Author's response to reviews

Title: The economic costs of alcohol consumption in Thailand, 2006

Authors:

Montarat Thavorncharoensap (pymbr@mahidol.ac.th)
Yot Teerawattananon (yot@ihpp.thaigov.net)
Jomkwan Yothasamut (jomkw @ihpp.thaigov.net)
Chanida Lertpitakpong (chanida@ihpp.thaigov.net)
Khannika Thitiboonsuwan (kikak@yahoo.com)
Prapag Neramitpittagkul (prapag@ihpp.thaigov.net)
Usa Chaikledkaew (usa@ihpp.thaigov.net)

Version: 2 Date: 6 March 2010

Author's response to reviews: see over
Dear editors of ‘BMC Public Health’,

We wish to thank all reviewers for their helpful comments on the previous version of the manuscript. We have addressed all the points made, and modified the manuscript accordingly. Our answers to the specific comments follow.

In response to reviewer #1

1. The inclusion of HIV in direct costs of healthcare and of productivity loss due to premature mortality: this remains slightly contentious because although alcohol use has been associated with unsafe sex, it may also be acting as marker for risk-taking behavior, and to this extent the association may be non-causal. If the authors include the cost of HIV, should they not also take into account other sexually transmitted infections? A second issue is whether the relative risk estimates derived from US or African studies are valid for the Thai population. Since the HIV associated component of cost associated with health care and pre mature mortality are very substantial. I feel this issue should be explored more thoroughly in the sensitivity analysis.

Currently, HIV is an important health problem in Thailand, as compared to other sexually transmitted infections. Also, the cost of treatment and its effect on mortality is substantial, as compared to other sexually transmitted infections. Therefore, we believe that the effect of the inclusion of other sexually transmitted diseases on the total estimates would be minimal. On the other hand, we totally agree with the reviewer that the RR used in the study might not valid for the Thai population; however, there is no RR for Thai population available at the present. To response, for this thoughtful comment, we agree to explore the effects of inclusion/exclusion of HIV in the sensitivity analysis, as shown in table 8.

2. In estimating the cost of productivity loss due to premature mortality, the authors assume that individuals retain the same level of productivity right up to the time of death (as estimated by life expectancy) and explain that there is not official retirement age for agriculture workers. Could a sensitivity analyses be included to investigate the effect of introducing a retirement age of e.g., 65 or 70.

In estimating the cost of premature mortality, although the lost working years for those who died prematurely was calculated by subtracting the mean age of death from the gender-adjusted life expectancies, we used age and gender-specific workforce participation rate and age and gender-specific income to calculate the present value of future value of earning. So, the individuals do not remain the same level of productivity right up to the time of death. To clarify this point, we have added more details in page 11 to make it clearer. However, as you suggested, we also conducted a sensitivity analyses to investigate the effect of introducing a retirement age of 60 in the study, as shown in table 8. The reason for using the retirement age of 60 is because; it is the official retirement age in the formal sectors in Thailand.

Finally, we would like to thanks the reviewer for the thoughtful comments and suggestions.
In response to reviewer #2

1. Page 6- Is this really the counterfactual? As it stands it relates only to alcohol consumption undertaken in 2006. But many of the costs (particularly health costs) are results of both past and present smoking. Surely, the counterfactual should be “What costs would have been avoided in Thailand in 2006 if there had been no past or present alcohol consumption in Thai society”

   We have changed the counterfactual to “What costs would have been avoided in Thailand in 2006 if there had been no past or present alcohol consumption in Thai society”, as suggested. Thanks very much.

2. Page 6- The paper needs an explanation of why the authors believe that the benefits of alcohol consumption should not be costed (benefit being negative costs)

   We explained our rationale of conducting gross cost estimate in page-6.

3. Page 6- Note that it perfectly possible for drinkers themselves to bear external costs (for an explanation of this see Collins and Lapsley, 2008, National Drug Strategy Monograph Series No.64, page 8)

   We put more explanation in page 5-6. Thanks.

4. Page 9- The derivation of crime AAFs is not adequately explained. It is simply referred to as a “macro costing technique”. Thus, it is difficult to assess the validity of these AAFs. It is very easy to overestimate alcohol-attributable crime AAFs, using association rather than causality, but it is not clear from the text whether this is a problem here.

   We added more explanation for the derivation of crime AAF in the revised manuscript.

