



**International Journal of TROPICAL DISEASE  
& Health**

30(2): 1-9, 2018; Article no.IJTDH.40471  
ISSN: 2278-1005, NLM ID: 101632866

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## **Interventions in Older Adults with Alcohol Consumption: A Systematic Review**

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### **Authors' contributions**

*This work was carried out in collaboration between all authors. Author BLN designed the study and wrote the first draft of the manuscript. Author AAA managed literature searches and participated in the first draft of manuscript. Author VMHR participated in to search of literature. Author LCC selected articles and participated in to write the first draft of manuscript. Author GCO participated in to select articles and design the protocol. Author NPR translated into English and corrected the first draft of manuscript. All authors read and approved the final manuscript.*

### **Article Information**

DOI: 10.9734/IJTDH/2018/40471

#### Editor(s):

- (1) Thomas I. Nathaniel, Department of Biomedical Sciences, School of Medicine -Greenville, University of South Carolina, Greenville, USA.  
(2) Jorge Paredes Vieyra, Universidad Autonoma De Baja California, Campus Tijuana, Mexico.

#### Reviewers:

- (1) Masoud Mohammadnezhad, Fiji National University, Fiji.  
(2) Shunji Oshima, Japan.

Complete Peer review History: <http://www.sciencedomain.org/review-history/24333>

**Review Article**

**Received 8<sup>th</sup> February 2018**  
**Accepted 19<sup>th</sup> April 2018**  
**Published 26<sup>th</sup> April 2018**

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### **ABSTRACT**

**Aims:** To analyze and assess the scientific evidence regarding interventions for alcohol consumption in older adults.

**Methodology:** Integrative review of articles published in the period from 2012 to 2016 in the

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databases MEDLINE, CINHAI, LILACS, Academic Search Complete, with the descriptors adult elderly, intervention, alcohol, 25 publications were selected for critical analysis.

**Results:** The type of interventions designed for the elderly are cognitive-behavioral, educational modality, brief intervention, with the use of printed and technological material, the most used instruments are the CARET and AUDIT, the interventions showed effectiveness in reducing the alcohol consumption with a small effect size. The join effect measure cannot be calculated because the studies show different effect measures.

**Conclusions:** There are few intervention studies aimed at the elderly for the decrease in alcohol consumption, given the magnitude of the problem, it is suggested to carry out intervention studies, based on theory, with a medium to large effect size.

*Keywords: Intervention; alcohol; elderly; systematic review.*

## 1. INTRODUCTION

In the literature, alcohol consumption is considered a public health problem, due to the effects on the morbidity and mortality of people, statistical increase in foreseeable deaths, and high treatment costs [1]. It is estimated that it is a root factor of 60 diseases (liver cirrhosis, cardiovascular problems, and polyneuritis, among others), car accidents, falls, and violence [2].

Thus, alcohol is the most prevalent addictive substance in the world population; According to statistical data, the World Health Organization (WHO) reports that excessive consumption of this drug causes 2.5 million deaths per year in the world, which is why it is considered the third risk factor for prevalence of diseases and disability, estimating that close to 4% of all deaths around the world are attributable to alcohol consumption and in Mexico the fourth cause of mortality [3].

Situation that tends to worsen, because alcohol consumption is on the rise "almost 27 million Mexicans (32.8%) drink with a pattern of risky consumption (5 or more drinks in a single occasion for men and four drinks or more for women)" [2]; Like the dependency to this substance, according to the results of the National Survey of Addictions (ENA) [4] it went from 4.1% in 2002 to 6.2% in 2011 in the population from 12 to 65 years.

In particular, the consumption of alcohol in older adults has been increasing along with this population group, because the consumption of this substance is started at previous ages, but its intake continues until old age. In a study conducted over 69 years, residents of the Federal District in Mexico, it was found that

65.3% consumed alcohol at some time in their lives, one in two men and one in four women consumed alcohol in the previous 12 months, of which 8.7% (15.8% men and 4.4% women) presented risky consumption and 1.2% clinical symptoms of alcohol abuse and dependence [5].

The older adults was defined as people with 60 or more years of age [6].

