Author's response to reviews

Title: Characteristics of attempted self-poisoning in Sri Lanka; a systematic review

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Author's response to reviews: see over
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Dr Keshia M. Pollack
Editor-in-Chief
BMC Public Health

Dear Dr Pollack

Previously submitted as MS: 9589933476848469. Intentional, non-fatal self-poisoning in Sri Lanka; a systematic review of prevalence and risk factors.

Thank you for your comments and feedback regarding the above submission. As suggested, we have revised the manuscript to address the issues raised by the reviewers, and now wish to submit this as a new manuscript to BMC Public Health.

Our responses to the comments by the reviewers and editors to the original manuscript are listed in detail below. The title of the article has also been revised to: Characteristics of attempted self-poisoning in Sri Lanka: a systematic review.

Thank you,

Your sincerely,

Thilini Rajapakse
Corresponding author

- Revisions and responses to reviewers and editors:

Reviewer Flemming Konradsen:

A) It is unclear how focus on intentional non-fatal poisonings has influenced analysis? Also the focus on non-fatal poisoning does not come across in all sections of the paper. In the inclusion critical non-fatal is mentioned but the same focus does not seem to be highlighted in the presentation of the aims of the paper.

We have revised the aims section to emphasize the fact that the focus of this review is on intentional, non-fatal self-poisoning. To make things clearer, we have consistently used the term ‘attempted self-poisoning’ throughout the review, and have defined what is meant by this term, in the methods section.

The main aim of this review is to systematically examine the relevant published literature, in order to describe the rates, socio-demographic characteristics, risk factors such as psychiatric morbidity and previous self-harm associated with attempted self poisoning in Sri Lanka. Based on the findings of this review, we also discuss attempted self-poisoning in Sri Lanka in the context of attempted self-poisoning patterns internationally, with particular reference to cross national World Health Organization studies relevant to attempted suicide.

In the methodology section, under search strategy inclusion/exclusion criteria, we have clarified the matter further, and have defined the term ‘attempted self-poisoning’.

For the purposes of this review, the term ‘attempted self-poisoning’ is defined as self-poisoning attempts that were carried out intentionally, but with a non-fatal outcome. Thus, studies focusing on intentional, non-fatal self-poisoning in Sri Lanka, published in indexed journals, were eligible for inclusion in this review. Studies were also included if they reported on both accidental and intentional poisoning, provided that the intentional self-poisoning group could be clearly delineated for separate examination.
B) The results section includes a presentation of case-fatality. How does this focus on non-fatal cases?

_We have further clarified the inclusion/exclusion criteria, to explain why, for pragmatic reasons, this review includes studies which focus exclusively on intentional non-fatal self-poisoning, as well as studies which focus on intentional self-poisoning with a mixed outcome (i.e. fatal outcomes as well as non-fatal outcomes)._ 

Given the limited number of studies available, and to be as inclusive as possible, studies were included which exclusively considered survivors of intentional self-poisoning attempts, as well as those which considered as participants who attempted intentional self-poisoning irrespective of outcome (i.e., which included as subjects those who survived as well as those who later died). Studies were not included if they focused exclusively on those who died by intentional self-poisoning (i.e. which considered completed suicides only).

_This may have influenced the results to some degree, and this is acknowledged in the limitations section._

_Furthermore, as mentioned previously, the aim of this review is to examine factors associated with intentional, non-fatal self-poisoning in Sri Lanka. However, due to the nature of the studies available, this review included studies which focus on intentional self-poisoning, where the outcome (i.e., survival or death) has not been differentiated. This is a limitation of the review._

_As pointed out by the reviewer, since examination of case fatality is not a direct objective of this review, and detracts from the aims of this review, we have reduced the emphasis on case fatality, in both the results and discussion section. We have also omitted the table (former table 4) which listed case fatality._
C) The paper would benefit from a clear distinction between strategies aimed at reducing mortality following self-poisoning, from a strategy aimed at reducing incidence of self-poisoning. The distinction would influence the analysis of published work as well as the discussion of future strategies to be recommended.

