Author's response to reviews

Title: Methamphetamine use and correlates in two villages of the highland ethnic Karen minority in northern Thailand: a cross sectional study

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Author's response to reviews: see over
Dear Editors and Reviewers

Here is a point-by-point response to the addressed comments by reviewers. I am appreciated it, if you kindly re-review it and also a revised manuscript.

I am looking forward to hearing from you soon.

With best regards,

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I. Reviewer's report

Title: Methamphetamine use and correlates in two villages of the highland ethnic Karen minority in northern Thailand: a cross sectional study

Version: 2 Date: 23 December 2008
Reviewer: William Zule

Reviewer's report:
This article describes correlates of methamphetamine use in two Karen villages in Thailand. Additional background information on the Karen's status in Thailand (e.g. are they a discriminated against minority? What is the relationship between the Karen in Thailand and the Karen in Myanmar?).

[Response]
We added further information on the Karen in terms of their status in Thailand, including social discrimination against them, and relationship between Karen in Thailand and Myanmar as described as the 2nd paragraph of background section, as below.

Considering the comment from another reviewer making recommendation to include description about ethnic minority, social mixing, and labor migration; we also added such information in this part.

“In Thailand, roughly 1 million people are members of ethnic minorities, constituting 1.6% of the entire Thai population. These minorities have distinct cultural backgrounds, practices and languages. Most (approximately 920,000) are members of nine ethnic minorities that reside in the highland areas at elevations from 500 to 2,500 meters. These highlanders are officially classified as “hill tribes,” or highland ethnic minorities, among which the Karen account for the largest population (47.5%) [7, 8]. Karen villagers originally resided in Myanmar for centuries but began to migrate into Thailand in the eighteenth century; today the vast majority of Karens, some 4 million, still remain in Myanmar [9]. While they face a struggle to attain their basic human rights, including democracy, and self-determination, the Karen in Thailand also face cultural and political discrimination. There is a stereotyped public view that highland ethnic minorities, including Karen residents, practice forest destruction by engaging in swidden cultivation, despite the fact that much of the deforestation has been caused by illegal logging [10]. Although the Karen have been mobile for many centuries, migration to lowland cities in search of labor or educational opportunities has increased in recent years. This was especially true in the 1980s for Karen youth. The increasing migration, together with improved infrastructure and media access in the remote villages, has resulted in a rise in material possessions that represent an elevation to prestigious cultural status as well as significant changes in lifestyle, sexual morality, and sexual behaviors [11].”

Due to this additional description, the original sentence, “which is densely populated by approximately 600,000 members of ethnic minorities[6],” in which the related information was provided in the last 2 line, in the 1st paragraph of the background section, was deleted to avoid confusion.

Some of the results and the discussion need to be rewritten. Since methamphetamine use is the dependent variable in the multiple logistic regression analysis, it is probably more correct to say that males were more likely to be methamphetamine users
(or being male was associated with increased odds of methamphetamine use) than to say that methamphetamine users were more likely to be male. The same holds true for the other independent variables in the model.

[Response]
We corrected the sentence not only sentences related to multiple logistic regression analysis but also sentences related to bivariate analysis for the unity. Corrected sentences are as below:

1. Last paragraph, line 2-5 in results section
   “In the bivariate analysis, the respondents who were male; had never married; were not farmers; had worked in town; had used opium, marijuana, or heroin in the past year; and had been diagnosed with an STI were significantly more likely to be methamphetamine users.”

2. Last paragraph, line 5-8 in results section
   “The multivariable analysis showed that respondents who were male; had primary or lower education; had worked in town; were opium, marijuana, or heroin users in the past year; and had ever been diagnosed with an STI were significantly more likely to be methamphetamine users.”

3. Second paragraph, Line 3-4 from the bottom in discussion section
   “the multivariable analysis showed that a history of an STI was potently associated with methamphetamine use,”

In the discussion, the authors state that the association between methamphetamine use and STIs suggests that methamphetamine users are likely to have unprotected sex. While this may be true, it seems that the conclusion goes beyond the data since no data on condom use are reported. The 11% of methamphetamine users that report a history of STIs compared to the 1% of non-methamphetamine users reporting a history of STIs definitely suggests an association between methamphetamine use and STIs. However, 89% of methamphetamine users in the sample had never had an STI. It would be helpful to know how a history of STIs was measured. Also if condom use were measured, it would be helpful to include it in the bivariate analysis to show a relationship between methamphetamine use and unprotected sex.

