A Three-Site Study of Alcohol Consumption among Adolescents from Indigenous Tribes in India

Ryntihlin Jennifer War[1], Vaibhav V Gharat[2], Susmita Chandramouleeshwaran[3], Sunil Nayak[2], Vishwajit L Nimgaonkar[4], Shylaja Devi[3]

ABSTRACT

Background: Alcohol use disorder is elevated among members of indigenous tribes in India, like native populations in several other countries. Despite constituting 8.6% of the Indian population, tribals are among the most geographically isolated, socioeconomically underdeveloped, and underserved communities in the country. Based on the experience from our centers (in Tamil Nadu, Meghalaya, and Gujarat), we are aware of escalating alcohol use among tribal communities. The aims of this study are (a) to estimate alcohol use and psychiatric morbidity among teenagers from indigenous tribes, and (b) pilot test a psychoeducational efficacy study.

Methods: The biphasic study is being conducted in three states of India: Tamil Nadu in South, Meghalaya in Northeast, and Gujarat in West. Phase 1 is a cross-sectional study of tribal adolescents at each site. The MINI 6.0/MINI Kid 6.0 questionnaire was used to estimate extent of psychiatric morbidity and substance addiction. Phase 2 is an intervention trial of 40 participants at each site to assess the effectiveness of NIMHANS LSE module in protecting the tribal adolescents from alcohol use.

Conclusions: The desired primary outcome will be forestalling the onset of alcohol use among this group. This paper focuses on the methodology and strategies to be used to achieve the objectives.

Keywords: Tribal adolescents, alcohol use, psychiatric morbidity, life skills education training, MINI 6.0

Key Messages: Alcohol use is rising among adolescents tribals in India. Life skills education module is effective to empower adolescents and promote mental well-being. It can help in improving self-management skills and decision making and thus can forestall alcohol use among adolescent tribals.

Alcohol use disorder is a global problem.[1] The World Health Organization (WHO) in its Global Status Report on Alcohol and Health (2018) documents that about half of the global population aged more than 15 years are current (past 12 months) users of alcohol. The WHO Global Burden of Disease study reported that among youth aged 10–24 years, the main risk factor for incident disability adjusted life years (7%) was alcohol use.[2] It is reported that alcohol is the most common psychoactive substance used by Indians with about 14.6% of the population (between 10 and 75 years of age) using alcohol and 2.7% being alcohol dependent. This would translate to 16 crore persons who consume alcohol in the country.[3] The National Mental Health Survey (NMHS) of India conducted in 2015–2016 reported 7.3% prevalence of psychiatric morbidity among 13–17 year olds.[4] The rates of alcohol consumption among under 21 year olds increased from 2% to 14% over the past 15 years.[5] The Youth Health Survey 2014 conducted in Himachal Pradesh reported a 7.2% alcohol use among 15- to 24-year-old persons, requiring urgent intervention.[6]

Tribal people constituting 8.6% of the Indian population are among the most

[1]Centre for Gender, Martin Luther Christian University, Shillong, Meghalaya. [2]Dept. of Community Medicine, Gujarat Medical Education and Research Society Medical College, Valsad, Gujarat. [3]Association for Health Welfare in the Nilgiris, Gudalur, Nilgiris, Tamil Nadu. [4]Behavioral Health Service Line, VA Pittsburgh Healthcare System, Western Psychiatric Institute and Clinic, University of Pittsburgh, Pennsylvania, USA.

HOW TO CITE THIS ARTICLE: War RJ, Gharat VV, Chandramouleeshwaran S, Nayak S, Nimgaonkar VL, Devi S. A Three-Site Study of Alcohol Consumption among Adolescents from Indigenous Tribes in India. *Indian J Psychol Med.* 2020;42(6S):51S–56S.