We have clarified the aims section of the manuscript to highlight the aims of this review – which is to examine attempted self-poisoning in Sri Lanka, in the anticipation that this may suggest directions for development of interventions to reduce attempted self-poisoning rates in this country. The discussion section has also been revised according to the aims.

This main aim of this review is to systematically examine relevant published literature, in order to describe the rates, socio-demographic characteristics, risk factors such as psychiatric morbidity and previous self-harm associated with attempted self-poisoning in Sri Lanka. Based on the findings of this review, we also discuss attempted self-poisoning in Sri Lanka in the context of attempted self-poisoning patterns internationally, with particular reference to cross national World Health Organization studies relevant to attempted suicide. Secondly, based on the findings of this review, we aim to discuss potential interventions to reduce attempted self-poisoning rates in Sri Lanka – including both first attempts, and repetitions. It is anticipated that a review of the literature from Sri Lanka will suggest directions for the development of effective intervention programs for reducing attempted self-poisoning rates in this country. Strategies to reduce mortality due to medical causes following attempted self-poisoning is beyond the scope of this review, and hence is not discussed.

D) Also, when discussing self-poisonings by gender and age it would be relevant to inform the reader if the outcome was different for mortality and morbidity.

Based on the data set it was not possible to examine mortality and morbidity by age and gender.

E) In the background section of the paper it is mentioned that the case fatality in Sri Lanka has dropped following a reduction in access to toxic pesticides. It may be more correct to state that the toxicity of the pesticides most commonly accessible has been reduced.
We have revised this section as suggested by the reviewer.

Since 1995 the suicide rate in Sri Lanka has declined to 23 per 100,000 population (2006), a reduction that has been attributed to a drop in case fatality following reduction in toxicity of accessible pesticides.

F) Would the literature search have changed if “self-harm” had been used as a search term?

The term ‘self-harm’ was not included in the initial search since the aim of the review was to examine attempted self-poisoning (i.e. with overt or implied suicidal intent). However a repeat search was done including the term self-harm as suggested. This did not lead to the inclusion of any additional studies, and hence the original search strategy remains as described.

G) It could be considered to include a reference to Gunnell et al paper “the global distribution of fatal pesticide self-poisoning: a systematic review”, BMC public health 2007, 21, in the background section as this presents the scale of the problem at a global level.

Reference to this article has been included into the background section as suggested.

Pesticide poisoning is estimated to account for up to one third of the world’s suicides [4], and similarly, the commonest method of suicide in Sri Lanka, as in other South Asian countries, is self-poisoning by pesticide ingestion.


BMC public health 2007, 7:357.

H) When discussing changes in patterns in self-poisonings it should be acknowledged that the majority of studies used in the review come from facility based studies. Therefore, the pattern of self-poisoning and the case fatality will be greatly influenced by the changes in admissions to hospitals. One factor that will influence admission and results from facility based studies relates to the toxicity of pesticides
sold. When the pesticides are highly toxic more will die before admission and will only be identified in studies if the research includes general deaths registries or are community based.

_The discussion (section discussing rates and types of poisons used) has been revised as suggested:_

Another important confounder is that most of the available rates are derived from studies based on hospital admissions. Thus, factors influencing the rates of admission to hospital following attempted self-poisoning – such as improvement in transport services and increased numbers of peripheral hospitals – could impact on study findings over time. The toxicity of ingested substances may also influence hospital admission rates – prior to the restriction of the sale of toxic pesticides such as WHO Class I toxicity pesticides in Sri Lanka [1], many who ingested pesticides may have died prior to admission to hospital.


I) When discussing the trends for the country over time the ref “1” should be used more as this presents relatively recent country wide information.

_This has been done (see example given above)._

J) The references should be more systematically presented.