   Since there is no objective way of measuring alcohol-related crime as the crime committed by drinkers even when he or she is under the influence of alcohol does not necessarily mean that the crime can be ascribed to alcohol use so we would believe that the best way to measure alcohol-related crime is to use subjective information from suspects and the temporal and contextual data. However, this may be subjected to the overestimation of the causal relationship. We addressed this limitation in the discussion.

5. Table 4 and references. There is more recent Australian alcohol cost study

   We changed that. Thank you for your kind suggestion.

6. Page 12- “presenteeism” is a term which, while perfectly correct, is not widely use in the literature. It would be useful to define it here, in terms of reduced-on-the-job productivity.

   We have put the term “reduced-on-the-job productivity” in the parenthesis after the word presenteeism.

7. In the relation to the quality of written English.....
We changed all, as kindly suggested. Thanks very much for all your helpful suggestion and comment.

In response to reviewer #3

1. Abstract, background, pg3: The authors say that “there has never been a well designed study which estimates the economic cost of alcohol consumption in developing countries:” However, there is, for example, a study of the social costs of alcohol in South Korea, which is another middle income countries.

We re-wrote that sentence.

2. Page 5, missing space between reference and new sentence “ industrialized nations. [5-9] Although the discrepancies in the estimation method and costs”. This happens in many other instances, please correct.

We corrected all, as kindly suggested.

3. Page 7, AAF: The explanation of the two approaches for the calculation of AAF suggested by the WHO International Guidelines is not clear in the manuscript. Also, it is not clearly explained the approach used for the different categories of costs. It is mentioned:”the first and most straightforward method is to directly..”, but an explanation of the second-the indirect approach, should be made before introducing the AAF calculation based on RR and prevalence. Example: the second method for estimating an AFF is the “indirect” method whereby estimated of the Relative Risk of particular disorders for different levels of alcohol use are combined with prevalence data on the number of persons consuming at different levels of use. This method is generally applied to conditions partly caused by the effects of long-term consumption, mostly disease.

We corrected that. Thanks for your kind suggestion.


We corrected that. Thanks.

5. Page 10: Explain what you mean by a top-down or macro costing technique. Something like: For gross costing the intervention is broken down into larger intermediate products for which resources use is determined. This top down costing allocates a total budget to specific services.

We added the explanation of a top-down technique.

6. Page 11: It would be good to provide a reference to the Human Capital Approach. For example: Rice D, Cooper B(1967) The economic value of
human life. American Journal of Public Health 57: 1954-66. Also, the paragraph could follow as: The human capital approach was used to estimate the costs of productivity loss due to premature death. In this approach wages are assumed to be equivalent to the value of an individual’s productive worth and used as a monetary conversion. This method usually does not take into account those who are not in the workforce, such as homemakers, retired, students and children. Despite this, a value can be placed on some activities by estimating the cost of hiring a market replacement for each individual function. The cost of productivity loss due to mortality was calculated as the product of the total number of deaths attributable to alcohol, by age and gender, with the present value of age and gender adjusted future earnings. A discount rate of 3% was applied. The number of death attributable to alcohol was calculated by combining the total number of deaths, by gender and age, with the gender and cause-specific AAFs (See table 1)

_We re-wrote the paragraph, as kindly suggested. Thanks so much._

7. Page 17, last paragraph, The authors have:....” may not be inappropriate…” please correct to “…may not be appropriate;”

_We corrected that. Thanks._

8. Discussion: A limitation that could be pointed out is the fact that cost-of-illness and social costs studies can demonstrated the scale of health problems, but they are limited in determining how resources are to be allocated because they do not measure the individual benefits or compared interventions in terms of their costs and outcomes. An extension of this work in Thailand could be the use of the estimates from this study to inform on the allocation of scarce resources for alcohol interventions, such as prevention, treatment and enforcement. Therefore, the results here presented can help with the calculations of the costs used in the full economic evaluations of alcohol interventions.

_We added that._

9. It is not clear if any of the AAFs were calculated by age, as the AAFs presented in the table 1 do not depend on age.

_The AAFs used in this study do not depend on age._

10. In table 1 an extra column could be added so as to provide the reference for where the AAFs are taken from or the reference used for the AAF calculation (Relative risks/meta analysis source), for each specific condition.

_We added that, as suggested._

11. It would be good to have a table with information on resource use and unit of costs for each category. For example, for police costs it would be good to see the number of crimes and offences related to alcohol as well as the unit costs used for these. The same should be conducted for the other categories.

