

The “Hidden Story” about Change in Alcohol Use in India over the Past Two Decades: Insights from a Secondary Analysis of Data from the National Family Health Survey

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ABSTRACT

Background: Studies and published reports have not commented on the change in the proportion of the Indian population that consumed alcohol over the years.

Methods: We report the findings on changes in alcohol use in India over the past two decades, based on a secondary analysis of the data gathered over the successive National Family Health Surveys (NFHS-3 to 5).

Results: There was a significant decline ($P < 0.001$) of around 8% and 45% for the current use of alcohol among men and women from NFHS-3 to NFHS-4. There was a decline in the proportion of men reporting alcohol use across all but one state in NFHS-5 compared to NFHS-3. The decline was statistically significant ($P < 0.001$) for all but one state. There was a decline in the proportion of women reporting alcohol use in 12 states and an increase in three states. Also, there was a significant

($P < 0.001$) decline in the proportion of men reporting alcohol use in all the states in NFHS-5 compared to NFHS-4. There was an increase in the proportion of women reporting alcohol use in nine states (statistically significant in six states) in NFHS-5 compared to NFHS-4. However, the proportions were more than NFHS-3 values in two states.

Conclusions: These observations on changes in alcohol use in the country over the past two decades will help better understand the trends in alcohol consumption and help better plan the future strategy to address alcohol use and alcohol use disorders.

Keywords: Alcohol, India, trends

Key Messages: There was a significant decline of around 8% and 45% for the current use of alcohol among men and women from NFHS-3 to NFHS-4. There was a decline (statistically significant for all but one state) in the proportion of men reporting alcohol

use across all but one state in NFHS-5 compared to NFHS-3. There was a decline in the proportion of women reporting alcohol use in 12 states and an increase in three states.

Alcohol use has usually been described as an “emergent” major public health concern in India. Recent literature recommended studies to capture the “emerging problem” of alcohol consumption in the country.¹ Recent publications have also commented on a “dramatic increase” in alcohol use over the past three decades.²

It is a noteworthy observation that studies and published reports have not commented on the change in the proportion of the Indian population that consumed alcohol over the years. In fact, there are no published articles that report findings on trends in alcohol use in India based on a longitudinal study. Additionally, the use of varied study designs,

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assessment methodology, sampling frame, and population of interest makes it difficult to make any well-educated estimates on the change in alcohol use in the country over the years by comparing findings from different cross-sectional studies.

To understand the trend in alcohol use, it is important to evaluate the data collected over time using comparable methodology at different data collection points. One such survey on health-related variables has been conducted in India for the past three decades. The National Family Health Survey (NFHS-1) was launched by the Ministry of Health and Family Welfare (MOHFW), Government of India, in 1991.³ The NFHS is a large-scale survey conducted in a representative sample of households across India. Four rounds of the NFHS were conducted in 1992–1993, 1998–1999, 2005–2006, and 2014–2015, respectively.⁴ The data for NFHS-5 were collected in the second half of 2019; the first phase covered 17 states and five union territories (the second phase of the survey been disrupted by the COVID-19 pandemic).⁵

We report the findings on changes in alcohol use in India over the past two decades based on a secondary analysis of the data gathered over the successive NFHSs.

Material and Methods

We accessed the data for the current study from the online portal of NFHS (<http://rchiips.org/nfhs/>). We retrieved the data in January 2021. The data on alcohol use were gathered from the NFHS-2 onwards, where it was initially included as a question on selected lifestyle indicators for household members.⁶ Later on, from the NFHS-3, a separate questionnaire asked questions on alcohol use.⁷ Since NFHS-3, men and women have been interviewed individually about alcohol use.

We analyzed the data from NFHS-3 to NFHS-5 to understand the change in alcohol use across different states in India. Comparisons were made for all those states for which data were available for all three surveys (NFHS-3 to 5). Analysis was done separately for men and women. The change in the proportion of men and women reporting alcohol use was calculated across the three surveys (NFHS-3 v/s NFHS-4; NFHS-4 v/s NFHS-5; NFHS-3 v/s NFHS-5). The two-proportion z test (two-tailed) was used to make the comparisons. Also, chi-square test for linear trend was carried out. A P value of <0.05 was considered statistically significant.