_We have carefully rechecked the article and have represented the references and author names in a more systematic way. All references in tables have been revised to give author, year of publication and reference:_

Jeyaratnam et al 1982 [12]

References to articles by Van Der Hoek is consistently referred to as Van der Hoek et al.

Reference 9 has been revised as follows:

K) Although only very few studies in Sri Lanka have looked at where individuals have obtained means of self-harm it could be interesting to highlight not least as if may present an important area of intervention.

*This has been done and is reported as follows in the results section:*

Three studies had directly examined reasons for choice of poison in those who attempted self-poisoning, and in all three studies, the most commonly cited reason for choice was easy availability [26, 29, 32]. A majority of those who ingested pesticides obtained the poison from their own homes or gardens [29, 32], while the study from Colombo reported that medicinal overdoses were obtained from homes as well as from pharmacies, purchased over the counter [26].

L) In a comparison of information from Sri Lanka with regional information it should be considered to include references to Tamil Nadu, India, e.g. Bose et al but also other authors has published from this state. It is likely to be the most relevant comparison to Sri Lanka.

*Where relevant we have included more references to relevant publications from India and neighbouring countries, including publications by Bose et al, and others:*


M) The discussion of incidence by gender could be linked with alcohol as a risk factor as it is likely that a higher mortality among men from pesticide self-poisoning is influenced by the intake of alcohol at the same time.

_We have re-emphasized the fact that more alcohol use disorders in men (compared to women) may have a bearing on the equal or higher attempted self-poisoning rates in men compared to women._

When examining the gender ratios on an area-wise basis, Sri Lankan evidence indicates that the rates of attempted self-poisoning in males are higher than females mostly in rural agricultural areas of the country. Why this should be so is not clear. One possible influencing factor is the pattern of alcohol consumption in this country. Sri Lanka is reported to have a high alcohol consumption, reflected by increase of alcohol related health problems in recent years [48], and culturally, alcohol use is much more common among men compared to women in this country. Alcohol use disorders are known to be associated with suicidal behaviours [49], and in keeping with this, Sri Lankan studies report that up to 50% of men were under the influence of alcohol at the time of the self-poisoning act [15, 22, 32].

The discussion would benefit from the use and reference to some of the reviews published discussing public health evidence and strategies aimed at reducing especially mortality following self-poisoning e.g. Konradsen et al 2003 “Reducing acute poisoning in developing countries – options for restricting the availability of pesticides”, Toxicology, 192 and Eddleston et al 2006 “Identification of strategies to prevent deaths after pesticide self-poisoning using a Haddon matrix, Inj Prev,12

_As mentioned previously, since the main aim of this review is to explore characteristics of attempted self-poisoning, and not reducing the mortality rate following self-poisoning, strategies to reduce mortality are not the main focus of the discussion._
Major compulsory review:
1. Background: Paragraph 1: I do not have a good sense of the rate in Sri Lanka compared to other places. I suggest that authors include data from other salient countries to provide additional context. This is especially important since the first paragraph concludes with a statement that although the suicide rate has decline, it is still high – high compared to what?

   We have attempted to place the suicide rate in Sri Lanka in context with other regional countries, by including relevant references:

   Sri Lanka has a high rate of suicide, which reached a peak in 1995, at 47 per 100,000 population [1, 12]. Vijayakumar et al, in their review of suicide in developing countries reported that the average annual suicide rate for the 1990s in Sri Lanka was 21.6/100,000, high compared to similarly reported rates in neighbouring India (9.7/100,000) and China (16.1/100,000) [3].

   We have also revised the background section to highlight that although the rates of completed suicide have shown a relative decrease with time, the rates of attempted (i.e. non-fatal intentional) self-poisoning remain high, compared to rates reported internationally – such as the rates for attempted self-poisoning reported by the WHO/EURO study.

