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Thematic Session 5A: Where We Live and What We Eat

Food Habits and Non-Communicable Disease Patterns in the North Eastern Population of India

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INTRODUCTION

- Diet and nutrition are main essential factors in the maintenance and promotion of good health throughout the entire span of life.
- Currently, chronic conditions, such as cardiovascular diseases like stroke and heart attacks, cancers, metabolic syndrome, Type 2 diabetes, chronic respiratory diseases such as chronic obstructive pulmonary disease and asthma and hypertension are the leading killers in developed countries and are increasing wildly in developing nations.
- According to WHO 2017, Non-communicable diseases, also known as chronic diseases, tend to exist for longer duration and the result of a combination of genetic, physiological, environmental and behavioural factors.
- The eight states that make up India's north-eastern region have a rich history and a reputation for their distinctive culture and cuisine. Recent decades, however, have seen major changes in eating habits, prompting worries about how they might contribute to the region's growing problem with NCDs.

OBJECTIVE

This study aimed to provide a comprehensive understanding of impact of changing food habits on the prevalence of non-communicable diseases (NCDs) in the North Eastern population of India, identify dietary practices that contribute to NCDs, and design effective interventions to promote healthier food choices and mitigate the impact of NCDs.

DATA AND METHODOLOGY

In this study, comprehensive data analysis was conducted using the **69th** and **71st** round datasets from the **National Sample Survey Office (NSSO), India**. The research approach involved not only univariate analysis but also the application of ordered logistic regression models. By utilizing these datasets and employing ordered logistic regression, the study aimed to gain a deeper understanding of the relationships and patterns within the data. This dual methodology allowed for a more nuanced examination of the variables, offering valuable insights into the complex dynamics captured within the NSSO datasets. These analysis were carried out with STATA 14.2, MLwIN 2.34, GeoDa and MS Excel 2018v.
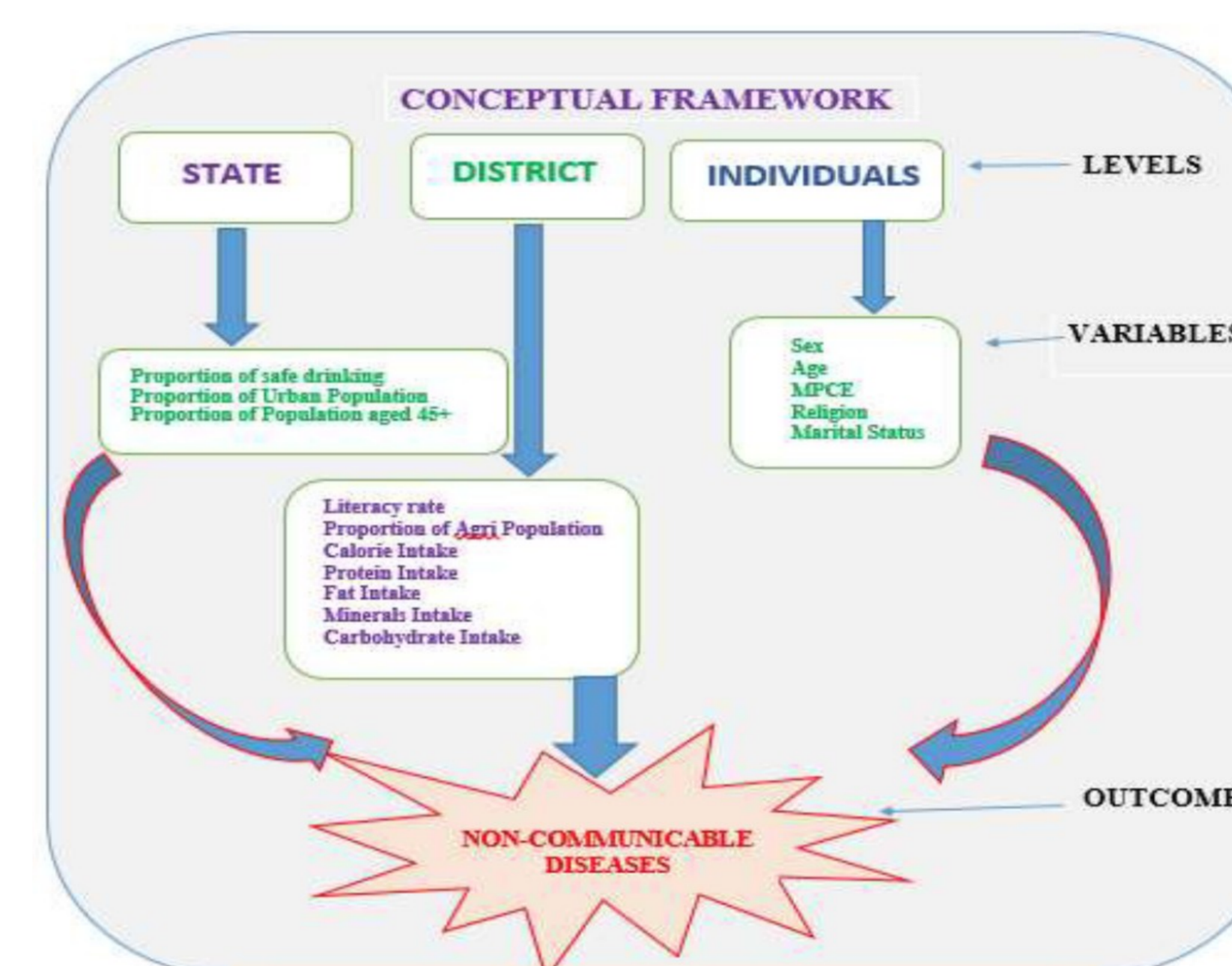

