

Impact of adverse food environments on overweight, obesity and HbA1c levels in India - findings from a large population cohort

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UDAY study

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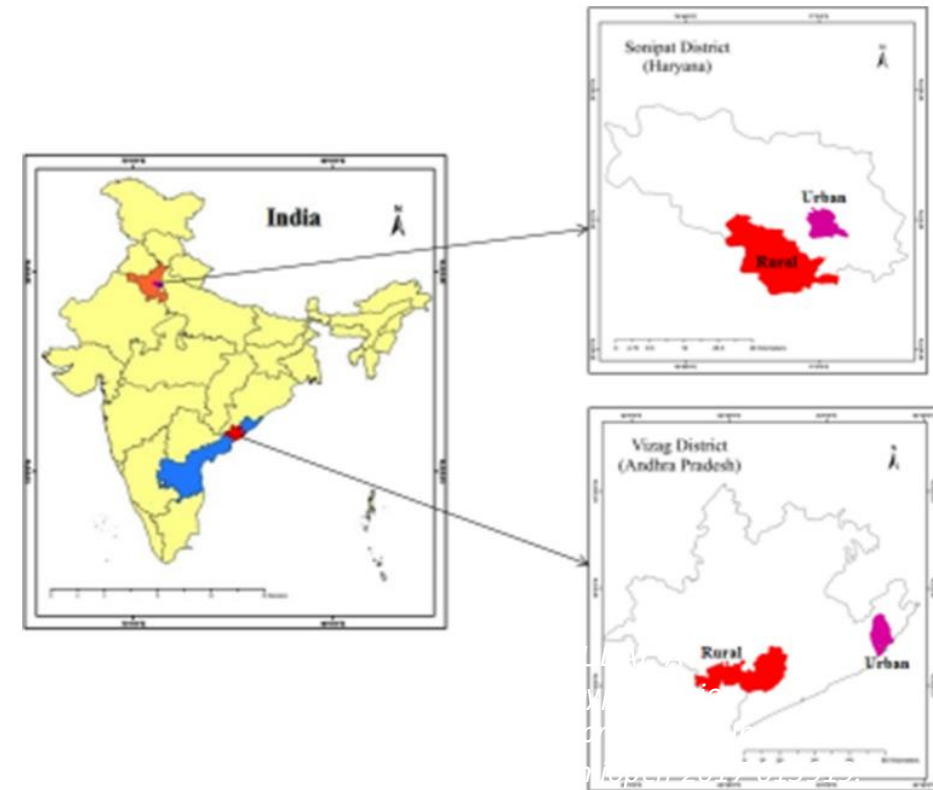


Rationale

- **Globally research on food environment has gained importance considering its connection with diet and related Non-Communicable Diseases (NCDs).**
- **Studies on food environment using advanced technology like geo-mapping are from are from HICs, relatively few from LMICs**
- **We studied these aspects of food environment in a community-based study in North and South India.**

Methods: Study Details

- **Cross-sectional survey**
- **Participants (12,243) age: 52.4 ± 11.7 years**
- **50:50 ♀, 50:50 rural/urban**
- **Selection- Multistage cluster random sampling technique**
- **Residing in rural and urban areas of Sonipat, Haryana and Vizag, Andhra Pradesh**



Measurements

Food environment:

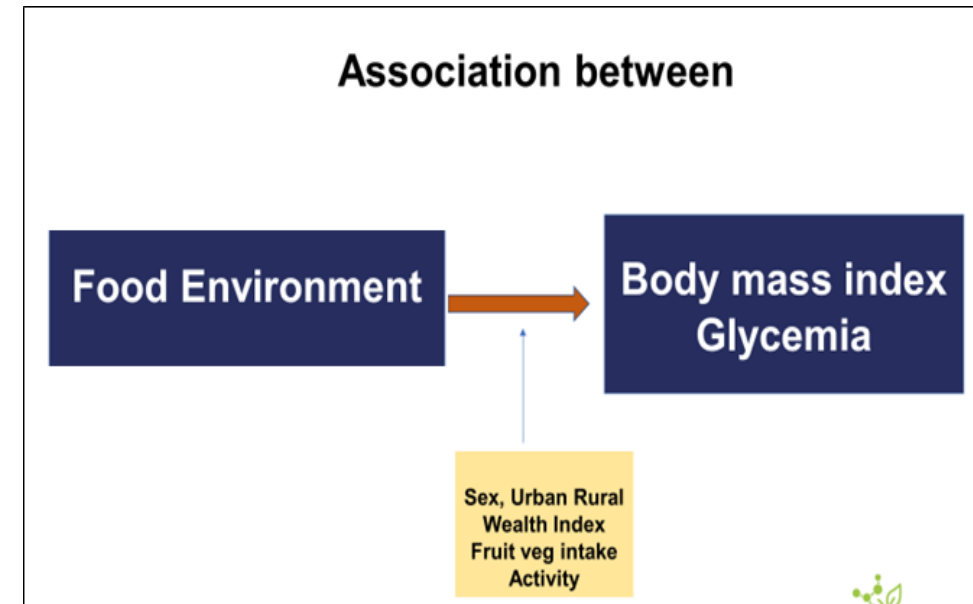
Density → Fried, bakery, sweet, salty processed food outlets/1000 households/ ward