In this sense, the costs and complications that derive from the consumption of alcohol can worsen the outlook for the elderly, family and health institutions, as they add to the situations of the elderly. Its intake may exacerbate heart failure, hypertension and other medical disorders that are common in older people, in addition to the additional risk factors (possible mixing of alcohol with drugs, low ability to metabolize alcohol, nutritional deficiencies) increase the effects harmful effects of excessive alcohol consumption in this age group [7].

Events that are added to variables significantly associated with alcohol consumption are the male sex, receiving four or more minimum wages, presence of one or more chronic diseases, the latter being the one that can be determined between risky consumption, the abuse and / or dependence of the substance [5]. Therefore, it is necessary to have intervention programs that allow an integral approach, and that permeate each one of the spheres of the individual, in such a way that conscious and constant changes are made against the consumption of alcohol risk, and so on, the opportunity of an aging in fullness is glimpsed.

However, intervention programs to combat alcohol consumption in older adults are scarce, almost non-existent, and lack systematization, despite the recognition of their influence and

impact to prevent diseases and promote a healthy lifestyle. The intervention programs have the purpose of informing and motivating individuals to perform healthy practices, so that they adopt and maintain them throughout their lives [8].

Thus, an opportunity opens up for the nursing professional, regarding the incursion in this type of research proposals, by virtue of the substantive functions performed by the nursing professional [9] and competencies for the implementation of interventions in the different levels of care and prevention [10].

Therefore, this gap regarding the systematization and effectiveness of intervention programs in older adults with alcohol consumption generates the need for a systematic review that aims to analyze and assess scientific evidence, regarding interventions for consumption of alcohol in older adults.

## 2. METHODOLOGY

To carry out the systematic review, the methodological proposal of six steps [3] was used: 1) establish the purpose of research based on a literature review to answer a knowledge gap; 2) define exclusion and inclusion criteria for the articles, as well as the search strategy; 3) define the information of interest to be extracted from the publications and select the articles; 4) analyze selected articles; 5) perform interpretation, discussion and conclusion of the findings, and 6) present the results.

As inclusion criteria, the search for articles in English and Spanish was defined, published in the period from 2012 to 2016, which will be found in full text and will cover the study variables (intervention before alcohol consumption, older adult population, with words as intervention, alcohol, elderly, systematic review in title and/or keywords, 50 and 75 years old, men and / or women, regardless of schooling or nationality, with a history of drinking alcoholic beverages at some time in their lives).

In addition, it was decided to include studies that belonged to the following levels of quality of scientific evidence: I (meta-analysis of randomized controlled trial), II (randomized controlled trial of large sample), III (randomized controlled trial of small sample), IV (prospective nonrandomized controlled trial), V (retrospective non-randomized controlled trial), VI (cohort

studies), VII (case-control studies), VIII (uncontrolled clinical series, descriptive studies, expert committees, conference consensus), and IX (anecdotes or unique cases) [11].

Levels of quality were the reported by Primo [11].

We proceeded to the exhaustive search in each of the following databases: MEDLINE, CINHALL, LILACS, Academic Search Complete. Likewise, the Google Scholar web search engine was used to review articles that are not available in the full text free context. Descriptors in Health Sciences (DeCS) and Medical Subject Headings (MeSH) were used, as well as the Boolean operator AND within the fields of title and summary: Afterwards, an exhaustive review of the complete texts was carried out to collect information: adult elderly AND intervention AND alcohol, alcohol AND intervention and elderly AND intervention.

The databases were selected because there are used in another reviews.

The focus was Spanish and English because articles in the databases were in English and Spanish. The articles in another languages were excluded because they were not the specific criteria in key words. The search began October 2016 until February 2017.

The search yielded 16,449 articles, so that the title and summary were reviewed, as well as the selection of those that covered the inclusion criteria; 25 publications were chosen for critical analysis, focusing on the description of the intervention, its duration, dose and intensity, follow-up and effectiveness; in order to achieve the planned goal.

The duplicated papers were removed.

As a strategy of analysis, critical reading was used, based on three essential components: interpretation from the type of study, design and identification of instrument characteristics and deciphering tables and graphs [12]; together with the underlining of relevant data and the theoretical note written in the left margin of article [3]. As a result, 19 articles were eliminated, which did not meet the inclusion criteria, so it ended with the inclusion of 6 articles.

