project were selected for sampling. Also the most important part is that data was also sampled in Gangtok police headquarters, hospitals (SMH and STNM), AIDS Cell, TB Cell, Rehabilitation centres, assuming that the majority of the Sikkim's population reside around the capital so that all variable groups are equally represented. A questionnaire based feedback model was used for data collection. Adequate care was taken to incorporate all strata of society with individuals more than 15 years old. The total population (n=2000) were interrogated (but the valid entries were only considered according to the risk factors) based on the questionnaire in Nepali, Hindi or English language and the information was filled in English language.

Questionnaires based anonymous feedback system (QAFS)

A pretested structured questionnaire containing 34 parameters was used to collect the data. The detailed questionnaire was in English language covering relevant aspects of the subject like demographics (like gender, age, etc), socio-economic (e.g. profession, income etc.), dietary habits (e.g. vegetarian/non vegetarian, fermented/non-fermented etc.), physical activity, life-style behaviour (e.g. addictions etc.), living conditions (e.g. house type, sanitation etc.), reproductive life (e.g. marital status, no. of partners etc.) and medical history (e.g. diseases, medication etc.). The questionnaire contained various diseases viz General diseases including major chronic diseases such as Heart diseases, Elevated blood pressure, Diabetes, Arthritis & Depression, Respiratory diseases, Gastrointestinal diseases, STDs, Dermal, Eye/Ear & Oral. Respondents were explained the purpose of study (for sincere response), our affiliations (for credentials of study) and anonymous nature of questionnaire (for reliable answers). The questionnaire was administered by a team of Master's and M.Phil students to the participants and hence did not depend on the literacy status of the participant. As the questionnaire was in English, symptoms were described in Nepali/Hindi for those subjects who did not understand scientific or English terms. Symptoms were explained to respondents to identify the exact disease/ailment and then after confirmation were marked on questionnaire.

Statistical analysis and relative risk calculation

The questionnaire was checked for errors and data was entered into MS excel and converted into Microsoft Excel format (.xls) and statistically analyzed using Graph pad prism V5.01.exe software (San Diego, USA). Relative Risk analyses were carried out using online software (Figure 1).

$$\text{Relative Risk} = \frac{a/(a+b)}{c/(c+d)}$$

Criteria for significance of relative risks

RR≈1 means the association between exposure and disease unlikely to exist.

Exposed group	
Number with positive outcome:	a=
Number with negative outcome:	b=
Control group	
Number with positive outcome:	c=
Number with negative outcome:	d=

Figure 1: "MEDCALC" (Version 12.2.1- © 1993-2012, MedCalc Software, Broekstraat 52, 9030 Mariakerke, Belgium).

other diseases such as liver, STDs, and oral contributes to 7, 3.4, 17 per cent respectively as shown in Table 1.

Total percentage of diseases with respect to gender

With respect to gender it was found that both males and females are more or less equally prone to most of the diseases, however, for respiratory and dermal diseases male population is more prone to these diseases and it contribute to 40.2 and 22.6 per cent respectively as compared to female gender contributing 38.3 and 28.4 per cent respectively. Whereas in rest of the corresponding diseases, female gender dominates such as in gastrointestinal, STDs, eye/ear, oral and general diseases and these contributes 25, 4.2, 29.3, 37.1 and 29.3 per cent respectively as compared to male gender contributing 21.3, 3, 23.4, 25.3 and 25.6 per cent respectively as shown in Table 1.

Prevalence of diseases with respect to age

Prevalence of diseases with respect to age group was checked and it was found that the most effected age group was 15-35 and 45- >60 as shown in graph above (Figure 2). Startlingly the highest number of respondents with the concerned disease falls in young age group and this is certainly the matter of concern.

