SUPPLEMENTARY APPENDIX

**Alcohol use and suicide-related outcomes in people with a diagnosis of schizophrenia: A comprehensive systematic review and meta-analysis.**

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Supplementary Appendix AA: Subgroup Analysis Table – Alcohol / Suicidal Ideation (ORs)

Supplementary References

**Supplementary Appendix A**: PRISMA Checklist

| **Section and Topic** | **Item #** | **Checklist item** | **Location where item is reported** |
| --- | --- | --- | --- |
| **TITLE** | | |  |
| Title | 1 | Identify the report as a systematic review. | Page 1 |
| **ABSTRACT** | | |  |
| Abstract | 2 | See the PRISMA 2020 for Abstracts checklist. | Page 2 |
| **INTRODUCTION** | | |  |
| Rationale | 3 | Describe the rationale for the review in the context of existing knowledge. | Pages 3 & 4 |
| Objectives | 4 | Provide an explicit statement of the objective(s) or question(s) the review addresses. | Page 4 |
| **METHODS** | | |  |
| Eligibility criteria | 5 | Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses. | Pages 5 & 6 |
| Information sources | 6 | Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted. | Pages 4 & 5 |
| Search strategy | 7 | Present the full search strategies for all databases, registers and websites, including any filters and limits used. | Page 5 |
| Selection process | 8 | Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process. | Page 6 |
| Data collection process | 9 | Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process. | Pages 6 & 7 |
| Data items | 10a | List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect. | Pages 7 & 8 |
| 10b | List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information. | Pages 7 & 8 |
| Study risk of bias assessment | 11 | Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process. | Pages 6 & 7 |
| Effect measures | 12 | Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results. | Page 8 |
| Synthesis methods | 13a | Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention characteristics and comparing against the planned groups for each synthesis (item #5)). | Pages 7 & 8 |
| 13b | Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions. | Page 8 |
| 13c | Describe any methods used to tabulate or visually display results of individual studies and syntheses. | Page 10 |
| 13d | Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used. | Pages 8 & 9 |
| 13e | Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression). | Page 9 |
| 13f | Describe any sensitivity analyses conducted to assess robustness of the synthesized results. | Page 9 |
| Reporting bias assessment | 14 | Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases). | Pages 6 & 7 |
| Certainty assessment | 15 | Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome. | Pages 6 & 7 |
| **RESULTS** | | |  |
| Study selection | 16a | Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram. | Pages 9 & 10 |
| 16b | Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded. | - |
| Study characteristics | 17 | Cite each included study and present its characteristics. | Page 10, Suppl B & C |
| Risk of bias in studies | 18 | Present assessments of risk of bias for each included study. | Page 10, Suppl D, E, F, G, H & I |
| Results of individual studies | 19 | For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect estimate and its precision (e.g. confidence/credible interval), ideally using structured tables or plots. | Page 10, 11 & 12 |
| Results of syntheses | 20a | For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies. | Page 10 |
| 20b | Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect. | Pages 10, 11 & 13 |
| 20c | Present results of all investigations of possible causes of heterogeneity among study results. | Pages 12 & 13, Suppl S, T, U, V, W, X, Y, Z, AA |
| 20d | Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results. | Pages 11, 12 & 13 |
| Reporting biases | 21 | Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed. | - |
| Certainty of evidence | 22 | Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed. | Pages 10, 11, 12 & 13 |
| **DISCUSSION** | | |  |
| Discussion | 23a | Provide a general interpretation of the results in the context of other evidence. | Pages 14 & 15 |
| 23b | Discuss any limitations of the evidence included in the review. | Pages 16 & 17 |
| 23c | Discuss any limitations of the review processes used. | Pages 16 & 17 |
| 23d | Discuss implications of the results for practice, policy, and future research. | Pages 17 & 18 |
| **OTHER INFORMATION** | | |  |
| Registration and protocol | 24a | Provide registration information for the review, including register name and registration number, or state that the review was not registered. | Pages 2 & 4 |
| 24b | Indicate where the review protocol can be accessed, or state that a protocol was not prepared. | Pages 2 & 4 |
| 24c | Describe and explain any amendments to information provided at registration or in the protocol. | - |
| Support | 25 | Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review. | Page 19 |
| Competing interests | 26 | Declare any competing interests of review authors. | Page 19 |
| Availability of data, code and other materials | 27 | Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review. | - |