Address for correspondence: Vaibhav Gharat, Dept. of Community Medicine, GMERS Medical College, 5th Floor, Valsad 396001, Gujarat. E-mail: drvvgmd@gmail.com

Submitted: 29 Sept. 2020
Accepted: 5 Oct. 2020
Published Online: 16 Dec. 2020

Copyright © 2020 Indian Psychiatric Society - South Zonal Branch

Creative Commons Non Commercial CC BY-NC: This article is distributed under the terms of the Creative Commons Attribution- NonCommercial 4.0 License (http://www.creativecommons.org/licenses/by-nc/4.0/) which permits non-Commercial use, reproduction and distribution of the work without further permission provided the original work is attributed as specified on the SAGE and Open Access pages (https://us.sagepub.com/en-us/nam/open-access-at-sage).

ACCESS THIS ARTICLE ONLINE
Website: journals.sagepub.com/home/szj
DOI: 10.1177/0253717620969737

geographically isolated, socioeconomically underdeveloped, and underserved communities in the country.[7] A study in South India reported increasing alcohol use among tribals.[8] Alcohol use among youth in a state in Northeast India was reported to be 36% for homemade drinks and 12.3% for commercial drinks.[9] A study on the Toto tribe in West Bengal revealed that about 5% had psychiatric morbidity with females being more affected than males but prevalence of substance use disorders was not estimated.[10] Nevertheless, markedly elevated consumption of alcohol has been reported among tribals, both in India and worldwide.[11-14] The age of initiation of drinking has also decreased.[14] Indigenous people should be encouraged, trained, and enabled to become increasingly involved in overcoming these challenges.[15]

The paucity of data on indigenous health has been a limitation to developing appropriate strategies and programs, assess effectiveness of those activities and modify them if necessary, and to compare health standards between different groups of indigenous and non-indigenous people.[16]

Aims and Objectives

The focus of this study will be to tackle the problem of alcohol use through a preventive upstream approach. The specific objectives of the study are:

1. Estimate the prevalence of alcohol use, psychiatric morbidity, and related risk factors among 11–19 year olds tribal youth in three states of India.
2. Conduct pilot studies to evaluate the implementation of the NIMHANS life skills module for potentially protecting this vulnerable group from alcohol use.

The study follows the recommendations of the NMHS to carry out life skills training in school going age groups of vulnerable tribal communities. The use of evidence-based substance use prevention programs has been reiterated as a means to protect the young people.[3] This study was conducted simultaneously at three sites in India which are different geographically and socioculturally.

- Association for health welfare in the Nilgiris (ASHWINI), Nilgiris, Tamil Nadu (Southern India), a registered 29-year-old charity that works with the tribal community in the Gudalur valley.
- Martin Luther Christian University, Shillong, Meghalaya (Northeastern India), a state private University.
- Gujarat Medical Education and Research Society (GMERS) Medical College, Valsad, Gujarat (Western India), a Government Medical College.

Description of Sites

This study is part of a capacity building workshop funded by the Indian Council of Medical Research, New Delhi. The following three sites were selected considering the tribal population, sociocultural and geographical difference among them (Eastern, Western, and Southern part of India), and reported use of alcohol.

Tamil Nadu: Although Tamil Nadu is one of the Indian states with best health indices, alcohol consumption among men and women (46.7% and 0.4%) is on rise compared to previous years (41.5% and 0.1%) and much higher than national average (29.2% and 1.2%) (National Family Health Surveys—NFHS 3 and NFHS 4).[17,18] Recently, the study on substance use magnitude in India concurs to the NFHS-3 study and reports Tamil Nadu to have about 14.2% (national 14.6%) current alcohol users and about 4% alcohol dependence, which is above the national average of 2.7%.[3] Based on the observations and hospital records available at ASHWINI, consumption of alcohol is on the rise. Of the 20,000 tribal catchment populations, in the period from April 2018 to March 2019, there were 26 admissions with severe medical problems due to alcohol use, of which 5 (19%) were less than 25 years of age (ASHWINI hospital records).

