

PEER REVIEW HISTORY

BMJ Open publishes all reviews undertaken for accepted manuscripts. Reviewers are asked to complete a checklist review form ([see an example](#)) and are provided with free text boxes to elaborate on their assessment. These free text comments are reproduced below. Some articles will have been accepted based in part or entirely on reviews undertaken for other BMJ Group journals. These will be reproduced where possible.

ARTICLE DETAILS

TITLE (PROVISIONAL)	Tobacco Use and Associated Factors among Adolescent Students in Dharan, Eastern Nepal: A Cross Sectional Questionnaire Survey
AUTHORS	Pradhan, Pranil; Niraula, Surya; Ghimire, Anup; Singh, Suman; Pokharel, Paras

VERSION 1 - REVIEW

REVIEWER	Dr. Chandrashekhar T Sreeramareddy, Associate Professor Faculty of Medicine and Health Sciences University Tunku Adul Rahman Malaysia
REVIEW RETURNED	05-Oct-2012

THE STUDY	<p>1) Binu VS, Subba SH, Menezes RG, Kumar G, Ninan J, Rana MS, Chhetri SK, Sabu KM, Nagraj K.Smoking among Nepali youth-- prevalence and predictors. Asian Pac J Cancer Prev. 2010;11(1):221-6.</p> <p>2) Budhathoki N, Shrestha MK, Acharya N, Manandhar A.Substance use among third year medical students of Nepal. J Nepal Health Res Council. 2010 Apr;8(1):15-8.</p> <p>3) Kakde S, Bhopal RS, Jones CM.A systematic review on the social context of smokeless tobacco use in the South Asian population: Implications for public health. Public Health. 2012 Aug;126(8):635-45</p> <p>4) Subba SH, Binu VS, Menezes RG, Ninan J, Rana MS.Tobacco Chewing and Associated Factors Among Youth of Western Nepal: A Cross-sectional Study. Indian J Community Med. 2011 Apr;36(2):128-32</p> <p>5) Sreeramareddy CT, Kishore P, Paudel J, Menezes RG.Prevalence and correlates of tobacco use amongst junior collegiates in twin cities of western Nepal: a cross-sectional, questionnaire-based survey. BMC Public Health. 2008 Mar 26;8:97.</p>
------------------	--

REVIEWER	Nandita Bhan Doctoral Candidate Harvard School of Public Health, USA No conflict of interest.
REVIEW RETURNED	14-Oct-2012

THE STUDY	*Authors state comparative cross-sectional study; cross-sectional
------------------	---

	<p>study would suffice. Not clear why comparative is indicated.</p> <p>*It is unclear if the focus of the paper is just on use, or looking at factors related to initiation. Authors cite an estimate for initiation; seems to be a figure for prevalence.</p> <p>*Abstract indicates authors are concerned with factors likely to aggravate burden - but the focus of the study is on examining correlates of use in this population.</p> <p>*Major rewriting of the paper is needed, with grammatical and other editing changes. The message of the paper is unclear.</p> <p>*Authors should also look at age as continuous if data is available.</p> <p>*References seem up to date, but may want to cite studies on tobacco use from other countries in South Asia.</p>
RESULTS & CONCLUSIONS	<p>*It is unclear whether these are adjusted models; more detail on what exactly was run in the statistical analysis.</p> <p>*Footnote to describe categories of ethnicity.</p> <p>*Write-up needs major revision.</p> <p>*What is the relevance of grade if age is in the model? Does type of school (public/private) matter?</p> <p>*Interesting to see how results for age modeled as continuous play out. Some explanation why family categories may affect tobacco.</p> <p>*In the discussion, interesting to see that respondents smoke in public places, away from home.</p>
GENERAL COMMENTS	<p>This is a relevant issue. Tobacco use is a major use in South Asian countries and understanding the correlates of initiation and use are both crucial. But distinction needs to be made in the focus of the paper to examine factors uniquely associated with each.</p> <p>Major rewrite and editing is needed.</p>

REVIEWER	<p>Dr. Meerjady Sabrina Flora MBBS, MPH, PhD Associate Professor of Epidemiology National Institute of Preventive and Social Medicine. Mohakhali, Dhaka-1212 Bangladesh</p>
REVIEW RETURNED	23-Oct-2012