**Supplementary Appendix B:** Demographic information of included studies (i).

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Source | Study Methodology | Sample | Sample Size | Age, y | Cases Age | Controls Age | Baseline PANSS Total  (Cases) | Baseline PANSS Total (Controls) |
| *Suicide*  Cohen et al, 1964 (USA)  Shaffer et al, 1974 (USA)  Allebeck et al, 1987 (Sweden) – Males  Allebeck et al, 1987 (Sweden) – Females  Stephens et al, 1999 (USA)  Sinclair et al, 2004 (UK)  Kuo et al, 2005 (Taiwan)  McGirr et al, 2006 (Canada)  Limosin et al, 2007 (France)  Reutfors et al, 2009 (Sweden)  Fazel et al, 2014 (Sweden) – Females  Hjorthoj et al, 2015 (Denmark)  Ostergaard et al, 2017 (Denmark)  Zaheer et al, 2020 (Canada)  Lahteenvuo et al, 2021 (Finland)  Lahteenvuo et al, 2021 (Sweden)  Olfson et al, 2021 (USA)  *Attempted Suicide*  Harkavy-Friedman et al, 1999 (USA)  Altamura et al, 2003 (Italy)  Goldstein et al, 2006 (USA) – Males  Altamura et al, 2007 (Italy) – NA  Altamura et al, 2007 (Italy) – EUR  Altamura et al, 2007 (Italy) – EEUR  Altamura et al, 2007 (Italy) – Saf  Altamura et al, 2007 (Italy) – SA  Barak et al, 2008 (Israel)  Uzun et al, 2009 (Turkey)  Barrett et al, 2010 (Norway)  Cohen et al, 2010 (USA)  Pratt et al, 2010 (UK)  Robinson et al, 2010 (Australia)  McLean et al, 2012 (Australia)  Fedyszyn et al, 2012 (Australia)  Bani-Fatemi et al, 2013 (Canada)  Mauri et al, 2013 (Italy)  Yan et al, 2013 (China)  Zhang et al, 2013 (China)  Hu et al, 2014 (Canada)  Luckoff et al, 2014 (South Africa) – A  Luckoff et al, 2014 (South Africa) – D  Ayesa-Arriola et al, 2015 (Spain)  Leposavic et al, 2015 (Serbia)  Yoo et al, 2015 (Korea)  Canal-Rivero et al, 2016 (Spain) – EFSA  Canal-Rivero et al, 2016 (Spain) – LFSA  Adan et al, 2017 (Spain) – Males  Ostergaard et al, 2017 (Denmark)  Waterreus et al, 2018 (Australia) – Males  Waterreus et al, 2018 (Australia) – Females  Jovanovic et al, 2019 (UK, Croatia)  Lopez-Morinigo et al, 2019 (UK) – AESOP  Lopez-Morinigo et al, 2019 (UK) – GAP  Temmingh et al, 2020 (South Africa)  Abderemane et al, 2022 (Morocco)  Dai et al, 2022 (China) – Males  *Suicidal Ideation*  Fialko et al, 2006 (UK) – M  Fialko et al, 2006 (UK) – S  Goldstein et al, 2006 (USA) – Males  Strauss et al, 2006 (USA) – Males  Barrett et al, 2010 (Norway)  Kim et al, 2010 (South Korea)  Yan et al, 2013 (China)  Amir et al, 2019 (Indonesia)  Freeman et al, 2019 (UK)  Temmingh et al, 2020 (South Africa)  Olfson et al, 2021 (USA)  Dai et al, 2022 (China) – Males  Wang et al, 2022 (Canada) – C | Cross-Sectional / Case Control  Cross-Sectional / Case Control  Cross-Sectional / Case Control  Cross-Sectional / Case Control  Longitudinal  Cross-Sectional / Case Control  Cross-Sectional / Case Control  Cross-Sectional / Case Control  Longitudinal  Cross-Sectional / Case Control  Longitudinal  Longitudinal  Longitudinal  Longitudinal  Longitudinal  Longitudinal  Longitudinal  Cross-Sectional / Case Control  Cross-Sectional / Case Control  Cross-Sectional / Case Control  Cross-Sectional / Case Control  Cross-Sectional / Case Control  Cross-Sectional / Case Control  Cross-Sectional / Case Control  Cross-Sectional / Case Control  Cross-Sectional / Case Control  Cross-Sectional / Case Control  Cross-Sectional / Case Control  Cross-Sectional / Case Control  Cross-Sectional / Case Control  Longitudinal  Cross-Sectional / Case Control  Cross-Sectional / Case Control  Cross-Sectional / Case Control  Cross-Sectional / Case Control  Cross-Sectional / Case Control  Cross-Sectional / Case Control  Cross-Sectional / Case Control  Cross-Sectional / Case Control  Cross-Sectional / Case Control  Longitudinal  Cross-Sectional / Case Control  Cross-Sectional / Case Control  Longitudinal  Longitudinal  Cross-Sectional / Case Control  Longitudinal  Cross-Sectional / Case Control  Cross-Sectional / Case Control  Cross-Sectional / Case Control  Cross-Sectional / Case Control  Cross-Sectional / Case Control  Cross-Sectional / Case Control  Cross-Sectional / Case Control  Cross-Sectional / Case Control  Cross-Sectional / Case Control  Cross-Sectional / Case Control  Cross-Sectional / Case Control  Cross-Sectional / Case Control  Cross-Sectional / Case Control  Cross-Sectional / Case Control  Cross-Sectional / Case Control  Cross-Sectional / Case Control  Cross-Sectional / Case Control  Cross-Sectional / Case Control  Longitudinal  Cross-Sectional / Case Control  Cross-Sectional / Case Control | Chronic  Chronic  Chronic  Chronic  Chronic  Chronic  Chronic  Chronic  Chronic  Chronic  Chronic  Chronic  Chronic  Chronic  Chronic  Chronic  Chronic  Chronic  Chronic  Chronic  Chronic  Chronic  Chronic  Chronic  Chronic  Chronic  Chronic  FEP  Chronic  Chronic  FEP  Chronic  FEP  Chronic  Chronic  Chronic  Chronic  Chronic  Chronic  Chronic  FEP  Chronic  Chronic  FEP  FEP  Chronic  Chronic  Chronic  Chronic  Chronic  FEP  FEP  Chronic  Chronic  Chronic  Chronic  Chronic  Chronic  Chronic  FEP  Chronic  Chronic  Chronic  Chronic  Chronic  Chronic  Chronic  Chronic | 80  89  46  50  1212  133  156  81  3434  168  9676  41,470  35,625  75,989  30,860  14,616  668,836  156  103  93  414  236  199  37  93  2188  300  170  311  84  282  821  180  566  106  540  520  234  959  975  397  50  87  65  51  50  35,625  1065  725  264  181  112  248  115  616  290  290  93  165  170  84  540  1130  110  248  64,565  616  85 | -  -  -  -  -  -  -  -  -  -  29.8 (8.3)  27.6 (9.2)  27.62 (8.81)  -  -  -  -  37.61 (11.84)  38.4 (11.0)  -  -  -  -  -  -  -  36.7 (11.8)  -  -  42.3 (11.85)  -  -  19.56 (2.73)  39.28 (11.45)  48.25 (12.68)  -  -  -  -  -  28.94 (9.46)  -  -  26.17 (9.53)  25.84 (9.05)  36.06 (7.79)  27.62 (8.81)  -  -  -  30.5 (11.3)  29.4 (9.2)  31.5 (9.2)  30.9 (0.83)  47.95 (12.7)  -  -  -  48 (8)  -  37.4 (7.1)  -  33.34 (-)  42.3 (11.5)  31.5 (9.2)  -  47.95 (12.7)  - | -  35.08 (9.78)  -  -  32.7 (11.6)  23 (-)  38.0 (48.7)  34.45 (11.61)  35.9 (11.0)  32.8 (9.7)  -  -  -  31.05 (8.14)  32.9 (7.8)  34.3 (7.6)  -  37.17 (10.41)  40.1 (11.2)  -  37.5 (9.0)  36.9 (10.8)  39.1 (10.7)  31.2 (9.0)  34.1 (11.0)  39.60 (12.86)  37.1 (12.5)  25.0 (6.1)  60.8 (5.2)  42.22 (10.60)  21.8 (3.2)  22.0 (6.4)  19.18 (2.63)  41.34 (11.06)  47.42 (14.02)  41.2 (7.4)  45.9 (11.8)  36.28 (11.09)  -  -  28.35 (8.56)  -  32.2 (8.1)  26.21 (11.53)  28.5 (9.44)  36.21 (6.95)  -  -  -  39.02 (11.56)  31.4 (11.5)  27.8 (5.8)  -  -  -  37.82 (11.41)  39.12 (10.01)  -  47 (7)  27.2 (9.5)  38.8 (7.3)  42.3 (8.9)  -  -  -  -  -  38 (16.2) | -  31.17 (10.24)  -  -  -  20 (-)  38.0 (48.7)  34.95 (9.17)  39.5 (11.3)  32.8 (9.7)  -  -  -  30.62 (8.56)  33.8 (7.8)  35.2 (7.4)  -  37.82 (12.54)  38.0 (11.0)  -  36.9 (10.9)  35.8 (10.8)  37.0 (10.8)  39.3 (17.7)  39.2 (11.9)  42.89 (13.69)  36.4 (11.4)  28.9 (8.1)  61.8 (5.8)  42.35 (14.46)  21.8 (3.5)  22.2 (6.4)  19.81 (2.77)  38.23 (11.52)  48.66 (12.04)  43.0 (9.1)  49.8 (10.9)  37.26 (11.18)  -  -  30.11 (9.61)  -  35.1 (10.1)  26.16 (9.04)  25.84 (9.05)  35.92 (8.63)  -  -  -  34.71 (11.80)  31.4 (11.2)  29.8 (5.8)  -  -  -  37.31 (10.86)  37.31 (10.86)  -  49 (9)  28.9 (8.1)  36.0 (6.8)  42.9 (8.9)  -  -  -  -  -  41.7 (13.8) | -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  86.9 (19.3)  75.7 (20.4)  84.2 (20.0)  74.5 (19.3)  89.5 (22.8)  -  -  -  -  -  -  -  -  -  -  -  60.0 (15.8)  -  -  -  -  -  66.4 (18.1)  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  55.6 (17.2)  -  -  -  -  -  -  - | -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  85.9 (25.5)  78.9 (10.3)  87.1 (23.4)  68.2 (22.0)  96.2 (24.7)  -  -  -  -  -  -  -  -  -  -  -  60.9 (14.7)  -  -  -  -  -  64.3 (17.0)  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  49.2 (13.6)  -  -  -  -  -  -  - |

Note: A, Abuse; AESOP, Aetiology and Ethnicity in Schizophrenia and Other Psychoses; C, Current; D, Dependence; E, Emergent; EFSA, Early First Suicide Attempt; EUR, Europe; EEUR, East Europe; GAP, Genetics and Psychosis; LFSA, Late First Suicide Attempt; M, Mild; NA, North America; PANSS, Positive and Negative Syndrome Scale; S, Severe; SA, South America; SAF, South Africa.