Meghalaya: In Meghalaya, many socioeconomic and health indicators are poor. The NFHS-4 (2015–2016) indicates that 44.6% of men of the age group 15–49 years consume alcohol in Meghalaya.[19] Recent study on substance use magnitude in India reports 3.4% of current alcohol users in the age group of 10–75 years of age with about 0.9% alcohol dependence in Meghalaya.[3] Since time immemorial the Khasis are in the regular habit of taking alcohol either of a spirit distilled from rice or millet or of rice beer (*ka'iad um*) which has an important place in Khasi religious ceremonies. However, exposure to colonialism introduced hard alcohol to the tribe.[20]

Gujarat: Despite being an alcohol prohibited state, based on NFHS 4 data, widespread alcohol use is observed throughout the state with prevalence of alcohol use among males being 11.1% and 0.3% in females.[21] The recent study on substance use magnitude in India reports 3.9% of current alcohol users in the age group of 10–75 years of age with about 1.2% alcohol dependence in Gujarat.[3] Alcohol use is also on a rise in tribal communities where both locally made "mahua" and "toddy" as well as branded alcohol are available. We are aware of escalating alcohol use among tribal youth, with consumption of alcohol starting as early as 12 years of age.

Materials and Methods

Study Design

This multicentric study was conducted in two phases in areas of operation of the three organizations, including the four tribal groups in the Gudalur and Pandalur taluks of Nilgiris district in Tamil Nadu, the Khasi tribe in Meghalaya, and in four tribal groups in Dharampur and Kaparada talukas of Valsad district in Gujarat. The study population was the 11- to 19-year-old persons in these communities.

Phase 1 is a cross-sectional study to assess the burden of psychiatric morbidity including substance use using standardized tools MINI and MINI KID. Phase 2 will be a community intervention trial where the study arm will comprise a group of adolescents who have never used alcohol and who will receive the NIMHANS LSE module, while the control group will be kept in their natural setting and environment. Both the groups will be followed up at 6 months and 1 year to assess alcohol use. An evaluation of the appropriateness of this module for the tribal community will also be done.

Sample Size

Phase 1

The following sample size formula was used[22]:

$$(Z^2 (P) (1–P)) / d^2,$$

where n = sample size, Z = Z statistic for a level of confidence, P = expected preva-

TABLE 1.
Timeline of the Study

Schedule of Research Activities	Year 1	Year 2	Year 3
Recruitment of staff, training of field workers and research fellows	✓		
Phase 1 Data collection: recruitment of participants, administering of MINI/MINI KID and ASSIST V3	✓		
Data entry: entering of data into ICMR portal	✓		
Preparation of year 1 report	✓		
Phase 2 Training of NIMHANS life skills facilitators	✓		
Pilot testing of study tools and modules	✓		
Recruitment of participants for the intervention		✓	
Intervention: providing intervention in two batches		✓	
Development of protocol paper as manuscript		✓	
Development of manuscript for findings from phase 1		✓	
Follow up of participants at 6 and 12 months		✓	✓
Data analysis preparation of report, submission of final report			✓
Conference presentation, development of manuscript for findings from phase 2			✓
Provision of NIMHANS life skills intervention to the control group			✓

lence or proportion (in proportion of one; if 20%, $P = 0.2$), and d = precision (in proportion of one; if 5%, $d = 0.05$). Z statistic (Z): For the level of confidence of 95%, which is conventional, Z value is 1.96.

$$n = ((1.96)\ 2\ (0.07)\ (0.93))/(0.05)$$
$$2 = 0.250/0.0025 = 100.$$

For the dropout rate to get adjusted in the sample size (N), the following formula was used:

$N = n\ /\ (1 - (z/100))\cdot N = 100/1 - 0.2 =$ 125. After adjusting the design effect of 1.5, the sample size was calculated to be 187.5, rounded off to 195.