Fig 1: Conceptual Framework

LEVEL	Variables	NATURE	DESCRIPTION
STATE	Prop. Of safe drinking water use	Continuous	ranges from 0-1
	Prop of urban pop	Categorical-2	0-(<=.25), 1--(>.25)
	Pop. Prop. Aged 45+	Categorical-2	0-(<=.20), 1--(>.20)
DISTRICT	Literacy	Continuous	ranges from 0-1
	Agri popu	Continuous	ranges from 0-1
	Calorie consumption/indiv./day	Categorical-2	0-(<=2000 Kcal), 1--(>2000 Kcal)
	Protein consumption/indiv./day	Categorical-2	0-(<=70g), 1--(>70g)
	Fat consumption/indiv./day	Categorical-2	0-(<=50g), 1--(>50g)
	Minerals consumption/indiv./day	Categorical-2	0-(<=30g), 1--(>30g)
	Carbohydrate (<20k)	Categorical-2	0-(<=650g), 1--(>650g)
INDIVIDUAL	Sex	Categorical-2	0-(MALE), 1--(FEMALE)
	Age	Categorical-4	1-(<18) 2-(18-39) 3-(40-60) 4-(60+)
	MPCE quantiles	Categorical-5	1-2-3-4-5
	Religion	Categorical-4	1-(HINDU) 2-(MUSLIM) 3-(CHRISTIAN) 4-(OTHER)
	Marital status	Categorical-2	0-(NEVER MARRIED) 1-(EVER MARRIED)

Fig 2: Variable Used

MAJOR FINDINGS

Table 1 : Exploring Multinomial Logistic Regression: Predictors and Odds of Non-Communicable Diseases

