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)	Underage alcohol drinking and medical services use in Hong Kong: a cross-sectional study
AUTHORS	Wang, Man Ping; Ho, Sai Yin; Lam, Tai Hing

VERSION 1 - REVIEW

REVIEWER	Dr Scott A McDonald Research Associate University of Strathclyde Scotland, UK I have no competing interests.
REVIEW RETURNED	06-Mar-2013

THE STUDY	It is unclear what is meant by questionnaires/respondents being excluded 'due to response sets' ?? Manuscript needs editing to achieve an acceptable level of English.
GENERAL COMMENTS	This is a well-designed study demonstrating an association between self-reported number of drinking days per week and the risk of using health services in the pre-survey period among adolescents in Hong Kong. The text needs tightening, in that there are a number of statements made in the Introduction and Discussion that are not adequately supported by evidence, or only select references are given. The manuscript would also benefit from being edited for English. Below, I have a number of comments that should be addressed in any revision. p.4 Psychosocial and educational programmes are stated as being unilaterally ineffective; only one study (reference 3) is cited as support, but this might be a setting-specific finding. p.4 The citations of the evidence for and against a U-shaped relationship between alcohol intake and health outcomes are wanting - this is a complex issue that cannot easily be summarised in two sentences; there a number of important differences between the cited studies that could have led to conflicting findings. p.4 Please replace 'often' ["... require acute medical care..."] with the actual effect size. p.5 What was the rationale for choosing a 2 week period to define the outcome for medical consultation, but a much longer (52 week) period for hospitalisation? p.6 The first sentence under subhead Statistical Analyses does not

make sense.

p.6 How were missing data dealt with (i.e. those questionnaires with <=50% missing items)?

p.6 Why was a subgroup analysis conducted, when this variable(s) was adjusted for in the multifactorial regression?

p.6 'as expected' - please explain this prediction

p.7 Fitting of unadjusted regression models should also be mentioned in the Methods

p.8 Were interactions between sex of respondent and consumption investigated?

p.7 The study population is described as 'non-Western' in the first sentence of the Discussion, but Hong Kong as a 'highly westernised' society in the Introduction. What exactly is the study base?

p.8 How exactly do your results provide support for the Framework Convention on Alcohol Control?

p.8 Measures of effect would be preferable to citing P values (especially given the large N) as per journal policy.

p.8 Was 'causality' meant rather than 'temporality'?

p.9 It is not a straightforward inference that "students who had medical consultations... would be more likely to avoid drinking". It might also be the case that a recent medical contact/hospital visit influenced self-reported consumption.

p.10 Conclusions (also conclusions of Abstract): I missed a reference to evidence for a "growing alcohol epidemic" - the current cross-sectional study cannot support this statement.

p.14 Table 2 Were tests for trend conducting over alcohol drinking categories or over days per week? (Also, description of trend tests should be added to Methods).

| REVIEWER | Griffiths, Sian
The Chinese University of Hong, School of Public Health and Primary Care |
|---|---|
| REVIEW RETURNED | 11-Mar-2013 |

| GENERAL COMMENTS | Thanks for asking me to review this paper
My comments are :
1. The authors need to demonstrate the validity of question used for capturing self reported alcohol use. – currently only frequency of "alcohol use" is asked but not the actual pure alcohol volume – so this is hard to judge how much the respondents actually drank.
2. Recall bias in drinking behaviour may inflate or deflate prevalence estimate. Currently there is no recall time frame mentioned in the questionnaire so it is rather hard to judge how reliable the data is..
3. Since the questionnaire did not specify any reason for consultation (e.g. for alcohol related problems), the association between alcohol use and health services use may be confounded. |

	4. It is mentioned that questionnaire with < 50% missing response were included in the analysis. How was the missing data handled? What was the imputation method used.
	5. The claim of a "growing alcohol epidemic in adolescents" is pre-mature – the prevalence of "alcohol use" is only 27.6%, and without taking into account actual alcohol content intake, as well as whether they reach the point of risky or harmful drinking.
	6. The policy recommendations whilst worthy cannot be derived from the data presented

VERSION 1 – AUTHOR RESPONSE

Reviewer 1: Dr Scott A McDonald

C1. It is unclear what is meant by questionnaires/respondents being excluded 'due to response sets?