   Since 1995 the suicide rate in Sri Lanka has declined to 23 per 100,000 population (2006), a reduction that has been attributed to a drop in case fatality following reduction in toxicity of accessible pesticides [1]. Nevertheless, the prevalence of attempted self-poisoning is still high [8, 9]. The rate of attempted suicide for males, as reported by a regional study in South Sri Lanka in 2002 was 330/100,000 [8], which is comparable to the highest average age standardized attempted suicide rates for males reported by the WHO/EURO para-suicide study of 314/100,000 [10].
2. Background, Paragraph 2: the heterogeneity of the prior studies is mentioned as one reason for this review. Say more here. What specific limitations of prior studies are being addressed by this review?

As suggested, we have given more details regarding the heterogeneity of prior studies, as follows:

However, the heterogeneity of these Sri Lankan studies makes overall conclusions difficult. For example, most studies have been conducted in different regions of the country, some based in the community, and others based on hospital admission data. The studies are of varying size, design and duration, and the nature of the subjects also vary – for example some studies examine pesticide self-poisoning only, some examine all types of self-poisoning, and some do not differentiate between intentional and accidental self-poisoning.

3. Exclusion criteria: how many studies were removed according to each of the exclusion criteria? I know that you have Figure 1, but I ask that you also state it in the text.

We have described the numbers of studies removed according to exclusion criteria, both in figure 1 and in the text as suggested:

As described above (figure 1), after the initial database search, 353 abstracts were screened, of which 261 were excluded because the studies were either not based in Sri Lanka, focused only on accidental poisoning, or focused only on the medical management of acute self-poisoning. After removal of duplicates, full text publications of the remainder (n 58) were retrieved and evaluated. Publications that did not provide data on attempted self-poisoning, and those that focused only on completed suicide were excluded (n 42). 16 publications were retained after this full text screen, 6 more were added after the examination of bibliographies of the already retrieved publications and 4 were added after hand-searches of print issues of the Ceylon Medical Journal. Therefore in total 26 publications (representing 23 studies) were included in this review.
4. Analysis strategy: what does systematically scrutinized mean? Who did this? Was there a standardized data abstraction sheet?

As suggested, we have described this further under Methods - analysis strategy:

A data extraction sheet was created, in order to obtain relevant information from each study included in the review, in a similar manner. Outcomes of interest included study design, nature and number of study participants, gender and age distribution, rates of self-poisoning, types of poison ingested and where obtained, degree of suicidal intent associated with the act, and factors associated with self-poisoning, such as triggers, psychiatric morbidity and alcohol use disorders. The method of assessment of outcomes such as psychiatric morbidity and alcohol use disorders was also noted for each study. Each included publication was scrutinized by one author (TR) initially, and relevant data was extracted and tabulated for each study, with the use of the data extraction sheet. Subsequently the data extraction and articles were reviewed by all three authors.

5. Discussion: The comparison to other countries – why not include this in the Results section? And leave the interpretation in the Discussion section? Also references were made to difference in the suicide rate between Sri Lanka and the West: but I did not see data showing these differences. Did I miss it? Again, a table may be useful here, that could be presented in the Results section, so that new data is not introduced in the Discussion section. In my opinion, it is one thing to put your findings in context of other counties, but another thing to do some additional analysis. Since one of the aims of the paper was to compare the suicide rate in Sri Lanka to other countries, I would consider including these numbers in the Results section.

We have revised the aims section, to clarify the aims and objectives of this review. As described below, this review aims to systematically examine the published literature to describe characteristics of attempted self-poisoning in Sri Lanka, and it’s associated factors. Based on the findings of this review we discuss attempted self-poisoning in Sri Lanka with attempted self-poisoning internationally, and this has been included in the discussion section.
A formal systematic comparison of attempted self-poisoning in Sri Lanka and other countries is not an aim of this review, and is beyond the scope of this article — and the aims section has been revised to clarify this.

