

# Intention to Quit Tobacco Use among Adults in India: Identifying Stages based on the Transtheoretical Model of Stages of Change



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## Introduction

The Stages of Change or the transtheoretical model was developed to examine the changes in addictive behavior of smokers. Tobacco users are categorized into continuum of 3 stages: precontemplation, contemplation, preparation. As an integrative biophysiological model, Stages of Change assumes smokers go through the sequence of these stages to quit successfully. 1) not at all thinking about quitting (*precontemplation*), 2) thinking about quitting (*contemplation*), 3) making preparations to quit (*preparation*). Based on the transtheoretical model of stages and processes of change three cessation stages are defined as stages a smoker goes through to quit successfully.

## Objectives

The specific objectives of this study are :

- To assess the socio-demographic and regional differentials in the proportion of tobacco users aged 15 and over in different stages of smoke and smokeless tobacco cessation.
- To examine the influence of factors associated with stages of cessation among smokers aged 15 and over.
- To examine the influence of factors associated with stages of cessation among smokeless tobacco users aged 15 and over.

## Data & Methodology

This study used publicly available data of Global Adult Tobacco Survey (GATS). GATS is a global standard for systematically monitoring adult tobacco use (smoking and smokeless) and tracking key tobacco control indicators.

### Variables Used

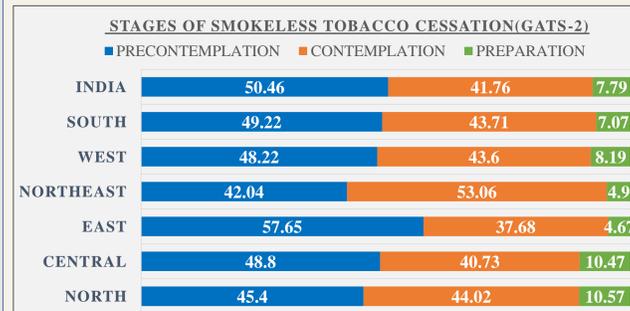
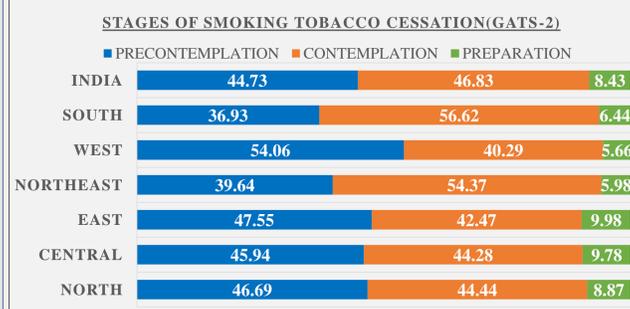
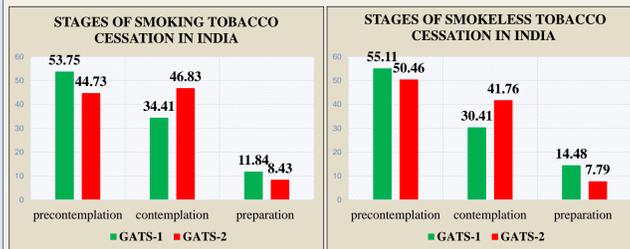
- **Outcome Variable** – Stages of cessation
- **Predictor Variables** - age, sex, education level, current working status, place of residence, wealth index, regions, smoking frequency, nicotine dependency, Information about dangers of smoking from any source of media, Belief that smoking causes serious illness etc.

### Statistical Analysis

- **Cross-tabs** are used to present the socio-demographic and economic differentials among all stages of smoke and smokeless tobacco cessation.
- **Pearson chi-square test** was used to understand the association between the predictor variables and the outcome variable.
- **Multinomial logistic regression** was used to calculate the predictive probabilities for the stages of cessation.

		Prevalence of smoking	Prevalence of smokeless tobacco
<b>India</b>	All 29 states and 3 Union territory	10.68 %	21.38 %
<b>North</b>	Chandigarh, Delhi, Haryana, Himachal Pradesh, Jammu & Kashmir, Punjab, Rajasthan, Uttarakhand.	13.79 %	9.98 %
<b>Central</b>	Chhattisgarh, Madhya Pradesh, Uttar Pradesh	12.01 %	29.63 %
<b>East</b>	Bihar, Jharkhand, Odisha, West Bengal	10.28 %	26.81 %
<b>North east</b>	Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Tripura	16.85%	40.5 %
<b>West</b>	Goa, Gujrat, Maharashtra	5.13 %	22.43 %
<b>South</b>	Andhra Pradesh, Karnataka, Kerala, Tamil Nadu, Telangana, Puducherry.	10.34 %	10.48 %

## Results



Proportion of adults aged 15+ in different stages of smoking tobacco cessation for socio-demographic characteristics from GATS-2(2016-17)

Background characteristics	Precontemplation	Contemplation	Preparation
<b>Age group ***</b>			
15-24	41.14	48.42	10.44
25-34	43.01	47.86	9.14
35-44	42.12	48.54	9.34
45-54	44.83	46.94	8.22
55-64	43.62	47.68	8.70
65-74	51.31	42.44	6.25
75+	48.04	44.17	7.79
<b>Sex***</b>			
Male	43.86	47.55	8.59
Female	53.58	39.56	6.86
<b>Education level***</b>			
No education/less than primary	50.65	41.59	7.76
Primary /less than secondary	40.26	50.27	9.48
Secondary	36.21	56.03	7.76
Higher	36.74	53.96	9.30
<b>Working status ***</b>			
Gov./Non-gov. employee	34.98	55.18	9.83
Daily wage/casual laborer	44.21	47.24	8.55
Self – Employed	44.69	46.87	8.44
Student	40.42	45.29	14.29
Homemaker	53.43	40.26	6.31
Unemployed	55.13	38.44	6.43
<b>Place of residence ***</b>			
Urban	38.97	52.46	8.57
Rural	46.83	44.79	8.38
<b>Wealth index ***</b>			
Poorest	36.01	55.90	8.09
Poorer	41.31	51.45	7.24
Middle	38.72	50.26	11.02
Richer	49.00	41.94	9.05
Richest	50.59	42.56	6.84