Phase 2

As stated in objective 2, the testing of the NIMHANS life skills module is a pilot study for potentially protecting tribal adolescents from alcohol use. A sample of 80 children in age group of 15 to 19 years (40 in study group and 40 in control group) will be selected to test the feasibility and effectiveness of the module in the community. The rationale of limiting each group to 40 was based on an appropriate group size for effective training. Moreover, as no studies have been conducted previously using the proposed design, we are unable to accurately estimate power of the proposed sample. The sample for phase 2 will be selected from different villages or cluster to prevent contamination of the sample.

Sampling Strategy

Tamil Nadu (TN) site: The study population is the 18,758 vulnerable primitive tribes of Gudalur and Pandalur taluk of the Nilgiris district belonging to four tribes: Mulakurumbas, Betakurumbas, Paniyas, and Kattunayikans.

Phase 1: The sample was selected through cluster random sampling. The tribes and the difficulty of access for villages are the two parameters that are used for the sampling. This is important as the distance from the nearest town and difficulty of approach could impact the extent of health care use and alcohol consumption in the villages. The villages are stratified for access into three categories based on distance from the nearest town, road access, and difficulty of the approach terrain (A: easy, B: medium, C: difficult). Each village comprises only one tribe. In the first stage of sampling, a proportional number of participants from each tribe were calculated, using the relative proportions of the tribes, and the total number of participants as 195. In the second stage of sampling, the number of participants from each tribe, for the different categories of villages, was calculated using the relative proportions of A, B, and C villages for each tribe. Using a list and with the use of a random number table, a list of 10 villages for each of the A, B, and C categories for each tribe was generated. The villages were visited sequentially as per the list until the required number of participants in each category was recruited. Phase 2: Two clusters of 10 villages each were randomly chosen from the village list. The villages were then divided into two groups: A for cases and B for control. Each village was visited sequentially for recruitment of participants, till the number of required participants is reached.

All children in the age group selected were approached. Those who have already used alcohol were excluded. Those who will not be able to participate meaningfully in the module due to psychiatric, developmental, or medical morbidities were excluded, and referred for the mental health services available at the Gudalur Adivasi Hospital.

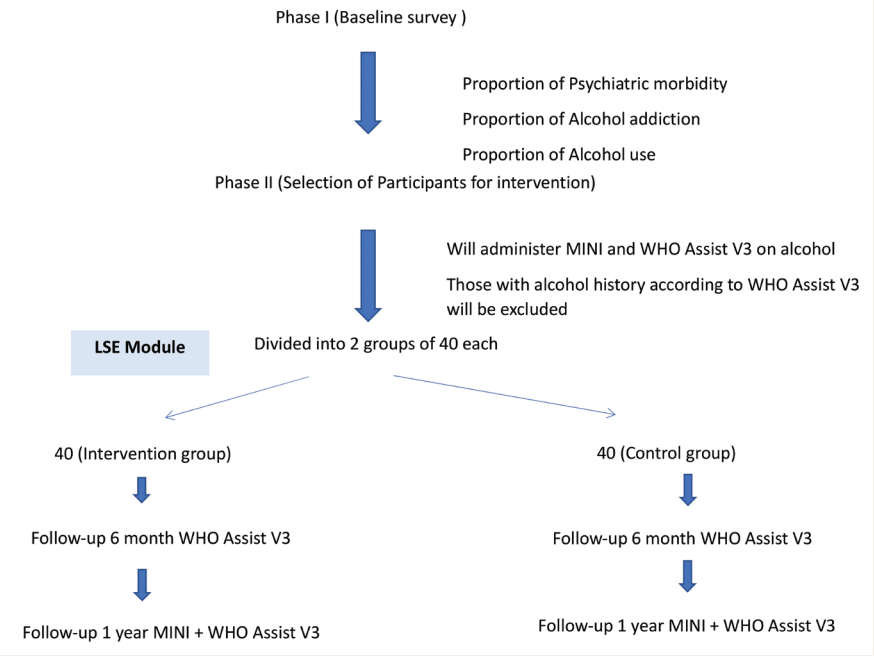
Meghalaya site: The tribe under study was the Khasis residing in East Khasi Hills district which has about 55% rural and the rest urban population. For phase 1, the sample size of 200 had 89 drawn from urban areas and 111 from rural areas. The eight blocks are considered as strata and two wards/villages (as per census 2011) from each block was selected using the lottery method. The number of samples to be drawn from each ward/village was determined using to probability proportional to size (PPS) sampling. The identification of the household/sample was attempted using

