

Original article

Alcohol consumption and Mediterranean Diet adherence among health science students in Spain: the DiSA-UMH Study



Alexander Scholz^a, Eva Maria Navarrete-Muñoz^{a,b,*}, Manuela Garcia de la Hera^{a,b}, Daniel Gimenez-Monzo^a, Sandra Gonzalez-Palacios^a, Desirée Valera-Gran^a, Laura Torres-Collado^a, Jesus Vioque^{a,b}

^a Department of Public Health, Miguel Hernandez University, Campus San Juan, Alicante, Spain

^b CIBER de Epidemiología y Salud Pública (CIBERESP), Spain

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ABSTRACT

Objective: To describe the association between consumption of different alcoholic beverages and adherence to the Mediterranean diet.

Methods: A cross-sectional analysis was conducted of the baseline data of the DiSA-UMH study, an ongoing cohort study with Spanish health science students (n = 1098) aged 17–35 years. Dietary information was collected by a validated 84-item food frequency questionnaire. Participants were grouped into non-drinkers, exclusive beer and/or wine drinkers and drinkers of all types of alcoholic beverages. Mediterranean diet adherence was determined by using a modification of the relative Mediterranean Diet Score (rMED; score range: 0–16) according to consumption of 8 dietary components. We performed multiple linear and multinomial regression analyses.

Results: The mean alcohol consumption was 4.3 g/day (SD: 6.1). A total of 19.5%, 18.9% and 61.6% of the participants were non-drinkers, exclusive beer and/or wine drinkers and drinkers of all types of alcoholic beverages, respectively. Participants who consumed beer and/or wine exclusively had higher rMED scores than non-drinkers (β : 0.76, 95%CI: 0.25–1.27). Drinkers of all types of alcoholic beverages had similar rMED scores to non-drinkers. Non-drinkers consumed less fish and more meat, whereas drinkers of all types of alcoholic beverages consumed fewer fruits, vegetables and more meat than exclusive beer and/or wine drinkers.

Conclusions: The overall alcohol consumption among the students in our study was low-to-moderate. Exclusive beer and/or wine drinkers differed regarding the Mediterranean diet pattern from non-drinkers and drinkers of all types of alcohol. These results show the need to properly adjust for diet in studies of the effects of alcohol consumption.

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Consumo de alcohol y dieta mediterránea en estudiantes de ciencias de la salud en España: estudio DiSA-UMH

RESUMEN

Objetivo: Explorar la asociación entre el consumo de diferentes bebidas alcohólicas y la adherencia a la dieta Mediterránea.

Métodos: Se analizaron transversalmente los datos basales del estudio DiSA-UMH (n = 1098) de 17–35 años. Para recoger información dietética se utilizó un cuestionario de frecuencia de alimentos de 84 ítems validado previamente. Se agrupó a los participantes en no bebedores, bebedores exclusivos de cerveza o vino (o ambos), y bebedores de todo tipo de bebidas. La adherencia a la dieta mediterránea se determinó usando una modificación de la *relative Mediterranean Diet Score* (rMED). Se utilizó regresión lineal múltiple y multinomial.

Resultados: La media de alcohol fue de 4,3 (6,1) g/día. El 19,5%, el 18,9% y el 61,6% de los participantes fueron clasificados en no bebedores, bebedores exclusivos de cerveza o vino, y bebedores de todo tipo de bebida, respectivamente. Los participantes clasificados en bebedores exclusivos de cerveza o vino tuvieron una mayor rMED que los no bebedores (β : 0,76; intervalo de confianza del 95%: 0,25–1,27). Los participantes clasificados en bebedores de todo tipo de bebidas tuvieron una rMED similar a los no bebedores. En comparación con los bebedores exclusivos de cerveza o vino, los no bebedores consumían menos pescado y más carne, mientras que los bebedores de todo tipo consumían menos frutas, vegetales y más carne.

Palabras clave:

Consumo de alcohol
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* Corresponding author.

E-mail address: enavarrete@umh.es (E.M. Navarrete-Muñoz).

Conclusiones: La ingesta de alcohol entre los estudiantes de nuestro estudio fue en general baja-moderada. Los bebedores exclusivos de cerveza o vino presentaron un patrón dietético mediterráneo diferenciado del de los no bebedores y los bebedores de todo tipo de bebidas, lo que justificaría ajustar correctamente por la dieta en estudios sobre los efectos del consumo de alcohol.