The first review was for PI and then corroborated by co-authors.

In Fig. 1 show the flow chart about this review.

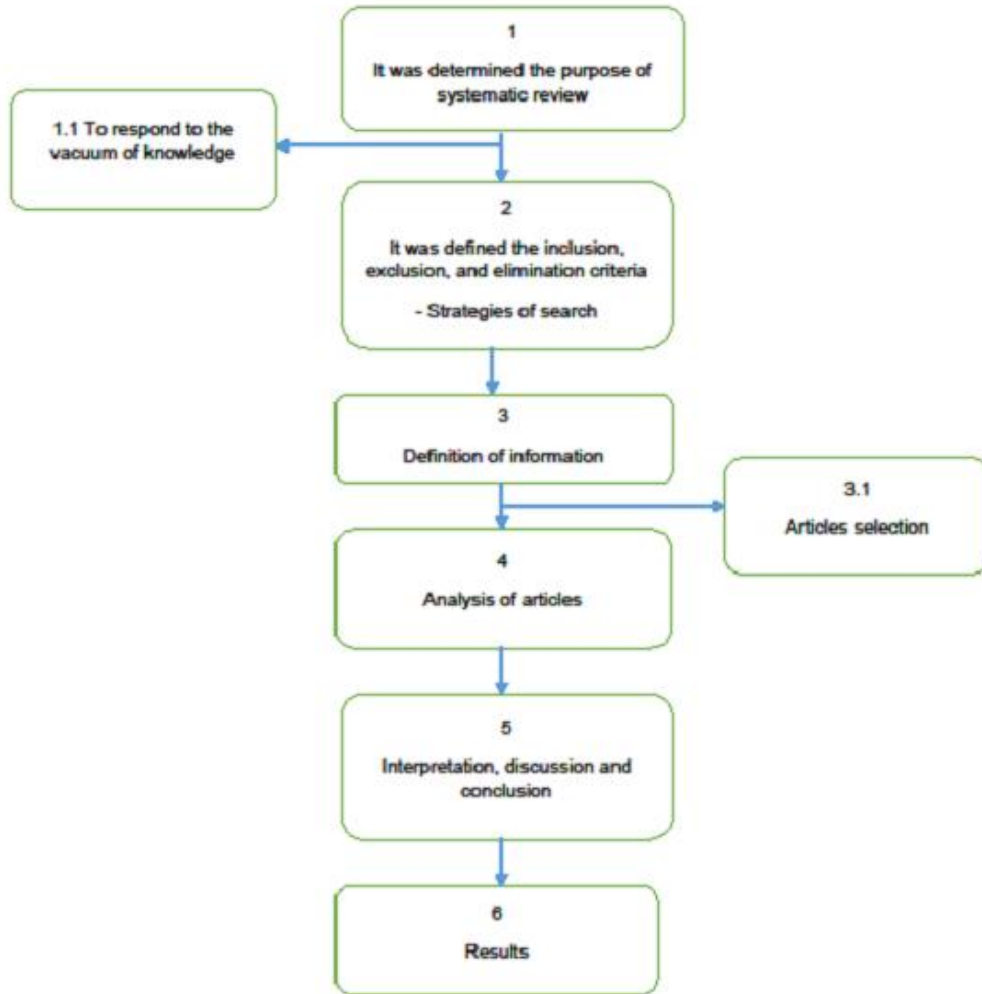


Fig. 1. Flow chart of search of literature and systematic analysis

### 3. RESULTS AND DISCUSSION

The six articles that were selected for the present review are presented in Table 1, which shows that three studies were carried out from 2012 to 2014 and in 2015 three, without finding evidence from 2016. Of these, 100% of

the studies were conducted in the United States, with a level of quality of scientific evidence between III (83%) and IV (17%), two (33%) of the six articles analyzed have a randomized controlled design, the rest comparative, longitudinal and 100% non-probabilistic sampling.

