

Examining the Relationship between Alcohol Use Disorder and Glaucoma: Protocol for a Scoping Review

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Examining the Relationship between Alcohol Use Disorder and Glaucoma: Protocol for a Scoping Review

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Abstract

Background: Alcohol use disorder (AUD) is a condition characterized by uncontrollable alcohol use despite negative social, occupational, or health consequences. AUD affects major organ systems in the body including the eyes in different ways. Current research displays mixed findings on the correlation between alcohol consumption and glaucoma, and little has been investigated in the AUD population. This paper outlines a protocol for a scoping review that aims to explore research on the connection between alcohol use disorder, and its related conditions such as alcohol dependence and alcohol misuse, with glaucoma and its associated symptoms, including increased intraocular pressure, optic nerve damage, and vision loss.

Objective: The overarching goal of this scoping review is to synthesize an extensive overview of the current literature surrounding alcohol use disorder or alcohol consumption and glaucoma. We aim to (1) map the existing literature on alcohol and glaucoma, (2) identify how alcohol consumption is associated with glaucoma, and (3) synthesize evidence concerning the association between alcohol use disorder or alcohol consumption (including drinking frequency, quantity, and type) with glaucoma.

Methods: A biomedical librarian will do a systematic search of PubMed/MEDLINE, Embase, and Web of Science. A two-step process will be used to screen the results, using Covidence as the screening software. All unique records retrieved from the database and supplemental searches will be screened by two reviewers independently using the eligibility criteria. This will be followed by data charting. This evidence synthesis will summarize findings in narrative and table formats.

Results: This scoping review was started in Covidence in Nov 2024 and is currently funded by NIH's Intramural Research Program. The projected end date for data collection and submission is August 2025.

Conclusions: By performing this scoping review, our team aims to address the mixed findings on the association between alcohol use disorder and or alcohol consumption and glaucoma. Our review will lay a foundation for future investigation on the topic.

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ABSTRACT

Background

Alcohol use disorder (AUD) is a condition characterized by uncontrollable alcohol use despite negative social, occupational, or health consequences. AUD affects major organ systems in the body including the eyes in different ways. Current research displays mixed findings on the correlation between alcohol consumption and glaucoma, and little has been investigated in the AUD population. This paper outlines a protocol for a scoping review that aims to explore research on the connection between alcohol use disorder, and its related conditions such as alcohol dependence and alcohol misuse, with glaucoma and its associated symptoms, including increased intraocular pressure, optic nerve damage, and vision loss.

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Keywords: Alcohol use disorder (AUD), Glaucoma, alcohol abuse, alcohol

consumption

INTRODUCTION

Overview

Alcohol use disorder (AUD) is a condition characterized by uncontrollable alcohol use despite negative social, occupational, or health consequences. The National Institute on Alcohol Abuse and Alcoholism (NIAAA) defines heavy drinking as consuming five or more drinks on any day or 15 or more per week for men, and consuming four or more drinks on any day or eight or more drinks per week for women.[1] According to the 2023 National Survey on Drug Use and Health, 28.1 million adults ages 18 and older had AUD in the past year.[2] AUD is a newer term as the disorder was previously called “alcoholism”. This change occurred in 2013 with the release of the Diagnostic and Statistical Manual of Mental Disorders 5th Edition (DSM-5).[3] Due to this terminology shift we will include various terms for alcohol consumption in our study.

Alcohol consumption is associated with risks of developing noncommunicable diseases such as liver and heart disease, cancers, and mental and behavioral conditions. The World Health Organization states that there is no form of alcohol consumption that is risk-free.[4] The health consequences of alcohol are widely known but are still being investigated as alcohol affects different major organs, including the eye, based on a variety of factors including age, sex, etc. Glaucoma is an eye disease that causes damage to the eye’s optic nerve due to fluid buildup in the front part of the eye; it is the leading cause of blindness for individuals over 60 years of age.[5] Glaucoma has been long known to be associated with alcohol consumption.[6] Current literature on the association between alcohol consumption and/or in the AUD population and glaucoma, including the various subtypes of the disease, is variable in terms of findings.[7-9]

A scoping review will be conducted versus other types of reviews to see what the current evidence for the link between different levels of alcohol consumption and/or an AUD diagnosis and glaucoma, including subtypes. Our aim is to identify gaps in the current knowledge and clarify concepts on the extensive and vast amount of literature out there on this topic.

