SUPPLEMENTARY APPENDIX

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

\*Dr. Lee D. Mulligan, ClinPsyD

Dr. Filippo Varese, PhD

Dr. Kamelia Harris, PhD

Prof. Gillian Haddock, PhD

\*Corresponding author: Dr. Lee Mulligan, Division of Psychology and Mental Health, University of Manchester, Manchester, UK (lee.mulligan@manchester.ac.uk).

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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) – MalesAllebeck et al, 1987 (Sweden) – FemalesStephens 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) – FemalesHjorthoj 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) – MalesAltamura et al, 2007 (Italy) – NAAltamura et al, 2007 (Italy) – EURAltamura et al, 2007 (Italy) – EEURAltamura et al, 2007 (Italy) – SafAltamura et al, 2007 (Italy) – SABarak 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) – ALuckoff et al, 2014 (South Africa) – DAyesa-Arriola et al, 2015 (Spain)Leposavic et al, 2015 (Serbia)Yoo et al, 2015 (Korea)Canal-Rivero et al, 2016 (Spain) – EFSACanal-Rivero et al, 2016 (Spain) – LFSAAdan et al, 2017 (Spain) – MalesOstergaard et al, 2017 (Denmark)Waterreus et al, 2018 (Australia) – MalesWaterreus et al, 2018 (Australia) – FemalesJovanovic et al, 2019 (UK, Croatia)Lopez-Morinigo et al, 2019 (UK) – AESOPLopez-Morinigo et al, 2019 (UK) – GAPTemmingh et al, 2020 (South Africa)Abderemane et al, 2022 (Morocco)Dai et al, 2022 (China) – Males*Suicidal Ideation*Fialko et al, 2006 (UK) – MFialko et al, 2006 (UK) – SGoldstein et al, 2006 (USA) – MalesStrauss et al, 2006 (USA) – MalesBarrett 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) – MalesWang et al, 2022 (Canada) – C | Cross-Sectional / Case ControlCross-Sectional / Case ControlCross-Sectional / Case ControlCross-Sectional / Case ControlLongitudinalCross-Sectional / Case ControlCross-Sectional / Case ControlCross-Sectional / Case ControlLongitudinalCross-Sectional / Case ControlLongitudinalLongitudinalLongitudinalLongitudinalLongitudinalLongitudinalLongitudinalCross-Sectional / Case ControlCross-Sectional / Case ControlCross-Sectional / Case ControlCross-Sectional / Case ControlCross-Sectional / Case ControlCross-Sectional / Case ControlCross-Sectional / Case ControlCross-Sectional / Case ControlCross-Sectional / Case ControlCross-Sectional / Case ControlCross-Sectional / Case ControlCross-Sectional / Case ControlCross-Sectional / Case ControlLongitudinalCross-Sectional / Case ControlCross-Sectional / Case ControlCross-Sectional / Case ControlCross-Sectional / Case 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-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) – MalesAllebeck et al,1987 (Sweden) - FemalesStephens 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) - FemalesHjorthoj 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) - MalesAltamura et al, 2007 (Italy) – NAAltamura et al, 2007 (Italy) – EURAltamura et al, 2007 (Italy) – EEURAltamura et al, 2007 (Italy) – SAfAltamura et al, 2007 (Italy) – SABarak 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) – ALuckoff et al, 2014 (South Africa) – DAyesa-Arriola et al, 2015 (Spain)Leposavic et al, 2015 (Serbia)Yoo et al, 2015 (Korea)Canal-Rivero et al, 2016 (Spain) – EFSACanal-Rivero et al, 2016 (Spain) – LFSAAdan et al, 2017 (Spain) - MalesOstergaard et al, 2017 (Denmark)Waterreus et al, 2018 (Australia) - MalesWaterreus et al, 2018 (Australia) – FemalesJovanovic et al, 2019 (UK, Croatia)Lopez-Morinigo et al, 2019 (UK) – AESOPLopez-Morinigo et al, 2019 (UK) – GAPTemmingh et al, 2020 (South Africa)Abderemane et al, 2022 (Morocco)Dai et al, 2022 (China) – Males*Suicidal Ideation*Fialko et al, 2006 (UK) – MFialko et al, 2006 (UK) – SGoldstein et al, 2006 (USA) – MalesStrauss et al, 2006 (USA) – MalesBarrett 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 | SCZSCZ295 – 295.99295 – 295.99SCZF20, F25SCZSCZ, SCA, DD, PDNOSSCZF20, F25, 295295, 297, 298, F20-F22, F25-F29SCZF20-25, F28-29, 295, 297, 298, 299, 301SCZ, SCA, PDNOSF20, F25, 295F20, F25295.X, F20.X, F25.XSCZ, SCASCZ, SCASCZ, SCASCZ, SCASCZ, SCASCZ, SCASCZ, SCASCZ, SCASCZSCZSCZ, SCP, SCA, DD, BPD, PDNOS, BD, MDDSCZ, SCASCZ, SCA, SCP, DD, PDNOSSCZ, SCA, SCP, DD, PDNOS