Proportion of adults aged 15+ in different stages of smoking tobacco cessation for smoke related factors from GATS-2(2016-17)

Smoke related factors	Precontemplation	Contemplation	Preparation
<b>Smoking frequency ***</b>			
Daily	47.01	45.28	7.70
Less than daily	35.34	53.24	11.42
<b>Nicotine dependency***</b>			
Low	40.26	50.55	9.19
Moderate	44.84	48.43	6.73
High	49.93	42.58	7.50
<b>Consume both smoke and smokeless tobacco***</b>			
No	33.68	54.54	11.78
Yes	46.31	45.74	7.95
<b>Info. about danger***</b>			
No	55.80	39.91	4.29
Yes	31.54	56.35	12.11
<b>Belief that smoking causes serious illness***</b>			
No	58.04	38.31	3.65
Yes	43.46	47.65	8.89
<b>Has smoking already done any harm to body***</b>			
Definitely no	51.34	41.96	6.70
Probably no	42.95	47.64	9.41
Probably yes	42.73	48.43	8.84
Definitely yes	38.93	51.46	9.60
<b>Made a quit attempt in last 12 months***</b>			
yes	22.42	61.73	15.86
no	57.50	38.32	4.18

\*p<0.10 \*\*p<0.05 \*\*\*p<0.01

Predictive probabilities based on multinomial logistic regression for different stages of quitting smokeless tobacco from GATS-2(2016-17)

Background characteristics	Precontemplation	Contemplation	Preparation
<b>Sex</b>			
Male	0.459	0.455	0.084
Female	0.549	0.367	0.083
<b>Place of residence</b>			
Urban	0.464	0.451	0.083
Rural	0.484	0.367	0.084
<b>Age group</b>			
15-24	0.519	0.389	0.091
25-34	0.482	0.425	0.091
35-44	0.444	0.472	0.083
45-54	0.471	0.447	0.081
55-64	0.477	0.452	0.070
65-74	0.512	0.380	0.107
75+	0.535	0.381	0.082
<b>Education level</b>			
No education/less than primary	0.528	0.390	0.081
Primary /less than secondary	0.459	0.451	0.088
Secondary	0.442	0.481	0.076
Higher	0.422	0.485	0.091
<b>Working status</b>			
Gov./Non-gov. employee	0.488	0.435	0.076
Daily wage/casual labourer	0.461	0.450	0.087
Self – Employed	0.505	0.407	0.086
Student	0.334	0.578	0.087
Homemaker	0.439	0.470	0.089
Unemployed	0.517	0.423	0.058
<b>Nicotine dependency</b>			
Low	0.451	0.477	0.101
Moderate	0.479	0.446	0.073
High	0.490	0.428	0.080
<b>Info. about danger</b>			
No	0.602	0.341	0.055
Yes	0.372	0.518	0.109
<b>Belief that smokeless tobacco causes serious illness</b>			
No	0.531	0.315	0.152
Yes	0.476	0.440	0.082

All probabilities were statistically significant at p<0.05

Predictive probabilities based on multinomial logistic regression for different stages of quitting smoking tobacco from GATS-2(2016-17)

Background characteristics	Precontemplation	Contemplation	Preparation
<b>Sex</b>			
Male	0.432	0.482	0.085
Female	0.425	0.500	0.073
<b>Place of residence</b>			
Urban	0.414	0.504	0.081
Rural	0.439	0.473	0.086
<b>Age group</b>			
15-24	0.477	0.388	0.134
25-34	0.436	0.485	0.078
35-44	0.405	0.515	0.079
45-54	0.445	0.468	0.085
55-64	0.449	0.456	0.093
65-74	0.438	0.483	0.078
75+	0.350	0.568	0.081
<b>Education level</b>			
No education/less than primary	0.461	0.447	0.090
Primary /less than secondary	0.405	0.510	0.084
Secondary	0.399	0.532	0.067
Higher	0.419	0.496	0.084
<b>Working status</b>			
Gov./Non-gov. employee	0.418	0.474	0.106
Daily wage/casual labourer	0.387	0.524	0.088
Self – Employed	0.452	0.468	0.078
Student	0.574	0.300	0.124
Homemaker	0.411	0.524	0.064
Unemployed	0.547	0.390	0.062
<b>Nicotine dependency</b>			
Low	0.397	0.505	0.969
Moderate	0.402	0.530	0.066
High	0.452	0.461	0.086
<b>Info. about danger</b>			
No	0.569	0.392	0.038
Yes	0.341	0.544	0.114
<b>Belief that smoking tobacco causes serious illness</b>			
No	0.462	0.486	0.051
Yes	0.429	0.483	0.086

All probabilities were statistically significant at p<0.05

## Conclusion

- There is a significant association between the stages of smoke and smokeless tobacco cessation and the socio-demographic characteristics and the factors related to smoke and smokeless tobacco use.
- The stages of smoking tobacco cessation depend on several factors including nicotine dependency, information about dangers of smoking, belief that smoking causes serious illness, working status of smokers, age, sex and wealth quantile.

## Discussion

- Quitting tobacco use is not a one step process, all the cessation programs should focus on these factors and try to formulate the strategies according to their stages of cessation.
- The contemplation is a big issue for the tobacco cessation.
- These stages may also help tobacco control programs to implement more effectively and efficiently.