ORIGINAL ARTICLE

Alcohol consumption and alcohol-drug interactions in the elderly attended at the Family Health Strategy

Consumo de álcool e interações álcool-drogas entre idosos atendidos na Estratégia Saúde da Família

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ABSTRACT

Introduction: drugs that can interact with alcohol are many, making the elderly more susceptible to adverse reactions and potentially undesirable interactions between drugs and alcohol with the consumption of this substance. **Objectives:** to determine the prevalence of alcohol consumption and potential alcohol-drugs interactions, describing and discussing them, considering the potential severity among elderly enrolled in the Family Health Strategy in the municipality of Timóteo, MG. **Methods and patients:** this was a cross-sectional study that used a stratified random sample. A total of 272 home interviews were carried out using a questionnaire that contained identification, sociodemographic, alcohol and drugs consumption questions. The potential alcohol-drug interactions were analyzed using the Micromedex®, DrugDigest®, and Medscape® softwares. **Results:** the overall prevalence of any amount of alcohol consumption was 8.4%, and 11% when considering only individuals who were taking drugs. Different potential alcohol-drugs interactions occurred in 4.4% times in a total of 12 events, of which 50% were light, 33.3% moderate, and 16.6% severe. The most frequent interaction was between alcohol and acetylsalicylic acid, considered of low gravity. The most frequently involved therapeutic classes in potential alcohol-drug interactions were psychiatric and antidiabetic drugs, in addition to acetylsalicylic acid. **Conclusion:** the prevalence of potential alcohol-drug interactions found was relevant in the elderly, demanding attention concerning the examination of habits related to alcohol consumption in the steps of prescribing and dispensing drugs performed by health professionals.

Key words: Pharmaceutical Preparations; Alcoholic Beverages;Prevalence; Drug-Related Side Effects and Adverse Reactions; Aged; Health of the Elderly; Family Health Strategy; Primary Health Care.

RESUMO

Introdução: *os fármacos que podem interagir com o álcool são muitos, fazendo com que o consumo dessa substância pelos idosos possa torná-los mais suscetíveis a reações adversas e a potenciais interações indesejáveis entre álcool e medicamentos.* ***Objetivos:*** *determinar a prevalência de consumo de álcool, bem como de potenciais interações álcool-drogas, descrevendo-as e discutindo-as, inclusive em relação ao potencial de gravidade, entre idosos cadastrados na Estratégia Saúde da Família do município de Timóteo, MG.* ***Métodos e casuística:*** *estudo do tipo transversal que utilizou amostra aleatória simples estratificada. Foram realizadas 272 entrevistas domiciliares, por meio de formulário que continha perguntas de identificação, sociodemográficas e questões relacionadas ao consumo de álcool e medicamentos. As potenciais interações álcool-drogas foram analisadas por meio dos softwares Micromedex®, DrugDigest® e Medscape®.* ***Resultados:*** *a*

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prevalência global de utilização de qualquer quantidade de bebidas alcoólicas foi de 8,4% e de 11% quando se consideraram apenas os indivíduos que tomavam medicamentos. Potenciais interações álcool-drogas diferentes ocorreram em 4,4% das vezes, perfazendo o total de 12 ocorrências, das quais 50% eram leves, 33,3% moderadas e 16,6% graves. A interação que ocorreu com mais frequência foi de álcool com ácido acetilsalicílico, considerada de baixa gravidade. As classes terapêuticas mais frequentemente envolvidas em potenciais interações álcool-drogas foram psicofármacos e antidiabéticos, além do ácido acetilsalicílico. **Conclusão***: a prevalência de potenciais interações álcool-drogas encontrada foi relevante entre idosos, demandando atenção quanto à verificação de hábitos relacionados ao consumo de bebidas alcoólicas nas etapas de prescrição e dispensação de medicamentos realizados por profissionais de saúde.*

Palavras-chave: *Preparações Farmacêuticas; Bebidas Alcoólicas; Prevalência; Efeitos Colaterais e Reações Adversas Relacionados a Medicamentos; Idoso; Saúde do Idoso; Estratégia Saúde da Família; Atenção Primária à Saúde.*

INTRODUCTION

The growth of the elderly population is a worldwide trend. In Brazil, between 1980 and 2000, the population aged 60 and older increased from 7.3 million to over 14.5 million in 2000. Projections from the World Health Organization (WHO) estimates that the country must have the sixth largest elderly population in the world and first in Latin America in 2025, with about 32 million (15%) people aged over 60, which will require improvements in the health care model provided in the country for the elderly.[1]