BD, MDDSCA, SCASCZ, SCP, DD, BPD, PDNOS, SIP, SCA, BD, MDDSCZ, SCASCZSCZSCZSCZSCZ, SCASCZ, SCASCZ, SCA, SCP, BPDPDSCZ295-298295-298DSF20-25, F28-29, 295, 297, 298, 299, 301PDPDSCZF10-F29, F30-F33F10-F29, F30-F33295, 295.4, 295.7, 298.8, 291, 292, 298.8, 296SCZSCZSCZ, SCA, Psy, DDSCZ, SCA, Psy, DDSCZ, SCASCZ, SCA, PTSDSCZ, SCP, SCA, DD, BPD, PDNOS, BD, MDDSCZSCZSCZSCZ, SCA, DD, PDNOS295, 295.4, 295.7, 298.8, 291, 292, 298.8, 296295.X, F20.X, F25.XSCZSCZ | Psychiatrist AssessmentPsychiatrist AssessmentICD-8ICD-8Medical RecordsICD-10DSM-III, DSM-III-R, DSM-IVDSM-IVICD-10ICD-10, ICD-9, ICD-8ICD-10, ICD-9, ICD-8ICD-10, ICD-8ICD-10, ICD-8Validated AlgorithmICD-10, ICD-9, ICD-8ICD-10ICD-9-CM, ICD-10-CMDSM-III-RDSM-III-RDSM-III-RDSM-IVDSM-IVDSM-IVDSM-IVDSM-IVICD-9-CMDSM-IVDSM-IVDSM-IVICD-10DSM-III-R, DSM-IVDIGS, DSM-IVMedical RecordsDSM-IVDSM-IV-TRDSM-IV, ICD-10DSM-IVDSM-IVDSM-IV-TRDSM-IV-TRDSM-IVMINI, ICD-10DSM-IVDSM-IVDSM-IVDSM-IV-TRICD-10, ICD-8DIPDIPClinical InterviewICD-10ICD-10DSM-IV-TRPsychiatrist AssessmentDSM-IV (SCID)DSM-IIIDSM-IIIDSM-III-RDSM-IV, PCLDSM-IVDSM-IVDSM-IV, ICD-10DIPMedical RecordsDSM-IV-TRICD-9-CM, ICD-10-CMDSM-IV (SCID)MINI-Plus | Medical RecordsMedical RecordsMedical RecordsMedical RecordsMedical RecordsMedical RecordsMedical RecordsSCID-I, SCID-IICAGEMedical RecordsICD-8, ICD-9, ICD-10ICD-8, ICD-10, ATC CodesICD-8, ICD-10, ATC CodesICD-9, ICD-10, NACRSICD-9, ICD-10ICD-9, ICD-10ICD-9-CM, ICD-10-CMDIGSSCID-IMedical RecordsDSM-IVDSM-IVDSM-IVDSM-IVDSM-IVMedical RecordsSCID-1Medical Records, SCID-ICAGEStudy QuestionnaireEarly Psychosis File QuestionnaireDIGSSCID-I, Study QuestionnaireSCID I/P, FIGSSCID-IStudy QuestionnaireStudy QuestionnaireSCID-IDIGSDIGSStudy QuestionnaireMINIStudy QuestionnaireSIACSIACDSM-IV-TR, Research InterviewICD-8, ICD-10, ATC CodesAUDITAUDITAUDITStudy QuestionnaireStudy QuestionnaireSCID-IAUDITStudy QuestionnaireClinical NotesClinical NotesMedical RecordsDALI, DMHSMedical Records, SCID-IAUDITStudy QuestionnaireResearch InterviewMAPSCID-IICD-9-CM, ICD-10-CMStudy QuestionnaireAUDIT | LifetimeLifetimeLifetimeLifetimeLifetimeLifetimeLifetimeCurrent, LifetimeLifetimeLifetimeLifetimeLifetimeCurrent, FormerLifetimeLifetimeLifetime< 12 monthsLifetimeLifetimeLifetimeLifetimeLifetimeLifetimeLifetimeLifetimeLifetimeLifetimeLifetimeLifetimeLifetimeLifetimeLifetimeCurrent, LifetimeLifetimeLifetimeCurrentCurrentLifetimeLifetimeLifetimeLifetimeLifetimeLifetimeDaily Daily LifetimeCurrent, Former<12 months<12 months<12 monthsCurrentCurrentLifetime< 12 monthsLifetimeDailyDailyLifetime< 6 monthsLifetime<12 monthsCurrentLifetime<1 monthLifetime< 12 monthsLifetime<12 months | Medical RecordsMedical RecordsMedical Records, Death CertificateMedical Records, Death CertificateMedical RecordsMortality Files, Coroner’s RegisterDeath Certification SystemCoroner’s Office / Morgue RegisterNational Death CertificateCause of Death RegisterCause of Death RegisterCause of Death RegisterCause of Death RegisterOffice of Registrar-DeathsMedical Records, Death RegisterMedical Records, Death RegisterNational Death IndexDIGS (Corroborated)SCID-I, Clinical Life ChartMedical RecordsResearch InterviewResearch InterviewResearch InterviewResearch InterviewResearch InterviewMedical RecordsStudy Questionnaire (Corroborated)Research Interview, SCID-IStudy QuestionnaireBSIICD-10DIGS (Corroborated)CAD-SASSCID-I, Clinical Life ChartResearch Interview (Corroborated)Research InterviewResearch Interview (Corroborated)SCID-IDIGS (Corroborated)DIGS (Corroborated)Medical RecordsMINIResearch InterviewSCANSCANSCID-INational Patient Register, ICD-10, ICD-8NSMHWNSMHWSIBQMedical RecordsMedical RecordsSCID-IStudy QuestionnaireStudy QuestionnaireBDIBDIMedical RecordsDMHSResearch Interview, SCID-IResearch InterviewHAM-DResearch InterviewC-SSRSSCID-IICD-9, ICD-10Study QuestionnaireC-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, 1974Allebeck et al, 1987 Stephens et al, 1999Sinclair et al, 2004 Kuo et al, 2005McGirr et al, 2006Limosin et al, 2007Reutfors et al, 2009 Fazel et al, 2014 Hjorthoj et al, 2015Ostergaard et al, 2017 Zaheer et al, 2020 Lahteenvuo et al, 2021 Olfson et al, 2021  | 333322212111111 | 313111131133133 | 221232122222211 | 111111111111111 | 211111111111111 | 323221121122122 |
|  |  |  |  |  |  |  |

