

CORRECTION

Correction: Alcohol-Related Risk of Suicidal Ideation, Suicide Attempt, and Completed Suicide: A Meta-Analysis

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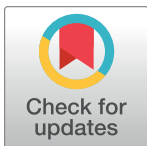
After publication of this article [1], concerns were raised about the inclusion of the study by Rossow and Amundsen [2] in the analysis shown in Fig 3, as this study reported estimates of the association between alcohol use disorder (AUD) and completed suicides but did not report on the association between AUD and suicide attempts. The authors apologize for this error and present here an updated version of Fig 3 in which this study is excluded. In the updated analysis, the summary measure of the effect of AUD on suicide attempt was 2.79 (95% CI: 2.16, 3.43), compared to 3.13 (95% CI: 2.45, 3.81) in the original analysis [1]. However, the association between AUD and suicide attempt remained significant and strong ($P < 0.001$). The heterogeneity across included studies, based on I^2 statistics, reduced from 88.5% in [1] to 86.3% in the reanalysis. The funnel plot analysis for attempted suicide (Fig 6) was also corrected accordingly, excluding the Rossow 1995 article from the analysis. Please see the updated Figs 3 and 6 here.

Questions were raised about the RR value used for the Rossow (1995) article, which is reported as 6.90 in Fig 3 and as 1.50 in Fig 4 in [1]. The authors clarify that the correct RR value (1.50) was used in the analysis reported in Fig 4. Whereas the 6.90 figure is reported in Rossow (1995) in Table 1, the text of that article reports that the odds of suicide among those who died was 1.50 higher among alcohol abusers compared to non-abusers (p. 688 of [2]).

Concerns were also raised about the heterogeneity in outcome measures analyzed, which included early alcohol initiation, "any heavy drinking", and AUD. For example, it was noted that [3] reported on early alcohol initiation and "any heavy drinking" (rather than AUD) as an exposure measure, and reported outcomes of self-reported suicidal behavior rather than a suicide outcome based on hospital records. The authors clarified that the upper part of Table 3 in [3] reported the effect of age of alcohol initiation as exposure measure on a suicide attempt. The lower part of the table reported the effect of various behavioral risk factors on the suicide attempt, including "any heavy drinking" which was used as a proxy for AUD. As mentioned in the Methods, the analysis of the association between AUD and suicide based on observational studies included data obtained using multiple study designs (cohort, case-control, and cross-sectional studies). However, the authors differentiated between the types of suicide (ideation, attempt, and complete) and the measure used to report effect estimates (odds ratio and risk/hazard ratio), as shown in Fig 4. In light of the heterogeneity between studies, the authors performed a meta-analysis using random-effects model, analyzed the heterogeneity across the included studies using I^2 statistics, and performed meta-regression to explore sources of heterogeneity (Table 2 in [1]).

The authors provide here an updated version of Table 1 in which participant age groups are reported consistently as the age range and/or mean age, per data available in the primary literature.

In addition, the Data Availability Statement for this article [1] is incorrect. The primary data are not provided in the published paper and its Supporting Information files. The authors provide the full list of excluded articles (with reasons for exclusion) and the table of all data extracted from the primary literature and used in the meta-analysis as Supporting Information in this Correction.



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Citation: Darvishi N, Farhadi M, Haghtalab T, Poorolajal J (2020) Correction: Alcohol-Related Risk of Suicidal Ideation, Suicide Attempt, and Completed Suicide: A Meta-Analysis. PLoS ONE 15(10): e0241874. <https://doi.org/10.1371/journal.pone.0241874>