LEVEL	DEP. VARIABLE =NCD	STATE	DISTRICT	INDIVIDUALS	FULL MODEL
	CONSTANT	0.013***(0.189)	0.015***(0.235)	0.008***(0.201)	0.002***(0.38)
STATE	PROP OF SAFE DRINKING	1.013***(0.03)			1.011***(0.003)
	PROP URBAN POP(<25%)®				
	PROP URBAN POP(>25%)	1.25***(0.084)			1.259*(0.124)
	PROP45+(<20%)®				
	PROP45+(>20%)	1.069 (0.081)			0.872 (0.142)
DISTRICT	LITERACY		3.438***(0.286)		2.425***(0.312)
	AGRI POPU		0.022*(1.974)		0.006**(2.264)
	CALORIE (<2Kcal) ®				
	more than 2kcal		0.889 (0.091)		1.052 (0.105)
	PROTEIN(<70g/day/Indv.) ®				
	>70g/day/Indv.		0.797***(0.082)		0.902 (0.09)
	FAT(<50g/day/Indv.) ®				
	(>70g/day/Indv.)		1.584***(0.075)		1.438***(0.083)
	MINERALS(<30g/day/Indv.) ®				
	(>30g/day/Indv.)		0.886 (0.09)		0.926 (0.101)
	CARBOHYDRADE (<650g/day/Indv.) ®				
	>650g/day/Indv.		0.773***(0.067)		1.01 (0.072)

INDIVIDUAL			
MALE ®			
FEMALE		0.268***(0.068)	0.266***(0.067)
<18		0.254***(0.27)	0.259***(0.27)
18-39 ®			
40-60		4.003***(0.072)	4.059***(0.072)
60+		7.022***(0.085)	6.938***(0.085)
POOREST ®			
POORER		0.882 (0.108)	0.87 (0.109)
AVERAGE		1.066 (0.101)	1.011 (0.103)
RICHER		1.17 (0.098)	1.063 (0.101)
RICHEST		1.455***(0.1)	1.273**(0.105)
HINDU ®			
MUSLIM		0.906 (0.099)	0.884 (0.101)
CHRISTIAN		0.778***(0.067)	0.734***(0.116)
OTHERS		0.893 (0.126)	0.823 (0.145)
SINGLE ®			
EVER MARRIED		4.968***(0.176)	5.028***(0.176)
RANDOM PART			
STATE	1.048 (0.171)		
DISTRICT		1.062 (0.13)	1.064 (0.129)

NB: * P<0.10; ** P<0.05 & *** P<0.01 level of significance. Numbers in the parenthesis are standard errors. ® stands for reference category

- Incidence of any NCD's was found to be 0.73 times lower among females compared to males
- Incidence of NCD's was 7.02 times higher among individual belonging to age group 60 years and above compared to individuals in the reference age group 18-39 years
- Increasing age and wealth quintile were found to be positively associated with higher incidence of NCD's.
- Ever married individuals were 5.03 times more likely to suffer rom NCD's compared to individuals who were single.
- State having more than 25% of urban population were 1.25 times likely to suffer from any NCD's
- States with more than 20% proportion of population aged 45+ were 1.07 times likely to be suffered from any NCD's compared to states having less than 20% 45+ aged population
- One unit increase in level of education, the odds of incidence of any NCD's increased by 3.44 times
- Higher consumption of protein, minerals and carbohydrate were found to be negatively associated with incidence of any NCD's among individuals and the odds being lesser by 0.20 ,0.11 and .21 times respectively
- Increasing consumption of fat was positively associated with incidence of any NCD (AOR: 1.58).

CONCLUSION AND RECOMMENDATION

- As the non-communicable diseases are rapidly increasing not only in North-Eastern states of India, but also all over the world. So it is very important to reduce the risk factors through policy interventions, regulation and legislation is needed to control various factors affecting chronic as well as non-chronic NCD's.
- Government should put emphasis into various factors like reduction in consumption of Tabaco and alcohol related products, reduce the use of trans-fat and high salt use in food-production industry to ensure healthy food supply
- Since north-eastern states have many foreign countries in its frontier, so it is important to made surveillance in cross-bordering marketing in foods products.
- Increasing the availability and access to local foods by strengthening support, tax breaks, technical assistances to farmers, fishermen and for home production in the use of non-hazardous substance so that more good and quality food can be served to the society
- It should be made mandatory in the product labelling with proper ingredient lists and nutrition information to facilitate healthier choices and encourage product reformations
- The one of the main targets for a healthy public policies is to make policies in recognition of the fact that it implemented not only considering the health behaviour but also considering profound influence on people's lifestyle choices

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