[Response]
History of STIs was measured by self reporting, so there might be possibility of underreporting. Responding to reviewer's comments, we deleted “This suggests that methamphetamine users are very likely to have unprotected sex, probably due to the influence of the drug, and therefore,” (discussion section, 2nd paragraph, line 2-4 from the bottom), since the sentence might give impression that the statement had gone beyond the data. Instead we used the sentence, “Importantly, the multivariable analysis showed that a history of an STI was potently associated with methamphetamine use, suggesting that methamphetamine users constitute an important subpopulation of Karen villagers that should be targeted by HIV-prevention programs.” (discussion section, 2nd paragraph, the last 4 lines) as the last sentence of the paragraph.
Limitations-- The limitations section should acknowledge the small number of methamphetamine users (n=54) in the sample. In their book, Applied Logistic Regression (2000), Hosmer and Lemeshow suggest that logistic regression models as general rule should have 10 cases (in least common event) per parameter. In this case, with 39 methamphetamine users in the sample that would suggest that no more than 5 or 6 covariates or independent variables should be included in the model. However, there are 11 independent variables in the model. This could reduce power and lead to a numerically unstable model. This is probably okay, but it just needs to be acknowledged as a limitation.

[Response]
As advised, such limitation should be mentioned in the manuscript, though we thought it was necessary to include all of 11 covariates responding to social background of the study population. The below sentence was added at discussion section, the last paragraph, line 4-5.
“The small number of methamphetamine users (n = 54) may make the model unstable and reduce the statistical power.”

Level of interest: An article whose findings are important to those with closely related research interests
Quality of written English: Acceptable
Statistical review: No, the manuscript does not need to be seen by a statistician.
Declaration of competing interests:
I declare that I have no competing interests.
II. Reviewer's report

Title: Methamphetamine use and correlates in two villages of the highland ethnic Karen minority in northern Thailand: a cross sectional study

Version: 2 Date: 30 December 2008
Reviewer: Wendee Wechsberg

Reviewer's report:
Major compulsory revisions needed:
1. Background: The first statement is strong and needs backup or referencing. Who are the ethnic minorities; this should be explicated, in addition to the concept of social mixing, migration for jobs etc.

[Response]
We presented two references to support the first statement. One, [1], is a reference related to a history of opium production, cultivation, and relevant politics and economy in Thailand, and the other, [2], is related to illegal drug situation in Thailand. This modification was presented in the background section, the 1st paragraph, line 1-6.

Who the ethnic minorities are was explained by mentioning that “In Thailand, roughly 1 million people are members of ethnic minorities, constituting 1.6% of the entire Thai population. These minorities have distinct cultural backgrounds, practices and languages. Most (approximately 920,000) are members of nine ethnic minorities that reside in the highland areas at elevations from 500 to 2,500 meters. These highlanders are officially classified as “hill tribes,” or highland ethnic minorities, among which the Karen account for the largest population (47.5%) [7, 8].” in the background section, the 2nd paragraph, in line 1-6.

Social and cultural mixing was explained in Karen context and migration for job was described by mentioning that “Although the Karen have been mobile for many centuries, migration to lowland cities in search of labor or educational opportunities has increased in recent years. This was especially true in the 1980s for Karen youth. The increasing migration, together with improved infrastructure and media access in the remote villages, has resulted in a rise in material possessions that represent an elevation to prestigious cultural status as well as significant changes in lifestyle, sexual morality, and sexual behaviors [11].” in the background section, the 2nd paragraph, in line 1-7 from the bottom.

Regarding “who are the ethnic minorities,” the concept of social mixing, migration for jobs; we described in section of background, the 2nd paragraph. Considering the comment from another reviewer making recommendation to describe additional information about Karen’s status in Thailand (e.g. are they a discriminated against minority? What is the relationship between the Karen in Thailand and the Karen in Myanmar?), those related information was also described in this part.