**Supplementary Appendix C:** Demographic information of included studies (ii).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Source | Diagnosis | Diagnosis Measure | Alcohol Measure | Alcohol Timeframe | Suicidality Measure |
| *Suicide*  Cohen et al, 1964 (USA)  Shaffer et al, 1974 (USA)  Allebeck et al,1987 (Sweden) – Males  Allebeck et al,1987 (Sweden) - Females  Stephens et al, 1999 (USA)  Sinclair et al, 2004 (UK)  Kuo et al, 2005 (Taiwan)  McGirr et al, 2006 (Canada)  Limosin et al, 2007 (France)  Reutfors et al, 2009 (Sweden)  Fazel et al, 2014 (Sweden) - Females  Hjorthoj et al, 2015 (Denmark)  Ostergaard et al, 2017 (Denmark)  Zaheer et al, 2020 (Canada)  Lahteenvuo et al, 2021 (Finland)  Lahteenvuo et al, 2021 (Sweden)  Olfson et al, 2021 (USA)  *Attempted Suicide*  Harkavy-Friedman et al, 1999 (USA)  Altamura et al, 2003 (Italy)  Goldstein et al, 2006 (USA) - Males  Altamura et al, 2007 (Italy) – NA  Altamura et al, 2007 (Italy) – EUR  Altamura et al, 2007 (Italy) – EEUR  Altamura et al, 2007 (Italy) – SAf  Altamura et al, 2007 (Italy) – SA  Barak et al, 2008 (Israel)  Uzun et al, 2009 (Turkey)  Barrett et al, 2010 (Norway)  Cohen et al, 2010 (USA)  Pratt et al, 2010 (UK)  Robinson et al, 2010 (Australia)  McLean et al, 2012 (Australia)  Fedyszyn et al, 2012 (Australia)  Bani-Fatemi et al, 2013 (Canada)  Mauri et al, 2013 (Italy)  Yan et al, 2013 (China)  Zhang et al, 2013 (China)  Hu et al, 2014 (Canada)  Luckoff et al, 2014 (South Africa) – A  Luckoff et al, 2014 (South Africa) – D  Ayesa-Arriola et al, 2015 (Spain)  Leposavic et al, 2015 (Serbia)  Yoo et al, 2015 (Korea)  Canal-Rivero et al, 2016 (Spain) – EFSA  Canal-Rivero et al, 2016 (Spain) – LFSA  Adan et al, 2017 (Spain) - Males  Ostergaard et al, 2017 (Denmark)  Waterreus et al, 2018 (Australia) - Males  Waterreus et al, 2018 (Australia) – Females  Jovanovic et al, 2019 (UK, Croatia)  Lopez-Morinigo et al, 2019 (UK) – AESOP  Lopez-Morinigo et al, 2019 (UK) – GAP  Temmingh et al, 2020 (South Africa)  Abderemane et al, 2022 (Morocco)  Dai et al, 2022 (China) – Males  *Suicidal Ideation*  Fialko et al, 2006 (UK) – M  Fialko et al, 2006 (UK) – S  Goldstein et al, 2006 (USA) – Males  Strauss et al, 2006 (USA) – Males  Barrett et al, 2010 (Norway)  Kim et al, 2010 (South Korea)  Yan et al, 2013 (China)  Amir et al, 2019 (Indonesia)  Freeman et al, 2019 (UK)  Temmingh et al, 2020 (South Africa)  Olfson et al, 2021 (USA)  Dai et al, 2022 (China)  Wang et al, 2022 (Canada) – C | SCZ  SCZ  295 – 295.99  295 – 295.99  SCZ  F20, F25  SCZ  SCZ, SCA, DD, PDNOS  SCZ  F20, F25, 295  295, 297, 298, F20-F22, F25-F29  SCZ  F20-25, F28-29, 295, 297, 298, 299, 301  SCZ, SCA, PDNOS  F20, F25, 295  F20, F25  295.X, F20.X, F25.X  SCZ, SCA  SCZ, SCA  SCZ, SCA  SCZ, SCA  SCZ, SCA  SCZ, SCA  SCZ, SCA  SCZ, SCA  SCZ  SCZ  SCZ, SCP, SCA, DD, BPD, PDNOS, BD, MDD  SCZ, SCA  SCZ, SCA, SCP, DD, PDNOS  SCZ, SCA, SCP, DD, PDNOS BD, MDD  SCA, SCA  SCZ, SCP, DD, BPD, PDNOS, SIP, SCA, BD, MDD  SCZ, SCA  SCZ  SCZ  SCZ  SCZ  SCZ, SCA  SCZ, SCA  SCZ, SCA, SCP, BPD  PD  SCZ  295-298  295-298  DS  F20-25, F28-29, 295, 297, 298, 299, 301  PD  PD  SCZ  F10-F29, F30-F33  F10-F29, F30-F33  295, 295.4, 295.7, 298.8, 291, 292, 298.8, 296  SCZ  SCZ  SCZ, SCA, Psy, DD  SCZ, SCA, Psy, DD  SCZ, SCA  SCZ, SCA, PTSD  SCZ, SCP, SCA, DD, BPD, PDNOS, BD, MDD  SCZ  SCZ  SCZ  SCZ, SCA, DD, PDNOS  295, 295.4, 295.7, 298.8, 291, 292, 298.8, 296  295.X, F20.X, F25.X  SCZ  SCZ | Psychiatrist Assessment  Psychiatrist Assessment  ICD-8  ICD-8  Medical Records  ICD-10  DSM-III, DSM-III-R, DSM-IV  DSM-IV  ICD-10  ICD-10, ICD-9, ICD-8  ICD-10, ICD-9, ICD-8  ICD-10, ICD-8  ICD-10, ICD-8  Validated Algorithm  ICD-10, ICD-9, ICD-8  ICD-10  ICD-9-CM, ICD-10-CM  DSM-III-R  DSM-III-R  DSM-III-R  DSM-IV  DSM-IV  DSM-IV  DSM-IV  DSM-IV  ICD-9-CM  DSM-IV  DSM-IV  DSM-IV  ICD-10  DSM-III-R, DSM-IV  DIGS, DSM-IV  Medical Records  DSM-IV  DSM-IV-TR  DSM-IV, ICD-10  DSM-IV  DSM-IV  DSM-IV-TR  DSM-IV-TR  DSM-IV  MINI, ICD-10  DSM-IV  DSM-IV  DSM-IV  DSM-IV-TR  ICD-10, ICD-8  DIP  DIP  Clinical Interview  ICD-10  ICD-10  DSM-IV-TR  Psychiatrist Assessment  DSM-IV (SCID)  DSM-III  DSM-III  DSM-III-R  DSM-IV, PCL  DSM-IV  DSM-IV  DSM-IV, ICD-10  DIP  Medical Records  DSM-IV-TR  ICD-9-CM, ICD-10-CM  DSM-IV (SCID)  MINI-Plus | Medical Records  Medical Records  Medical Records  Medical Records  Medical Records  Medical Records  Medical Records  SCID-I, SCID-II  CAGE  Medical Records  ICD-8, ICD-9, ICD-10  ICD-8, ICD-10, ATC Codes  ICD-8, ICD-10, ATC Codes  ICD-9, ICD-10, NACRS  ICD-9, ICD-10  ICD-9, ICD-10  ICD-9-CM, ICD-10-CM  DIGS  SCID-I  Medical Records  DSM-IV  DSM-IV  DSM-IV  DSM-IV  DSM-IV  Medical Records  SCID-1  Medical Records, SCID-I  CAGE  Study Questionnaire  Early Psychosis File Questionnaire  DIGS  SCID-I, Study Questionnaire  SCID I/P, FIGS  SCID-I  Study Questionnaire  Study Questionnaire  SCID-I  DIGS  DIGS  Study Questionnaire  MINI  Study Questionnaire  SIAC  SIAC  DSM-IV-TR, Research Interview  ICD-8, ICD-10, ATC Codes  AUDIT  AUDIT  AUDIT  Study Questionnaire  Study Questionnaire  SCID-I  AUDIT  Study Questionnaire  Clinical Notes  Clinical Notes  Medical Records  DALI, DMHS  Medical Records, SCID-I  AUDIT  Study Questionnaire  Research Interview  MAP  SCID-I  ICD-9-CM, ICD-10-CM  Study Questionnaire  AUDIT | Lifetime  Lifetime  Lifetime  Lifetime  Lifetime  Lifetime  Lifetime  Current, Lifetime  Lifetime  Lifetime  Lifetime  Lifetime  Current, Former  Lifetime  Lifetime  Lifetime  < 12 months  Lifetime  Lifetime  Lifetime  Lifetime  Lifetime  Lifetime  Lifetime  Lifetime  Lifetime  Lifetime  Lifetime  Lifetime  Lifetime  Lifetime  Lifetime  Current, Lifetime  Lifetime  Lifetime  Current  Current  Lifetime  Lifetime  Lifetime  Lifetime  Lifetime  Lifetime  Daily  Daily  Lifetime  Current, Former  <12 months  <12 months  <12 months  Current  Current  Lifetime  < 12 months  Lifetime  Daily  Daily  Lifetime  < 6 months  Lifetime  <12 months  Current  Lifetime  <1 month  Lifetime  < 12 months  Lifetime  <12 months | Medical Records  Medical Records  Medical Records, Death Certificate  Medical Records, Death Certificate  Medical Records  Mortality Files, Coroner’s Register  Death Certification System  Coroner’s Office / Morgue Register  National Death Certificate  Cause of Death Register  Cause of Death Register  Cause of Death Register  Cause of Death Register  Office of Registrar-Deaths  Medical Records, Death Register  Medical Records, Death Register  National Death Index  DIGS (Corroborated)  SCID-I, Clinical Life Chart  Medical Records  Research Interview  Research Interview  Research Interview  Research Interview  Research Interview  Medical Records  Study Questionnaire (Corroborated)  Research Interview, SCID-I  Study Questionnaire  BSI  ICD-10  DIGS (Corroborated)  CAD-SAS  SCID-I, Clinical Life Chart  Research Interview (Corroborated)  Research Interview  Research Interview (Corroborated)  SCID-I  DIGS (Corroborated)  DIGS (Corroborated)  Medical Records  MINI  Research Interview  SCAN  SCAN  SCID-I  National Patient Register, ICD-10, ICD-8  NSMHW  NSMHW  SIBQ  Medical Records  Medical Records  SCID-I  Study Questionnaire  Study Questionnaire  BDI  BDI  Medical Records  DMHS  Research Interview, SCID-I  Research Interview  HAM-D  Research Interview  C-SSRS  SCID-I  ICD-9, ICD-10  Study Questionnaire  C-SSRS |