systematic random sampling every fifth house. For phase 2, two localities will be selected and randomly allotted to the study and the control group. The identification of the household will be done by using systematic random sampling of every fifth house.

Gujarat site: The desired sample was selected from Dharampur and Kaparada blocks of Valsad district which are hard to reach and have predominantly tribal population consisting of Bhils, Kharva, Nayakas, Dhodiya, and Halpati. For phase 1, 30 villages were selected by the simple random sampling method from 235 villages of both blocks. The number of participants from each village was selected based on PPS size method. The participants from each village were recruited by simple random sampling method till the desired sample for that particular village was reached. For phase 2, two clusters of 10 villages each, one study arm and one control arm, will be randomly chosen in Dharampur and Kaparada taluka. The selection of participants from each village will be based on the PPS size method.

FIGURE 1.

Description of Study in Flow Diagram



Data Collection

Phase 1: Data collection was carried out through a door-to-door survey. Sociodemographic data was collected using a semistructured questionnaire. MINI 6.0 (18–19 years of age) or the MINI KID 6.0 (11–17 years of age) was administered to 195 participants at each site. Approximately 10% of the forms were cross-examined by principal investigator to maintain the diagnostic accuracy of data collection method.

Phase 2 Intervention

Adolescents from the study and control villages will be interviewed using the MINI/MINI kid as well as the alcohol part of the WHO ASSIST V3. Those who have history of alcohol use will be excluded. A total of 40 participants in the study group and control group each will be selected for phase 2 intervention. NIMHANS LSE module training will be given to 20 participants in a standardized manner by trained facilitators in two workshops (total 40 participants study group) lasting 3 to 4 days.

Follow-up

After the training, the study and control groups will be followed at 6 months with ASSIST V3 and 1-year post intervention with MINI/MINI KID and ASSIST V3 questionnaire. The data would be collected by field assistants, who will be different from those administering the intervention. Sample questions from Life Skills Assessment Scale (LSAS) developed and validated by the Rajiv Gandhi National Institute of Youth Development, and Sriperumbudur[23] will be used as pre-test and post-test assessment to assess the improvement after the training. An interview/discussion will be held with some of the participants/parents and facilitators of the study group on alcohol use in the participants during the interim period. This qualitative tool will enable us to draw intangible benefits if any as an outcome of the intervention and to ascertain whether the intervention is feasible and acceptable by the tribal adolescents.

Study Timeline

Phase 1 of study will be of 12 months. Among these 6 months are for data collection, 2 months for data analysis, and 4 months for report preparation. Phase 2 of study will take 2 years. Among these first 14 months is for data collection and 10 months is for data analysis and report preparation.

Instruments

MINI/MINI KID[24-26]: The M.I.N.I. International Neuropsychiatric Interview was developed in 1990 in the United States and Europe for *DSM-IV* and *ICD-10*. It is a structured diagnostic interview used for psychiatric evaluation requiring approximately 15 minutes to administer. MINI KID is the version of MINI for use among children and adolescents. It has been chosen for the relative ease of training field staff, and availability of validated multiple Indian language versions.

WHO ASSIST V3[27]: The WHO ASSIST (Alcohol, Smoking and Substance Involvement Screening Test) version 3 was developed by the WHO to identify people with both moderate and severe substance use problems. The ASSIST is an interviewer administered questionnaire that has been validated in variety of settings including India and has high validity.