THE STUDY	<p>study targets burden and factor tobacco use in adolescent. it is not clear why anti tobacco regulations mentioned, research question did not relate with those regulations.</p> <p>The study selected schools from a list of schools obtained from Private and Boarding School's Organization, Nepal, which might not include all categories of school. therefore, may lack external validity. The sampling strategy is not clearly understood.</p> <p>Sample size was estimated with 10% precision which is poor and study lacks external validity. these are not mentioned under limitations of the study.</p> <p>it is not clear how the awareness to FCTC was measured.</p> <p>factors were identified through univariate analyses. logistic regression model was constructed but the variables included in the model are not discussed. the factors were not identified after adjusting for the effect of other extraneous variables.</p> <p>The English needs to be checked. some places the papers fails to communicate what it intends.</p> <p>information given in reference to Reference 1 is not justified.</p>
RESULTS & CONCLUSIONS	<p>the issue of anti tobacco regulations is not clarified by results. table 3 and 4 be merged and Adjusted OR could be incorporated.</p>
REPORTING & ETHICS	<p>the adolescents are not at their legal age to give consent. They can give assent but consent should be taken from legal guardian.</p>

VERSION 1 – AUTHOR RESPONSE

1. Since the outcome variable in this study is dichotomous (tobacco user and non user), comparative cross sectional study has been indicated.
2. The paper is focused mainly on the tobacco use and associated factors likely to aggravate the burden. Regarding initiation of tobacco use, only the mean age of initiation has been shown in the result in order to highlight the fact that students in early adolescents are vulnerable for starting tobacco use.
3. Age was categorized in order to compare the tobacco use between middle (14-15 years of age) and late adolescence (16-19 years of age). It was seen from studies that smoking and other risk taking behaviors begin to manifest from middle adolescence. This has also been mentioned in the discussion.
4. Grade has been incorporated in the model because transition from secondary level education to higher secondary level education (Grade 11 and 12) is a major challenge to all students in context of Nepal. This is a big stress factor and can play an important role in inviting risky behaviors such as tobacco use.
5. Type of school (Public/private) represents students belonging to different social strata in context of Nepal and this can have an influence over the tobacco use.
6. Family categories can have an effect on tobacco use as in a nuclear family continuous contact of parents with their children helps in preventing tobacco use compared to joint family. On the other hand, influence of smoking parents is more upon the children in case of nuclear families.
7. Respondents' smoking in public places in our study is an important finding as home is a restricted environment where smoking habit can be easily suspected and traced by parents. Public places were the preferred location for tobacco use possibly because the anti tobacco law has not been strictly enforced in Nepal yet.
8. Anti tobacco regulations has been mentioned because Government of Nepal assented to the directives of Tobacco Product Control and Regulatory Act 2010 on November 4, 2011, which happened to be within the study duration. We assessed the tobacco burden and associated factors in the background of the endorsement of anti tobacco directives in Nepal.
9. The list of schools obtained from Private and Boarding School's Organization included all categories of schools (both private and government schools) and this list was utilized for sampling purpose.
10. Sample size was calculated with 10% of allowable error. Thus taking 10% error of given prevalence (20.9%), we calculated the sample size to be 1454 students at 95% confidence.
11. Awareness to FCTC was assessed by asking students whether they had heard about FCTC or not. This has been corrected using appropriate terminology in the revised manuscript.
12. The variables included in the model for logistic regression has been discussed in the methodology section of the revised manuscript. Statistical analysis has been explained in detail in the methodology section.
13. Information given in reference to reference 1 has been modified and updated in the revised manuscript.
14. Table 3 shows bivariate analyses and Table 4 logistic regression analyses. Table 3 has been expanded to show all the variables that were analysed by Chi square test. Adjusted odds ratios are shown in Table 4.

15. Written consent has been obtained from the all the school authorities (Principal or director of school) prior to conduction of the study. Consent was not taken from parents as this could have influence over the participant's response to the tobacco use questions and this was discussed with the institutional ethical review board prior to data collection.

VERSION 2 – REVIEW

REVIEWER	Dr. Chandrashekhar T Sreeramareddy Department of Clinical Sciences Faculty of Medicine and Health Sciences University Tunku Abdul Rahman Sungai Long, Kajang, Cheras, Selangor Malaysia
REVIEW RETURNED	17-Nov-2012