R1. Response sets refer to fixed or dubious patterns of responses on the questionnaire. As a measure of quality control, we excluded 2% of the sample with response sets or excessive missing data. The representativeness of the sample has been reported in our previous study (Lai et al, 2009, ref 21). We have now revised the Methods as follows "After excluding questionnaires with dubious response patterns or excessive missing data (>50% missing items) (N=718, 2.0%), and students with age ≥18 (N=2094, 5.8%), 33300 (92.2%) students remained for data analysis. The sample was representative of the corresponding population in Hong Kong.21"

C2. Manuscript needs editing to achieve an acceptable level of English.

R2. We have thoroughly edited the manuscript.

C3. p.4 Psychosocial and educational programmes are stated as being unilaterally ineffective; only one study (reference 3) is cited as support, but this might be a setting-specific finding.

R3. Reference 3 is a Cochrane Review summarising the effects of primary preventions on youth drinking from 56 studies mostly conducted in Western countries.

C4. p.4 The citations of the evidence for and against a U-shaped relationship between alcohol intake and health outcomes are wanting - this is a complex issue that cannot easily be summarised in two sentences; there a number of important differences between the cited studies that could have led to conflicting findings.

R4. We agree that this is a complex issue. As the studies are many and mostly are adults, our intention was to point out the inconsistent associations between alcohol drinking and medical services use. To address the methodological differences between studies, we have now included a sentence to the 3rd paragraph of Introduction as follows: "These inconsistent associations are complex and may not be directly comparable given the differences in outcome measures, settings and methods."

C5. p.4 Please replace 'often' ["... require acute medical care..."] with the actual effect size.

R5. We have now described the results as follows: "In adolescents, consequences of alcohol drinking such as unintended injuries, risky sexual behaviours and intoxication, often require acute medical care and hospitalisation. For example, 16% of ambulance calls concerning college students were attributable to alcohol drinking in the US; alcohol intoxication occupied 1.5% of adolescent hospital admissions in the Slovak Republic; and the prevalence of hospitalisation due to alcohol intoxication was increasing in the Netherlands.14-16"

C6. p.5 What was the rationale for choosing a 2 week period to define the outcome for medical consultation, but a much longer (52 week) period for hospitalisation?

R6. We used a shorter 2-week period for medical consultation considering that this is a common outcome and the difficulty to recall if a longer period was used. This 2-week period for medical consultation was also adopted in our government surveys (e.g. Thematic Household Report no.3). A longer period of 1 year was used to identify more cases for hospitalisation as it is a relatively rare outcome. Students should be able to recall such significant events in the past year.

Thematic Household Report no.3:
http://www.censtatd.gov.hk/hkstat/sub/sp140.jsp?productCode=B1130201

C7. p.6 The first sentence under subhead Statistical Analyses does not make sense.

R7. We have now revised the sentences as follows: "Stata 10.1 was used for data analysis. After excluding questionnaires with dubious response patterns or excessive missing data (>50% missing items) (N=718, 2.0%), and students with age ≥18 (N=2094, 5.8%), 33300 (92.2%) students remained for data analysis."

C8. p.6 How were missing data dealt with (i.e. those questionnaires with <=50% missing items)?

R8. Complete-case analysis was used as few students had missing data in the main variables. Only 0.3%, 0.2% and 4.5% students had missing values for medical consultation, hospitalisation and alcohol drinking, respectively.

C9. p.6 Why was a subgroup analysis conducted, when this variable(s) was adjusted for in the multifactorial regression?

R9. The potential confounding effects of feeling depressed and anxious was controlled by conducting subgroup analysis after excluding subjects reporting these 2 conditions. Feeling depressed and anxious were not included as covariates in logistic regression to avoid over-adjustment, although we subsequently found that adjusting for these 2 variables produced similar results. We prefer the subgroup analysis approach as it seems more clear-cut. However, we would be glad to present results based on adjustment if required.

C10. p.6 'as expected' - please explain this prediction

R10. As medical consultation is more common than hospitalisation observed among Hong Kong adults, we expected the same pattern for adolescents. We have now removed this to avoid any confusion.

