The effect of a brief intervention and motivational interviewing on alcohol misuse and anti-retroviral therapy adherence in patients with human immuno-deficiency virus and a history of alcohol misuse: a systematic review protocol

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Review question/objective

The objective of this systematic review is to determine the effect of a brief intervention and motivational interviewing on alcohol misuse and highly active anti-retroviral therapy (HAART) adherence in patients with human immunodeficiency virus (HIV) with a history of alcohol misuse.

Background

Alcohol use is high among people living with HIV (PLHIV). For instance, a systematic review by Nakimuli-Mpungu et al. on alcohol use, depression and adherence to antiretroviral therapy (ART) in patients with HIV showed a prevalence of alcohol use between 2.5 and 51%.¹ Studies in several African countries have shown a causal link between alcohol use and HIV, and have shown that alcohol use has effects on the course of HIV, including adherence to ART. The prevalence of HIV is considerably higher in adults who have a history of high or frequent alcohol consumption than in adults who do not use alcohol.²,³,⁴,⁵ A systematic review and meta-analysis by Fisher et al. confirmed the strong association between alcohol use and HIV infection.⁶

Alcohol use disorder can be hazardous drinking or harmful drinking. Hazardous drinking is defined as a quantity or pattern of alcohol consumption that places patients at risk of adverse health consequences, while harmful drinking is defined as alcohol consumption that results in adverse consequences (for example, physical or psychological harm).⁷ Problem level alcohol consumption is a common issue in the treatment of individuals with HIV infection.⁸ For instance, Myer et al. reported a prevalence of alcohol dependence/abuse in 7% of patients with HIV in Cape Town.⁹
Researchers believe alcohol consumption may have an impact on HIV viral replication, disease progression, and drug toxicity and may impair immune system function. HIV disease progression is accelerated by alcohol use, which is shown by a more likely decline of CD4 T cells to ≤200 cells/μl and a more frequent detectable viral load in frequent alcohol users. These effects occur independent of baseline CD4 cell count and HIV viral load, ART use over time, the time since HIV diagnosis, age and gender.

Heavy consumption or hazardous drinking is likely to lead to increased risk for toxicity from antiretroviral therapy because it intensifies conditions that also place a strain on the liver, such as hepatitis C or chronic hepatitis B.

The negative effects of alcohol use on individuals with HIV are numerous. High alcohol use is associated with high risk sexual behavior and the risk of HIV. Once individuals are infected with HIV, alcohol use is related to low participation in prevention of mother-to-child transmission (PMTCT), pre-test and posttest counseling (including returning for test results). In addition, there is a late presentation to HIV care in patients who use alcohol, compared with those who do not use alcohol.

 Alcohol consumption has been linked to lower rates of adherence to HAART regimens. HIV-positive patients who drink have worse adherence than those who do not. Non-adherence increases with the level of drinking severity. Among HIV-positive persons with alcohol problems, alcohol was the most significant predictor of non-adherence, and problem drinkers are more likely than non-drinkers to report forgetting medication, taking medication off schedule, or running out of medications.

Lack of adherence results in inadequate suppression of the virus and viral replication, low potency of the antiretroviral regimens, and pharmacokinetic interactions causing inadequate drug delivery. Non-adherence risks the development of drug resistance and failure of therapy.

Screening and brief alcohol intervention is an example of secondary preventive care for people with problem drinking. It aims to identify hazardous or harmful drinking at an early stage (before people are consciously aware of [or seeking help for] problems), and then provide advice or counseling to help reduce consumption levels.

Parsons et al. have conducted a randomized controlled trial on the effects of motivational interviewing and cognitive-behavioral intervention on adherence among hazardous drinkers. The study demonstrated that an eight session behavioral intervention resulted in improvements in self-report and biological markers (CD4 cell count and HIV viral load) after three months relative to those participants provided with education (factual information through didactic methods and formal discussions) only.