2. A need to better set up the issue for disease transmission from meth use, to sexual risk to HIV?

[Response]
The original sentence, “because its use is associated with high-risk sexual behavior and a risk of sexually
transmitted infections (STIs) and therefore potentially with a risk of HIV infection,” in background section, 2nd paragraph, line 6-7 was deleted and a new sentence, “Apart from its direct toxicity, methamphetamine represents a serious health concern in the context of the HIV epidemic. This is because methamphetamine use leads to engagement in other illicit drug use [12, 13], sexual initiation or increase in sexual activity [14, 15], multiple steady male partners [15], and STIs [12], though the factors associated with methamphetamine use vary depending on the study population.” was added in background section, 3rd paragraph, line 5-10, so as readers could easily understand why methamphetamine use could be risk for sexual behaviors and STIs/HIV.

3. Methods: How was the sample selection done, the instrumentation developed from what, validated and adapted how? What cultural differences were addressed?

[Response]
Sampling procedure was added in method section, the 1st paragraph, line 3-7, as “The two villages were selected from villages in Category 1, the most developed level, and Category 3, a less developed level, based on the government categorization; among five possible levels within that categorization, more than 90% of villages in the study districts are classified in categories 1 to 3 [7].” To avoid duplication, the last sentence in original, “In a five-category classification system used in Thailand, village A is categorized in Category 1, the most developed, and village B in Category 3, less developed” in the paragraph was deleted.

Due to the above revision, the 2nd sentence in original paper, “Briefly …… Thailand” and the 4th sentence, “The two Karen villages …… development” were combined into one sentence in line 1-3 as “Briefly, we conducted a survey in two Karen villages at different levels of infrastructural development in a mountainous region in northern Thailand.”

The process of questionnaire development was described in the 2nd paragraph, line 3-10 as ” The questionnaire was developed based on results of eight focus group interviews with male and female Karen villagers. The questionnaire, written in Thai, was translated into the local languages through discussions among interviewers. For sensitive questions, such as questions about drug-related and sexual attitudes or behaviors, a separate answer sheet was prepared, and illustrations were used for those who were illiterate. Prior to the data-collection phase, we pretested the questionnaire in other villages that were distant from the study villages, and then revised the questions iteratively as needed.” To avoid duplication, original line 3-6 of the 2nd paragraph, “previously pretested in other villages distant from the study villages and then revised. For sensitive questions, such as questions about drug-related and sexual attitude or behaviors, a separate answer sheet was prepared that used illustrations for those who were illiterate,” was deleted.

Cultural differences were address by implementing data collection by Karen interviewers, by using local language, by paying special consideration for the illiterates by preparing separate answer sheet with illustration for sensitive questions, which were all included in the above additional explanation.

4. Results: Table 1 was presented in a confusing manner

[Response]
We understand that Table 1 might be confusing, since the data of methamphetamine was shown in two lines, one as main category, but the other as subcategory. To avoid this, we reorganized the data by presenting methamphetamine, opium, marijuana, and heroin, originally addressed as subcategories, as main categories and put those data prior to the data of “any of 4 drug use.” Then we deleted the other data of methamphetamine use to avoid duplication.

Responding to the reorganized order of the data in Table 1, the related sentences in the manuscript, in the results section, the 2\textsuperscript{nd} paragraph, line 1-3, were also modified by mentioning the data of methamphetamine first, then the data of any of 4 drug use second.

Minor Essential Revisions:

5. Table 2 needs to collapse rows. Do not need 7 rows (ever married, not graduated, never worked, no to opium, no to marijuana, no to heroin, no to opium, marijuana, heroin) They are the inverse of data presented.

[Response]
We collapsed the 7 rows in Table 2 as advised.

Overall: This paper in its present form is fairly weak and has not set up the data. It maybe the only data available about meth use and worthy of publication if these issues are addressed.

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.
**III. Reviewer's report**

**Title:** Methamphetamine use and correlates in two villages of the highland ethnic Karen minority in northern Thailand: a cross sectional study  

**Version:** 2  

**Date:** 22 January 2009  

**Reviewer:** Mary-Lynn Brecht  

**Reviewer's report:**  
This is a well-organized and presented manuscript, providing information on an understudied methamphetamine-using population. The methods appear appropriate. Results identify a population with particularly high methamphetamine use compared to the nation as a whole. I would suggest only a few clarifications that might facilitate the interpretation of results:

1. p. 2, last line For what year was the 0.4% meth-dependent survey result? And this seems inconsistent with the 0.2% from 2003 having used meth in the past year. Usually, dependence is a smaller rate than is past year use. Can you clarify?