Results

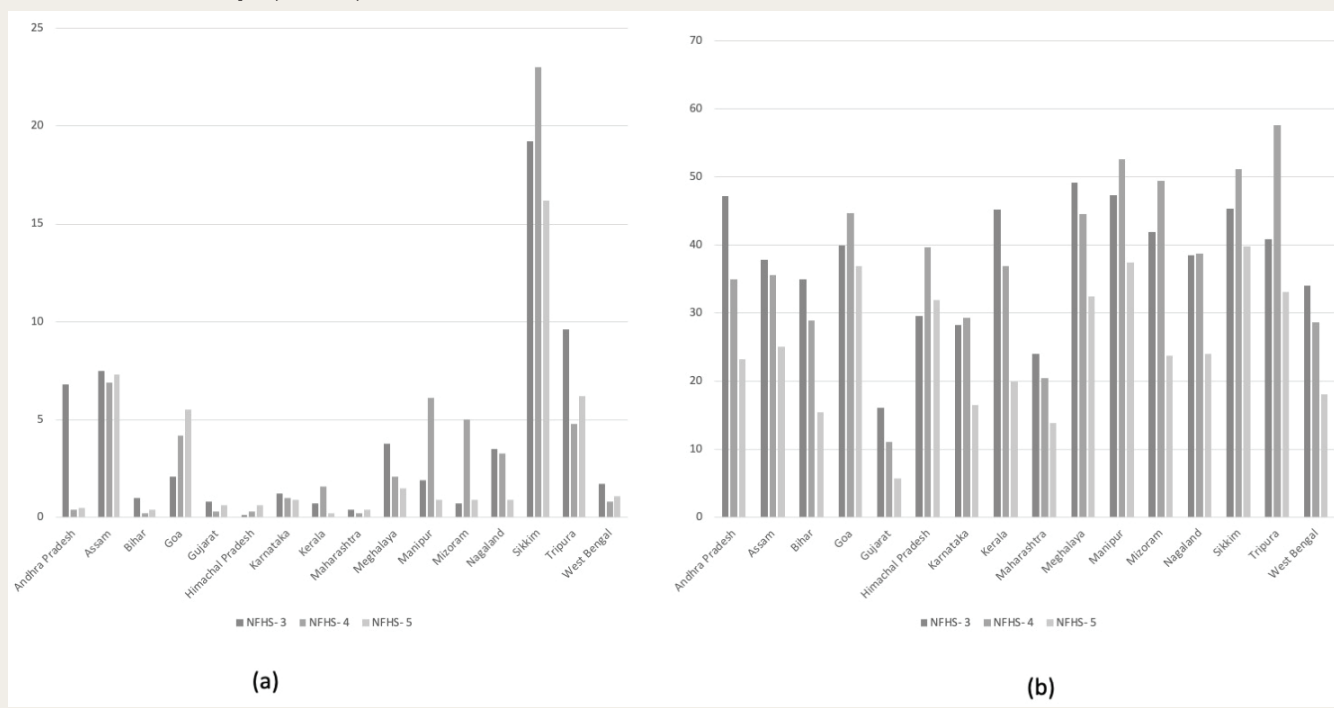
For 16 states, data were available for all three surveys (NFHS-3 to 5). The proportion of men and women reporting alcohol use across the successive surveys have been presented in **Figure 1** (a and b). There was a significant decline ($P < 0.001$) of around 8% and 45% for the current use of alcohol among men and women from NFHS-3 to NFHS-4. However, the national proportions for current alcohol use were not yet available for NFHS-5.

There was a decline in the proportion of men reporting alcohol use across all but one state (Himachal Pradesh, with a nonsignificant increase of around 8%) in NFHS-5 compared to NFHS-3. Moreover, the decline was statistically significant ($P < 0.001$) for all but one state (Goa, $P = 0.29$). The decline ranged from 7% to 55%.