_We added more table in the revised manuscript._
12. Some of the writing was a bit difficult to follow. It would be important to review the manuscript regarding this issue. I give one example, but this needs to be corrected throughout all the body of the text (with special attention to the first two paragraph of the discussion). Example: An abstract, background Pg 3: The authors have. “The existing evidences indicate that adverse consequences of alcohol impose substantial economic burden of the society worldwide”. It would read better something like “There is evidence that the adverse consequences of alcohol…”

We have changed that. Thanks.

13. Methods, page 6: It would be nice to have a more objective definition of the costs used in the study, something like: In economic terms, social consequences are the sum of private and external consequences that can represent a cost or a benefit. Private alcohol consequences are the consequences accruing to the individuals engaged in the drinking activity while external consequences are consequences of an action by drinker (s) that fall on others. This study is concerned with the external costs of alcohol consumption, henceforth referred as “social costs”

We have added that. Thanks so much for your kind suggestion.

14. Methods, page 6: The second paragraph is a bit confusing. Pls take into account the comment given above and that this paragraph should be rewritten. For example write the above together with: This study focus on the costs associated with the negative consequences of alcohol consumption and therefore, any benefits related to a moderate consumption, such as CHD, are excluded from the analysis. This exclusion is consistent with a gross cost methodology. However, the impact on the results of the use of net costs, where the benefits of alcohol consumption are included, is assessed in the sensitivity analysis.

We have changed that, as kindly suggested.

15. Page 6- The author say” This is surprising as it has been found that about 31% of the Thai adult population has been classified as drinkers “However, not all alcohol consumption is associated with alcohol problems and this statement needs to be put into context. Also, 31% is very low and what is surprising and more important is the level at which those 31% are drinking. For example, write something like: It has been found that 31% of the Thai population drinks alcohol. Even though this is not a big estimate, when compared to other countries, the level of heavy drinking is a cause of concern. From the 31% that do not abstain, 16.6% of males and 2.1% of females drink heavily. (> 40g/day…)

We discussed more in the discussion section.

16. Page 8: Under the heading “Direct cost”, provide a breakdown of the direct costs assessed, in the same way as it was done for indirect costs. Example: Direct costs are divided in …

We have added that.
17. Page 7: The authors said: “...did not include intangible”. I would like to mention that it is true that past and also some current studies call pain and disutility costs "intangible costs". Intangible costs are costs that when reduced do not release production or consumption resources for other uses making it extremely difficult to place a value upon. In contrast, tangible costs are the costs, which when reduced, yield resource which are then available to the community for consumption or investment purposes. However, there is now literature that argues that pain and disutility are not "cost" (That is, resources denied to others) and are not strictly intangible as they are measured and valued, through the utility or willingness-to-pay approach. The use of "intangible costs" is left at the discretion of the authors. However, it would be good to have an example of the costs the authors refers to. For example; "intangible costs, such pain and disutility ... Also, I am not sure which type of ethical limitations the authors refer to.

We have added the example of intangible cost.

18. Page 10, last paragraph: Shouldn’t dividing" be “multiplying”

You are correct. We have changed that. Thanks.

19. Page 14, 2nd paragraph: The authors wrote:"It was found that the choice of discount rate was the most significant because it influenced the estimated costs of productivity loss, and hence, the total cost.” I would suggest something more like: The parameter with the highest impact on the results was the discount rate. This is because the discount rate directly affects the costs due to productivity losses, which is the category with the largest alcohol-related cost.

We re-wrote that.

20. Conclusion, last sentence: I would suggest taking out of the last sentences the following’... “.. that is they need to make a better balance between cost and revenue generated from alcohol.” For example, I would suggest: This study provided evidence for the economic burden of alcohol consumption in Thailand. It is hoped that the findings provided will stimulate discussion and improvement of alcohol policy in Thailand.

We re-wrote that.

21. Methods, page 6& discussion.: The authors say that the counterfactual scenario is the inexistence of alcohol. However, while this is the assumption used in all cost–of–illness studies and social cost studies, it could be pointed out that this is a strong assumption and not realistic. This could be presented in the discussion.

We have added that.
Thanks very much for your helpful and thoughtful comments and suggestions.