Note: A, Abuse; AESOP, Aetiology and Ethnicity in Schizophrenia and Other Psychoses; ATC, Anatomic Therapeutic Chemical; AUDIT, Alcohol Use Disorders Identification Test; BD, Bipolar Disorder; BDI, Beck Depression Inventory; BPD, Brief Psychotic Disorder; BSI, Beck Scale for Suicidal Ideation; C, Current; CAD-SAS, Classification Algorithm for the Determination of Suicide Attempt and Suicide; CAGE, Alcohol Questionnaire; C-SSRS, Columbia-Suicide Severity Rating Scale; D, Dependence; DALI, Dartmouth Attitudes and Lifestyle Inventory Scale; DD, Delusional Disorder; DIGS, Diagnostic Interview for Genetic Studies; DIP, Diagnostic Interview for Psychosis; DMHS, Duke Mental Health Study Inventory; DS, Dual Schizophrenia; DSM, Diagnostic and Statistical Manual; E, Emergent; EFSA, Early First Suicide Attempt; EUR, Europe; EEUR, East Europe; FIGS, Family Interview for Genetic Studies; GAP, Genetics and Psychosis; HAM-D, Hamilton Depression Rating Scale; ICD, International Classification for Diseases; LFSA, Late First Suicide Attempt; M, Mild; MAP, Maudsley Addiction Profile; MDD, Major Depressive Disorder; MINI, Mini International Neuropsychiatric Interview; NA, North America; NACRS, National Ambulatory Care Reporting System; NSMHW, National Survey of Mental Health and Wellbeing; PCL, Post Traumatic Stress Disorder Checklist; PD, Psychotic Disorder; PDep, Psychotic Depression; PDNOS, Psychotic Disorder Not Otherwise Specified; Psy, Psychosis; PTSD, Post Traumatic Stress Disorder; S, Severe; SA, South America; SAF, South Africa; SCA; Schizoaffective Disorder; SCAN, Schedules for Clinical Assessment in Neuropsychiatry; SCID, Structured Clinical Interview for DSM; SCP, Schizophreniform Disorder; SCZ, Schizophrenia; SIAC, Systematic Interview of Alcohol Consumption; SIB; Suicide Ideation and Behaviour Questionnaire.

**Supplementary Appendix D**: Risk of Bias Assessment (Rater KH) – Alcohol / Suicide

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Study | Selection Bias | Confounders | Data Collection | Dropouts | Analysis | Global |
| Cohen et al, 1964  Shaffer et al, 1974  Allebeck et al, 1987  Stephens et al, 1999  Sinclair et al, 2004  Kuo et al, 2005  McGirr et al, 2006  Limosin et al, 2007  Reutfors et al, 2009  Fazel et al, 2014  Hjorthoj et al, 2015  Ostergaard et al, 2017  Zaheer et al, 2020  Lahteenvuo et al, 2021  Olfson et al, 2021 | 3  3  3  3  2  2  2  1  2  1  1  1  1  1  1 | 3  1  3  1  1  1  1  3  1  1  3  3  1  3  3 | 2  2  1  2  3  2  1  2  2  2  2  2  2  1  1 | 1  1  1  1  1  1  1  1  1  1  1  1  1  1  1 | 2  1  1  1  1  1  1  1  1  1  1  1  1  1  1 | 3  2  3  2  2  1  1  2  1  1  2  2  1  2  2 |
|  |  |  |  |  |  |  |

Note: 1; Strong, 2; Moderate, 3; Weak

**Supplementary Appendix E**: Risk of Bias Assessment (Rater KH) – Alcohol / Attempted Suicide

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Study | Selection Bias | Confounders | Data Collection | Dropouts | Analysis | Global |
| Harkavy-Friedman et al, 1999  Altamura et al, 2003  Goldstein et al, 2006  Altamura et al, 2007  Barak et al, 2008  Uzun et al, 2009  Barrett et al, 2010  Cohen et al, 2010  Pratt et al, 2010  Robinson et al, 2010  McLean et al, 2012  Fedyszyn et al, 2012  Bani-Fatemi et al, 2013  Mauri et al, 2013  Yan et al, 2013  Zhang et al, 2013  Hu et al, 2014  Luckoff et al, 2014  Ayesa-Arriola et al, 2015  Leposavic et al, 2015  Yoo et al, 2015  Canal-Rivero et al, 2016  Adan et al, 2017  Ostergaard et al, 2017  Waterreus et al, 2018  Jovanovic et al, 2019  Lopez-Morinigo et al, 2019  Temmingh et al, 2020  Abderemane et al, 2022  Dai et al, 2022 | 2  1  2  1  2  2  2  1  2  2  1  2  1  2  2  2  2  1  2  2  2  2  2  1  1  2  2  3  3  1 | 3  3  3  3  1  3  3  1  1  1  2  1  1  1  2  1  1  1  3  3  1  3  1  3  1  2  3  2  3  3 | 3  1  1  1  3  2  1  1  1  1  1  2  1  1  1  1  1  2  1  3  1  1  1  2  1  1  1  1  1  1 | 1  1  1  1  1  1  1  2  1  1  1  1  1  1  1  1  1  1  1  1  1  1  2  1  1  2  2  1  1  1 | 3  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  3  1  1  1  1  1  1  1  1  1  1 | 3  2  2  2  2  2  2  1  1  1  1  1  1  1  2  1  1  1  2  3  1  2  1  2  1  1  2  2  3  2 |
|  |  |  |  |  |  |