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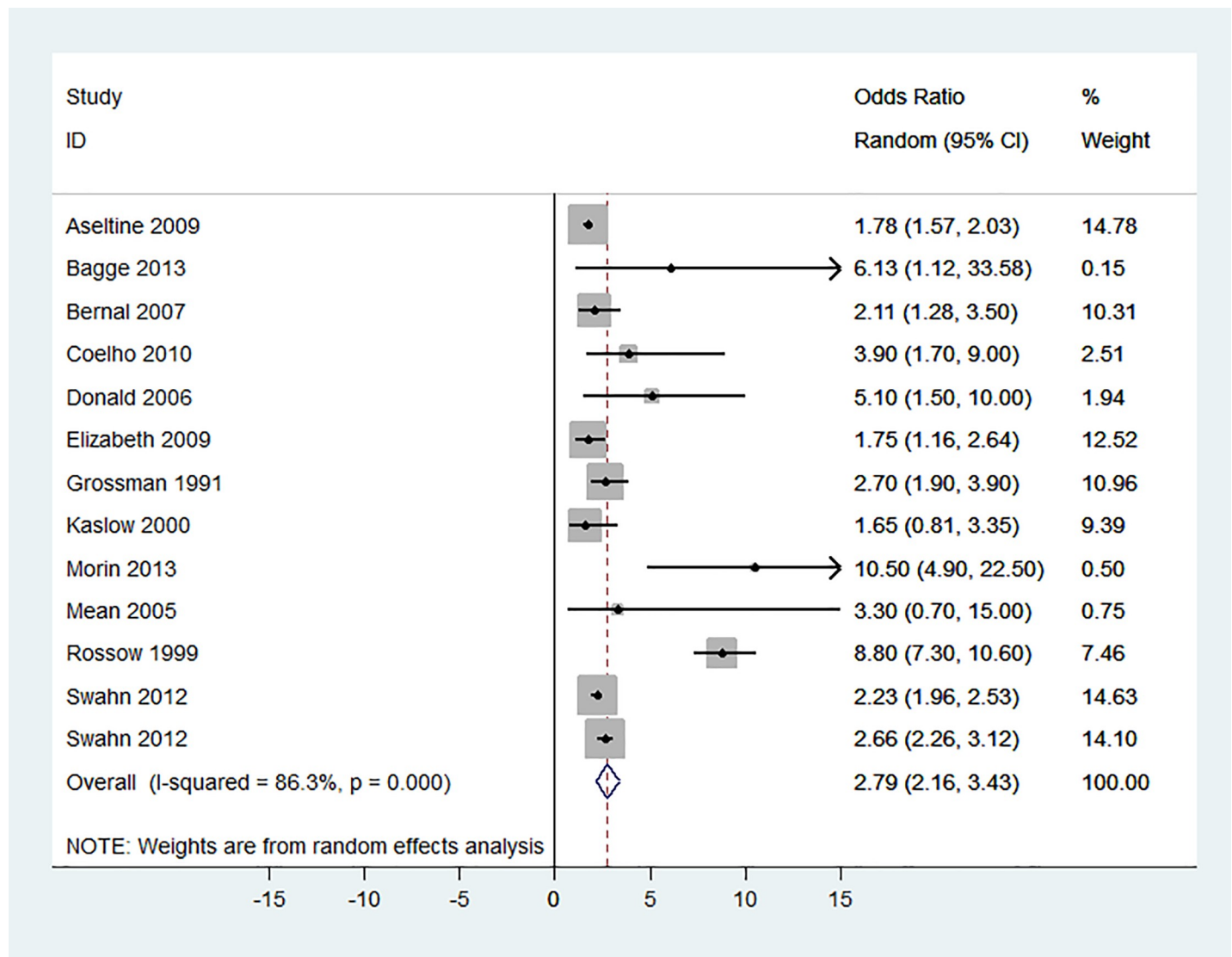


Fig 3. Forest plot of the association between alcohol use disorder and suicide attempt.

<https://doi.org/10.1371/journal.pone.0241874.g001>

Finally, there are errors in the References for this article [1].

The author names are not listed correctly for Reference 47. Note, in Fig 3 and Table 1 in [1] this reference is cited as Elizabeth 2009. The correct reference is:

Schilling EA, Aseltine RH Jr, Glanovsky JL, James A, Jacobs D. Adolescent alcohol use, suicidal ideation, and suicide attempts. *J Adolesc Health*. 2009;44: 335–341. pmid:19306791.

Additionally, the publication year is incorrectly listed as 2014 for Reference 52 in [1]. The correct reference is:

Swahn MH, Bossarte RM, Choquet M, Hassler C, Falissard B, Chau N. Early substance use initiation and suicide ideation and attempts among students in France and the United States. *Int J Public Health*. 2012;57: 95–105.