We also do not aim to systematically review completed suicide rates of Sri Lanka and other countries. Therefore this was not included in the results section.

6.1) Other Limitations: publication bias; language bias (if potential studies were not published in English).

The language used for scientific and medical publications and conferences in Sri Lanka is English. Therefore all relevant publications would be in English, and language bias is not likely to be an issue with regards to this review. We have described this further in the limitations section.

The search was conducted in the English language, but since the language used for scientific and medical publications and conferences in Sri Lanka is English, a language bias is unlikely.

6.2) What about the confounding present in all of the cross-sectional studies? This was not mentioned and I think is an important oversight.

As mentioned by the reviewer, this is a limitation and we have mentioned it in the limitation section.

Many of the findings reported in this review are based on cross-sectional data, which provide limited information about rates of change and factors associated with attempted self-poisoning.

6.3) This is why I asked about rating the quality of the included papers. Ultimately this review is based on a summary of not very strong papers, thus the conclusions need to be taken with a grain of salt. Also, the most recent data that was included is from 2002 – do you feel Ok with that? Is this in itself a limitation?

As we described in the background section, studies on attempted self-poisoning in Sri Lanka were almost all regional rather than islandwide, and
were of varying sizes and study designs. Of the publications included in our review, the most recent study ended in 2008, and the most recent study which gave data on rates of attempted self-poisoning ended in 2002. As mentioned by the reviewer, these are all limitations – but it is this dearth of information itself that made us attempt this review. By reviewing and collating the available data on attempted self-poisoning in Sri Lanka, we aim to highlight what is known about this area, and indicate areas where further research is needed, particularly in order to reduce attempted self-poisoning rates in this country. Furthermore, wherever possible we have attempted to refer to more recent relevant studies from Sri Lanka.

7. The Discussion talks about interventions: I am curious as to why there was not a deliberate attempt to review studies reporting on the impact of interventions in this area. Or was there and I missed it? I ask because in the Background there is a comment about a change in strategy that helped to reduce the rate since 1995.

>The aim of this study was to review characteristics and factors associated with attempted self-poisoning in Sri Lanka. It was anticipated that this would suggest possible interventions for reduction of rates of attempted self-poisoning in Sri Lanka. However this review does not aim to systematically review interventions for attempted self-poisoning (either internationally or in Sri Lanka).

One study included in this review included an intervention, which has been mentioned in the results section:

>Therefore in total 26 publications (representing 23 studies) were included in this review. Of these, 18 were either cross sectional descriptive studies or retrospective studies based on medical case records (Table 1). One study included an intervention (brief intervention and contact following attempted self-harm) and was a randomized controlled trial.

>The strategy referred to in the background section refers to the drop in completed suicide (case fatality) rates following the reduction of toxicity of accessible pesticides.
Since 1995 the suicide rate in Sri Lanka has declined to 23 per 100,000 population (2006), a reduction that has been attributed to a drop in case fatality following reduction in toxicity of accessible pesticides [1].

Minor Essential Review:

1. Background, Paragraph 2: Lines 5-6 talk about the repetition rate. Are you referring to multiple attempts? Repetition rate does not seem like a common term to me. If it is cite it, or use alternative language.

   We have used the term repetition rate to indicate repetition of one or more suicide attempts, by any method, following the index attempted self-poisoning. This is in keeping with the repetition rates as described the WHO/SUPRE MISS study. We have revised the results section which gives the rates of self-poisoning and repetition, to clarify this issue:

   For the purposes of this review, with regards to repetition rate following attempted self-poisoning, repetition was defined as one or more suicide attempts, by any method, following the index attempted self-poisoning attempt. This is in keeping with the repetition as described by the WHO SUPRE-MISS study.

3. Results: based on strength of study design, the studies are primary cross sectional or descriptive. Was there any attempt to rate the studies?