Note: 1; Strong, 2; Moderate, 3; Weak

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Study | Selection Bias | Confounders | Data Collection | Dropouts | Analysis | Global |
| Fialko et al, 2006  Goldstein et al, 2006  Strauss et al, 2006  Barrett et al, 2010  Kim et al, 2010  Yan et al, 2013  Amir et al, 2019  Freeman et al, 2019  Temmingh et al, 2020  Olfson et al, 2021  Dai et al, 2022  Wang et al, 2022 | 1  3  3  2  2  2  1  2  3  1  1  1 | 2  2  2  3  3  2  3  3  2  3  3  3 | 1  1  1  1  1  1  3  1  1  1  1  1 | 1  1  1  1  1  1  1  1  1  1  1  2 | 1  1  2  1  1  1  2  1  1  1  1  1 | 2  2  2  2  2  2  3  2  2  2  2  2 |
|  |  |  |  |  |  |  |

**Supplementary Appendix F**: Risk of Bias Assessment (Rater KH) – Alcohol / Suicidal Ideation

Note: 1; Strong, 2; Moderate, 3; Weak

**Supplementary Appendix G**: Risk of Bias Assessment (Rater LM) – Alcohol / Suicide

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Study | Selection Bias | Confounders | Data Collection | Dropouts | Analysis | Global |
| Cohen et al, 1964  Shaffer et al, 1974  Allebeck et al, 1987  Stephens et al, 1999  Sinclair et al, 2004  Kuo et al, 2005  McGirr et al, 2006  Limosin et al, 2007  Reutfors et al, 2009  Fazel et al, 2014  Hjorthoj et al, 2015  Ostergaard et al, 2017  Zaheer et al, 2020  Lahteenvuo et al, 2021  Olfson et al, 2021 | 3  3  3  3  2  1  2  1  2  1  1  1  1  1  1 | 3  2  3  2  2  2  2  3  1  1  3  3  1  3  3 | 2  2  2  2  3  2  1  2  1  1  1  1  1  1  1 | 1  1  1  1  1  1  1  1  1  1  1  1  1  1  1 | 2  1  1  1  1  1  1  1  1  1  3  1  1  1  1 | 3  2  3  2  2  1  1  2  1  1  3  2  1  2  2 |
|  |  |  |  |  |  |  |

Note: 1; Strong, 2; Moderate, 3; Weak

**Supplementary Appendix H**: Risk of Bias Assessment (Rater LM) – Alcohol / Attempted Suicide

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Study | Selection Bias | Confounders | Data Collection | Dropouts | Analysis | Global |
| Harkavy-Friedman et al, 1999  Altamura et al, 2003  Goldstein et al, 2006  Altamura et al, 2007  Barak et al, 2008  Uzun et al, 2009  Barrett et al, 2010  Cohen et al, 2010  Pratt et al, 2010  Robinson et al, 2010  McLean et al, 2012  Fedyszyn et al, 2012  Bani-Fatemi et al, 2013  Mauri et al, 2013  Yan et al, 2013  Zhang et al, 2013  Hu et al, 2014  Luckoff et al, 2014  Ayesa-Arriola et al, 2015  Leposavic et al, 2015  Yoo et al, 2015  Canal-Rivero et al, 2016  Adan et al, 2017  Ostergaard et al, 2017  Waterreus et al, 2018  Jovanovic et al, 2019  Lopez-Morinigo et al, 2019  Temmingh et al, 2020  Abderemane et al, 2022  Dai et al, 2022 | 2  1  3  1  2  2  2  1  2  2  1  2  2  2  2  1  2  3  2  2  2  2  3  1  1  2  2  3  3  3 | 3  3  2  3  1  3  3  1  2  1  2  1  2  2  2  1  1  1  3  3  1  3  2  3  1  2  3  1  3  2 | 2  1  1  1  3  2  1  1  1  1  1  2  1  1  1  1  1  2  1  3  1  1  1  2  1  1  1  1  2  1 | 1  1  1  1  1  1  1  2  1  1  1  1  1  1  1  1  1  1  1  1  1  1  2  1  1  2  2  2  1  1 | 2  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  1  2  1  3  1  1  1  1  1  1  1  1  1  1 | 3  2  2  2  2  2  2  1  1  1  1  1  1  1  2  1  1  2  2  3  1  2  2  2  1  1  2  2  3  2 |
|  |  |  |  |  |  |

Note: 1; Strong, 2; Moderate, 3; Weak

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Study | Selection Bias | Confounders | Data Collection | Dropouts | Analysis | Global |
| Fialko et al, 2006  Goldstein et al, 2006  Strauss et al, 2006  Barrett et al, 2010  Kim et al, 2010  Yan et al, 2013  Amir et al, 2019  Freeman et al, 2019  Temmingh et al, 2020  Olfson et al, 2021  Dai et al, 2022  Wang et al, 2022 | 1  3  3  2  2  2  1  1  3  1  3  2 | 2  2  2  3  3  2  3  3  1  3  2  3 | 1  1  1  1  1  1  3  1  1  1  1  1 | 1  1  1  1  1  1  1  1  2  1  1  2 | 1  1  1  1  1  1  2  1  1  1  1  1 | 2  2  2  2  2  2  3  2  2  2  2  2 |
|  |  |  |  |  |  |  |

**Supplementary Appendix I**: Risk of Bias Assessment (Rater LM) – Alcohol / Suicidal Ideation

Note: 1; Strong, 2; Moderate, 3; Weak

**Supplementary Appendix J**: Publication Bias Assessment - Alcohol / Suicide (k = 11)

Odds Ratio - Egger’s test of H0: No selection bias (B = .35, SE = .09, *p* = 0.65)



**Supplementary Appendix K**: Publication Bias Assessment - Alcohol / Attempted Suicide (k = 35)

Odds Ratio - Egger’s Test of H0: No selection Bias (B = .38, SE = .17, *p* = 0.42).



**Supplementary Appendix L**: Publication Bias Assessment - Alcohol / Suicidal Ideation (k = 11)

Egger’s Test of H0: No selection Bias (B = 0.99, SE = 0.44, *p* = 0.35).



**Supplementary Appendix M**: Trim & Fill Analysis - Alcohol / Suicide (ORs)

Meta-analysis

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Method | Pooled Estimate | 95% Confidence Interval | Z value | P value | Studies (k) |
| Random Effect | 0.32 | 0.19 – 0.46 | 4.65 | <0.01 | 11 |

Filled

Meta-analysis (exponential form)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Method | Pooled Estimate | 95% Confidence Interval | Z value | P value | Studies (k) |
| Random Effect | 1.38 | 1.21 – 1.58 | 4.65 | <0.01 | 11 |



**Supplementary Appendix N**: Trim & Fill Analysis - Alcohol / Attempted Suicide (ORs)

Meta-analysis

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Method | Pooled Estimate | 95% Confidence Interval | Z value | P value | Studies (k) |
| Random Effect | 0.53 | 0.37 – 0.68 | 6.63 | <0.01 | 35 |

Filled

Meta-analysis (exponential form)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Method | Pooled Estimate | 95% Confidence Interval | Z value | P value | Studies (k) |
| Random Effect | 1.64 | 1.40 – 1.92 | 6.13 | <0.01 | 38 |



**Supplementary Appendix O**: Trim & Fill Analysis - Alcohol / Suicidal Ideation (ORs)

Meta-analysis

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Method | Pooled Estimate | 95% Confidence Interval | Z value | P value | Studies (k) |
| Random Effect | 0.52 | 0.20 – 0.85 | 3.14 | <0.01 | 11 |

Filled

Meta-analysis (exponential form)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Method | Pooled Estimate | 95% Confidence Interval | Z value | P value | Studies (k) |
| Random Effect | 1.69 | 1.22 – 2.34 | 3.14 | <0.01 | 11 |