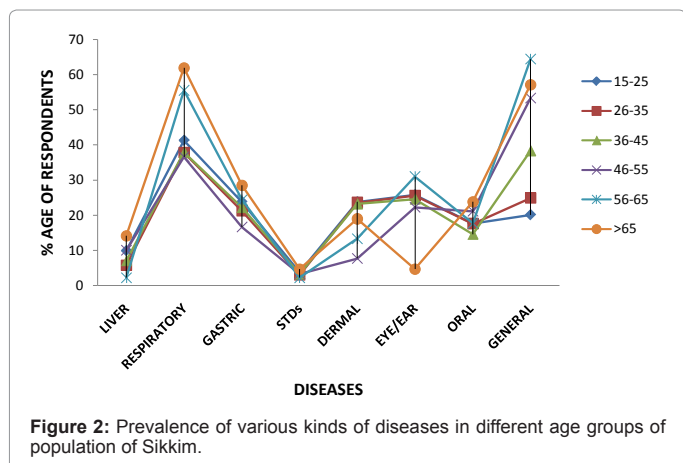


Figure 2: Prevalence of various kinds of diseases in different age groups of population of Sikkim.

RR>1 means the increased risk of disease among those that have been exposed.

RR<1 means the decreased risk of disease among those that have been exposed.

Results

It is important for any state to document what kinds of diseases like infectious or chronic diseases are prevalent in its population and also its distribution among gender and different age groups. The prevalence of different diseases varies in rural and urban population also. In an order to control the prevalence of different diseases, the risk factors associated with these diseases should be also addressed. In the present study we checked the prevalence of various kinds of diseases in Sikkimese population, its distribution among different age groups and gender.

Total percentage of diseases

By checking the total percentage of all diseases among total respondents it was found that the prevalence of respiratory disease, gastrointestinal diseases, eye/ear, dermal and general (non-microbial) diseases are high as compared to other diseases considered and these contribute 40.2, 22.5, 25.3, 22.6 and 26.8 per cent respectively. The

Identification of risk factors

The risk factors presumed or hypothesized for the present study were Diet, Water Consumption, Physical Activity and Type of Addiction. Relatively all the risk factors pose more or less impression on all the diseases concerned. However, in our study the risk factors such as Type of Addictions which includes, Alcoholism, Smoking, and Recreational drug use are the major risk factors with relative risk values >1 and P-values <0.05, e.g. in case of Alcohol Consumption all the considered diseases show relative risk values >1 and the diseases like Liver, STDs & Dermal have P-values 0.0002 and diseases like Eye/Ear, Oral and General diseases possess P-values of 0.008, 0.018 & 0.0010 respectively as shown in Table 2, which is statistically significant. Similarly in case of Smoking all the diseases possess relative risk values >1 and diseases like Gastric and Dermal have the P-values 0.008 & 0.001. In case of Recreational drug use all the concerned diseases show the relative risk value >1 and the Liver and STDs possess the highest values of 2.035 and 2.008 respectively. Also the diseases like Liver, Respiratory, Gastric and Dermal shows the P-values of 0.0021, 0.00122, 0.015 & 0.0184 respectively as shown in Table 2.

Although the diet plays significant role in various diseases, the metabolic diseases are mostly affected and in our study the result shows that the Liver, Respiratory, STDs, and Dermal disease are mostly affected possessing relative risk values >1 and the diseases viz Gastrointestinal, General, Oral and Eye/Ear diseases are least affected with relative risk <1 as shown in Table 2. Similarly in case of Water consumption, although there is less difference between the percentage of respondents (with diseases) having untreated (raw) water with the percentage of respondents (with diseases) having treated (boiled, filtered & purified) water, the relative risks of the most of diseases such as Liver, Respiratory Gastrointestinal, STDs & Dermal is >1 that is statistically significant.

In case of Physical Activity the results shows that Liver, Respiratory, Gastric and Oral possess the relative risk values >1 viz 1.07, 1.04, 1.26, and 1.104 respectively whereas other diseases possess relative risks <1. Also the Gastric and Dermal have P-values <0.05 as shown in Table 2.