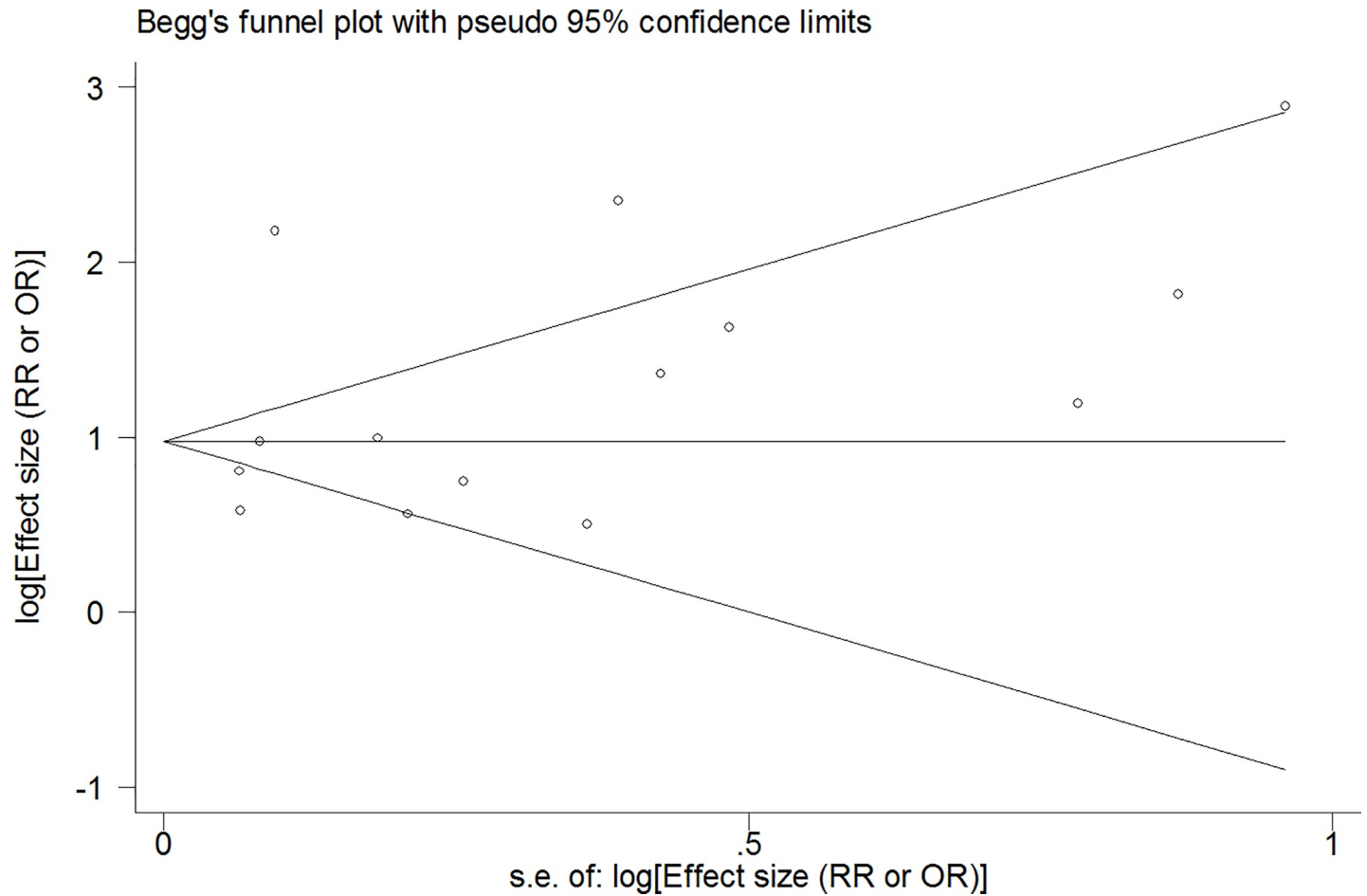


Fig 6. Funnel plot of included studies assessing the publication bias in studies addressing the association between alcohol use disorder and suicide attempt.

<https://doi.org/10.1371/journal.pone.0241874.g002>

Table 1. Summary of study results.

| 1 st author | Country | Age (yr) | | Gender | Population | Study | Estimate | Sample | Newcastle Ottawa Score | | |
|------------------------|-----------|----------|-------|--------|------------|-----------------|----------|--------|------------------------|-----|-----|
| | | Mean | Range | | | | | | Sel | Com | E/O |
| Agrawal 2013 | USA | 15.9 | 18–27 | Female | General | Cross-sectional | Crude | 3,787 | **** | * | ** |
| Akechi 2006 | Japan | 49.5 | 40–69 | Male | General | Cohort | Adjusted | 43,383 | **** | ** | *** |
| Andreasson 1991 | Sweden | - | 18–21 | Male | General | Cohort | Adjusted | 49,464 | *** | ** | ** |
| Aseltine 2009 | USA | - | 11–19 | Both | General | Cross-sectional | Adjusted | 32,217 | ** | ** | ** |
| Bagge 2013 | USA | 36.7 | 18–64 | Both | General | Case-Control | Adjusted | 192 | **** | ** | ** |
| Beck 1989 | USA | 29.9 | - | Both | General | Case-Control | Adjusted | 413 | *** | ** | ** |
| Bernal 2007 | Europe | 47.0 | 18+ | Both | General | Cross-sectional | Adjusted | 21,425 | *** | ** | ** |
| Bunevicius 2014 | Lithuania | 50.0 | 18–89 | Both | General | Cross-sectional | Adjusted | 998 | *** | ** | ** |
| Coelho 2010 | Brazil | - | 18+ | Both | General | Cross-sectional | Adjusted | 1,464 | ** | ** | ** |
| Donald 2006 | Australia | - | 18–24 | Both | General | Case-Control | Adjusted | 380 | **** | ** | ** |
| Schilling 2009 | USA | - | 13–18 | Both | General | Cross-sectional | Crude | 31,953 | ** | * | * |
| Feodor 2014 | Denmark | - | 16+ | Both | General | Cohort | Adjusted | 32,010 | **** | ** | *** |
| Flensburg 2009 | Denmark | - | 20–93 | Both | General | Cohort | Adjusted | 18,146 | **** | ** | *** |