****

**Supplementary Appendix P**: Sensitivity Analysis - Alcohol / Suicide (ORs / HRs)

|  |  |  |
| --- | --- | --- |
| **Alcohol / Suicide - ORs** |  | |
|  | Estimate if study removed | 95% Confidence Interval |
| Cohen et al. 1964 | 1.40 | 1.22 - 1.60 |
| Shaffer et al. 1974 | 1.38 | 1.20 - 1.58 |
| Allebeck et al. 1987 (Males) | 1.37 | 1.20 - 1.58 |
| Allebeck et al. 1987 (Females) | 1.39 | 1.21 - 1.59 |
| Stephens et al. 1999 | 1.38 | 1.20 - 1.58 |
| Sinclair et al. 2004 | 1.39 | 1.21 - 1.59 |
| Kuo et al. 2005 | 1.37 | 1.20 - 1.57 |
| McGirr et al. 2006 | 1.38 | 1.21 - 1.59 |
| Limosin et al. 2007 | 1.36 | 1.17 - 1.57 |
| Reutfors et al. 2009 | 1.41 | 1.23 - 1.62 |
| Zaheer et al. 2020 | 1.30 | 1.01 - 1.69 |

|  |  |  |
| --- | --- | --- |
| **Alcohol / Suicide - HRs** |  | |
|  | Estimate if study removed | 95% Confidence Interval |
| Fazel et al. 2014 (Females) | 1.26 | 0.94 - 1.68 |
| Hjorthoj et al. 2015 | 1.47 | 1.12 - 1.92 |
| Ostergaard et al. 2017 | 1.26 | 0.94 - 1.70 |
| Lahteenvuo et al. 2021 (Finland) | 1.28 | 0.94 - 1.76 |
| Lahteenvuo et al. 2021 (Sweden) | 1.24 | 0.93 - 1.64 |
| Olfson et al. 2021 | 1.43 | 0.96 - 2.14 |

**Supplementary Appendix Q**: Sensitivity Analysis - Alcohol / Attempted Suicide (ORs)

|  |  |  |
| --- | --- | --- |
| **Alcohol / Attempted Suicide - ORs** |  | |
|  | Estimate if study removed | 95% Confidence Interval |
| Harkavy-Friedman et al. 1999 | 1.69 | 1.44 - 1.99 |
| Altamura et al. 2003 | 1.71 | 1.46 – 2.00 |
| Goldstein et al. 2006 (Males) | 1.69 | 1.44 - 1.98 |
| Altamura et al. 2007 (NA) | 1.66 | 1.42 - 1.94 |
| Altamura et al. 2007 (EUR) | 1.67 | 1.43 - 1.96 |
| Altamura et al. 2007 (EEUR) | 1.69 | 1.44 - 1.98 |
| Altamura et al. 2007 (SAf) | 1.70 | 1.46 – 1.99 |
| Altamura et al. 2007 (SAm) | 1.70 | 1.46 – 1.99 |
| Barak et al. 2008 | 1.67 | 1.42 - 1.96 |
| Uzun et al. 2009 | 1.65 | 1.42 - 1.93 |
| Barrett et al. 2010 | 1.67 | 1.43 - 1.95 |
| Cohen et al. 2010 | 1.72 | 1.47 – 2.00 |
| Pratt et al. 2010 | 1.69 | 1.44 - 1.98 |
| Robinson et al. 2010 | 1.67 | 1.42 - 1.95 |
| McLean et al. 2012 | 1.70 | 1.44 – 2.01 |
| Fedyszyn et al. 2012 | 1.66 | 1.42 - 1.95 |
| Bani-Fatemi et al. 2013 | 1.73 | 1.48 - 2.03 |
| Mauri et al. 2013 | 1.69 | 1.44 - 1.97 |
| Yan et al. 2013 | 1.71 | 1.45 – 2.00 |
| Zhang et al. 2013 | 1.70 | 1.44 – 1.99 |
| Hu et al. 2014 | 1.70 | 1.45 – 2.00 |
| Luckoff et al. 2014 | 1.71 | 1.46 – 2.01 |
| Ayesa-Arriola et al. 2015 | 1.73 | 1.47 - 2.02 |
| Leposavic et al. 2015 | 1.66 | 1.43 - 1.94 |
| Yoo et al. 2015 | 1.68 | 1.44 - 1.97 |
| Canal-Rivero et al. 2016 | 1.69 | 1.44 - 1.98 |
| Adan et al. 2017 (Males) | 1.69 | 1.45 – 1.98 |
| Waterreus et al. 2018 (Males) | 1.72 | 1.46 - 2.02 |
| Waterreus et al. 2018 (Females | 1.65 | 1.41 - 1.94 |
| Jovanovic et al. 2019 | 1.75 | 1.54 – 2.00 |
| Lopez-Morinigo et al. 2019 (AESOP) | 1.70 | 1.45 – 1.99 |
| Lopez-Morinigo et al. 2019 (GAP) | 1.70 | 1.46 – 2.00 |
| Temmingh et al. (2020) | 1.67 | 1.43 – 1.95 |
| Abderemane et al. 2022 | 1.68 | 1.44 - 1.96 |
| Dai et al. 2022 (Males) | 1.67 | 1.43 - 1.96 |

**Supplementary Appendix R**: Sensitivity Analysis - Alcohol / Suicidal Ideation (ORs)

|  |  |  |
| --- | --- | --- |
| **Alcohol / Suicidal Ideation - ORs** |  | |
|  | Estimate if study removed | 95% Confidence Interval |
| Fialko et al. 2006 | 1.64 | 1.13 - 2.38 |
| Goldstein et al. 2006 (Males) | 1.72 | 1.21 - 2.44 |
| Strauss et al. 2006 (Males) | 1.66 | 1.15 - 2.40 |
| Barrett et al. 2010 | 1.69 | 1.19 - 2.41 |
| Kim et al. 2010 | 1.71 | 1.21 - 2.43 |
| Yan et al. 2013 | 1.84 | 1.34 - 2.55 |
| Amir et al. 2019 | 1.54 | 1.24 - 1.91 |
| Freeman et al. 2019 | 1.74 | 1.22 - 2.48 |
| Temmingh et al. 2020 | 1.76 | 1.25 – 2.48 |
| Dai et al. 2022 (Males) | 1.64 | 1.11 - 2.42 |
| Wang et al. 2022 | 1.70 | 1.21 - 2.38 |

**Supplementary Appendix S**: Subgroup Analysis by Research Design – Alcohol / Attempted Suicide (ORs)



**Supplementary Appendix T**: Subgroup Analysis by Gender – Alcohol / Attempted Suicide (ORs)



**Supplementary Appendix U**: Subgroup Analysis by Illness Course – Alcohol / Attempted Suicide (ORs)

**Supplementary Appendix V**: Subgroup Analysis by Quality – Alcohol / Attempted Suicide (ORs)



**Supplementary Appendix W**: Subgroup Analysis Table – Alcohol / Attempted Suicide (ORs)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Variable | No. of studies | Pooled OR (95% CI) | Homogeneity within the study (I2 and Q) | |
|  | | | Q value | I2, *p*-value |
| *Study Design* |  |  |  |  |
| Cross-Sectional / Case Control | 32 | 1.70 (1.45 – 2.01) | 52.00 | 40.4%, *p* = 0.01 |
| Longitudinal | 3 | 1.60 (0.87 – 3.00) | 4.09 | 51.1%, *p* = 0.13 |
|  |  |  |  |  |
| *Gender* |  |  |  |  |
| Male | 4 | 1.62 (1.18 – 2.23) | 2.66 | 0.00%, *p* = 0.45 |
| Female | 1 | 2.55 (1.62 – 4.02) | - | - |
| Combined | 30 | 1.66 (1.39 – 1.98) | 50.01 | 42.0%, *p* = 0.01 |
|  |  |  |  |  |
| *Sample* |  |  |  |  |
| Chronic | 28 | 1.67 (1.40 – 1.99) | 47.54 | 43.2%, *p* = 0.01 |
| First Episode Psychosis (FEP) | 7 | 1.80 (1.27 – 2.56) | 8.31 | 27.8%, *p* = 0.22 |
|  |  |  |  |  |
| *Study Quality* |  |  |  |  |
| Weak | 3 | 3.08 (1.15 – 8.23) | 3.49 | 42.7%, *p* = 0.18 |
| Moderate | 19 | 1.79 (1.49 – 2.14) | 19.27 | 6.6%, *p* = 0.38 |
| Strong | 13 | 1.54 (1.19 – 1.99) | 30.24 | 60.3%, *p* < 0.01 |

Note: OR, Odds Ratio.