Discussion

Definition of health status and its dimension depends on the nature

S.No.	Diseases	Total %	Gender		Population Type		Age (%)					
			Male (%)	Female (%)	Rural	Urban	15-25	26-35	36-45	46-55	56-65	>65
1.	LIVER DISEASE	7	69.6% (8.1)	30.4% (8)	43.2%	50.3%	59 (9.9)	22.7 (5.7)	9.7 (7.1)	5.8 (10)	0.6 (2.2)	1.9 (14.2)
2.	RESP	40.2	70.8% (41)	29.1% (38.3)	49.9	47.5	49.5 (41.3)	30.3 (37.8)	10.4 (37.9)	4.3 (36.6)	3.2 (55.5)	1.6 (61.9)
3.	GIT	22.5	65.8 (21.3)	34.1 (25)	49.2	46.4	51.1 (23.8)	30.3 (21.2)	10.9 (22.2)	3.50 (16.6)	2.5 (24.4)	1.4 (28.5)
4.	STDs	3.4	62.1 (3)	37.8 (4.2)	53	45.4	53 (3.8)	28.7 (3)	10.6 (3.3)	4.5 (3.3)	1.5 (2.2)	1.5 (4.7)
5.	DERMAL	22.6	71 (23.1)	29 (21.4)	51.5	45.7	50.8 (23.8)	33.6 (23.6)	11.3 (23.2)	1.6 (7.7)	1.3 (13.3)	0.9 (19)
6.	EYE/EAR	25.3	64.4 (23.4)	35.5 (29.3)	54.4	43.2	49.2 (25.8)	32.6 (25.6)	10.8 (24.6)	4.1 (22.2)	2.9 (31)	0.2 (4.7)
7.	ORAL	17.6	64.4 (25.3)	35.5 (37.1)	49.2	46.2	48.6 (17.7)	32.2 (17.6)	9.2 (14.6)	5.6 (21.1)	2.3 (17.7)	1.4 (23.8)
8.	GENERAL	26.8	66.4 (25.6)	33.5 (29.3)	43.9	52.3	36.2 (20.1)	30 (24.9)	15.8 (38.3)	9.4 (53.3)	5.6 (64.4)	2.3 (57.1)

Table 1: Prevalence of various types of diseases in different groups of people in Sikkim. RESP: Respiratory Diseases; GIT: Gastro-intestinal Tract diseases; STDs: Sexual transmitted Diseases where General Diseases are chronic diseases.

S. No.	PARAMETERS		DISEASES (%)								
			LIVER	RESP	GIT	STDs	DER	EYE/EAR	ORAL	GENERAL	
1.	DIET TYPE	VEG	25.8	24	26.8	18.1	21.1	25.7	26.5	28.8	
		NON-VEG	72.2	74	72.1	78.7	77.4	72.9	72.2	69.2	
		Relative Risk (P-value)	1.005 (0.993)	1.068 (0.359)	0.961 (0.688)	1.51 (0.187)	1.24 (0.044)	1.0029 (0.975)	0.96 (0.785)	0.145 (0.881)	
2.	WATER CONSUMED	RAW	8.8	42.1	22.7	4	24.1	26.5	20.4	26	
		BOILED	7.3	41.4	23.8	3.2	24.2	26.8	18.7	26.9	
		FILTERED	8.8	40.6	22.9	3.5	21.8	19.4	14.7	30	
		PURIFIED	4.7	33.8	19.6	4.7	17.3	23.6	11	22.8	
		Relative Risk (P-value)	1.150 (0.497)	1.032 (0.69)	0.995 (0.968)	1.197 (0.562)	1.036 (0.756)	1.036 (0.742)	1.133 (0.331)	1.030 (0.78)	
3.	PHYSICAL ACTIVITY	EXERCISE	28	29.8	24.7	34.8	32	30.9	27.7	31.9	
		MANUAL WORK	67	67.1	72.8	62.1	65.6	65.4	68.9	63.1	
		Relative Risk (P-value)	1.073 (0.681)	1.014 (0.853)	1.26 (0.021)	0.812 (0.416)	0.81 (0.034)	0.96 (0.688)	1.104 (0.81)	0.91 (0.298)	
4.	TYPE OF ADDICTION	ALCOHOL	57.4	43.7	49	68.1	54.2	51.1	49.5	51.5	
		Relative Risk (P-value)	1.866 (0.0002)	1.0013 (0.98)	1.057 (0.54)	2.76 (0.0002)	1.406 (0.0002)	1.243 (0.008)	1.28 (0.0186)	1.308 (0.0010)	
		SMOKING	FC	9.2	41.6	27	3.5	29.5	26.5	19.4	28.2
			NFC	7.5	39.4	21.2	6	24.2	33.3	18.1	31.8
			NO	6.5	40.7	19.8	3.2	20.1	24.5	16.9	25.3
			QT	10.7	39.9	16	5.9	25.5	32.1	15.4	30.3
			RR (PV)	1.258 (0.180)	1.012 (0.859)	1.28 (0.008)	1.08 (0.75)	1.52 (0.0001)	1.057 (0.53)	1.124 (0.286)	1.08 (0.75)
		RECREATI-ONAL DRUG USE	20.6	11.6	14	18.1	13.9	12.8	14	0.465	
Relative Risk (P-value)	2.035 (0.0021)	1.329 (0.0122)	1.425 (0.015)	2.008 (0.069)	1.412 (0.0184)	1.142 (0.32)	1.157 (0.363)	0.465 (0.465)			