   Because of the heterogeneity of the studies, there was no formal attempt to rate their quality. However based on methodology and study size, 4 of the studies included were considered to be more robust and relevant to the topic of this review [7, 9, 12, 31].

4. Discussion, First sentence: says that the suicide rate appears to be increasing? This was not mentioned up front. Where is the data to support this statement?

   The opening statement of the discussion refers to the fact that despite the reported drop in (completed) suicide rates in Sri Lanka after 1995 [1], the rates of attempted self-poisoning remain high, and appear to be increasing.
We have revised this statement to include references, and also refer to relevant the table in the article which give rates of attempted self-poisoning with the year:

Despite the drop in rate of completed suicide, the rates of attempted self-poisoning continues to be high [8, 9].

5. Table 3: I question the usefulness of this table.

We included table 3 in our original submission to highlight the rates of attempted self-poisoning by age and sex. However since only two studies included in the review gave this data, the information in the table was necessarily limited. We have now omitted that table 3.

However, after revision of the article, we have given the rates of self-poisoning separately for pesticides ingestion and other poison ingestion (as suggested by reviewer David Gunnell), and therefore this revised article does include a different table 3, titled: Rates for intentional self-poisoning (per 100,000 population) – for any type of substances including pesticides.

6. Revisit the acronyms in Table 2 – as the reader, I don’t know what some of these abbreviations mean.
FYI - editing: include comma after “i.e.” For all of the tables: in some cases there is a comma after “et al” and in other places, there is no comma.

We have revised table 2 to omit any acronyms, have attempted to make the regional area names clearer, and have revised the article again to correct the inconsistencies highlighted by the reviewer.

Reviewer David J Gunnell
Major Compulsory Revisions
1.1 Whilst this is potentially an interesting topic I’m not sure the authors have drawn out some of the key issues that would be of interest from such a review and the review is limited in terms of overlooking a number of relevant papers (e.g.Ganesvaran - 1988 British Journal of Psychiatry (1988), 152, 420-423; De Alwis, L. B. L. and Salgado, M. S. L. (1988) Agrochemical poisoning in Sri Lanka. Forensic Science International 36, 81-89).
As mentioned by the reviewer, the papers by Ganesvaran and De Alwis are both important publications, and both were considered for inclusion in this review. During the search and analysis process, the full text of both articles were retrieved and examined. However on closer examination, both papers met exclusion criteria for the review as described below, and therefore could not be included in this review:

The paper by Ganesvaran et al (1988) was considered for the review but excluded because the study examines and reports on 22 fatal deliberate self-harm cases (i.e. 22 completed suicides), and hence met exclusion criteria. (At the start of the paper the authors state that 328 patients with deliberate self-harm are admitted to the study hospital in that year, but these non-fatal attempts are not included as participants in this paper).

The paper by De Alwis et al (1988) lists the number of persons admitted to hospitals in Sri Lanka for pesticide poisoning from 1975-1983. Thereafter the paper focuses on details of completed suicides from among this group. Since this paper presents information based on the examination of fatal self-poisoning, and does not give information on those who attempted self-poisoning, this paper could not be included in this review.

The inclusion and exclusion criteria for this review is described in the methodology section. The relevant exclusion criteria with regards to the above two articles are as follows:

Since the aim of this review is to examine factors associated with attempted self-poisoning in Sri Lanka, studies which focused solely on accidental poisoning, as well as those which focused solely on fatal self-poisoning or completed suicides in Sri Lanka were also excluded.

1.2) I think it’s also a great pity that the authors have not hand searched the (very few) relevant Sri Lankan Journals that may not be listed on Medline e.g. the Ceylon Medical Journal

Following the reviewer’s suggestion, we have hand searched the issues of the Ceylon Medical Journal from the 1960s to date. This resulted in the inclusion of 4 publications from the archives of the Ceylon Medical Journal (see figure 1).
1.3) I’d suggest focusing on time trends in incidence and substances ingested.