THE STUDY	<p>Sampling methods need more description. How many private and how many public schools were included?</p> <p>It is not clear how a 'ever user of tobacco product' was defined? There are >1 outcome measures. Smoking and chewable tobacco are both common in Nepal. Authors are adviced to look at both of them seperately and report them in their results. Authors should cite any standard definition or use similar definition from Nepal. There are significant omissions in references.</p> <p>Please define 'Tobacco user', 'Current smoker', 'currently using' and 'chewable tobacco' in Table-2. The numbers are missing for chewable tobacco</p> <p>Most variables tested are socio-demographic and pocket money. What about peer-pressure (friends) and parents smoking etc. Without these factors included the multivariate analyses done is week.</p> <p>There are many erroneous statements and significant references from Nepal which are not cited and compared their results in the discussion.</p> <p>I had indicated these in my previous review. The authors response letter do not mention about these comments i had made earlier.</p>
RESULTS & CONCLUSIONS	<p>Median age (not mean and SD) should be reported. Dichotomising age is incorrect. Moreover, my comment about possible correlation between age and grade is not addressed.</p> <p>The main message is not clear except of prevalence of 'ever tobacco use'. Since all known variables for determinants were not tested and smoking and chewable tobacco not analysed seperatley message is not clear.</p>
GENERAL COMMENTS	<p>Comments</p> <p>The title could include “.....Dharan eastern Nepal: A cross-sectional questionnaire survey”.</p> <p>Abstract</p> <p>“To explore the burden” could mean prevalence, incidence, DALYs etc. To be specific authors should rewrite as “ to estimate</p>

	<p>prevalence of Tobacco use and determine associate factors”.</p> <p>Design: Cross-sectional survey/study</p> <p>Participants: “Out of the total sample of 1454, 1312 students completed the Questionnaires giving the response rate of 90.23%.”</p> <p>Sample size and sampling method together should be written under ‘methodology’. Response rate should be written under ‘results’ section.</p> <p>Results:</p> <p>Provide 95% CIs for prevalence of tobacco use i.e. 19.7% similar to 95% CIs authors have provided for adjusted Odds ratios.</p> <p>Conclusion:</p> <p>“...focusing on the significant factors found by the study”. It is better to state those groups of students here. For examples Males, Janjati’s etc.</p> <p>Main manuscript:</p> <p>Introduction:</p> <p>Authors use Low-and-middle-income countries (LMICs) and developing countries in the first paragraph. The authors should be consistent with these terminologies.</p> <p>Page 5 lines 19 -24. Some thing missing to connect two ideas i.e. prevalence of tobacco use and the major reason.</p> <p>Page 5 lines 36 – 41. “Some of the factors associated with.....”. The reference number 7 is study done among adults i.e. all women aged 15 to 49 years and men aged 15 to 59 years. The citation here is completely wrong. Look at the authors list and the title etc are from two different references. Further the authors should remove this citation and cite different study given below.</p> <p>Sreeramareddy CT, Kishore P, Paudel J, Menezes RG. Prevalence and correlates of tobacco use amongst junior collegiates in twin cities of western Nepal: a cross-sectional, questionnaire-based survey. BMC Public Health. 2008 Mar 26;8:97.</p> <p>Page 6 lines 4 – 7. Which burden are the authors referring to? Page 6 lines 8-11. The authors should clear statement on objective of their study.</p> <p>Methods:</p> <p>Abstract is better structured than the methods section. Sub headings and some more details would help this manuscript.</p> <p>Page 6 lines 17-18. What is comparative cross-sectional study? What did the authors compare with? Is it urban-rural, male-female should be specified. The authors used analytical approach by</p>
--	---

performing binary logistic regression rather than just being descriptive.

Page 6 lines 19-26. What was rationale for calculating a sample size based on prevalence reported from south Delhi rather than studies from Nepal which are cited by the authors?

The authors may have used the prevalence based on GYTS-Nepal or other published studies from Nepal. There are several other published reports about smoking among youth In Nepal.

A short paragraph about study setting i.e. Dharan municipality will be useful to interpret the results.

Page 6 lines 37-39,

Authors are not clear on what basis were the schools stratified and how many schools were selected.

Page 6 lines 49 – 50

The questionnaire used had information about “tobacco use by the parents” but is not shown in results.

Page 7 lines 3 – 13

The outcome definition is ambiguous. “any type of tobacco use”, “ever use of tobacco”, “current use of tobacco (smoking or chewing)”.

Doubts arise about what types of tobacco use were included in smoking cigarettes, or beedies (these are common in neighboring India and studies report they are used in plains of Nepal which is bordering with India).

There are different forms of tobacco use ‘chewing’ which of them were included in the definition for outcome variables. In addition use of inhaled tobacco “snuff” also is common in Nepal and India. The authors should look more references from India and Nepal for more information about this. Presenting the different forms of smoking and chewing tobacco used would be very useful. There no mention about ‘cigarette’ and ‘surti’ in the manuscript.

While providing definition it would better to provide examples of Questions asked and responses which were considered for their definition.