There was a decline in the proportion of women reporting alcohol use across 12 states (statistically significant for nine states) and an increase across three states (statistically significant for two states). The decline ranged from 2% to 92%, whereas the increase ranged from 28% to 500%. The proportion of women reporting alcohol use was less than 1% in two-thirds (11 out of 16) of the states

FIGURE 1.

Proportion of Women (a) and Men (b) Reporting Alcohol Use Across the Successive National Family Household Surveys (NFHS) in India



in NFHS-5. One state had a double-digit value (Sikkim, 16.2%) for the proportion of women reporting alcohol use.

Also, there was a significant ($P < 0.001$) decline in the proportion of men reporting alcohol use across all the states in NFHS-5 compared to NFHS-4. This decline ranged from 17% to 92%. There was an increase in the proportion

of women reporting alcohol use across nine states (statistically significant in six states) in NFHS-5 compared to NFHS-4. However, the proportions were more than NFHS-3 values only in two states (Goa and Himachal Pradesh).

The changes in the proportion of men and women reporting alcohol use across the 16 states between NFHS-4

and NFHS-3, NFHS-5 and NFHS-4, and NFHS-5 and NFHS-3 have been presented in **Table 1**.

For women, there was a significant decreasing linear trend for Karnataka (chi-square for slope [linear trend]: chi-square = 4.80, $df = 1$, $P = 0.02$). For men, there was a significant decreasing linear trend for Andhra Pradesh (chi-square for

TABLE 1.

Proportion of Women and Men Reporting Alcohol Use in NFHS-3, NFHS-4, and NFHS-5 with Comparisons of the Proportions Across the Surveys