Table 1. Characteristics of the selected articles

Author and year	Country	Evidence level*	Design	Sampling
Carmody et al. [13]	USA	IV	Comparative	Non-probabilistic
Borok et al. [14]	USA	III	Controlled, randomized	Non-probabilistic
Ettner et al. [15]	USA	III	Controlled, randomized	Non-probabilistic
Kuerbis et al. [16]	USA	III	Controlled, randomized	Non-probabilistic
Haug et al. [17]	USA	III	Randomized	Non-probabilistic
Markus et al. [18]	USA	III	Single blind	Non-probabilistic

\*According to the Medical Technology Assessment Center (MTA) [10].

**Table 2. Relationship between alcohol consumption and interventions for the elderly**

Author and year	Population, age range, (sample)	Measurement / Instruments	Type of intervention			Intervention
			Cognitive behavioral	Brief	Educative	
Carmody et al. 2012 [13]	Adults 50 years and over (n = 162)	* Questionnaire of expectations about the interaction between nicotine and other substances [NOSIE] * Nicotine dependence [FTND] * Thoughts about abstinence * Depressive symptoms [BDI]	✓			Behavioral cognitive The interventions used in this study are mainly based on the ASI instrument to characterize consumption patterns of the categories and other variables related to the categories and treatment. Likewise, the ASI was used to evaluate the consumption of 30 days of alcohol and abstinence of 26 weeks, using the breathalyzer to validate the self report of abstinence from consumption.
Borok et al. 2013 [14]	USA	* Cormorbidity risk evaluation [CARET].		✓		Brief intervention This intervention was applied to the groups: control group and intervention group for the intervention group, the CARET instrument was applied, which determined a classification according to a score that ranged from 1 to 7 as at-risk drinkers and 0 for non-risk . Participants in the intervention group were more likely to be in control of the group than it was not necessary to have a change
Ettner et al. 2014 [15]	USA	* Cormorbidity risk evaluation [CARET].			✓	Educative intervention Interventions aimed at assessing the risk of comorbidity were carried out by two groups in the intervention and control group, where the intervention group received via e-mail an educational brochure on alcohol and aging as well as a drinking diary to monitor alcohol consumption. Older adults in the control group conducted the surveys of 3.6 and 12 months received in counseling about alcohol

Author and year	Population, age range, (sample)	Measurement / Instruments	Type of intervention			Intervention	
			Cognitive behavioral	Brief	Educative		Technological
Kuerbis et al. 2015 [16]	USA	* Cormobility risk evaluation [CARET].			✓		Educational intervention with two groups: the participants of the control group were sent a letter informing them that the study was approved to give information about healthy behaviors where it would help reduce health risks as well as a gift card of about \$ 5 and a reminder where they were informed that a follow-up survey would be sent in 3 months For the intervention group, the actions that facilitated the results were a personalized feedback report, two brochures on alcohol education and follow-up in 3 months in addition to the letter and the 5 dollars.
Haug et al. 2015 [17]	USA	* AUDIT				✓	Social support through technology The intervention monitored self-selected alcohol consumption goals at regular intervals that included motivational text messages for therapeutic adherence, proactive phone calls from counselors for participants who did not adhere to their treatment or with the need for further support.
Markus et al. 2015 [18]	USA	* Consumption pattern. TEPT		✓			Brief intervention The intervention consisted of EMDR plus TAU where the evaluations were scheduled before treatment. The effects of both treatments were compared in the indices of the behavior of drinking mediators and moderators predictors of treatment, quality of life, safety, acceptability, feasibility of treatment.

✓Intervention carried out

In Table 2, the findings are reported regarding population, age range, sample, measurement instrument, as well as the type of intervention used. It can be observed that in two studies (33%) the short intervention was used, in two others the educational intervention, in one (17%) the cognitive behavioral and in another the technological one (17%); while the follow-up strategies included email, phone calls, text messages and personal interaction.

Finally, in table 3, the characteristics of the intervention are broken down according to duration, number of sessions, intensity, monitoring and effectiveness. Where the duration was between seven weeks and 12 months, the number of sessions from two to 16, with an intensity of daily to weekly, and three (50%) of the studies reported not having followed up. The interventions showed effectiveness in decreasing alcohol consumption with a small effect size.