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, 2015Leposavic et al, 2015Yoo 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, 2019Temmingh et al, 2020Abderemane et al, 2022 Dai et al, 2022  | 212122212212122221222221122331 | 333313311121112111331313123233 | 311132111112111112131112111111 | 111111121111111111111121122111 | 311111111111111111131111111111 | 322222211111112111231212112232 |
|  |  |  |  |  |  |

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, 2019Temmingh et al, 2020 Olfson et al, 2021 Dai et al, 2022 Wang et al, 2022  | 133222123111 | 222332332333 | 111111311111 | 111111111112 | 112111211111 | 222222322222 |
|  |  |  |  |  |  |  |

**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  | 333321212111111 | 323222231133133 | 222232121111111 | 111111111111111 | 211111111131111 | 323221121132122 |
|  |  |  |  |  |  |  |

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, 2015Leposavic et al, 2015Yoo 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, 2019Temmingh et al, 2020Abderemane et al, 2022 Dai et al, 2022  | 213122212212222123222231122333 | 332313312121222111331323123132 | 211132111112111112131112111121 | 111111121111111111111121122211 | 211111111111111112131111111111 | 322222211111112112231222112232 |
|  |  |  |  |  |  |

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, 2019Temmingh et al, 2020 Olfson et al, 2021 Dai et al, 2022 Wang et al, 2022  | 133222113132 | 222332331323 | 111111311111 | 111111112112 | 111111211111 | 222222322222 |
|  |  |  |  |  |  |  |

**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.

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