State	Women						Men					
	NFHS-3	NFHS-4	NFHS-5	NFHS-3 v/s NFHS-4	NFHS-4 v/s NFHS-5	NFHS-3 v/s NFHS-5	NFHS-3	NFHS-4	NFHS-5	NFHS-3 v/s NFHS-4	NFHS-4 v/s NFHS-5	NFHS-3 v/s NFHS-5
Andhra Pradesh	6.8	0.4	0.5	94.11%, $P < 0.001$	25%, $P = 0.28^{\#}$	92.64%, $P < 0.001$	47.2	34.9	23.3	26.05%, $P < 0.001$	33.23%, $P < 0.001$	50.63%, $P < 0.001$
Assam	7.5	6.9	7.3	8%, $P = 0.17$	5.79%, $P = 0.05^{\#}$	2.66%, $P = 0.64$	37.8	35.6	25.1	5.82%, $P = 0.14$	29.49%, $P < 0.001$	33.59%, $P < 0.001$
Bihar	1	0.2	0.4	80%, $P < 0.001$	100%, $P < 0.001^{\#}$	60%, $P < 0.001$	34.9	28.9	15.5	17.19%, $P < 0.001$	46.36%, $P < 0.001$	55.58%, $P < 0.001$
Goa	2.1	4.2	5.5	100%, $P < 0.001^{\#}$	30.95%, $P = 0.06^{\#}$	161.90%, $P < 0.001^{\#}$	40	44.7	36.9	11.75%, $P = 0.03^{\#}$	17.44%, $P < 0.001$	7.75%, $P < 0.29$
Gujarat	0.8	0.3	0.6	62.55%, $P < 0.001$	100%, $P < 0.001^{\#}$	25%, $P = 0.13$	16.1	11.1	5.8	31.05%, $P < 0.001$	47.74%, $P < 0.001$	63.97%, $P < 0.001$
Himachal Pradesh	0.1	0.3	0.6	200%, $P = 0.04^{\#}$	100%, $P = 0.002^{\#}$	500%, $P < 0.001^{\#}$	29.5	39.7	31.9	34.57%, $P < 0.001$	19.64%, $P < 0.001^{\#}$	8.13%, $P = 0.20$
Karnataka	1.2	1	0.9	16.66%, $P = 0.17$	10%, $P = 0.21$	25%, $P = 0.02$	28.3	29.3	16.5	3.53%, $P = 0.28^{\#}$	43.68%, $P < 0.001$	41.69%, $P < 0.001$
Kerala	0.7	1.6	0.2	128.57%, $P < 0.001^{\#}$	87.5%, $P < 0.001$	71.42%, $P < 0.001$	45.2	37	19.9	18.14%, $P < 0.001$	46.21%, $P < 0.001$	55.97%, $P < 0.001$
Maharashtra	0.4	0.2	0.4	50%, $P = 0.001$	<100%, $P = 0.001^{\#}$	0%, $P = 0.98$	24	20.5	13.9	14.58%, $P < 0.001$	32.19%, $P < 0.001$	42.08%, $P < 0.001$
Meghalaya	3.8	2.1	1.5	44.73%, $P < 0.001$	28.57%, $P = 0.001$	60.52%, $P < 0.001$	49.2	44.6	32.4	9.34%, $P = 0.05$	27.35%, $P < 0.001$	34.14%, $P < 0.001$
Manipur	1.9	6.1	0.9	221.05%, $P < 0.001^{\#}$	85.24%, $P < 0.001$	52.63%, $P < 0.001$	47.4	52.6	37.5	10.97%, $P < 0.001^{\#}$	28.70%, $P < 0.001$	20.88%, $P < 0.001$
Mizoram	0.7	5	0.9	614.28%, $P < 0.001^{\#}$	82%, $P < 0.001$	28.57%, $P = 0.46$	42	49.5	23.8	17.85%, $P = 0.001^{\#}$	51.91%, $P < 0.001$	43.33%, $P < 0.001$
Nagaland	3.5	3.3	0.9	5.71%, $P = 0.56$	72.72%, $P < 0.001$	74.28%, $P < 0.001^{\#}$	38.5	38.8	24	0.77%, $P = 0.83^{\#}$	38.14%, $P < 0.001$	37.66%, $P < 0.001$
Sikkim	19.2	23	16.2	19.79%, $P < 0.001^{\#}$	29.56%, $P < 0.001$	15.62%, $P = 0.005$	45.4	51.2	39.8	12.77%, $P = 0.02^{\#}$	22.26%, $P < 0.001$	12.33%, $P = 0.05$
Tripura	9.6	4.8	6.2	50%, $P < 0.001$	29.16%, $P = 0.001^{\#}$	35.41%, $P < 0.001$	40.9	57.6	33.1	40.83%, $P < 0.001^{\#}$	42.53%, $P < 0.001$	19.07, $P = 0.001$
West Bengal	1.7	0.8	1.1	52.94%, $P < 0.001$	37.5%, $P = 0.003^{\#}$	35.29%, $P < 0.001$	34	28.7	18.1	15.58%, $P < 0.001$	36.93%, $P < 0.001$	46.76%, $P < 0.001$
INDIA total	2.2	1.2	NA	45.45%, $P < 0.001$	-	-	31.9	29.2	NA	8.46%, $P < 0.001$	-	-

NFHS: National Family Health Survey, NA: data not available. ^ z test for difference of proportions. # Proportion increased since the previous comparator survey.

slope [linear trend]: chi-square = 331.94, $df = 1$, $P < 0.001$ and Gujarat (chi-square for slope [linear trend]: chi square = 175.84, $df = 1$, $P < 0.001$).

Discussion

Overall, we found a decrease in the proportion of men (in all but one state) and women (for 12 states) reporting alcohol use in India in the year 2019 (NFHS-5) as compared to the years 1998–1999 (NFHS-3). This finding has not been highlighted in the published literature on alcohol use from the country. On the contrary, “alcohol use” has usually been described as an “emergent” major public health concern in India. Additionally, there was a significant decrease in the proportion of men reporting alcohol use across all the states in the NFHS-5 compared to previous survey years 2014–2015 (NFHS-4).