NIMHANS Life Skills Module[28]: This is an effective method to empower adolescents and promote mental well-being. It is based on a cognitive behavioral model, with a focus on development of self-management skills in general and relapse prevention skills in particular in order to support a drug free lifestyle. Some elements of Adolescent Community Reinforcement Approach (ACRA)

have been used. It has been tested in the field by NIMHANS for use among adolescents with substance use.

Inclusion and Exclusion Criteria for Intervention Phase

Inclusion Criteria

1. Adolescents in the age group of 11–14 years or 15–19 years
2. Adolescents who do not have any major psychiatric, developmental, or medical morbidities

Exclusion Criteria

1. Adolescents who have a history of alcohol use according to WHO ASSIST V3.

Ethical Issues

The study was conducted after approval from Ethical Committee of the respective institutions. All the participants were informed about the study procedure and information required from them for the study. A voluntary informed written consent/assent was taken from the participants or parents.

Data Analysis

Data were entered into the ICMR data entry software.

Phase 1 data will be analyzed for the prevalence of various psychiatric morbidities including alcohol dependence. The sociodemographic and clinical factors will be calculated as percentages and frequencies. Univariate associations between alcohol use and sociodemographic/clinical factors will be calculated using the chi-square test. We will then use regression methods to assess the potential effects of demographic or clinical covariates.

For phase 2, the impact of the training on use of alcohol in the two groups will be analyzed. The feedback from the participants and facilitators will be analyzed to understand the feasibility of the module. We will compare the sociodemographic and clinical details of the two groups at baseline to assess for the comparability of the two groups.

Outcome

The prevalence of various psychiatric morbidities and alcohol use disorders, age groups in which they are present, and associated risk factors will be identified. The primary outcome measures of the intervention would be initiation of use of alcohol in the interim period, 6 months and 1 year after the intervention. This would be a categorical variable. We will compare this with the prevalence of alcohol use from the data obtained among age controls with the use of appropriate univariate analysis. We will then use regression methods to assess the potential effects of demographic or clinical covariates. The test will be considered significant if the p value is less than 0.05. Other intangible outcomes as a result of the life skills intervention will be documented through qualitative methods. The proportion of psychiatric morbidity among the study and control group during the follow-up period will also be ascertained.

Discussion

With the background of growing alcohol use disorders in India, and especially among youth, we aim to quantify this problem among different tribal communities in different parts of India and test an intervention to forestall the use of alcohol among this population. If we obtain favorable results of the effectiveness of the intervention in forestalling alcohol use, we will conduct a larger, randomized controlled study with adequate power to test the efficacy of our intervention where we will attempt to enculturate the study in an appropriate and feasible manner.

The importance of cultural inputs in health care has been emphasized by the WHO: "There are ethical, epistemological and economic imperatives for considering the cultural contexts of health and well-being."[29] Lancet, a leading medical journal that has led studies on the health of indigenous peoples, has noted that "The systematic neglect of culture in health and health care is the single biggest barrier to the advancement of the highest standard of health worldwide."[30] A comprehensive review of indigenous health has noted that "Agencies that have provided clinical and related healthcare services for Indigenous people have often had little success because of an absence of awareness or acceptance of Indigenous cultural behaviours."[16] Health and illness are defined, labeled, evaluated, and acted upon in the context of culture.

Experience shows that health programs that fail to recognize and work with indigenous beliefs and practices fail to reach their goals. Similarly, research to plan and evaluate a health program must take cultural beliefs and behaviors into account in order to understand why programs are not working and what to do about it.[31] An NIH Expert Panel concluded that culture is glaringly absent from health research, highlighting the primarily monocultural lens through which health behavior is currently conceptualized.[32]

The above aspects of social validity and research in a cultural context are sought by the investigators in this study. In Gudalur, the research team has been working with tribal groups for several decades. In Shillong, the investigators are themselves tribal and are conducting the intervention in the immediate vicinity of the university. In Gujarat, investigators had conducted various research and service projects in tribal population.