Although there is a tendency to reduce alcohol consumption in the elderly in several countries[2-4], the increase in this population group may require specific interventions by health professionals in order to detect the harmful effects arising from this practice. An American study showed that more than one-third of elderlies did not receive any advice to avoid alcohol use when receiving prescriptions or medications.[5]

Alcohol consumption can compromise the health of the elderly resulting from its ability to trigger and/or worsen diseases, compromising their functional status, and predisposing to potential drug interactions, defined as situations in which the effects of a drug are modified, or leads to the emergence of new ones, because of another drug, some food, drink, or an environmental chemical agent.[6]

Drug interactions involving the combined use of alcohol and drugs can be of various types and occur even with the intake of small amounts of this drink. When taken chronically, alcohol can induce the biotransformation of other drugs metabolized by the P450 cytochrome enzyme system, and it is through this mechanism that alcohol can interfere with the metabolism of paracetamol (acetaminophen), leading to increased reactive hepatotoxic metabolites. The acute use of this beverage can inhibit the metabolism of other drugs and increase the sedative effect of benzodiazepines, phenothiazines, and tricyclic antidepressants because pharmacodynamic mechanisms also produce additive depression of the central nervous system when these drugs are used. The concomitant use of alcohol and nonsteroidal anti-inflammatory drugs (AINEs), including acetylsalicylic acid (AAS), may increase bleeding time and predispose to inflammation and gastric bleeding. Ethanolism may increase in patients using H2 receptor blockers. The disulfiram effect due to the accumulation of acetaldehyde by the inhibition of the aldehyde dehydrogenase enzyme also represents an important alcohol-drug interaction and can occur when drugs are ingested as metronidazole, some cephalosporins, and sulfonylureas.[7,8]

The simultaneous use of drugs and alcohol has been thoroughly investigated. In the United States, a study conducted through a questionnaire sent and received by the Mail Service to retired elderlies showed that 47% of subjects consumed alcohol and 38% used drugs with a potential alcohol-drug interaction.[8] Other studies in that country found a prevalence of potential alcohol-drug interaction between 19% and 40% between elderlies.[9-12] Recently, a Finnish study showed that 62.6% of elderlies took, at least, one drug together with alcohol; and according to a high, moderate, or low risk, depending on the ingested dose, presented 42.2, 34.9, and 52.7% of potential alcohol-drug interactions, respectively.[13]

In a Brazilian study on alcohol abuse, 11.6% of individuals who consumed over 30 grams of ethanol/day were elderlies.[4] In another study, the prevalence of binge drinking defined as the consumption of five or more drinks by men, or four or more drinks by women, on a single occasion, ranged from 13.7 to 27.1% among elderlies.[14] Another study in Brazil showed 46 possible drug interactions involving drugs/alcohol, of which, 54.3% were resulting from self-medication. However, the study population was composed of individuals of all ages.[15] Studies on the prevalence of alcohol consumption among elderly people in Brazil are scarce, and most of them consider only the massive use or dependence of alcoholic beverages. Almeida and Coutinho found frequencies of alcohol use and

alcoholism of 37.6 and 2%, respectively, in individuals aged 50 or older.[16] A study conducted in João Pessoa found the prevalence of 9.4% in consumption of any amount of drink among individuals aged 60 and older.[17] As to gender, alcoholism – understood as the consumption of high doses of alcohol – was detected in 11.7% of elderly men and 0.7% of elderly women.[18]

Thus, despite the reduction in alcohol consumption with increasing age, the importance of determining the prevalence of alcohol consumption and potential alcohol-drug interactions is emphasized, describing and discussing them, including considering its potential severity among the elderlies attending the Family Health Strategy (ESF), which is considered the structuring model of primary care and the gateway into the public health system in Brazil.

METHOD AND SAMPLE

This was a transversal population-based study using a simple random stratified sample, representative of the elderly population enrolled in 15 ESF teams in the municipality of Timóteo – MG.

Because this study was conducted in conjunction with another study that aimed to determine potential drug-drug interactions, the sample size calculation was designed considering the overall prevalence of drug interactions and was proportional to the number of elderlies enrolled in each team (stratum) of the municipality, according to the latest census carried out by community health workers. Randomization was performed using the software features in Microsoft Excel®, 2010. Home interviews were conducted with subjects over 60 years of age, through a form and after the consent of subjects, between April and June of 2012.

The form contained questions related to personal identification, sociodemographic, and consumption of drugs and alcohol data.