METHODS

We will follow the methods outlined in the JBI Manual for Evidence Synthesis[10] and use the Preferred Reporting Items for Systematic Reviews and Meta-analyses extension for Scoping Review checklist (PRISMA-ScR)[11] to report the completed review. The protocol was written using the PRISMA-ScR as an outline with additional information and details used from Lely and colleagues (2023). [11,12]

Eligibility Criteria

The criteria were developed by the study team to include a wide variety of literature on the topic. We will include:

- Studies of individuals ages 18 and up
- Patient populations of men and women
- Studies that document a diagnosis of glaucoma (ICD10 code: H40)
- Documented diagnosis of alcohol use disorder or similar terms

(alcoholism, alcohol abuse, etc.), or alcohol consumption levels that classify as heavy drinking based on the definition from NIAAA[1]

- Articles published in English
- Articles published since 2014
- Primary research articles (case-control studies, case series/case reports, cohort studies, controlled trials, cross-sectional studies, prospective/longitudinal/follow-up studies, randomized control trials) and reviews (systematic reviews and meta-analyses)
- Grey literature (conference proceedings, dissertations, ongoing clinical trials, and preprints)

We will exclude:

- Animal/non-human studies
- Studies of individuals with other ocular conditions or diagnoses
- Diagnoses of congenital glaucoma (childhood glaucoma) including juvenile open-angle glaucoma and any induced glaucoma (drug, steroid, corticosteroid etc.)
- Cost benefit analysis studies and qualitative research studies
- Commentary or opinion, editorials, and letters

Search strategy

The biomedical librarian (TS) will develop the search strategies and incorporate team feedback on terminology. Three databases will be searched: PubMed, which includes MEDLINE (US National Library of Medicine); Embase (Elsevier); and Web of Science Core Collection: Science Citation Index Expanded (SCI-EXPANDED) and Social Sciences Citation Index (SSCI) (Clarivate Analytics). Search strategies include a combination of indexing terms (Medical Subject Headings [MeSH], Emtree) and keywords; Table 1 provides examples of terms for each concept. Concepts will be combined using the Boolean operators OR and AND, then limited to English language citations and published since 2014. This date limit reflects diagnostic criteria as defined in DSM-5.[3] The searches will be peer reviewed by biomedical librarians independent of this scoping review team following PRESS guidance[13] and the complete searches for every databases will be documented as supplementary materials in the final manuscript to improve validity and reproducibility. All results will be exported to EndNote 21 (Clarivate Analytics) and uploaded to Covidence screening software (Veritas Health Innovation, Melbourne, Australia; available at www.covidence.org) with duplicate citations removed.

Table 1: search concepts and terms

Concept	Indexing Terms	Example Keywords
AUD	MeSH: "Alcohol-Related Disorders"[Majr:NoExp] OR "Alcoholism"[Majr] OR "Alcohol Drinking"[Majr]	alcohol use disorder; alcoholism; alcoholic; alcohol abuse; alcohol misuse; binge drinking; excess alcohol; excessive

	Emtree: 'alcoholism'/exp/mj OR 'drinking behavior'/exp/mj	drinking
Glaucoma	MeSH: "Eye Diseases"[Majr] OR "Vision Disorders"[Majr] OR "Optic Nerve Diseases"[Mesh] OR "Retinal Diseases"[Mesh] OR "Dry Eye Syndromes"[Mesh] OR "Glaucoma"[Mesh] Emtree: 'eye disease'/exp/mj OR 'visual disorder'/exp/mj OR 'optic nerve disease'/exp OR 'retina disease'/exp OR 'dry eye syndrome'/exp OR 'glaucoma'/exp	glaucoma; eye disease; eye disorder; blindness; dry eye; anatomical terms such as eye, retina, or intraocular