Finally, it is well accepted that "Indigenous people should be encouraged, trained, and enabled to become increasingly involved in overcoming these challenges."[15]

In future, the follow-up of this project will explore and define the community sustainability of alcohol-prevention efforts.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

This protocol paper describes the methodology of a research project funded under 'Capacity Building Task Force for Mental Health Research in India' funded by the Indian Council of Medical Research vide file number 5/4-4/151/M/2017/NCD-1. International mentors were funded by the training program 'Cross Fertilized Research Training for New Investigators in India and Egypt' funded by FIC, NIH (No. D43 TW009114).

Trial Registration Details: Clinical Trials Registry of India ID

Tamil Nadu CTRI: CTRI/2018/08/015244
Meghalaya CTRI: CTRI/2019/05/019189
Gujarat CTRI: CTRI/2018/10/016015

ORCID iD

Vaibhav V Gharat https://orcid.org/0000-0001-7341-3066

References

1. Monteiro MG. The road to a World Health Organization global strategy for reducing the harmful use of alcohol. Alcohol Res Health 2011; 34(2): 257–260.
2. Gore FM, Bloem PJ, Patton GC, et al. Global burden of disease in young people aged 10–24 years: A systematic analysis. Lancet 2011; 377(9783): 2093–2102.
3. Ambekar A, Agrawal A, Rao R, Mishra AK, et al; on behalf of the group of investigators for the National Survey on Extent and Pattern of Substance Use in India (2019). Magnitude of Substance Use in India. New Delhi: Ministry of Social Justice and Empowerment, Government of India.
4. Gururaj G, Varghese M, Benegal V, et al. *National Mental Health Survey of India, 2015-2016: Prevalence, Patterns and Outcomes. NIMHANS Publication No. 129*. Bengaluru: National Institute of Mental Health and Neuro Sciences; 2016.
5. Prasad R. Alcohol use on the rise in India. Lancet 2009; 373(9657): 17–18.
6. Gururaj G, Pradeep BS, Beri G, et al. *Report of Youth Health Survey—Himachal Pradesh*. Centre for Public Health. Bangalore, NIMHANS; 2014.
7. Office of Registrar General & Census Commissioner of India. *Census 2011 New Delhi: Ministry of Home Affairs*; 2013, http://censusindia.gov.in/ (accessed 5 November 2019).
8. Mohindra KS, Narayana D, Anushreedha SS, et al. Alcohol use and its consequences in South India: Views from a marginalised tribal population. Drug Alcohol Depend 2011; 117: 70–73.
9. Mahanta B, Mohapatra PK, Phukan N, et al. Alcohol use among school-going adolescent boys and girls in an industrial town of Assam, India. Indian J Psychiatry 2016, 58(2): 157–163.
10. Ghosh AB, Banerjee G, and Biswas D. Psychiatric morbidity in a sub-Himalayan tribal community: An epidemiological study. Indian J Psychiatry 2004; 46(4): 324–332.
11. Saxena S. Country profile on alcohol in India. In: Riley L and Marshall M (eds). *Alcohol and public health in 8 developing countries*. Geneva: World Health Organization; 1995, pp. 38–60.
12. Giri DK, Chaudhary S, Manjhi G, et al. Utilization of psychiatric services by tribal population of Jharkhand through community outreach programme of RINPAS. Eastern J Psych 2007; 10: 25–29.
13. Neufeld KJ, Petersb DH, Rani M, et al. Regular use of alcohol and tobacco in India and its association with age, gender and poverty. Drug Alcohol Depend 2005; 77: 283–291.
14. Subramanian SV, Davey Smith G, et al. Indigenous health and socioeconomic status in India. PLoS Med 2006; 3: 1794–1804.