The finding of decreasing trend of alcohol use in India has various implications. First, the fact that a relatively lower proportion of the Indian population is currently using alcohol compared to the previous survey years can serve as an important piece of information while delivering interventions targeted at primary prevention of alcohol use disorders (AUD). Studies have found that perceptions of drinking norms correlate positively with individual drinking behavior. It is commonly observed that perceived drinking norms typically exceed personal levels of alcohol use.⁸ Adolescents usually overestimate their peers' alcohol use, and these misperceptions affect adolescents' own alcohol-related behaviors.⁹ Overestimation of friends' alcohol use significantly increases the likelihood of all alcohol consumption behaviors and all alcohol-related problems.¹⁰ The finding of a decrease in the proportion of the Indian population with alcohol use can help develop social-norm campaigns as part of a prevention intervention.

Second, it can be argued that our findings lend support to the efforts targeted at prevention of alcohol use and AUD in the country. However, it is difficult to attribute this decrease to one or more programs or interventions, as the impact of the same has not been studied systematically in the country. While India still does not have a written policy on alcohol, various legislative and programmatic initiatives have been taken with an

aim to reduce the burden due to alcohol use in the country.¹¹ India has enacted laws against drunk driving and defined the minimum legal drinking age. Also, some of the Indian states have prohibited the sale, purchase, and consumption of alcohol. India also observes dry days on major religious festivals and national holidays. The country has legally binding regulations on alcohol advertising and legally required health warning labels on alcohol advertisements. Mass media and public awareness campaigns are other initiatives taken up in the country to address the issue. Such interventions have been reported to be effective against “harm caused by alcohol.”¹² However, the impact of such strategies and interventions cannot be commented on for the lack of systematic evaluation of their impact.

Third, the findings from the current study, when inferred alongside the other data on patterns of alcohol use and AUD, present a concerning situation. While the NFHS data suggested a decreasing trend in the proportion of people (especially men) who reported alcohol use in India, the Global Status Report on Alcohol and Health 2018 by WHO estimated a 38% increase in per-capita alcohol consumption among individuals aged ≥ 15 years in India during the period 2010–2017.¹³ This suggests that while the proportion of persons reporting alcohol use in India has decreased over the past two decades, the amount of alcohol consumed by those who drink has actually increased over the years. In fact, the total alcohol per capita consumption among drinkers in India is high at 18.3 liters and 6.6 liters of pure alcohol, respectively, for men and women (aged ≥ 15 years). The average volume of alcohol consumption is a well-established contributor to the alcohol-associated burden of disease and injury.¹⁴ These observations also highlight the need to be precise with the use of terminology while publishing research findings. It is important to accurately use the terms representing the use of alcohol as well as harms due to alcohol use.

Fourth, another important finding of the current study is the increase in the proportion of women reporting alcohol use across nine states. While the values were less than 1% in 11 states and still less than or equal to the 2005–2006

proportions for seven of these states, there is a need to focus on alcohol use among women across these states.

While the NFHS data have offered an important understanding into the trends in alcohol use in India over the past three decades, there are certain limitations of this data set. One important difference observed in the report on the NFHS-5 data was that the sample population of NFHS-5 was from the age group “15 years and above” as compared to between 15 and 49 years in NFHS-4. Therefore, it will be worth making a direct comparison for the 15–49 years once the detailed data are available for NFHS-5. Also, the NFHS assessed only alcohol use. It did not ask any questions on the past use of alcohol. So, those who did not report alcohol use could have been lifetime abstainers or current abstainers. Hence, it is not possible to comment on to which extent the observed findings are attributable to a decrease in the proportion of people who had never drunk in their lifetime vis-à-vis previous drinkers who have now stopped drinking. Additionally, it was not possible to draw any inferences on the trends in AUD as the information was not gathered. Also, we had information only on those aged ≥ 15 years. The age of initiation of alcohol was reported to be 13.6 years in a national survey among children and adolescents.¹⁵ So, we could not comment on the trend of alcohol use among those aged < 15 years.