**Supplementary Appendix X**: Subgroup Analysis by Gender – Alcohol / Suicidal Ideation (ORs)



**Supplementary Appendix Y**: Subgroup Analysis by Illness Course – Alcohol / Suicidal Ideation (ORs)



**Supplementary Appendix Z**: Subgroup Analysis by Quality – Alcohol / Suicidal Ideation (ORs)



**Supplementary Appendix AA**: Subgroup Analysis Table – Alcohol / Suicidal Ideation (ORs)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Variable | No. of studies | Pooled OR (95% CI) | Homogeneity within the study (I2 and Q) | |
|  | | | Q value | I2, *p*-value |
| *Gender* |  |  |  |  |
| Male | 3 | 1.82 (1.32 – 2.50) | 0.52 | 0.00%, *p* = 0.77 |
| Female | 0 | - | - | - |
| Combined | 8 | 1.63 (0.99 – 2.67) | 22.19 | 68.5%, *p* < 0.01 |
|  |  |  |  |  |
| *Sample* |  |  |  |  |
| Chronic | 10 | 1.69 (1.19 – 2.41) | 22.66 | 60.3%, *p* = 0.01 |
| First Episode Psychosis (FEP) | 1 | 1.59 (0.61 – 4.16) | - | - |
|  |  |  |  |  |
| *Study Quality* |  |  |  |  |
| Weak | 1 | 5.37 (3.03 – 9.52) | - | - |
| Moderate | 10 | 1.54 (1.24 – 1.91) | 6.61 | 0.00%, *p* = 0.68 |
| Strong | 0 | - | - | - |

Note: OR, Odds Ratio.

**Supplementary References**

Abderemane, A., Ahmadou, T. M., Khadmaoui, A., Belbachir, S., Barkat, K., & Ahami, A. O. T. (2022). A cross-sectional study of substance use in patients with schizophrenia hospitalized for relapse at the Ar-Razi Psychiatric Hospital in Salé, CHU Ibn Sina Rabat, Morocco. *The Pan African Medical Journal*, *41*, 107.

Adan, A., Capella, M. D. M., Prat, G., Forero, D. A., López-Vera, S., & Navarro, J. F. (2017). Executive functioning in men with schizophrenia and substance use disorders. Influence of lifetime suicide attempts. *PloS one*, *12*(1), e0169943.

Allebeck, P., Varla, A., Kristjansson, E., & Wistedt, B. J. A. P. S. (1987). Risk factors for suicide among patients with schizophrenia. *Acta Psychiatrica Scandinavica*, *76*(4), 414-419.

Altamura, A. C., Bassetti, R., Bignotti, S., Pioli, R., & Mundo, E. (2003). Clinical variables related to suicide attempts in schizophrenic patients: a retrospective study. *Schizophrenia Research, 60*(1), 47-55.

Altamura, A. C., Mundo, E., Bassetti, R., Green, A., Lindenmayer, J. P., Alphs, L., & Meltzer, H. Y. (2007). Transcultural differences in suicide attempters: analysis on a high-risk population of patients with schizophrenia or schizoaffective disorder. *Schizophrenia Research, 89*(1-3), 140-146.

Amir, N., Antoni, R., Asmarahadi, A., Djatmiko, P., Khalimah, S., Naswati, S., ... & Wulandari, W. D. (2019). Rates and risk factors for suicide ideas among Schizophrenia patients in Indonesia. *Macedonian Journal of Medical Sciences, 7*(16), 2579.

Ayesa-Arriola, R., Alcaraz, E. G., Hernández, B. V., Pérez-Iglesias, R., Moríñigo, J. D. L., Duta, R., ... & Crespo-Facorro, B. (2015). Suicidal behaviour in first-episode non-affective psychosis: Specific risk periods and stage-related factors. *European Neuropsychopharmacology, 25*(12), 2278-2288.

Bani-Fatemi, A., Polsinelli, G., Kennedy, J. L., & De Luca, V. (2013). Ethnicity and suicide attempt: analysis in bipolar disorder and schizophrenia. *BMC Psychiatry, 13*(1), 1-6.

Barak, Y., Baruch, Y., Achiron, A., & Aizenberg, D. (2008). Suicide attempts of schizophrenia patients: a case-controlled study in tertiary care. *Journal of Psychiatric Research, 42*(10), 822-826.

Barrett, E. A., Sundet, K., Faerden, A., Nesvåg, R., Agartz, I., Fosse, R., ... & Melle, I. (2010). Suicidality before and in the early phases of first episode psychosis. *Schizophrenia Research, 119*(1-3), 11-17.

Canal-Rivero, M., Barrigón, M. L., Perona-Garcelán, S., Rodriguez-Testal, J. F., Giner, L., Obiols-Llandrich, J. E., & Ruiz-Veguilla, M. (2016). One-year follow-up study of first suicide attempts in first episode psychosis: Personality traits and temporal pattern. *Comprehensive Psychiatry, 71*, 121-129.

Cohen, C. I., Abdallah, C. G., & Diwan, S. (2010). Suicide attempts and associated factors in older adults with schizophrenia. *Schizophrenia Research, 119*(1-3), 253-257.

Cohen, S., Leonard, C. V., Farberow, N. L., & Shneidman, E. S. (1964). Tranquilizers and suicide in the schizophrenic patient. *Archives of General Psychiatry, 11*(3), 312-321.

Dai, Q., Zhou, Y., Liu, R., Wei, S., Zhou, H., Tian, Y., ... & Zhang, X. (2022). Alcohol use history increases the likelihood of suicide behavior among male chronic patients with schizophrenia in a Chinese population. *Suicide and Life‐Threatening Behavior, 52*(4), 716-724.

Fazel, S., Wolf, A., Palm, C., & Lichtenstein, P. (2014). Violent crime, suicide, and premature mortality in patients with schizophrenia and related disorders: a 38-year total population study in Sweden. *The Lancet Psychiatry, 1*(1), 44-54.

Fedyszyn, I. E., Robinson, J., Harris, M. G., Paxton, S. J., & Francey, S. (2012). Predictors of suicide-related behaviors during treatment following a first episode of psychosis: the contribution of baseline, past, and recent factors. *Schizophrenia Research, 140*(1-3), 17-24.

Fialko, L., Freeman, D., Bebbington, P. E., Kuipers, E., Garety, P. A., Dunn, G., & Fowler, D. (2006). Understanding suicidal ideation in psychosis: findings from the Psychological Prevention of Relapse in Psychosis (PRP) trial. *Acta Psychiatrica Scandinavica, 114*(3), 177-186.

Freeman, D., Bold, E., Chadwick, E., Taylor, K. M., Collett, N., Diamond, R., ... & Waite, F. (2019). Suicidal ideation and behaviour in patients with persecutory delusions: Prevalence, symptom associations, and psychological correlates. *Comprehensive Psychiatry, 93*, 41-47.

Goldstein, G., Haas, G. L., Pakrashi, M., Novero, A. M., & Luther, J. F. (2006). The cycle of schizoaffective disorder, cognitive ability, alcoholism, and suicidality. *Suicide and Life-Threatening Behavior, 36*(1), 35-43.

Harkavy-Friedman, J. M., Restifo, K., Malaspina, D., Kaufmann, C. A., Amador, X. F., Yale, S. A., & Gorman, J. M. (1999). Suicidal behavior in schizophrenia: characteristics of individuals who had and had not attempted suicide. *American Journal of Psychiatry, 156*(8), 1276-1278.

Hjorthøj, C., Østergaard, M. L. D., Benros, M. E., Toftdahl, N. G., Erlangsen, A., Andersen, J. T., & Nordentoft, M. (2015). Association between alcohol and substance use disorders and all-cause and cause-specific mortality in schizophrenia, bipolar disorder, and unipolar depression: a nationwide, prospective, register-based study. *The Lancet Psychiatry, 2*(9), 801-808.

Hu, J., Chan, L. F., Souza, R. P., Tampakeras, M., Kennedy, J. L., Zai, C., & De Luca, V. (2014). The role of tyrosine hydroxylase gene variants in suicide attempt in schizophrenia. *Neuroscience Letters, 559*, 39-43.