The present work has allowed us to synthesize and evaluate the available evidence, in Spanish and English, regarding the therapeutic interventions with effectiveness in the reduction of alcohol consumption, published in the international literature in the period 2012-2016. The evidence shows that they are few intervention studies aimed at older adults for the decrease in alcohol consumption.

A standardized measure of all included studies could not be performed, because each study performed different tests.

The type of interventions designed for the elderly are cognitive-behavioral, educational modality, brief intervention, with the use of printed material and use of technologies in terms of the instruments most used are the CARET and AUDIT. In such a way that the interventions must have specific tools for this age group as strategies to support the treatment and that in turn can facilitate aspects of the coverage and

access to support in reducing the risk of alcohol and other substances.

The findings of this review show that there is a limited number of research on interventions related to alcohol consumption in older adults and its consequences with the consumption of alcohol risk. Proof of this is that there were few studies identified that address interventions in the identification of alcohol risk consumption.

In the same way, it is discussed how the interventions had a positive effect in the identification of the risk of alcohol consumption.

Another important finding was the divergence of results between the different intervention techniques. Although the different investigations were carried out with adults of similar age, most of the results that were presented in the interventions were similar, which consisted of interviews, follow-ups via telephone, emails or messages at home, depended on the activities of daily life of the elderly, Kuerbis et al evaluated an intervention to reduce the alcohol risk consumption in adults 50 years and older. The results reported a significant difference in the results of the intervention group versus control, drinkers at risk (66% versus 88%), excessive alcohol consumption (45% versus 68%) [16].

As well as the results of Severing et al. [18], who in their program to reduce alcohol consumption in outpatients aged 50 to 65 years. It was observed that 41.7% of the participants in the control group had an alcohol risk consumption change in the experimental group was 28.6% (OR = 0.56, 95% 95%CI, 0.16-1.95,  $P = 0.36$ ).

Regarding the educational intervention for the reduction of risk, Ettner et al. [15], observed a significant association in the reduction of risk consumption (56% vs. 67%,  $P \leq .01$ ), the amount of ingested beverages (-2.19 drinks per week,  $P \leq .01$ ; the same that was identified in all the studies reviewed.

**Table 3. Characteristics of the selected articles**

Author and year	Duration	Number of sessions	Frequency	Follow-up	Effectiveness
Carmody et al. [13]	6 months	16	Weekly	Non-probabilistic	Small
Borok et al. [14]	12 months	4	Weekly	Non-probabilistic	Without report
Ettner et al. [15]	3 months	4	Weekly	Non-probabilistic	Small
Kuerbis et al. [16]	3 months	2	Weekly	Non-probabilistic	Without report
Haug et al. [17]	6 months	17	Daily	Non-probabilistic	Without report
Markus et al. [18]	7 weeks	7	Weekly	Non-probabilistic	Small

Regarding the educational intervention for the reduction of risk, Ettner et al. [15], observed a significant association in the reduction of risk consumption (56% vs. 67%,  $P \leq .01$ ), the amount of ingested beverages (-2.19 drinks per week,  $P \leq .01$ ; the same that was identified in all the studies reviewed.

The majority of older adults who decreased alcohol consumption recognized that their consumption habits can cause them harm and the environment can hinder or help reduce alcohol consumption Borok et al. [14] finding similarity with all the results of the mentioned articles, since it was identified that the death of older adults thought that the decrease in alcohol consumption would benefit them.

One disadvantage is that using measures of effect or testing different hypotheses in the selected studies, a joint measure could not be calculated.

#### 4. CONCLUSION

Given the magnitude of the problem, it is suggested to favor intervention studies in Mexico, with scientific rigor, based on theory and favoring a medium to large effect size. An alternative is the design of interventions based on a qualitative approach to the problem of alcohol consumption in older adults, which makes it possible to propose the transversal axes of the intervention from their voice, which is culturally and socially related to the context they live in, thus contributing to the development of effective strategies for the social significance of this phenomenon in older adults.

#### CONSENT

It is not applicable.

#### ETHICAL APPROVAL

It is not applicable.

#### COMPETING INTERESTS

Authors have declared that no competing interests exist.

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*Peer-review history:*  
The peer review history for this paper can be accessed here:  
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