Despite these limitations, the NFHS data offer valuable learning. These findings can be integrated in the prevention interventions targeted at reducing harms due to alcohol use. There is a need to strengthen the existing programmatic and legislative measures targeted at reducing the burden due to alcohol use. A systematic evaluation of the existing interventions shall help identify the ones that should be prioritized going ahead. Additionally, the existing prevention measures can be supplemented by additional interventions. There is a need to focus on the increase in the proportion of women reporting alcohol use. Finally, the findings of the current study, when interpreted in light of other data on patterns of alcohol use, highlight the need for developing services for those who consume excessive amounts of alcohol. Also, this set of people is likely to include a subset that requires services for the AUD.

In conclusion, this “hidden story” on change in alcohol use in the country shall help better understand alcohol consumption trends and help better plan the future strategy to address alcohol use and AUD.

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References

- Eashwar VMA, Umadevi R, and Gopalakrishnan S. Alcohol consumption in India: An epidemiological review. *J Family Med Prim Care* [Internet] 2020, Jan 28; 9(1): 49–55, <https://pubmed.ncbi.nlm.nih.gov/32110564>
- Luca DL, Owens E, and Sharma G. The effectiveness and effects of alcohol regulation: evidence from India. *IZA J Dev Migration* [Internet]. 2019 Jan 31 [cited 2021 Jan 30]; 9(1). DOI: 10.1186/s40176-018-0139-1
- International Institute for Population Sciences. *National Family Health Survey* [Internet]. [cited 2021 Jan 31], <http://rchiips.org/nfhs/about.shtml>
- Dandona R, Pandey A, and Dandona L. A review of national health surveys in India. *Bull World Health Organ* 2016; 94(4): 286–296A.
- International Institute for Population Sciences. *National Family Health Survey (NFHS-5)* [Internet]. [cited 2021 Jan 31], http://rchiips.org/nfhs/factsheet_NFHS-5.shtml
- International Institute for Population Sciences (IIPS) and ORC Macro. *National Family Health Survey (NFHS-2), 1998–99: India*. Mumbai: IIPS, 2000.
- International Institute for Population Sciences (IIPS) and Macro International. *National Family Health Survey (NFHS-3), 2005–06: India*. Vol. I. Mumbai: IIPS, 2007.
- Borsari B and Carey KB. Descriptive and injunctive norms in college drinking: A meta-analytic integration. *J Stud Alcohol* 2003; 64(3): 331–341.
- Cullum J, Armeli S, and Tennen H. Drinking norm-behavior association over time using retrospective and daily measures. *J Stud Alcohol Drugs* [Internet] 2010; 71(5): 769–777, <https://pubmed.ncbi.nlm.nih.gov/20731984>.
- Amialchuk A and Sapci O. The influence of normative misperceptions on alcohol-related problems among school-age adolescents in the U.S. *Rev Econ Household* [Internet] 2020 Feb 22 [cited 2021 Jan 31], <https://doi.org/10.1007/s11150-020-09481-3>.
- Jiloha RC. Prevention, early intervention, and harm reduction of substance use in adolescents. *Indian J Psychiatry* [Internet] 2017 [cited 2021 Jan 31]; 59(1): 111, <https://www.indianjpsychiatry.org/article.asp?issn=0019-5545;year=2017;volume=59;issue=1;spage=111;epage=118;aulast=Jiloha;type=0>
- Anderson P, Chisholm D, and Fuhr DC. Effectiveness and cost-effectiveness of policies and programmes to reduce the harm caused by alcohol. *Lancet* 2009 June 27; 373(9682): 2234–2246.
- WHO. *Global Status Report on Alcohol and Health* [Internet]. World Health Organization, 2018, https://www.who.int/substance_abuse/publications/global_alcohol_report/en/
- Rehm J, Gmel GE, Gmel G, et al. The relationship between different dimensions of alcohol use and the burden of disease—an update. *Addiction* [Internet] 2017 [cited 2021 Jan 31]; 112(6): 968–1001, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5434904/>
- Dhawan A, Pattanayak RD, Chopra A, et al. Pattern and profile of children using substances in India: Insights and recommendations. *Natl Med J India* 2017; 30(4): 224–229.