Study Selection

A two-step process will be used to screen the results, using Covidence as the screening software. First, the titles and abstracts of all unique records retrieved from the database and supplemental searches will be screened by two reviewers (FE, AH) independently using the eligibility criteria. A separate third reviewer (GW) will resolve conflicts and if necessary, discuss the conflict with at least one other reviewer (FE) to decide whether to include or exclude based on the eligibility criteria. Second, articles that meet inclusion criteria after title and abstract screening will proceed to full text screening. The PDFs of these articles will be obtained and uploaded into Covidence. Two reviewers (FE, AH) will independently screen the full text using the same eligibility criteria. Conflicts will be resolved using the same process as before. Prior to working on the full review, reviewers will conduct a pilot of this two-step process, including testing data extraction. For the pilot, the biomedical librarian (TS) will randomly select 50 articles from the completed searches and upload to Covidence to test title and abstract screening, and full text screening steps with all reviewers (FE, AH, GW). Based on this pilot process, revisions or clarifications to the eligibility criteria, search strategies, and protocol will be made as needed.

Data Charting

Covidence as well as Microsoft Excel will be used for data collection. Covidence will be used to screen title and abstracts to filter out publications to the full-text review stage and then finally obtain a collection of papers for data extraction. Excel will be used to collect the necessary information via an extraction template for the scoping review (Table 2). Two reviewers (FE, AH) will independently collect data from each included article. One reviewer (GW)

will check all collected data and reconcile any discrepancies in the data. If data is missing, we will contact the corresponding author and if no reply is received, either mark the data as missing or not reported. Like the screening pilot, a pilot of the data collection step will be completed with three reviewers (FE, AH, GW) on a sample of 2–5 records taken from the screening pilot. Changes to the data items or data collection process will be documented in the protocol.

Table 2 Data charting for included literature

Domain/subdomain	Description
1. Document characteristics	
Document types articles, Reviews and so on	Primary research
Grey literature types dissertations, ongoing clinical trials, preprints	Conference proceedings,
Title	Title of publication
Authors	Authors of publication
Publication year	Year of publication
Full citation	Citation of publication
DOI	DOI included
Web link	Link to online source
2. Study characteristics	
Design	Case-control study, case report/series, cohort study, and so
Setting	For example, hospital; in-patient or outpatient
Location	Country of publication
Population	Study eligibility criteria
Sample size	Number of participants in study
Study objectives	What is the study research question (if relevant)?
3. Characteristics of AUD	
Drinking Frequency	For example, number of drinks in a day, week, month, etc.
Type of liquor consumed	For example, beer, wine, liquor, and other types of alcoholic beverages reported
Alcohol consumption level	For example, Light, moderate, heavy alcohol consumption
Alcohol consumption assessment tool	For example, self-reported surveys, questionnaires, and other assessment tools
4. Characteristics of Glaucoma	
Glaucoma Subtype such as Open-angle, normal tensions and so on	Types of glaucoma
IOP Status/Reading normal, low; (measured in mmHg)	For example, elevated,
5. Co-uses	
Smoking (Nicotine) smoker, non-smoker, ex-smoker	Smoking status:
Marijuana/Cannabis user, non-user, ex-user	Marijuana/Cannabis
Other outcomes	Any other study outcomes

Limitations authors, and any other limitations identified	Limitations described by authors
Implications and conclusions	Implications and conclusions as described by authors
6. Vision Characteristics	
Visual Tests visual field/acuity, gonioscopy, pachymetry	IOP readings, OCT,
AUD, Alcohol Use Disorder; IOP, intraocular pressure, OCT, optical coherence tomography	

Data Synthesis

As this is a scoping review, we will provide a narrative summary of our findings including descriptive statistics on key data items. A PRISMA flow diagram will be used to document disposition of results from the searches. We will include a table of key characteristics for the included studies and additional tables and figures for specific variables of interest as needed.

Results

After utilizing our search strategy, 783 papers were imported into Covidence, and titles and abstracts were screened for relevancy using our inclusion criteria. 118 papers were included for full-text review and extraction is currently taking place through Covidence and Microsoft Excel.