Page 7, lines 11 - 21

The authors should also clarify about the explanatory variables used in binary logistic regression analysis.

How was type of family defined?

Any specific reason for dichotomizing age and pocket money?

Continuous variables should best be treated as continuous.

Information is usually lost when the continuous variables are dichotomized.

Nepal has a multi-ethnic population, and Hinduism as a complex caste system. The classification of the ethnicity is confusing. According to my understanding Brahmin/Chhetri and Terai major caste are castes rather than ethnicity. ‘Janajati’ according to me also means a caste. The authors are also providing religions here.

Tibeto-burmese and indo-aryans are broad categories of ethnic groups in Nepal

In tables educational level and grade are they different? I suspect age and 'grade' would be strongly correlated. Authors have used both in multivariate analysis and are significant in univariate analysis.

Discussion

Pages 13 and 14

The logistic regression analysis the factors included are not sufficient to make any casual inferences. Many factors like "peer pressure i.e. friends smoking", parents smoking, 'family income', knowledge about harms of smoking, etc have been reported in literature. Considering that the authors had a large sample size inclusion all these factors would have been relevant for this analysis. Since this was the objective of this manuscript for which authors have collected the data.

Page 14 lines 6 – 26

The paragraph should be under background.

Page 14 lines 32 – 44

The authors have repeated many results in discussion which is not recommended.

Page 14 lines 47 – 50

The authors refer to "prevalence of tobacco use" as 'this burden' here and many other instances. Burden means incidence, prevalence, DALYs etc. So authors should refer to this as prevalence which the authors provide in the manuscript.

Page 16 lines 9 – 16

Discussion about female tobacco use needs more explanation about social inhibition in conservative societies in Nepal and other south Asian countries. However, female smoking is common in females but among higher age groups or females may have not reported due to social reasons.

Page 16 lines 49 – 53

The interpretation of pocket money and tobacco could be viewed differently. The reason for significant association is that students spend money on tobacco products. So they received or asked for more pocket money from their parents.

Page 17 lines 44 – 47

The authors do not have any data to support the statement about effective implementation of anti-tobacco act. How do the authors know the this act is not effectively implemented?

REVIEWER	Nandita Bhan, Doctoral Candidate, Department of Society, Human Development and Health Harvard School of Public Health No competing interests
REVIEW RETURNED	26-Nov-2012

THE STUDY	<p>*Clear mention study aims.</p> <p>*Remove comparative, and retain cross-sectional design. It would only be comparative if they had more than 1 study site.</p> <p>*Authors introduce the study as being exploratory. Need elaboration of the covariates considered, why they were chosen and how they might be relevant i.e. their relationships with tobacco consumption. e.g.*inclusion of FCTC (whether students have heard of it) - why does this matter as a variable.</p> <p>*Authors' description of bivariate analyses needs rewriting.</p> <p>*Need to reconsider and rewrite strengths/limitations in the abstract. For instance, I dont think this is a large sample. Limitations include recall bias, social desirability bias.</p>
RESULTS & CONCLUSIONS	<p>*Can parental SES be included - since income is not a good measure in developing countries - perhaps parental occupation?</p> <p>*Presenting results as unadjusted and adjusted - clearly differentiating economic and social dimensions of use?</p> <p>*Since age and grade are both captured in models, perhaps authors may want to elaborate how they are different - it seems to me that they may capture the same thing?</p> <p>*A suggestion would be to consider "ever used tobacco" and "currently used tobacco" as separate outcomes - both represent different dimensions and it seems the study has data for both.</p> <p>*In terms of dimensions for interpretation - I think the authors need to think through the theoretical dimensions of the relationships, which their covariates capture - e.g. material dimensions (disposable income adolescents may have) or informal social control (family, gender, caste). These will enhance the quality of their discussion.</p>
GENERAL COMMENTS	<p>This draft is much more focused than the previous version of the same. Recommend considering dimensions explored in the data analysis in depth for interpretation in the discussion section. Rewriting and editing is required for the draft.</p>

VERSION 2 – AUTHOR RESPONSE

Justification to reviewer's comments: (Dr. Chandrashekar T Sreeramareddy, Department of Clinical Sciences
Faculty of Medicine and Health Sciences
University Tunku Abdul Rahman
Sungai Long, Kajang, Cheras, Selangor
Malaysia)

Abstract

1. The objective has been modified as "To estimate the prevalence of tobacco use"
2. Study design has been changed into Cross sectional study.
3. Sample size and sampling method has been written under methodology section. Response rate has been written under results section.
4. 95% CI has been provided for prevalence of tobacco use in the abstract
5. Significant factors found in the study has been added in the conclusion.