FC: Filtered Cigarettes; NFC: Non Filtered Cigarettes; NO: Non Smoker; QT: Quit smoking; RR: Relative Risk; PV:P value

Table 2: Risk factors associated with various diseases prevalent in population of Sikkim.

of the county's current health problems and on its ability to deal with them. In essence, there are three components in the definition and measurement of health status; Physical, Psychological and social. The expert committee of the Indian Council for Medical Research (INMR) and the Indian Council for Social Science Research (ICSSR) acknowledged this fact in its report of Health for all by 2000 A.D. "Health is a function, not only of Medical care but of the overall integrated development of socio-cultural, economic and Socio-political as well" [10]. A complex constellation of social, economic, and behavioural factors is behind the rise in chronic diseases [12]. The three main risk factors for chronic diseases over nutrition, lack of physical activity, and tobacco use are increasing generally in developing countries,

just as in developed countries. The distressing aspect in regard to the public health and economic agendas of these countries is the speed with which unhealthy habits have taken hold in developing countries, with little indication of slowing [13]. There is a list of diseases which occupies an important place in the Sikkim state health profile also some new problems like HIV/ AIDS and reappearance of malaria are very disturbing. Although preventive, curative and promotive service is provided but needs to be intensified in conformity with strategies to achieve the goal of "HEALTH FOR ALL" [10].

The study on the identification and prevalence of diseases (microbial & non-microbial) and the associated risk factors with these diseases in Sikkim was quantitative in nature with empirical approach. The

study design was based on random selection among 2000 individuals from different areas of Sikkim. For collection of data 'Questionnaire based anonymous feedback system' was followed. In this study the prevalence of various diseases as given above were checked. The risk factors hypothesized for these diseases were mainly related to lifestyle such as Diet, Physical Activity, Water Consumed & Type of Addictions including Alcohol, Smoking & Recreational drug use.

The prevalence of diseases were checked by using three parameters viz Gender (Male/Female), Population Type (Rural/Urban) & Age (with age groups 15-25, 26-35, 36-45, 46-55, 56-65, & >65). The total percentage of diseases was also checked and the result shows that the highly prevalent diseases in Sikkim are respiratory disease, gastrointestinal diseases, eye/ear, dermal and general (non-microbial) diseases as compared to other diseases considered and these contribute 40.2, 22.5, 25.3, 22.6 and 26.8 per cent respectively. The other diseases such as liver, STDs, and oral contributes to 7, 3.4, & 17 per cent respectively as shown in Table 1. The dramatic changes occurring in people's diets around the world have been referred to as the nutrition transition [14]. The model suggests that countries pass through a gamut of dietary, economic, and health stages (among other categories) as they modernize and urbanize. At a late (but not the final) stage of the transition, people tend to consume more fats, animal based products, and sugar, as well as more processed foods and less fiber. Each factor potentially can be a precursor to overweight and obesity, leading to chronic diseases [15].