Proximity → Outlets <0.5km Vs $\geq 0.5-3$ km /1000 households/ ward

Outcome variables of metabolic risk

Overweight and obesity BMI ≥ 25.0 kg/m²

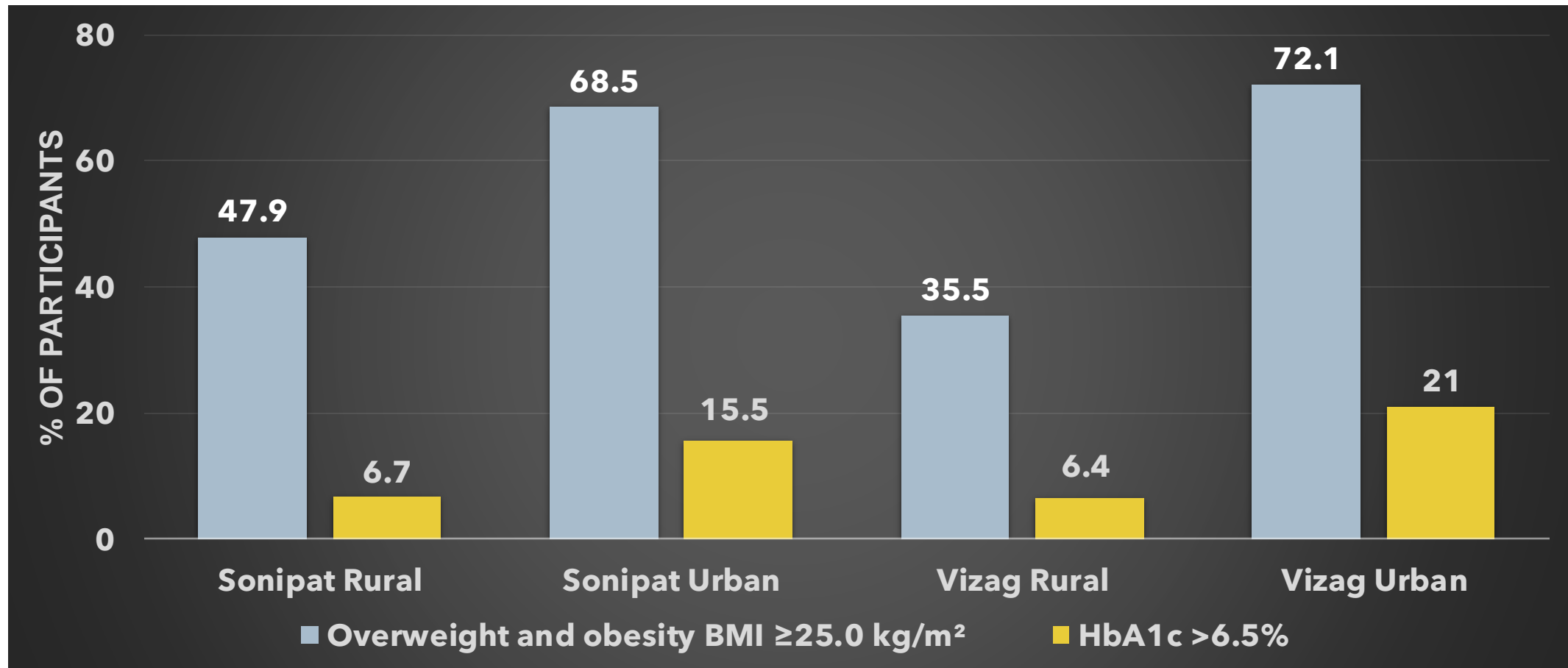
HbA1c >6.5%



Socio-demographic characteristics

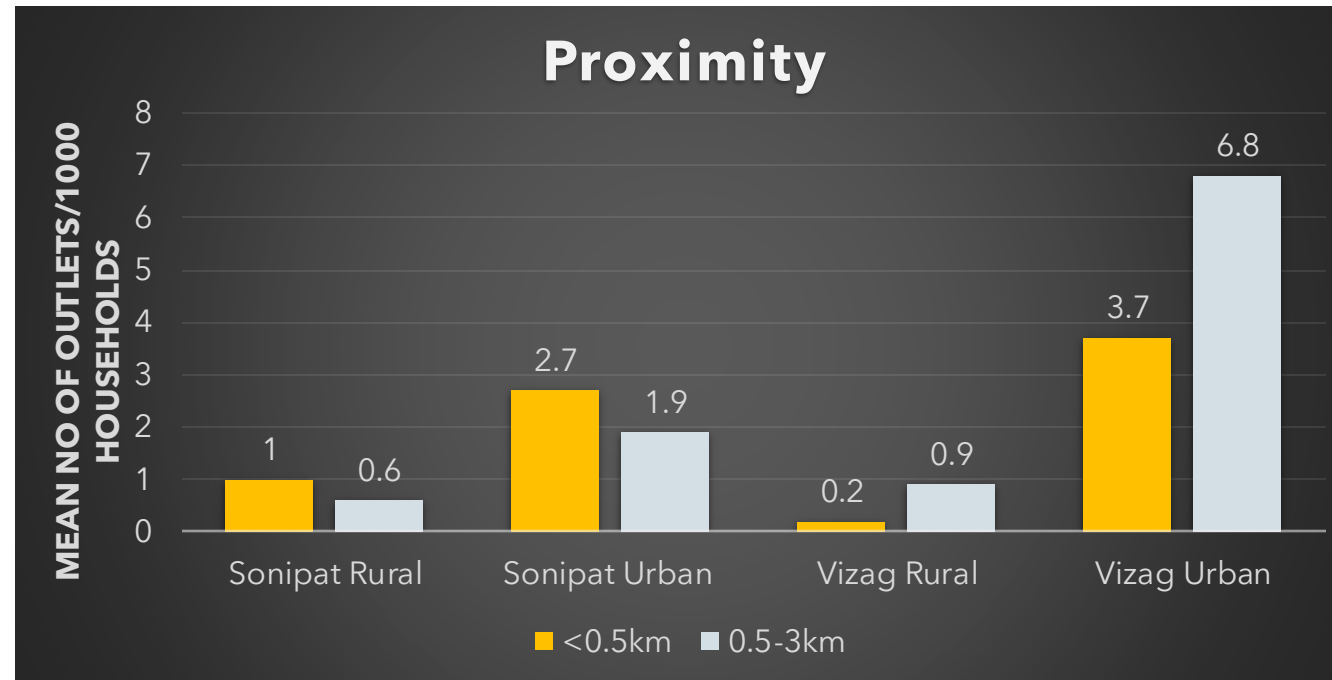
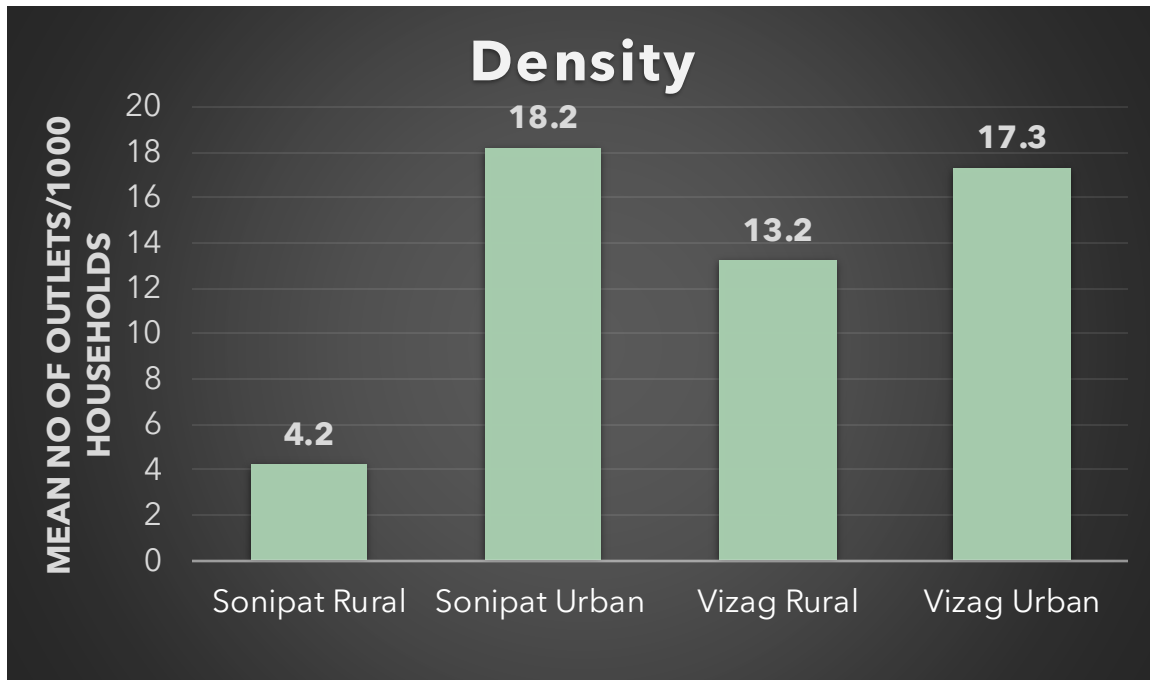
Categories		Sonipat (n=6208) (%)		Vizag (n=6035) (%)	
		Rural (n=3104)	Urban (n=3104)	Rural (n=3069)	Urban (n=2966)
Age	30-40 years	33.8	4.1	38.8	38.9
	41-50 years	26.4	28.3	28.8	26.8
	>51 years	39.9	37.6	32.4	34.3
Gender	Male	56.7	52.0	53.6	54.2
	Female	43.3	48.0	46.4	45.8
Wealth index	Poorest	9.5	4.5	59.6	3.3
	Poor	21.3	9.5	33.7	15.4
	Middle	31.4	17.0	4.8	26.8
	Rich	24.2	28.3	1.7	27.1
	Richest	13.6	40.8	0.2	27.3