In comparison, Samet et al. conducted a randomized controlled trial to enhance antiretroviral therapy adherence in patients with a history of alcohol problems. They employed multi-component interventions that included: i) assessment and discussion of the patient’s alcohol and other substance use based on the stage of readiness for behavioral change; ii) use of a watch that served as a medication timer device and a practical aid to improving adherence; iii) enhancement of perceived efficacy of medications; and iv) individualized HIV counseling and exploration of ways to tailor medication use to specific circumstances. Subjects randomized to the intervention group were scheduled for an initial 60-minute individual appointment, a follow-up home visit within the first three weeks and two subsequent 15- to 30-minute appointments at one month and three months with the nurse interventionist who delivered the adherence enhancement intervention. In that study, a multi-component intervention showed no
significant differences in adherence, CD4 count, viral load or alcohol consumption compared to those who were assigned to standard care (verbal or written instruction about optimal medication adherence strategies).^33

However, no previous synthesis has been identified on the effects of interventions on people with HIV with a history of alcohol misuse and problems on HAART adherence and alcohol use and virological outcomes. Therefore, in order to have an evidence-based health care practice in reducing alcohol use related problems and HIV viral load, and in improving the CD4 count, the findings of studies should be synthesized. The current review is aimed at generating evidence from studies conducted on the effect of motivational interviewing and brief interventions on patients with HIV and alcohol use problems.

**Keywords**

Brief intervention and Motivational Interview; alcohol misuse and anti-retroviral therapy Adherence; HIV

**Inclusion criteria**

**Types of participants**

This review will consider studies which include adults (aged 18 or above) living with HIV with a history of alcohol misuse.

**Types of intervention(s)/phenomena of interest**

The intervention of interest will consider studies that evaluate the effects of motivational interviewing, and/or brief intervention, and/or cognitive behavioral therapy or all of these interventions.

Brief intervention is a discussion of approximately 10 minutes. The conversation begins by building rapport through asking questions about participants’ experiences. Participants are then encouraged to talk about how drinking fits in with their lives, explore any ambivalence and evaluate their drinking, including any problems associated with it. The conversation ends with either the participant or the counselor providing a summary of the conversation. This intervention is conducted over two months.\(^33\)

On the other hand, in motivational interviewing, a weekly discussion lasting for one hour will be conducted for two months. And cognitive behavioral therapy is a method in which clients are provided with weekly factual information and formal discussions lasting for two months regarding HIV, HAART adherence and alcohol.\(^32\)

**Comparator**

The comparator groups for the review will be those clients who were provided standard treatment (only verbal or written instruction about optimal medication adherence strategies).

**Types of outcomes**

This review will consider studies that include the following outcome measures: viral load, CD4 cell count, and HAART adherence including drinking behavior.

Drinking behavior will be measured by the number of self-reported standard drinks consumed per drinking day. The number of drinks per drinking day is calculated by dividing the total number of standard drinks in the past 14 days by the number of days during that period in which the participant had
at least one alcoholic drink.\textsuperscript{32}

\textbf{Setting:}

This review will consider all primary studies conducted both in developing and developed countries.

\textbf{Types of studies}

This review will consider both experimental and epidemiological study designs including randomized controlled trials, on-randomized controlled trials, quasi-experimental, before and after studies, prospective and retrospective cohort studies, case control studies and analytical cross sectional studies, conducted on adults living with HIV with history of alcohol misuse, for inclusion.

\textbf{Search strategy}

The search strategy aims to find both published and unpublished studies. A three-step search strategy will be utilized in this review. An initial limited search of MEDLINE and CINAHL will be undertaken followed by an analysis of the text words contained in the title and abstract, and of the index terms used to describe article. A second search using all identified keywords and index terms will then be undertaken across all included databases. Thirdly, the reference list of all identified reports and articles will be searched for additional studies. Studies reported in English from 2004 to 2013 will be considered for inclusion in this review. This is because significant improvements have been made in the access to ART in low-income and middle-income countries after 2004.\textsuperscript{34}

The databases to be searched include: MEDLINE and CINAHL.

The search for unpublished studies will include: MedNar, Google Scholar, and proQuest.

Initial keywords to be used will be:

People living with HIV, HIV positive patients and history of alcohol use problems (for population); motivational interview, and/or brief intervention, and/or cognitive behavioral therapy or all these interventions (for intervention); viral load, CD4 cell count, and ART adherence and drinking behavior (for outcome).