Discussion

Implications

This scoping review aims to provide a comprehensive synthesis of the extensive literature on glaucoma and alcohol consumption, addressing the conflicting findings that have been reported. By thoroughly summarizing all relevant data, we intend to clarify existing literature and address any gaps.

Limitations

We aim to be comprehensive in our scoping review although some limitations can be expected. For instance, we plan to synthesize data on symptoms of glaucoma such as intraocular pressure readings, and utilize visual imaging results such as OCT, visual field acuity tests and more. However, these tests or readings may not be widely available in the existing literature. It's also important to consider that alcohol consumption may be reported in varying ways between papers. Therefore, when evaluating the existing literature, we plan to take a holistic approach while also including any specific and relevant findings that we find.

CONCLUSION

We intend to review the vast amount of literature relating to the association between alcohol use disorder (AUD) and glaucoma to provide a summary of current knowledge and an evidence-based resource that may benefit physicians, patient care teams, and other health professionals in advising, treatment and preventative care. While synthesizing the breadth of evidence, we will concurrently identify gaps in the literature thus identifying areas that

need focused future research efforts.

REFERENCES

- 1 National Institute on Alcohol Abuse and Alcoholism (NIAAA). Understanding Alcohol Drinking Patterns. Understanding Alcohol Drinking Patterns. 2025. <https://www.niaaa.nih.gov/alcohols-effects-health/alcohol-drinking-patterns> (accessed 14 February 2025)
- 2 Substance Abuse and Mental Health Services Administration (SAMHSA). Results from the 2023 National Survey on Drug Use and Health (NSDUH): Key Substance Use and Mental Health Indicators in the United States. Substance Abuse and Mental Health Services Administration (SAMHSA) 2024.
- 3 American Psychiatric Association. Alcohol Use Disorder. *Diagnostic and Statistical Manual of Mental Disorders*. American Psychiatric Association 2013:491-504.
- 4 World Health Organization. Alcohol. <https://www.who.int/news-room/fact-sheets/detail/alcohol> (accessed 13 February 2025)
- 5 American Academy of Ophthalmology (AAO). Understanding Glaucoma: Symptoms, Causes, Diagnosis, Treatment. American Academy of Ophthalmology. 2024. <https://www.aao.org/eye-health/diseases/what-is-glaucoma> (accessed 17 February 2025)
- 6 Peczon JD, Grant WM. Glaucoma, Alcohol, and Intraocular Pressure. *Archives of Ophthalmology*. 1965;73:495-501. doi: 10.1001/archopht.1965.00970030497009

- 7 Kang JH, Willett WC, Rosner BA, *et al.* Prospective study of alcohol consumption and the risk of primary open-angle glaucoma. *Ophthalmic Epidemiol.* 2007;14:141-7. doi: 10.1080/09286580601187963
- 8 Karimi S, Arabi A, Shahraki T. Alcohol and the Eye. *jovr.* 2021;16:260-70. doi: 10.18502/jovr.v16i2.9089
- 9 Stuart KV, Madjedi K, Luben RN, *et al.* Alcohol, Intraocular Pressure, and Open-Angle Glaucoma: A Systematic Review and Meta-analysis. *Ophthalmology.* 2022;129:637-52. doi: 10.1016/j.opthta.2022.01.023
- 10 Aromataris E, Lockwood C, Porritt K, *et al.*, editors. *JB1 Manual for Evidence Synthesis.* JBI 2024.
- 11 Tricco AC, Lillie E, Zarin W, *et al.* PRISMA Extension for Scoping Reviews (PRISMA-ScR): Checklist and Explanation. *Ann Intern Med.* 2018;169:467-73. doi: 10.7326/M18-0850
- 12 Lely J, Morris HC, Sasson N, *et al.* How to write a scoping review protocol: Guidance and template. Published Online First: 30 May 2023. doi: 10.17605/OSF.IO/YM65X
- 13 McGowan J, Sampson M, Salzwedel DM, *et al.* PRESS Peer Review of Electronic Search Strategies: 2015 Guideline Statement. *Journal of Clinical Epidemiology.* 2016;75:40-6. doi: 10.1016/j.jclinepi.2016.01.021