C11. p.7 Fitting of unadjusted regression models should also be mentioned in the Methods

R11. All models have satisfactory goodness-of-fit as indicated by non-significant Chi-square values and this has now described in the Methods as follows: "All models have satisfactory goodness-of-fit (all $\chi 2 > 0.20$)."

C12. p.8 Were interactions between sex of respondent and consumption investigated?

R12. We have found non-significant interaction effects of sex on the associations. This has now been described in Results as follows: "The associations were also similar in boys and girls (p for interaction

>0.05)."

C13. p.7 The study population is described as 'non-Western' in the first sentence of the Discussion, but Hong Kong as a 'highly westernised' society in the Introduction. What exactly is the study base?

R13. 'Non-Western' refers to ethnicity and 'westernise' refers to the way of life. To avoid confusion, we have modified the sentence as: "To the best of our knowledge, this is the first non-Western study that investigates the association between medical services use and alcohol drinking among underage adolescents."

C14. p.8 How exactly do your results provide support for the Framework Convention on Alcohol Control?

R14. We have now revised the paragraph as follows "In Hong Kong, beer and wine tax was unprecedentedly abolished in 2008 to boost alcohol trading, and this was followed by fierce promotion by the industry. Alcohol drinking is increasingly publicised as stylish and fashionable without any legislation regulating such promotion in Hong Kong. Our findings suggest that any increase in adolescent drinking may be accompanied by a rise in medical services use. Following the success of the World Health Organisation Framework Convention on Tobacco Control, a similar international treaty for alcohol control is needed to guide policies on alcohol taxation and promotion."

C15. p.8 Measures of effect would be preferable to citing P values (especially given the large N) as per journal policy.

R15. We have now reported the effects of associations in the Discussion as follows "Using the same data, we also found significant associations of medical consultation and hospitalisation with health complaints (medical consultation OR 2.27; hospitalisation OR 1.29) and poor self-rated health (medical consultation OR 3.46; hospitalisation OR 2.09) supporting the validity of these data (data not shown in tables)."

C16. p.8 Was 'causality' meant rather than 'temporality'?

R16. The corresponding change was made.

C17. p.9 It is not a straightforward inference that "students who had medical consultations... would be more likely to avoid drinking". It might also be the case that a recent medical contact/hospital visit influenced self-reported consumption.

R17. We agree and have modified the sentence in Discussion as follows "On the other hand, health services use might prompt the students to avoid drinking or influence their reporting of alcohol consumption, which could bias the associations in either direction."

C18. p.10 Conclusions (also conclusions of Abstract): I missed a reference to evidence for a "growing alcohol epidemic" - the current cross-sectional study cannot support this statement.

R18. We agree that the findings may not support the increasing trend in alcohol use among adolescents in Hong Kong. The conclusion has now been revised as follows "Alcohol consumption was associated with medical services use in Chinese adolescents. More rigorous alcohol control policies and health promotion programmes are needed to reduce alcohol drinking and related harms in adolescents."

C19. p.14 Table 2 Were tests for trend conducting over alcohol drinking categories or over days per

week? (Also, description of trend tests should be added to Methods).

R19. We have now defined p for trend in Methods as follows: "The linear associations between alcohol drinking and medical services use were tested by treating alcohol drinking as a continuous variable (p for trend)."

Reviewer 2: Prof Sian Griffiths

C20. The authors need to demonstrate the validity of question used for capturing self reported alcohol use. – currently only frequency of "alcohol use" is asked but not the actual pure alcohol volume – so this is hard to judge how much the respondents actually drank.

R20. We have acknowledged the limitation of self-reported data and have now added the lack of measurement on drinking amount as a limitation as follows: "We only have data on the frequency of alcohol drinking. Future studies should also consider the amount of alcohol consumed."

C21. Recall bias in drinking behaviour may inflate or deflate prevalence estimate. Currently there is no recall time frame mentioned in the questionnaire so it is rather hard to judge how reliable the data is.

R21. We have now addressed the issue of recall bias in Discussion (please also see R17).

C22. Since the questionnaire did not specify any reason for consultation (e.g. for alcohol related problems), the association between alcohol use and health services use may be confounded.

R22. We agree and we have discussed the limitation of potential confounding effects in Discussion.