As suggested by the reviewer, we have focused further on changes in substances ingested with time. We have described it further in the text (results and discussion sections), and have also showed changes via table 4.

In the results section:

When considering patterns of substances ingested with time, studies published up to the turn of the century reported pesticides to be the most commonly ingested substance, irrespective of gender or area where the study was conducted (table 4). Five studies included this review have been carried out after 2001, and of these, the studies conducted in urban areas report an increasing frequency of medicinal overdoses (table 4).

In the discussion section:

As expected, when considered overall, the most commonly ingested substance by those who attempted self-poisoning in Sri Lanka was pesticides (table 4), similar to neighbouring countries such as India [42]. However, two studies carried out after 2001 in urban areas of the country, report medicinal overdoses to be the most common substance used, for both genders in one study [26], and among females in the other study [14] (table 4). Interestingly, two studies included in this review reported on changes in types of poisons ingested over time [9, 27], of which the more recent study by Senadheera et al [27] of young people aged less than 19 years in urban Galle reported a dramatic increase of medicinal overdoses from 2001 to 2007. The latter included a five-fold increase of paracetamol overdose from 2001 to 2007. The findings of this review suggest that there has been an increasing rate of pharmaceutical drug overdoses rather than pesticide self-poisoning during the last decade in more urbanized areas of the country. The recent study by De Silva et al reported similar findings, i.e., increased hospital admissions for poisoning by medicinal and biological substances, and decreased admissions due to pesticide ingestion since 2003 [39]. The reason for these changes has not been directly investigated. However, given that the most common reason for choice of poison is easy availability [26, 30, 33], the
finding may reflect the increasing accessibility of medicines relative to pesticides, particularly in urban areas. This trend has important implications, for future health policy in Sri Lanka. It suggests that policy makers should consider introducing preventive strategies such as restriction of the quantity of paracetamol available as a single purchase, in order to reduce risk of medical complications associated with attempted self-poisoning due to overdoses.

2. The title of the paper refers to a desire to investigate risk factors and prevalence – thus cross sectional, cohort and case control studies should form the basis of the review. I’d suggest excluding trials as these are often based on selected sub-groups of the population and so findings may not be generalizable.

   **Only one trial (Ref- Fleischmann et al) was included in this review. The subjects for this trial are reported to be “all suicide attempters identified between January 2002 and January 2004, in emergency-care settings by medical staff within a catchment area with a population of at least 250,000. The exclusion criteria for this trial is stated as follows: refusal, death in the ward, clinical conditions not allowing interview, leaving against medical order, residence in a different catchment area, and language problems. These conditions do not suggest a strong sub-group selection, and hence we thought it appropriate to include the study in this review.**

3. Page, final paragraph – rather than simply counting the number of studies showing a male / female excess in rates, suggest focus on the study(s) that in the authors’ view give the most robust evidence e.g. those that are population based (identifying cases from rural and district hospitals) rather than based in tertiary referral centres e.g. Manuel et al.

   **We agree with the reviewer that giving equal weight to all studies may be a limitation (and is noted as such, in the limitations section). However when we examined the more methodologically sound studies individually, the findings of these are largely similar to the overall findings of the review.**
Another possible limitation is that during data extraction, equal weight was given to all studies, irrespective of study quality. However the overall findings were largely supported when higher quality studies were examined individually.

Minor Essential Revisions

1. Table 1 is not given in full in the manuscript – it has been cut off mid-way through Dawson et al 2010.

   *This occurred as an error when the article was being uploaded for submission to the journal. This has been rectified.*

1. Epidemiological terminology should be checked throughout – e.g. a) terms such as “prevalence rates” should be removed. Prevalence should be used where the proportion of people with a condition is stated; incidence rate where the number of new cases per xx population per unit time period is given; b) page 5, line 3 rates should be replaced by “proportions”

   *We have rechecked the paper and have revised the terms used where relevant.*

2. Page 1 – line 4-5 refer to studies from other South / East Asian countries – but only two references are given (5/6) and both are studies from Taiwan. Suggest cite data for India / China here.