Main Manuscript: Introduction

6. Reference number 7 has been corrected
7. The term burden has been replaced by prevalence.
8. Statement on the objective of the study has been provided.

Methodology

9. Methodology and results have been presented in subheadings as suggested.
10. The term comparative has been removed and cross sectional study design kept
11. Short description of the study area has been added
12. The basis for stratification of schools (private and government) and number of schools has been explained.
13. Results on parental tobacco use have been added.
14. Definition of outcome variable has been specified
15. Results on smoking and chewing tobacco have been added.
16. Example of questions asked has been elaborated.
17. Explanatory variables used for logistic regression analysis has been added

18. Basis for defining type of family has been added. Age has been dichotomized into middle (14-15 years) and late adolescence (16-19 years) as smoking has been shown to manifest from middle adolescence onwards. Pocket money was divided on the basis of median value as data for pocket money was not normally distributed.

19. Ethnicity has been grouped into four major groups : Brahmins/Chhetris, Janajati, Dalit and Terai Major Caste. Each ethnic group is a collection of group of castes. Indoaryans, TibetoBurmese, Australoids and Dravidians are races. If classified according to races, socio cultural aspects which affect the behavior cannot be identified. Ethnic groups have been classified in such a way as their culture, tradition, customs and social activities are common.

20. Age and grade show significant positive correlation (this has been mentioned in the results). Grade has been included in the model as separate variable because transition from secondary level education (class 9 and 10) to higher secondary level education (class 11 and 12) is a major challenge to students in context of Nepal and a big stress which can invite risky behavior such as use of tobacco.

21. Discussion on female tobacco use has been expanded.
22. Interpretation of relationship between pocket money and tobacco use has been further elaborated.

23. Basis for calculation of sample size from a prevalence reported in Delhi has been explained. Since GYTS in Nepal has been conducted among students aged 13-15 years only, we chose prevalence of tobacco use from a similar study from done among 14-19 year old adolescents as a basis of calculation of sample size for our study.

Justification to reviewer's comment: (Nandita Bhan, Doctoral Candidate,
Department of Society, Human Development and Health
Harvard School of Public Health)

1. Study aims have been mentioned clearly
2. "Comparative" has been removed from study design
3. Covariates considered for analysis have been described with references.
4. Bivariate analysis has been described and rewritten.
5. Since parental socio economic status was not assessed, we have included parental occupation.

6. Results have been shown separately as unadjusted and adjusted odds ratios.
7. Only one outcome variable (Ever use of tobacco) has been included.
8. Strengths and limitations have been modified. Limitations has been rewritten taking into account the sample size, recall bias and social desirability bias.
9. Discussion has been rewritten.

VERSION 3 - REVIEW

REVIEWER	Chandrashekhar T Sreeramareddy Faculty of Medicine and Health Sciences University Tunku Abdul Rahman Malaysia
REVIEW RETURNED	12-Jan-2013

THE STUDY	Having reviewed this manuscript earlier, i notice major improvement in manuscript content and quality. The only outstanding issue is the strong correlation between age and grade. In my view one of the two variable should have been used in multivariate analysis. age group 14-19 are very corresponding to grades 9-12. Authors could provide prevalence of tobacco chewing in addition to % of difference forms of tobacco use.
RESULTS & CONCLUSIONS	There are two forms of tobacco use prevalent in Nepal. For each there may be 'ever uses', 'current user' and 'never user'. Authors only present 'ever use of tobacco'. According to the definition of 'ever use of tobacco' it seems that current use was not included. However, 'ever use' prevalence was 19.7%. Authors should clarify this by providing current use also.
GENERAL COMMENTS	Most of my previous comments have been addressed. However, only one dichotomous outcome varibale of 'ever tobacco use' is not sufficient when such diverse form tobacco use is prevalent in south-asia. Some results have been repeated in discussion and 'peer pressure' is was not used in study and also not discussed as a limitation. Another limitation is that data was collected from one town in eastern Nepal, hence cannot generalise results to the region eastern Nepal.

VERSION 3 – AUTHOR RESPONSE

1. Grade has been removed from multivariate analysis. The corresponding paragraph in the discussion section has also been removed.
2. Prevalence of tobacco chewing has been added in the results section under the sub heading "prevalence of ever and current tobacco use".
3. Prevalence of current use of tobacco has been added in the results section. Definition of current use has been added in definition of the variables.
4. Peer pressure was not used in analysis part and this has been discussed in the limitations. Limited generalizability to the rest of eastern Nepal has also been added as a limitation.