In response to reviewer #4
1. I have one general comment that should be considered for each following comment below, and that is that there is too little information given in the text to thoroughly investigate the appropriateness of methods and assumptions. This is normally the case in article version of COA studies where space is
limited, and the method can possibly be assumed to be acceptable as the study follows the international guidelines. However, I believe the authors should take advantages of the possibilities of publishing in electronic journals in general and BMC public health in particular as there is no official limitation of length or number of tables included. The paper can be extended by at least 2 pages without overwhelming the reader. Also, additional, more detailed tables should be included. In the comments below are several areas where additional information would improve the reader’s understanding of the paper. An alternative to including more information in the article is to refer to some form of technical report where methods and assumption are thoroughly described. This is not done in the paper which leads me to conclude that no such report exists.

Thanks for your suggestion. We have extended the paper and put more details and tables. We also referred to the technical report in the revised manuscript. (it but it was written in Thai).

2. The fact that the total cost is dominated by indirect cost should be discussed more as this is not the case in most prior studies. Generally, indirect costs account for 50% of total costs, but in the current paper it amount to 96%. Why is that? Is it an effect of the informal sector in a developing country? Is it an effect of the estimation method (or even bias)? Potentially, a part of the issue can be explained by the inclusion of HIV/AIDS as this disease stand for 38% of the total mortality costs in the paper. In any case, the dominance of indirect cost should be much more discussed in the paper

We discussed this issue in the discussion section.

3. It is very interesting that the cost amounts to 2% of GDP while only 31% of the population consumes alcohol. The proportion of heavy drinkers is large but probably not large enough to explain the high costs. This should be discussed in the discussion section (and not only mentioned in the conclusions). Preferably, with potential explanation. This comment is closely related to the comment above regarding the large proportion of indirect cost.

We discussed the issue in the discussion section.

4. The counterfactual scenario is ambiguously stated. It is unclear if it should be interpreted as that alcohol never existed in The Thai society or that it is disappeared overnight? There are important implications for which of these two scenarios are used. The latter would have to include temporal characteristics of risk decline following abstention. That is, it does not mean that just because an individual stops consuming alcohol, the elevated risk of disease (e.g. liver cirrhosis) disappears at once. This risk decline takes time and it is therefore not appropriate, as is done in the current study, to claim that all alcohol-related cases or cirrhosis can be averted in the counterfactual. However, if the former interpretation is correct, the methods for health care etc. employed in the paper are appropriate. The downside to this interpretation is that, theoretically productivity losses should be estimated with the demographic approach. This is however less of a problem as the human capital approach often is used to approximate this cost. (and is also accepted in the international guideline)
We changed the counter scenario to “What costs would have been avoided in Thailand in 2006 if there had been no past or present alcohol consumption in Thai society”, as suggested by reviewer #2.

5. It is not true, as is stated in the Method section, third paragraph, that it is consistent with the international guidelines to not include intangible cost. Intangible costs should be included if possible but is often not for several reasons.

We have changed that. Thank you for the comment.

6. The fact that only disease with an AAF > 0 is included in the paper will lead to an underestimation of the gross costs. The reason for this is that for several diseases are heavy consumption detrimental even if low consumption is beneficial for health. I assume these costs are included in the sensitivity analysis regarding beneficial health effects which further muddles the waters.

You are correct that inclusion of only disease with AAF>0 in the analysis will lead to an underestimation of the gross cost. However, after looking through our calculated AAFs the effect on the total cost would be minimal. However, we have discussed this limitation in the discussion section.

7. Why differences in what crimes are included in the police and court costs? Also, there is no source for the AAF for court costs.

We have added the source for the AAF for court costs. The differences in types of crime included in the police and court costs are due to the different system between police and court are used for classifying the types of crime in each database.

8. The same AAF is used for mortality as for morbidity. This is normally not the case for injuries/accidents, see for example the lastest Canadian COA study. Generally, AAFs are thought to be lower for non-fatal accidents compared to fatal.

You are correct. However, we have no information on AAF for injuries/accident for mortality so we used the same as AAFs for morbidity.

9. As I understand the estimation of productivity losses due to premature mortality, there is an underlying assumption of full productivity until death. I.E., there is no reduction in productivity following old age. This does not seem reasonable to me.

In estimating the cost of premature mortality, although the lost working years for those who died prematurely was calculated by subtracting the mean age of death from the gender-adjusted life expectancies, we used age and gender-specific workforce participation rate and age and gender-specific income to calculate the present value of future value of earning. So, the individuals do not remain the same level of productivity right up to the time of death. To clarify this point, we have added more details in page 11 to make it clearer. However, as you suggested, we also conducted a sensitivity analyses to investigate the effect of introducing a retirement age of 60 in the study, as shown in table 8. The reason
for using the retirement age of 60 is because; it is the official retirement age in the formal sectors in Thailand.