(Continued)

Table 1. (Continued)

| 1 st author | Country | Age (yr) | | Gender | Population | Study | Estimate | Sample | Newcastle Ottawa Score | | |
|------------------------|-------------|----------|-------|--------|------------|-----------------|----------|--------|------------------------|-----|-----|
| | | Mean | Range | | | | | | Sel | Com | E/O |
| Grossman 1991 | USA | 14.4 | - | Both | General | Cross-sectional | Adjusted | 6,637 | *** | ** | *** |
| Gururaj 2004 | India | - | 15–60 | Both | General | Case-Control | Crude | 538 | **** | * | ** |
| Kaslow 2000 | USA | 30.8 | 18–64 | Female | General | Case-Control | Crude | 285 | *** | * | ** |
| Kettl 1993 | Alaska | 30.8 | - | Both | General | Case-Control | Crude | 66 | ** | * | *** |
| Lesage 1994 | Canada | - | 18–35 | Male | General | Case-Control | Crude | 150 | **** | * | *** |
| Méan 2005 | Switzerland | 18.9 | 16–21 | Both | General | Cohort | Adjusted | 148 | *** | ** | * |
| Morin 2013 | Sweden | 80.0 | 70–91 | Both | General | Case-Control | Adjusted | 515 | *** | ** | ** |
| Orui 2011 | Japan | 54.0 | - | Both | General | Cross-sectional | Adjusted | 770 | *** | ** | ** |
| Petronis 1990 | USA | - | - | Both | General | Cohort | Adjusted | 13,673 | FTU | FTU | FTU |
| Pridemore 2013 | Russia | - | 25–54 | Male | General | Case-Control | Adjusted | 1,640 | **** | ** | ** |
| Randall 2014 | Benin | - | 12–16 | Both | General | Cross-sectional | Adjusted | 2,690 | ** | ** | ** |
| Rossow 1999 | Sweden | - | 25–44 | Male | General | Cohort | Adjusted | 46,490 | **** | ** | *** |
| Shoval 2014 | Israel | - | 21–45 | Both | General | Cross-sectional | Adjusted | 1,237 | *** | ** | ** |
| Swahn 2012 | France | - | 11–19 | Both | General | Cross-sectional | Adjusted | 13,187 | ** | ** | ** |
| Swahn 2012 | USA | - | 11–19 | Both | General | Cross-sectional | Adjusted | 15,136 | ** | ** | ** |
| Tidemalm 2008 | Sweden | 37.7 | - | Both | General | Cohort | Adjusted | 39,685 | **** | ** | *** |
| Zhang 2010 | China | - | - | Male | General | Cross-sectional | Adjusted | 454 | ** | ** | ** |
| Zonda 2006 | Hungary | 52.0 | - | Both | General | Case-Control | Crude | 200 | *** | * | ** |

Sel: Selection; **Com:** Comparability; **E/O:** Exposure/Outcome; **FTU:** Full text unavailable

Adjusted means controlled for one or more of the following factors: age, gender, race, mental disorder, drug abuse, smoking, marital status, body mass index, educational level, employment status, income, living alone

<https://doi.org/10.1371/journal.pone.0241874.t001>

Supporting information

S1 File. Characteristics of the excluded studies.
(DOC)

S2 File. Dataset underlying the study.
(XLSX)

References

1. Darvishi N, Farhadi M, Haghtalab T, Poorolajal J. (2015) Alcohol-Related Risk of Suicidal Ideation, Suicide Attempt, and Completed Suicide: A Meta-Analysis. *PLoS ONE* 10(5): e0126870. <https://doi.org/10.1371/journal.pone.0126870> PMID: 25993344
2. Rossow I, Amundsen A. (1995) Alcohol abuse and suicide: a 40-year prospective study of Norwegian conscripts. *Addiction* 90: 685–691. <https://doi.org/10.1046/j.1360-0443.1995.9056859.x> PMID: 7795504
3. Swahn MH, Bossarte RM, Choquet M, Hassler C, Falissard B, Chau N. (2012) Early substance use initiation and suicide ideation and attempts among students in France and the United States. *Int J Public Health*. 57: 95–105. <https://doi.org/10.1007/s00038-011-0255-7> PMID: 21523616