[Response]  
Methamphetamine dependent rate of 0.4% was a calculated figure by the author based on the whole population of Thailand, 60,617,200 by Population and Housing Census 2000, National Statistical Office, Thailand. This figure may be possible to be used by describing that it is equivalent to 0.4% of the whole Thai population, however; we decided not to use, because we noticed that there was no reference indicating the source of the figure, 250,000 in the reference #1. In addition, figures obtained from a kind of survey is more appropriate to be used in the manuscript than a figure calculated by the author; otherwise it may cause confusion as pointed out by the reviewer by saying “why dependence rate is not smaller than user’s rate in past year.” We would like to apologize on this. Instead, we use other data to explain methamphetamine as the most popular illicit drug in modern Thailand by referring number and proportion of methamphetamine users among new admissions for drug treatment and of methamphetamine-related arrests in Thailand, as described in the background section, the 1st paragraph, line 3-6.

2. p. 3, lines 5-6 In what year were the 10.3% and 29% results compiled?

[Response]  
The data presented in background section, the 1st paragraph, line 3 from the bottom, was collected in 1999 (for 10.3%) and published in 2001 (for 29.0%). Further we revised this sentence in line 2-4 from the bottom as “determined that 10.3% of this study group tested positive for current methamphetamine use. Additionally, 29.0% of the study group reported having ever used methamphetamine [4]” since difference between using methamphetamine and having ever used methamphetamine was not clear in the original sentence.
3. p. 4, last paragraph The data collection procedure is described as occurring on 2 days, with interviews conducted by 3 interviewers in each of 2 villages. It’s not clear how this could have produced 548 interviews—that seems to work out to an average of 45 interviews per interviewer per day—is this correct?

[Response]
We needed to spent 31 days, from “February” 24 to “March” 26, to complete the data collection. In a revised sentence, we presented month first, followed by date, in the method section, the 2nd paragraph, line 1.

4. p. 7, line 4 “…was used by 15% of male residents of two separate Karen villages.” Table 1 indicates a rate of 19.5% in Village A and 15% in Village B. Please clarify.

[Response]
This is our mistake happened in the process of English proof reading. The original sentence was “…is already prevalent at more than 15% among male residents of two separate ….” Therefore, it should be “…was used by more than 15% of male residents of two ….”

Taking this opportunity for more appropriate description; we would like to revise as “…was used by 9.9% of the residents of two …” in discussion section, the 1st paragraph, line 3, by using methamphetamine prevalence rate of the whole study population including males and females, since the data of national household survey presented in line 5-6 for comparison is the prevalence of general population, including both males and females, so as to be fair for the comparison.

5. p. 7, paragraph 2, 6-10 This explanation is not clear (impact of earlier opium use).

[Response]
What we would like to discuss was that Karen society, which has a long history of opium use dating from the late 19th century until today, might have a kind of reduced reluctance toward or a feeling of reduced psychological resistance against using narcotic drugs including methamphetamine; and that this might ignited the prevailed use of methamphetamine among the study population when they exposed to methamphetamine during their migration to lowland Thai society for working.

As reviewer’s comment, however, our explanation was not clear and failed to write the sentence in logical way for clarifying relationship among the long history of opium use, exposure to methamphetamines use in lowland, and prevailed methamphetamine use in the study population.

Then, we would like to revise this sentence in discussion section, the 2nd paragraph, line 5-11, as “Contact with lowland Thai society through labor migration might have increased the use of methamphetamine because it enables laborers to work longer hours or to cope with work-related stress
associated with different socio-cultural situations. It is also possible that once exposed to methamphetamine, Karen villagers might be less reluctant than Thais to use new narcotic drugs, including methamphetamine, owing to the Karen’s cultural and traditional use of opium, dating from the late nineteenth century [17].

The above argument comparing Karen and Thai in terms of cultural and traditional history regarding opium use could also help response to reviewer’s comment No.7, asking “Are there any suggestions as to why this population has considerably higher meth use than other national surveys have found?”