10. The estimation of presenteeism and absenteeism is very interesting. However, it would have been preferred if the planned article about the presenteeism study had been published in advance of the current paper, in order for the reader to be able to evaluate the method and results. As it showed, I can not determine if these estimates are reasonable, i.e. if there are based on associations, if appropriate controls for reversed causality have been performed. Etc.

We explained more in details of how we measured absenteeism and presenteeism in the revised manuscript. We believed that there is no current standard method to measure the absenteeism and presenteeism. For absenteeism, self-reported-absenteeism due to alcohol was used in several studies. However, as drinking is considered a sensitive issue, so we believed that this method would result in significantly lower rate of alcohol attributable absenteeism. Therefore, in our study, we asked something like" how many hours you missed work due to health problems" (which is less sensitive than drinking and absence) and then calculated the rate of absenteeism for each categories of drinker. (The multivariate adjusted for other potential confounders was also conducted and shown in sensitivity analysis.)

For the presenteeism, which is even harder to measure than absenteeism as the result it was omitted in most studies. As, presenteeism resulted in higher cost than absenteeism in several studies therefore it would be legitimate for any attempt of measuring such cost. By using the WPAI-GH questionnaires, presenteeism and absenteeism due to health problem can be measured and later combined into overall impairment rate.

We agreed with the reviewer that reversed causality is likely to occur in the measuring of presenteeism and absenteeism from alcohol. This is the common problem for most observational studies, however, experimental studies cannot be performed in this situation. We believe that our method of measuring cost of absenteeism and presenteeism is less likely to be subjected to reversed causality, as the questions used to assess the absenteeism and presenteeism asked about the impairment during the last seven days before the interview while the questions used to assessed the status of drinking using time frame of 30 days before the interview.

11. The section on page 13 that presents the sensitivity analyses should be expanded, explaining the analyses in more detail.

We add more explanation.

12. For employed, productivity losses are valued according to income. But how is non-employed mortality valued? And what is actually measured, the value of domestic production or the value of lost leisure time? In any case, do not employed individuals suffer losses in these areas as well following premature mortality? More information on how these costs are estimated is needed.

Actually, in the base case analysis, non-employed mortality was not valued. However, in the sensitivity analysis, the value of non-employed mortality was taken into account (which is done by not taken into account the workforce participation rate when estimating the present value of age and gender adjusted future earning). The value of domestic production and lost leisure time were not
taken into account in this study. We add more explanation in the sensitivity analysis section.

13. There is some confusion regarding why you compare the societal cost of alcohol consumption to alcohol-tax revenues. I guess you do it because it is common political argument (although mostly a flawed argument). It is especially in conclusion section this becomes a problem when it is stated that the government need to better balance between revenues and costs. This paper does not study this balance. Just because there is a substantial societal cost does not mean that it is a net loss to the governmental budget. It should rather say that the government needs to try to minimized the adverse effect (costs) of alcohol consumption for the benefit of society as a whole.

You are totally correct. We rewrote that. Thank you very much.

14. The paper needs to be check regarding formatting and language

We did that.

15. There are no references to tables 2 and 3 in the text.

We added that. Thanks.

16. I suggest that all costs expressed in million baht be expressed in Billion baht.

We’d like to keep the unit in million baht since some costs (i.e. cost of property damage and law enforcement) might not be appropriate to present in Billion baht as they are very small.

17. The international guidelines is not developed but published by WHO

We corrected that. Thanks.

18. The number of decimals differs in the study, e.g page 8

We corrected that in the revised manuscript.

19. Results, page 13, the USD figure is not correct.

We corrected that. Thanks very much.

20. Page 14, last paragraph. It has not been “proven” but rather “shown”

We corrected that. Thanks.

21. Page 17, last paragraph. It says “[...] societal costs may not be inappropriate [...]” I think you mean “[...]societal costs may not be appropriate.

You are correct. We have changed that.

22. Reference 3. First-and surnames of authors 3-6 are switched.

We changed that. Please accept our sincere apology for that.

23. Table 2. Also, include the per capita cost in USD.

We included that in the revised version.
Thanks very much for your insightful and helpful comments.

We are very pleased to re-submit the manuscript and hope that editors and reviewers will find this revised version acceptable. Please don’t hesitate to contact us if there is anything we could do to make this manuscript more complete. Thanks very much again for all helpful comments and suggestions.

Sincerely,

Montarat Thavorncharoensap

Corresponding author

6 March 2010