All types of diets, including vegetarian diets, are associated with potential health risks as well as benefits, at both the individual and the combined level [16]. It is presently well known that the relationship between a nutrient, food item, or diet pattern and health is not linear. There is an optimal range of intake, but at both extremes, there are marginal or detrimental intake ranges and further apart are deficient or toxic intake ranges [17]. Nutrient deficiencies as well as diet-related chronic diseases could be prevented best by diets largely based on plant foods, such as well-balanced vegetarian diets. However, restrictive or unbalanced vegetarian diets may lead to nutritional deficiencies, particularly in situations of high metabolic demand [16]. In non-vegetarian diet the consumption of fat is more as compare to vegetarian diet and it is difficult for liver to break down the high deposition of fats in liver. Excess of liver fats can cause cirrhosis to liver failure. Risk factors for obesity include behavioural components which include exercise and weight control measures, social components which includes food choices and eating patterns in different cultural groups [18]. In our study two parameters vegetarian and non-vegetarian diet (at least 3 meals in a week) were investigated and it was found that diet especially non vegetarian diet could be a risk factor for various diseases as the relative risk value is greater than 1 however more data is required as this value is not statistically significant except for dermal diseases which is >0.05 does not play a significant role in diseases considered. The level of physical activity is another important risk factor for chronic diseases that is undergoing profound change in developing countries. Caused by some of the same extensive trends that have led to dietary changes, urbanization, modernization, and changes in occupational behaviours, physical activity in general appears to be diminishing. Reports from the United States estimate that the population-attributable risk of physical inactivity is responsible for 12% of type 2 diabetes and 22% of coronary heart disease, as well as significant shares of other poor health conditions [19]. It has been reported that a sudden transition to a sedentary lifestyle can quickly lead to symptoms of non-alcoholic fatty liver disease (hepatic steatosis), which affects at least 75% of obese people. Moreover, exercise results in a reduction of total body fat along with liver fat. This often results in significant reduction of elevated liver

enzymes SGOT (also known as AST) and SGPT (also known as ALT) which reduces the probability of acquiring Non-alcoholic fatty liver disease [20]. In the present study we found that sedentary life styles can be a potential risk factor for various kinds of diseases which we studied as the relative risk value and P values are significant.

The water is one of the most common routes of transmission of several diseases, especially GIT infections. The most often reported disease associated with drinking water is gastroenteritis and the attack rates for these infections can reach over 50% of the exposed population [21]. Water quality of almost all the drinking water resources in East and South Sikkim districts is poor and many people especially in rural areas are not even aware of it [22]. We found that people who are taking raw water directly from natural resources like river and springs and not treated water like filtered or boiled are more prone to various kinds of diseases especially gastrointestinal tract infections.

Alcohol consumption and problems related to it vary widely around the world, but the burden of disease and death remains significant in most countries. Alcohol consumption is the world's third risk factor for disease; in middle income countries, it is a greatest risk factor [23]. Frequency and amount of alcohol both play a part in risk of alcohol-related injury or death [24]. Alcohol is a causal factor in 60 types of diseases and injuries. Alcoholic liver diseases are the most common which represents a spectrum of clinical illness and morphological changes that range from fatty liver to hepatic inflammation and necrosis (alcoholic hepatitis) to progressive fibrosis (alcoholic cirrhosis) [25]. In our study, out of the total respondents the number of people who consume alcohol regularly is really high in Sikkim (46.6%). Furthermore, most of the alcoholics fall between the age group of 15-25 which is mainly consists of students. When the risk of alcohol was seen it was shown that all the diseases considered possess relative risk values >1 and most of the diseases possess P-values <0.05 as shown in table which is statistically significant. Thus, relative risk analysis clearly shows that alcohol poses the risk of acquiring these diseases.

Drug addictions including smoking are also the major known risk factors for various diseases viz respiratory diseases, cardiovascular, cancers, high blood pressure etc. show that more than 20% of the Indian population smoke daily. Twice as many people living in rural areas smoke every day compared with the urban population [26]. Also the addictions like alcohol and drugs indeed pose the risk of acquiring STDs [27]. In our study, drug addiction including smoking plays a significant role and is the major risk factor for all the considered diseases. In our study, the relative risk analysis shows that all the diseases possess relative risk values >1 with few of the few of the diseases having P-values <0.05 and in case of recreational drug use all the diseases considered possess relative risk values >1 and most of them possesses P-values <0.05 as shown in Table 2. Thus this clearly indicates that smoking and other addictions pose the risk for these diseases.

For any state the biggest wealth is its population and Sikkim's rapidly growing economy is due to its young population. Therefore it is important to keep this working population healthy. The present study is preliminary in nature without laboratory based confirmation however it gives an idea about the prevalence of various diseases and risk factors associated with it. In an order to design effective remedial measure by policy makers to decrease the risk factors associated with these diseases a more detailed and laboratory based studies are required which will help in improving the quality of life of people and developmental process of state.

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