\textbf{Assessment of methodological quality}

Papers selected for retrieval will be assessed by two independent reviewers for methodological validity prior to inclusion in the review using standardized critical appraisal instruments from the Joanna Briggs Institute Meta Analysis of Statistics Assessment and Review Instrument (JBI-MAStARI) (Appendix I). Any disagreements that arise between the reviewers will be resolved through discussion.

\textbf{Data collection}

Data will be extracted from papers included in the review by two independent reviewers using the standardized data extraction tool from JBI-MAStARI (Appendix II). The data extracted will include specific details about the interventions, populations, study methods and outcomes of significance to the review question and specific objectives. The authors of primary studies will be contacted by e-mail in
case there is incomplete information.

**Data synthesis**

Quantitative data will, where possible, be pooled in statistical meta-analysis using JBI-MAStARI. All results will be subject to double data entry. Before conducting meta-analyses, heterogeneity will be assessed statistically using the standard Chi-square and visual inspection of the meta-analysis output on a forest plot. Because of the possibility of low power if there are few studies, we will use a significance level of $P < 0.1$, in order to protect against the possibility of falsely stating that there is no heterogeneity present. Data will also be explored using subgroup analyses based on the different study designs included in this review.

The data syntheses will be based on random effects model. Effect sizes expressed as odds ratio (OR) and risk ratio (RR) (for categorical data) and standardized mean differences (SMD) (for continuous data) and their 95% confidence intervals will be calculated using DerSimonian and Laird method.

Where statistical pooling is not possible the findings will be presented.

**Conflicts of interest**

We declare neither financial nor intellectual conflict of interest in this work.

**Acknowledgements**

We would like to acknowledge the Joanna Briggs Institute (JBI) and Jimma University JBI Collaborating Center, and Jimma University for their support.
References


Appendix I: Appraisal instruments

MAStARI appraisal instrument

**JBI Critical Appraisal Checklist for Randomised Control / Pseudo-randomised Trial**

Reviewers: [Name]

Date: [Date]

Author: [Name]

Year: [Year]

Record Number: [Record Number]

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<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
<th>Unclear</th>
<th>Not Applicable</th>
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<td>1. Was the assignment to treatment groups truly random?</td>
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<td>2. Were participants blinded to treatment allocation?</td>
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<td>3. Was allocation to treatment groups concealed from the allocator?</td>
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<td>4. Were the outcomes of people who withdrew described and included in the analysis?</td>
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<td>5. Were those assessing outcomes blind to the treatment allocation?</td>
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<td>6. Were the control and treatment groups comparable at entry?</td>
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<td>7. Were groups treated identically other than for the named interventions</td>
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<td>8. Were outcomes measured in the same way for all groups?</td>
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<td>9. Were outcomes measured in a reliable way?</td>
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<td>10. Was appropriate statistical analysis used?</td>
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Overall appraisal: Include [ ] Exclude [ ] Seek further info. [ ]

Comments (Including reason for exclusion)

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doi: 10.11124/jbisrir-2013-660
**JBI Critical Appraisal Checklist for Descriptive / Case Series**

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<td>1. Was study based on a random or pseudo-random sample?</td>
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<td>2. Were the criteria for inclusion in the sample clearly defined?</td>
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<td>3. Were confounding factors identified and strategies to deal with them stated?</td>
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<td>4. Were outcomes assessed using objective criteria?</td>
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<td>5. If comparisons are being made, were there sufficient descriptions of the groups?</td>
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<td>6. Was follow up carried out over a sufficient time period?</td>
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<td>7. Were the outcomes of people who withdrew described and included in the analysis?</td>
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**Overall appraisal:** Include [ ] Exclude [ ] Seek further info [ ]

**Comments (Including reason for exclusion)**

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Appendix II: Data extraction instruments

MAStARI data extraction instrument

JBI Data Extraction Form for Experimental / Observational Studies

Reviewer .................................. Date ................................

Author .................................. Year ................................

Journal, .................................. Record Number ..............................

Study Method

RCT ☐ Quasi-RCT ☐ Longitudinal ☐

Retrospective ☐ Observational ☐ Other ☐

Participants

Setting

Population

Sample size

Group A ___________________________ Group B ___________________________

Interventions

Intervention A

Intervention B

Authors Conclusions:

Reviewers Conclusions:
**Study results**

**Dichotomous data**

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<th>Intervention (2) number / total number</th>
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**Continuous data**

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