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Introduction

Alcohol consumption is a serious worldwide public health problem because of its high prevalence and the substantial physical and psychosocial health burden caused by its harmful use.¹ Alcohol drinking is a risk factor associated to more than 200 pathologies.¹ In many cases exists a dose-response relationship, especially for the alcohol attributable cancers.² For example, it has been demonstrated that yet one alcoholic drink per day increases the risk for female breast cancer.³ Young people are a vulnerable collective and the negative effects of alcohol consumption may be more pronounced among them.⁴ Consequences include an elevated risk of other drug abuse, suffering car accidents as a result of driving under the influence of alcohol and higher long term risks of developing chronic alcohol consumption or alcohol addiction.⁴ Additionally, alcohol consumption at younger ages interferes with the complex process of brain development.⁵ Some U.S. studies have shown higher rates of alcohol abuse and alcoholism in university students than in non-students.⁶ Interestingly, despite their training in health issues, medical students also show alarming rates of alcohol intake although recent studies in health science students are scarce.⁷

In contrast, the benefits of moderate alcohol consumption have been demonstrated in relation to cardiovascular diseases.⁸ However, the balance between potential harms and benefits of moderate alcohol consumption is a complex matter and internationally consistent recommendations still do not exist.⁹ The Mediterranean diet includes daily moderate alcohol consumption, especially of red wine.¹⁰ This dietary pattern plays an important role in the reduction of cardiovascular risk which was recently confirmed by a large randomized intervention trial.¹¹ An important question in this aspect is whether the beneficial effects of moderate alcohol consumption are caused by the alcohol itself, by non-alcoholic drink components or by associated dietary or lifestyle factors. Many studies observed that the preferences for certain alcoholic beverages, which is usually defined as more than 50% of the total alcohol intake coming from a particular beverage, are associated with certain dietary or lifestyle habits.^{12,13} For example, it has been reported that wine consumption is associated with healthier dietary and lifestyle habits.^{13–15} This observation could partially explain the described health benefits of moderate alcohol or red wine consumption or it may even introduce confounding.^{14–16} On the other hand, a prospective Spanish study did not identify relevant differences between alcoholic beverage preference and the adherence to the Mediterranean dietary pattern and concluded that the positive cardiovascular effects should not be attributed to an overall healthier dietary pattern.¹⁷ Hence, more research is needed to explore the association between the intake of specific alcoholic beverages and specific dietary patterns.

In the present study, we aimed to describe the alcohol consumption among university health science students using the baseline data of a Spanish prospective epidemiological cohort (DiSA-UMH Project) and to explore the association between the consumption of alcoholic beverages and Mediterranean Diet adherence.

Methods

Study population

The DiSA-UMH Project (*Dieta, Salud y Antropometría* - Universidad Miguel Hernández) is a prospective cohort study of health science university students from the Miguel Hernández University in Alicante, Spain. Baseline information was collected for 1204 subjects (868 female and 336 male) aged 17 to 35 years during the enrolment period from 2006 to 2012. The study rationale and design has been previously described in detail.^{18,19} Briefly, the recruitment took place during the lecture period from different health science degrees at the San Joan d'Alacant Campus of Miguel Hernández University such as Medicine (72%), Physiotherapy (10%), Master of Public Health program (9%), Occupational Therapy (5%) and Pharmacy (4%). After we excluded the subjects with missing data for relevant variables and extreme values for mean daily energy intake (<500 and >3500 kcal/day for women, <800 and >4000 kcal/day for men) which indicate misreporting,²⁰ 1098 students (91.2%) between 17 and 35 years (791 female and 307 male) were included in the present analysis. All subjects gave informed consent and responded to a self-administered questionnaire at baseline. The study was approved by the ethics committee of the Miguel Hernández University.

Dietary assessment

The alcohol consumption and dietary intake were evaluated using a self-administered semi-quantitative food-frequency-questionnaire (FFQ) completed at baseline. The FFQ was an adapted version of the questionnaire by Willett et al.²¹ and validated for Spanish populations.^{22,23} Nutrient values for each food in the questionnaire were mainly obtained from the food composition tables of the US Department of Agriculture and other Spanish sources.^{24,25}

Assessment of alcohol intake

The FFQ included the following types of alcoholic drinks in order to measure total alcohol intake: red wine (one drink = 125 ml), other wines (one drink = 125 ml), beer (one drink = 200 ml), medium alcoholic drinks such as sherry, dry wines or vermouth (one drink = 50 ml) and spirits such as brandy, gin, rum, whisky or vodka (one drink = 50 ml). The validity and reproducibility of the FFQ used in the present study was satisfactory when comparing the FFQ with 3 to 9 repeated 24-hours recall. The correlation coefficients for the 1-year reproducibility and validity of mean alcohol intake in grams per day were 0.78 and 0.58, respectively. Subjects were categorized into 3 groups by alcohol consumption: non-drinkers (alcohol intake = 0 g/day), exclusive beer and/or wine drinkers (only beer, only wine or only beer and wine consumption) and drinkers of all types of alcoholic beverages (only high graduation drinks or only medium graduation drinks or drinks of various categories). For an additional analysis, we categorized the subjects according to their alcoholic beverage preference which we defined as >50% of the

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