Metabolic risk among the study participants



Overweight and obesity and HbA1c % higher in urban than rural

Density and Proximity of unhealthy outlets



Mean proximity and density was higher in urban than rural ($p < 0.05$)

Multivariable analysis of unhealthy food density with metabolic risk

Dependent variable

Model 1: Overweight and obesity

1.42(1.16,1.73)*

Model 2: HbA1c >6.5%

0.96(0.79, 1.18)

Logistic regression

Odds Ratio (95%CI) adj for covariates age, sex, wealth index, physical activity, fruit vegetable intake * Indicates $p \leq 0.05$

Higher density Higher metabolic risk

Multivariable analysis of unhealthy food proximity with metabolic risk

Dependent variable

Model 3: Overweight and obesity	1.21(1.01, 1.45)*
Model 4: HbA1c >6.5%	1.29(1.08, 1.56)*

Proximity outlets within <0.5Vs ≥0.5-3km)

Values indicate odds Ratio (95% CI) adj for age, sex, wealth index, physical activity, fruit vegetable intake

* Indicates $p \leq 0.05$

Higher proximity Higher metabolic risk

Conclusions

- **Density and Proximity to unhealthy food outlets is closely associated with increasing risk of NCDs especially in urban areas.**
- **Considering the prevalence of diet related NCDs among Indian population, food environment research is necessary for guided public health actions.**

Thank you !!!

Study participants, collaborators and colleagues