Jovanovic, N., Kudumija Slijepcevic, M., & Podlesek, A. (2019). Personality traits in suicidal and homicidal subjects with schizophrenia. *The Journal of Forensic Psychiatry & Psychology, 30*(1), 76-88.

Kim, S. W., Kim, S. J., Mun, J. W., Bae, K. Y., Kim, J. M., Kim, S. Y., ... & Yoon, J. S. (2010). Psychosocial factors contributing to suicidal ideation in hospitalized schizophrenia patients in Korea. *Psychiatry Investigation, 7*(2), 79.

Kuo, C. J., Tsai, S. Y., Lo, C. H., Wang, Y. P., & Chen, C. C. (2005). Risk factors for completed suicide in schizophrenia. *Journal of Clinical Psychiatry, 66*(5), 579-585.

Lähteenvuo, M., Batalla, A., Luykx, J. J., Mittendorfer‐Rutz, E., Tanskanen, A., Tiihonen, J., & Taipale, H. (2021). Morbidity and mortality in schizophrenia with comorbid substance use disorders. *Acta Psychiatrica Scandinavica, 144*(1), 42-49.

Leposavić, L., Dimitrijević, D., Đorđević, S., Leposavić, I., & Nikolić Balkoski, G. (2015). Comorbidity of harmful use of alcohol in population of schizophrenic patients. *Psychiatria Danubina, 27*(1), 0-89.

Limosin, F., Loze, J. Y., Philippe, A., Casadebaig, F., & Rouillon, F. (2007). Ten-year prospective follow-up study of the mortality by suicide in schizophrenic patients. *Schizophrenia Research, 94*(1-3), 23-28.

Lopez-Morinigo, J. D., Di Forti, M., Ajnakina, O., Wiffen, B. D., Morgan, K., Doody, G. A., ... & David, A. S. (2019). Insight and risk of suicidal behaviour in two first-episode psychosis cohorts: Effects of previous suicide attempts and depression. *Schizophrenia Research, 204*, 80-89.

Lückhoff, M., Koen, L., Jordaan, E., & Niehaus, D. (2014). Attempted suicide in a Xhosa schizophrenia and schizoaffective disorder population. *Suicide and Life‐Threatening Behavior, 44*(2), 167-174.

Mauri, M. C., Paletta, S., Maffini, M., Moliterno, D., & Altamura, A. C. (2013). Suicide attempts in schizophrenic patients: clinical variables. *Asian Journal of Psychiatry, 6*(5), 421-427.

McGirr, A., Tousignant, M., Routhier, D., Pouliot, L., Chawky, N., Margolese, H. C., & Turecki, G. (2006). Risk factors for completed suicide in schizophrenia and other chronic psychotic disorders: A case–control study. *Schizophrenia Research, 84*(1), 132-143.

McLean, D., Gladman, B., & Mowry, B. (2012). Significant relationship between lifetime alcohol use disorders and suicide attempts in an Australian schizophrenia sample. *Australian & New Zealand Journal of Psychiatry, 46*(2), 132-140.

Olfson, M., Stroup, T. S., Huang, C., Wall, M. M., Crystal, S., & Gerhard, T. (2021). Suicide risk in medicare patients with schizophrenia across the life span. *JAMA Psychiatry, 78*(8), 876-885.

Østergaard, M. L., Nordentoft, M., & Hjorthøj, C. (2017). Associations between substance use disorders and suicide or suicide attempts in people with mental illness: a Danish nation‐wide, prospective, register‐based study of patients diagnosed with schizophrenia, bipolar disorder, unipolar depression or personality disorder. *Addiction, 112*(7), 1250-1259.

Pratt, D., Gooding, P., Johnson, J., Taylor, P., & Tarrier, N. (2010). Suicide schemas in non-affective psychosis: An empirical investigation. *Behaviour Research and Therapy, 48*(12), 1211-1220.

Reutfors, J., Brandt, L., Jönsson, E. G., Ekbom, A., Sparén, P., & Ösby, U. (2009). Risk factors for suicide in schizophrenia: findings from a Swedish population-based case-control study. *Schizophrenia Research, 108*(1-3), 231-237.

Robinson, J., Harris, M. G., Harrigan, S. M., Henry, L. P., Farrelly, S., Prosser, A., ... & McGorry, P. D. (2010). Suicide attempt in first-episode psychosis: a 7.4 year follow-up study. *Schizophrenia Research, 116*(1), 1-8.

Shaffer, J. W., Perlin, S., Schmidt, C. W., & Stephens, J. H. (1974). The prediction of suicide in schizophrenia. *The Journal of Nervous and Mental Disease, 159*(5), 349-355.

Sinclair, J. M., Mullee, M. A., King, E. A., & Baldwin, D. S. (2004). Suicide in schizophrenia: a retrospective case-control study of 51 suicides. *Schizophrenia Bulletin, 30*(4), 803-811.

Stephens, J. H., Richard, P., & McHUGH, P. R. (1999). Suicide in patients hospitalized for schizophrenia: 1913-1940. *The Journal of Nervous and Mental Disease, 187*(1), 10-14.

Strauss, J. L., Calhoun, P. S., Marx, C. E., Stechuchak, K. M., Oddone, E. Z., Swartz, M. S., & Butterfield, M. I. (2006). Comorbid posttraumatic stress disorder is associated with suicidality in male veterans with schizophrenia or schizoaffective disorder. *Schizophrenia Research, 84*(1), 165-169.

Temmingh, H. S., Mall, S., Howells, F. M., Sibeko, G., & Stein, D. J. (2020). The prevalence and clinical correlates of substance use disorders in patients with psychotic disorders from an Upper-Middle-Income Country. *South African Journal of Psychiatry*, *26*, a1473.

Uzun, Ö., Tamam, L., Özcüler, T., Doruk, A., & Ünal, M. (2009). Specific characteristics of suicide attempts in patients with schizophrenia in Turkey. *Israel Journal of Psychiatry, 46*(3), 189.

Wang, K. Z., Dai, N., Zai, C. C., de Bartolomeis, A., Gerretsen, P., Graff, A., & De Luca, V. (2022). Recent Stressful Life Events and Suicidal Ideation in Schizophrenia: A 1-Year Follow-up Study. *The Journal of Nervous and Mental Disease, 210*(2), 111-115.

Waterreus, A., Di Prinzio, P., Badcock, J. C., Martin-Iverson, M., Jablensky, A., & Morgan, V. A. (2018). Is cannabis a risk factor for suicide attempts in men and women with psychotic illness?. *Psychopharmacology, 235*, 2275-2285.

Yan, F., Xiang, Y. T., Hou, Y. Z., Ungvari, G. S., Dixon, L. B., Chan, S. S., ... & Chiu, H. F. (2013). Suicide attempt and suicidal ideation and their associations with demographic and clinical correlates and quality of life in Chinese schizophrenia patients. *Social Psychiatry and Psychiatric Epidemiology, 48*, 447-454.

Yoo, T., Kim, S. W., Kim, S. Y., Lee, J. Y., Kang, H. J., Bae, K. Y., ... & Yoon, J. S. (2015). Relationship between suicidality and low self-esteem in patients with schizophrenia. *Clinical Psychopharmacology and Neuroscience, 13*(3), 296.

Zaheer, J., Olfson, M., Mallia, E., Lam, J. S., de Oliveira, C., Rudoler, D., ... & Kurdyak, P. (2020). Predictors of suicide at time of diagnosis in schizophrenia spectrum disorder: a 20-year total population study in Ontario, Canada. *Schizophrenia Research, 222*, 382-388.

Zhang, X. Y., Al Jurdi, R. K., Zoghbi, A. W., Xiu, M. H., Tan, Y. L., De Yang, F., & Kosten, T. R. (2013). Prevalence, demographic and clinical correlates of suicide attempts in Chinese medicated chronic inpatients with schizophrenia. *Journal of Psychiatric Research, 47*(10), 1370-1375.