6. Discussion Do you have any information that might relate to whether the relationship of meth to work in town is influenced mainly from “exposure” to meth or perhaps by a perceived need for meth use for “functional” purposes (e.g. to work more hours or two jobs)?

[Response]
According to Thailand Narcotics Annual Report 2006 by Office of Narcotic Control Board, Thailand, the most major population among methamphetamine users are young people as well as students, followed by laborers for longer work. While young people could be considered to be influenced by “exposure” to methamphetamine, for example, by friends; laborers could be assumed to use it for their functional purpose, such as for longer work. In case of this study population, since none of students reported methamphetamine use (Table 1), the methamphetamine use could be considered to be related to “functional” use at work. Responding to the discussion based on the review’s recommendation, we replace the sentence, “Perhaps contact with lowland Thai society through labor migration increased the exposure to methamphetamine use,” in discussion section, the 2nd paragraph, line 4-6, to a sentence, “Contact with lowland Thai society through labor migration might have increased the use of methamphetamine because it enables laborers to work longer hours or to cope with work-related stress associated with different socio-cultural situations.”

7. Discussion Are there any suggestions as to why this population has considerably higher meth use than other national surveys have found? The predictors found in the study don’t seem to be different from what might be found in the general Thai population. Is it that prevention efforts have reached the general population but not these ethnic villages? Other possibilities?

[Response]
We had discussion on this comment in our study team, including an anthropologist specializing social and cultural studies of the Karen, and concluded that Karen’s cultural and traditional history about opium use might be a considerable main reason of more prevailed methamphetamine use in Karen than in Thai; which is also supported by a result of the study showing a significant association of opium, marijuana, and heroin use to methamphetamine use, in which opium is the most prevailed drug in those of the three drugs.
Another possible explanation might be limited occupational choices of the Karen in lowland cities, due to language, educational or nationality-related barriers. Such barriers narrows available job opportunities almost only to low wage laborers, including construction workers, in which methamphetamine use to work harder and longer to compensate low income among the labors is reported. (Thailand Narcotics Annual Report 2006, by Office of Narcotics Central Board, Ministry of Justice, Thailand)

Discussion here might help us consider next step of the study; however, we would not include it in the manuscript, since we do not have any data or information that could link higher methamphetamine use in Karen and their historical background of opium use or limited occupational choices in which methamphetamine use seems to be common.

Since the history of opium use was an historical background shared by ethnic Karen as a whole, it could not be a predictor of methamphetamine use of the Karen in the study.

Regarding drug prevention efforts, it is quite sure that drug prevention program is reached in their villages through school education and public health services having been established in mountainous areas, through mass media including radio that does not require electricity system in a village, and through voluntary activities by NGOs. However, we do not have enough information to discuss if the prevention activities are implemented effectively and/or sufficiently in villages of ethnic minorities.

7. References #2 Is this reference from Thailand?

[Response]
Yes, it was from Thailand. We added “Thailand” in the reference.

Level of interest: An article of importance in its field
Quality of written English: Acceptable
Statistical review: No, the manuscript does not need to be seen by a statistician.
Declaration of competing interests: I declare that I have no competing interests.
Other points of revision

A below sentence originally existed at the background section, the 1st paragraph, line 2-3, was deleted, due to uncertainty of the resource of the data described in the reference (this reference was deleted in the revised manuscript).

"From a nationwide survey, 250,000 (0.4% of the population) people are estimated to be methamphetamine dependent[1]."

In results section, 3rd paragraph, the 2nd sentence and the 3rd sentence was replaced, and mentioned similarity of methamphetamine users and methamphetamine/drug non-users prior to mentioning differences between the two groups. Further, we separated the rest of the sentences in the paragraph, “Among methamphetamine users, those from village A (developed) were more likely to be younger, to never have been married, to be daily wage laborers, to have graduated from a school in town, to have never worked in town, to have used marijuana and heroin in the past year, to have been diagnosed with an STI in their lifetimes, compared to those from Village B; no such differences were seen between villages within methamphetamine/drug non-users.” from the 2en paragraph, and treated it as the 3rd paragraph.

The other small revisions made without reviewers” comments were just for English proofreading.