15. Anderson I, Robson B, Connolly M, et al. Indigenous and tribal peoples' health (The Lancet–Lowitja Institute Global Collaboration): A population study. Lancet 2016; 388: 131–157.
16. Gracey M and King M. Indigenous health part 1: Determinants and disease patterns. Lancet 2009; 374: 65–75.
17. International Institute for Population Sciences (IIPS) and ICF. *National Family Health Survey (NFHS-4), 2015-16 State Factsheet Tamil Nadu*. Mumbai: IIPS; 2017, http://rchiips.org/NFHS/pdf/NFHS4/TN_FactSheet.pdf (accessed 10 July, 2019).
18. International Institute for Population Sciences (IIPS) and Macro International. *National Family Health Survey (NFHS-3), 2005-06 State Factsheet Tamil Nadu*. Mumbai: IIPS; 2007, http://rchiips.org/nfhs/pdf/Tamil%20Nadu.pdf (accessed 10 July, 2019).
19. International Institute for Population Sciences (IIPS) and ICF. *National Family Health Survey (NFHS-4), 2015-16 State Factsheet Meghalaya*. Mumbai: IIPS; 2017, http://rchiips.org/NFHS/pdf/NFHS4/ML_FactSheet.pdf (accessed 10 July, 2019).
20. Gurdon PRT. *The Khasis. Reprint 2010*. New Delhi: Akansha Publishing House; 2010, pp. 52–54.
21. International Institute for Population Sciences (IIPS) and ICF. *National Family Health Survey (NFHS-4), 2015-16. State Factsheet Tamil Nadu*. Mumbai: IIPS; 2017, http://rchiips.org/nfhs/pdf/NFHS4/GJ_FactSheet.pdf (accessed 10 July, 2019).
22. Daniel WW. *Biostatistics: a foundation for analysis in the health sciences,* 7th ed. New York: John Wiley & Sons; 1999.
23. Subasree R and Nair AR. The Life Skills Assessment Scale: The construction and validation of a new comprehensive scale for measuring Life Skills. IOSR J Human Soc Sci 2014; 19(1): 50–58.
24. Sheehan DV, Lecrubier Y, Sheehan KH, et al. The Mini-International Neuropsychiatric Interview (M.I.N.I.): The development and validation of a structured diagnostic psychiatric interview for DSM-IV and ICD-10. J Clin Psychiatry 1998; 59 (suppl 20): 22–33; quiz4–57.
25. Lecrubier Y, Sheehan DV, Weiller E, et al. Mini International Neuropsychiatric Interview (M.I.N.I). A short diagnostic structured interview: Reliability and validity according to the CIDI. Eur Psychiatry 1997; 12: 223–231.
26. Sheehan DV, Lecrubier Y, Harnett-Sheehas K, et al. The validity of Mini International Neuropsychiatric Interview (M.I.N.I) according to the SCID-P and its reliability. Eur Psychiatry 1997; 12: 232–241.
27. WHO Assist Working Group. The Alcohol, Smoking and Substance Involvement Screening Test (ASSIST): Development, reliability and feasibility. Addiction 2002; 97(9): 1183–1194.
28. Srikala B and Kishore KKV. Empowering adolescents with life skills education in schools—School mental health program: Does it work? Indian J Psychiatry 2010; 52(4): 344–349.
29. David Napier AD, Michael Depledge M, Knipper M, et al. *Policy brief, No. 1: Cultural contexts of health and well-being. Culture matters: Using a cultural contexts of health approach to enhance policy-making.* WHO; 2017. http://www.euro.who.int/__data/assets/pdf_file/0009/334269/14780_World-Health-Organisation_Context-of-Health_TEXT-AW-WEB.pdf?ua=1 (accessed 20 November, 2019).
30. Napier AD, Ancarno C, Butler B, et al. Culture and health. Lancet 2014; 384: 1607–1639.
31. Emic Perspective. *Essential Medicines and Health Products Information Portal*. A World Health Organization resource; 2006, https://www.who.int/medicines/publications/en/ (accessed 15 November 2019).
32. Kagawa S, Dressler W, George S; NIH Expert Panel. Culture: The missing link in health research. Soc Sci Med 2016; 170: 237–246.