C23. It is mentioned that questionnaire with < 50% missing response were included in the analysis. How was the missing data handled? What was the imputation method used.

R23. We used complete-case analysis given that the missing rates were very small (0.2%-4.5%). Please also see R8.

C24. The claim of a "growing alcohol epidemic in adolescents" is pre-mature – the prevalence of "alcohol use" is only 27.6%, and without taking into account actual alcohol content intake, as well as whether they reach the point of risky or harmful drinking.

R24. We have now revised the conclusion as follows "Alcohol consumption was associated with medical services use in Chinese adolescents. More rigorous alcohol control policies and health promotion programmes are needed to reduce alcohol drinking and related harms in adolescents." Please also see response R18.

C25. The policy recommendations whilst worthy cannot be derived from the data presented

R25. We have now revised the implication for policy on alcohol control, please also see R14.

VERSION 2 – REVIEW

REVIEWER	S. A. McDonald Epidemiologist/statistician University of Strathclyde, Glasgow, UK I have no competing interests.
REVIEW RETURNED	26-Apr-2013

GENERAL COMMENTS	The revision has adequately addressed my comments on the original version, and both the quality of the paper and the English is much improved. I note a few remaining points: You have described the rationale for choosing a 2 week period to define the outcome for medical consultation, but a much longer (52 week) period for hospitalisation in the response letter, but this also needs to go into the manuscript. I believe my comment on the original manuscript was misunderstood "p.7 Fitting of unadjusted regression models should also be mentioned in the Methods" - I did not mean to request reporting of a goodness-of-fit statistic, but merely to report that both unadjusted and adjusted regression analyses were conducted. Although answered in the letter, it is not mentioned in the Methods that complete case analysis was used (thus excluding all cases with *any* missing covariates). The reader is left wondering how the missing data were dealt with. The description of the linear trend is still ambiguous; was the midpoint of the frequency in each category used; what was done for 'non-drinker'? Also, Table 3 should include this information. Please check the references carefully; for example, the name of the first author of [10] is misspelt. There are still a few grammatical errors that need attention.

VERSION 2 – AUTHOR RESPONSE

Reviewer 1: Dr Scott A McDonald

C1. You have described the rationale for choosing a 2 week period to define the outcome for medical consultation, but a much longer (52 week) period for hospitalisation in the response letter, but this also needs to go into the manuscript.

R1. We have now explained the rationale in the Methods as follows: "A shorter period was used for medical consultation as this is more common than hospitalisation and a longer period was used for hospitalisation to identify more cases. The 2-week period of medical consultation was also used in government surveys.24"

C2. I believe my comment on the original manuscript was misunderstood "p.7 Fitting of unadjusted regression models should also be mentioned in the Methods" - I did not mean to request reporting of a goodness-of-fit statistic, but merely to report that both unadjusted and adjusted regression analyses

were conducted.

R2. We have now deleted goodness-of-fit statistic and reported that both crude and adjusted odds ratios were calculated in the Methods: "Logistic regression was used to calculate the crude and adjusted odds ratios (AOR) of medical consultation and hospitalisation for alcohol drinking…"

C3. Although answered in the letter, it is not mentioned in the Methods that complete case analysis was used (thus excluding all cases with *any* missing covariates). The reader is left wondering how the missing data were dealt with.

R3. We have now described that complete case analysis was used: "After excluding questionnaires with dubious response patterns or excessive missing data (>50% missing items) (N=718, 2.0%), and students with age ≥18 (N=2094, 5.8%), 33300 (92.2%) students remained for complete case analysis."

C4. The description of the linear trend is still ambiguous; was the midpoint of the frequency in each category used; what was done for 'non-drinker'? Also, Table 3 should include this information.

R4. We have now described the linear trend in the Methods as follows: "The linear associations between alcohol drinking and medical services use were tested by treating categorised alcohol drinking frequency as a continuous variable of 0, 1, 2 and 3 to derive P for trend." A footnote was also added to Table 2.

C5. Please check the references carefully; for example, the name of the first author of [10] is misspelt. There are still a few grammatical errors that need attention.

R5. We are sorry for the typo. The references have now been thoroughly checked and edited. Several grammatical changes were also made.