According to the Micromedex®[19], DrugDigest®[20], and Medscape®[21] softwares, the potential alcohol-drug interactions were classified as potentially serious (those that could present a risk of death and/or require urgent medical intervention to minimize serious adverse effects), moderate (those that could result in the exacerbation of patient's clinical conditions and/or require change in therapy), and light (those that show limited clinical effects that could include increasing the frequency or severity of adverse effects but which would not require major changes in therapy).[2]

Data analysis consisted of the construction of frequency distribution tables, determination of prevalence rates, and assessment of potential interactions. The research protocol was approved by the Research Ethics Committee of the Eastern University Center of Minas Gerais (Unileste/MG), under number 46.267.11.

RESULTS

A total of 272 patients were interviewed. Table 1 shows the frequency distribution of demographic and socioeconomic data found in this population.

Table 1 - Distribution of frequency of demographic and socioeconomic indicators in a sample of elderlies enrolled in the ESF of the municipality of Timóteo, MG

Indicators	N	Percentage (%)
Gender		
Female	157	58.6
Male	111	41.4
Age (years)		
60 - 70	132	48.7
70 - 80	93	34.3
+ 80	46	17
Marital status		
Married	164	60.3
Not married	12	4.4
Living together	3	1.1
Divorced	13	4.8
Widower	80	29.4
Number of residents in the residence		
1	22	8.1
2	91	33.6
3	56	20.7
4 or more	102	37.6
Level of education		
None	66	23.2
1-4	150	55.1
4-11	48	17.6
>11	11	4.0
Monthly personal income		
0-1 minimum wage	20	7.4
1-2 minimum wages	115	42.3
2-3 minimum wages	36	13.2
3- 4 minimum wages	67	24.6
Do not know	5	1.8
Has no income	29	10.7

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Table 1 - Distribution of frequency of demographic and socioeconomic indicators in a sample of elderlies enrolled in the ESF of the municipality of Timóteo, MG

Indicators	N	Percentage (%)
Family income		
0-1 minimum wage	12	4.4
1-2 minimum wages	138	50.7
2-3 minimum wages	0	0
3- 4 minimum wages	71	26.1
Do not know	44	12.2
Has no income	7	2.6

With regard to the number of drugs consumed simultaneously, the majority (78.7%) consumed from 2 to 10 drugs simultaneously, and only 3.3% of individuals consumed more than ten drugs simultaneously. The drugs were mostly administered (82.1%) by the person interviewed. As for the frequency of alcohol intake in the previous four months, 208 people responded they had never consumed alcohol during this period. The overall prevalence of consumption of any amount of alcohol was found to be 8.4%, and the prevalence of consumption of any amount of alcohol in the elderly who took medications was 11% (Table 2).

Table 2 - Distribution of frequency of habits related to alcohol and drugs consumption in a sample of elderly enrolled in the ESF of the municipality of Timóteo, MG

Habits	N	Percentual (%)
Number of medications consumed at the same time		
No medication	29	10.7
1 medication	19	7
1 medicament + alcohol	1	0.4
2-4 medications	115	42.3
5-10 medications	99	36.4
> 10 medications	9	3.3
Person offering/giving the medicine		
Self	184	82.1
Family member	0	0
Neighbor	37	16.5
Others	3	1.3
Alcohol intake frequency in the last four months		
Never	208	90
1 time/month or less	4	1.7
2-4 times/month	4	1.7
1 time/week	5	2.2
2-4 times/week	3	1.3
4 or more times/week	7	3.0

The overall prevalence of potential drug-alcohol interactions was 4.4%, corresponding to 12 occurrences among the 272 individuals involved. Of these, six (50%) were light, three (25%) were moderate, and three (25%) were severe.

When considering only the elderly who reported drinking alcohol in the past four months, the prevalence of 52.1% of potential alcohol-drug interactions is observed.

The amount and severity of the classification of potential interactions found are presented in Table 3.

Table 3 - Potential drug-alcohol interactions in a sample of elderlies enrolled in the ESF of the municipality of Timóteo, MG analyzed by the Drugdigest®, Medscape®, and Micromedex® software

Light potential alcohol-drug interactions	Moderate potential alcohol--drug interactions	Severe potential alcohol-drug interactions
Acetylsalicylic acid + alcohol (5)	Alcohol + Formoterol (1)	Alcohol + Insulin (1)
Alcohol + nifedipine (1)	Alcohol + Alprazolam (1)	Alcohol + Metformin (1)
	Alcohol + Clonazepam (1)	Alcohol + Glibenclamide (1)