   *This has been done, as suggested by the reviewer.*

Sri Lanka has a high rate of suicide, which reached a peak in 1995, at 47 per 100,000 population [1, 2]. Vijayakumar et al, in their review of suicide in developing countries reported that the average annual suicide rate for the 1990s in Sri Lanka was 21.6/100,00, high compared to similarly reported rates in neighbouring India (9.7/100,000) and China (16.1/100,000) [3].
References:

3. I’d suggest re-ordering the methods section to give the search strategy first.

*As suggested by the reviewer, the methods section has been re-ordered to give the search strategy first.*

5. The search terms given on page 3 differ slightly from those in the Figure – please be clear about the search terms used.

*This has been addressed.*

6. There’s a suggestion in Table 1 that the incidence of self-poisoning in Sri Lanka has increased in recent years – the authors might comment on this / graph the incidence rates (perhaps stratified by urban / rural study location).

*As suggested by the reviewer previously, we have given rates for attempted self-poisoning by pesticides only, and all poisons, separately (table 2 and 3), and have discussed further in the text.*

Despite the reported drop in completed suicide rates in Sri Lanka after 1995 [1], the rates of attempted self-poisoning in this country have increased in the three decades leading up to the turn of this century [8, 9, 12, 18, 19] (table 2 and 3), and this trend is seen both for attempted self-poisoning by pesticide ingestion, as well as for poisoning by ingestion of any other substance. This is supported by findings of De Silva et al [39], who reported that the rate of hospital admissions for any type of poisoning in Sri Lanka has increased from 204.8 admissions per 100,000 population in 1995, to 321.2 per 100,000 in 2007 – this despite a clear drop in the rate of completed suicides during the same period.
7. Page 7, last sentence (re-suicidal intent) – the difference in study findings here could reflect differences in casemix and poison ingested. Eddleston et al’s analysis is restricted to yellow oleander poisoned patients.

We agree with the reviewer, and have addressed the possibility that the differences in reported suicidal intent maybe influenced by differences in types of poison under consideration in the two studies concerned.

In the discussion section:

The available evidence suggests that attempted self-poisoning in Sri Lanka is associated with brief premeditation. The two studies in this review which examined suicidal intent associated with the attempted self-poisoning reported conflicting results – one study which examined self-poisoning by ingestion of any poison reported suicidal intent in upto 55.7% of those who attempted [33], whereas the other study which examined self-poisoning by oleander seed ingestion reported that most did not wish to die [25]. One possible explanation maybe the differences in substances ingested in the two studies concerned – oleander seed is a plant poison available in the garden, and maybe more associated with low intent, impulsive attempts of self-poisoning. Differences in methods of assessment of suicidal intent may also have influenced the findings.

8. Table 2 – some of the rates in this table are for pesticide self-poisoning, others are for all substances ingested – please distinguish these.

As suggested we have separately examined the rates for attempted self-poisoning for all substances ingested, and for pesticides only. Our findings are reported separately in two tables – table 2 and 3.

9. Please give reference numbers as well as author names for each study in the summary tables

This has been done as suggested.
10. Table 2 (and others) – papers 4, 5 and 6 please cite this author’s name (van der Hoek W) consistently for all papers.

   This has been done as suggested by the reviewer.

11. It is not clear why data from Manuel are given in Table 4- the cited figure is not for case fatality.

   The data by Manuel et al states the fatal self-poisoning rate per 100,000 population. As stated by the reviewer, it is not case fatality as reported by the other studies mentioned in the table, and was therefore omitted from the table.

   Since the aim of our review was to examine attempted self-poisoning in Sri Lanka, the case fatality as shown in table 4 was not thought to be very relevant, and has been omitted from the revised version.