DISCUSSION

The prevalence of consumption of any amount of alcohol in this study (8.4%) was similar to that described in the literature and in view that the values can be quite variable according to the criteria adopted. Leite-Cavalcanti et al. evaluated 117 individuals aged between 60 and 89 years and found a prevalence of 9.4%.[17] In a study conducted in Bahia, Ferreira et al. found a prevalence of 21% consumption of any amount of alcohol in a sample of 38 elderlies.[23] Some reasons can justify the difference in prevalence rates found: methodological heterogeneity among studies, both in relation to the sample and the adopted criteria (e.g.: some authors considered the consumption of any amount of alcohol by older people in the last 12 months and others considered it over the past four months), and socio-cultural and economic characteristics of different studied populations that can decisively influence on issues related to consumption habits. Moreover, most national studies adopt alcoholism or ingestion of large amounts of ethanol in a short period of time ("binge drinking") as the main variables without considering that alcohol may facilitate the occurrence of

drug interactions and damage the health of the elderly even in small quantities.[4,14,16,18]

In addition to the limitations already described, other difficulties inherent in the household survey are highlighted. Consideration of the possibility of other biases should be given, such as responses and especially memory, underestimating the obtained results.[23]

Psychiatric drugs, antidiabetic, and AAS were the most associated with potential alcohol-drug interactions. Immonen et al. also found data compatible with the data presented here, except for the high frequency of use of warfarin by the elderly identified in their study.[13] In addition to antacids and AINEs, Adams et al. also found a high frequency of interactions between alcohol and AAS, anti-diabetics, and hypnotic-sedatives. However, the highest prevalence of this type of event was between alcohol and anti-hypertensives, similar to the rates found between alcohol and antidiabetic in this study.[7] Because most interactions were alcohol-disease and not alcohol-drugs, it is noteworthy that the software used for the analysis of interactions did not detect, in addition to nifedipine, deleterious associations between alcohol and anti-hypertensives.

AAS was the medicine with the most commonly associated potential alcohol-drug interactions observed in this study. Despite that the drug interaction detection software does not consider the dose of the investigated substances, it is known that even in small doses (antithrombotic), this association presents potential harm to the gastric mucosa, which predisposes to lesions and gastrointestinal bleeding. This interaction was considered of low severity, as well as that with nifedipine, which could have increased blood levels by decreasing metabolism. Nifedipine was removed from the National List of Essential Drugs of the Ministry of Health (2012) as an anti-hypertensive agent.[24] Currently, there is the tendency to replace this drug with amlodipine, which shows better drug dosage and adverse effect profile, making this interaction, even more, irrelevant in the clinical practice.

The interactions between psychotropics (alprazolam and clonazepam) were considered of moderate severity by the possibility of alcohol to enhance depression of the central nervous system caused by benzodiazepines. The sedation given by these drugs, especially when enhanced by alcohol, may interfere with the balance and vigil state in the elderly, predisposing to falls and injuries arising from falls. The combination of alcohol with formoterol, a beta-2 adrenergic agonist agent of long-term effect used as an inhalant, could cause changes related to sedation according to one of the softwares used. However, the program itself indicates that the interaction is not well-understood. Because the medication is an inhalant, it is believed that the systemic absorption and, consequently, the possibility of interactions with alcohol are negligible, compared to this drug.

All potential interactions of alcohol with antidiabetic agents were considered highly dangerous. The use of glibenclamide could lead to a disulfiram-like reaction and changes in the blood glucose levels, particularly hypoglycemia. The concomitant use of insulin and metformin with alcohol could also increase, in the first case the risk of hypoglycemia, and in the second case the chance of lactic acidosis.

It is worth mentioning the impossibility, based on the design adopted for the study (epidemiological and cross-sectional), to verify the clinical repercussions of potential alcohol-drug interactions on the health status of the elderly. The problems and adverse effects from alcohol-drug interactions depend not only on the quality but also on the quantity (dose), regularity, and concurrent consumption of these substances.[13]

CONCLUSIONS

This study revealed a significant prevalence of alcohol consumption and potential alcohol-drug interactions among the elderly, confirming the data described in the literature. The therapeutic classes most frequently involved in potential alcohol-drug interactions were psychiatric drugs and antidiabetic agents, in addition to AAS. Alcohol consumption and its potential interactions with other drugs can compromise the safety and health of older people, who already have deficits related to drugs biotransformation and elimination. Caution regarding the verification of habits related to alcohol consumption should be emphasized in drugs prescribing and dispensing processes carried out by health professionals in order to avoid associations that could compromise people's quality of life in this age group.

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