ISSNe: 2182.2883 | ISSNp: 0874.0283
Available: https://doi.org/10.12707/RIV17110

RESEARCH PAPER (ORIGINAL)
ARTIGO DE INVESTIGAÇÃO (ORIGINAL)

Screening and brief interventions for reducing alcohol consumption in patients admitted to an emergency department

Screening e intervenções breves na redução do consumo de álcool em utentes num serviço de urgência

Identificación sistemática e intervenciones breves en la reducción del consumo de alcohol en usuarios en un servicio de urgencias

Teresa Margarida Gaspar Esgaio*; Tereza Maria Mendes Diniz de Andrade Barroso**

Abstract

Background: Emergency departments (ED) admit the largest number of individuals presenting any type of injury directly or indirectly related to harmful alcohol consumption. A potential emergency episode may be the key moment for a change in the consumption pattern.
Objectives: To evaluate the effect of brief interventions (BI) in reducing alcohol consumption to low-risk levels in patients admitted to an ED.
Methodology: A pre-experimental study, with one-group pretest-posttest design, was conducted. A total of 215 interviews were performed to a non-randomized sample of 9 patients with harmful or hazardous risk consumption assessed using the Alcohol Use Disorders Identification Test (AUDIT). BI were performed by a nurse with specific training.
Results: Three patients were referred for consultation due to likely alcohol use disorder. At the 3-month follow-up, a statistically significant reduction in risk levels was observed (p = 0.0017).
Conclusion: The results suggest a positive effect of BI in reducing alcohol consumption to low-risk levels in patients admitted to the ED.

Keywords: alcohol drinking; evaluation of the efficacy-effectiveness of interventions; emergency service, hospital; nursing

Resumo

Enquadramento: Os serviços de urgência (SU) admitem o maior número de indivíduos que apresentam qualquer tipo de lesão, direta ou indiretamente, relacionada com o consumo de álcool de risco. Um potencial episódio de urgência pode ser o momento chave para uma mudança de padrão de consumo.
Objetivos: Avaliar o efeito das intervenções breves (IB) na redução do consumo de risco, nos utentes admitidos num SU.
Metodologia: Estudo pré-experimental, avaliação antes e após com grupo único. Foram realizadas 215 entrevistas a uma amostra não aleatória de 9 participantes com nível de risco e nocivo de álcool, avaliados através do *Alcohol Use Disorders Identification Test* (AUDIT). As IB foram realizadas por um enfermeiro com treino específico.
Resultados: Três utentes foram referenciados para consulta por provável perturbação de uso de álcool (PUA). Três meses após as IB, verificou-se uma redução dos níveis de risco estatisticamente significativa (p = 0,0017).
Conclusão: Os resultados sugeriram efeito positivo das IB na diminuição do consumo de risco de álcool dos utentes admitidos no SU.

Palavras-chave: consumo de bebidas alcoólicas; avaliação de eficácia-efetividade das intervenções; serviço hospitalar de emergência; enfermagem

Resumen

Marco contextual: Los servicios de urgencias (SU) son los que más admiten a individuos que presentan cualquier tipo de lesión de riesgo relacionada directa o indirectamente con el consumo de alcohol. Un posible caso de urgencias puede ser el momento clave para un cambio en el patrón de consumo.
Objetivos: Evaluar el efecto de las intervenciones breves (IB) en la reducción del consumo de riesgo en los usuarios admitidos en un SU.
Metodología: Estudio preexperimental, evaluación antes y después con un único grupo. Muestra no aleatoria. Se realizaron 215 entrevistas. En el estudio se incluyen 9 participantes con nivel de riesgo y nocivo de alcohol, evaluado a través del *Alcohol Use Disorders Identification Test* (AUDIT). Las intervenciones las llevó a cabo un enfermero con formación específica.
Resultados: Se indicaron tres usuarios para consulta por probable alteración del consumo de alcohol (PUA). Tres meses después de las IB, se verificó una reducción de los niveles de riesgo estadísticamente significativa (p = 0,0017).
Conclusión: Los resultados mostraron un efecto positivo de las IB en la disminución del consumo de riesgo de alcohol de los usuarios admitidos en el SU.

Palabras clave: consumo de bebidas alcohólicas; evaluación de eficacia-efectividad de intervenciones; servicio de urgencia en hospital; enfermería

*MSc., Nurse, Hospital Center of Leiria, Alcobaça Unit, 2460-051, Alcobaça, Portugal [teresa.esgaio@sapo.pt]. Contribution to the article: literature search, data treatment, analysis and discussion, article writing.
**Ph.D., Adjunct Professor, Nursing School of Coimbra, Coimbra, Portugal [tbarroso@esenfc.pt]. Contribution to the article: literature search, data collection, data treatment, analysis and discussion, article writing. Morada para correspondência: Rua Comercial, nº 18 - Bairro da Liberdade, 3020-112, Coimbra, Portugal.

Received for publication: 17.12.17
Accepted for publication: 09.03.18

Introduction

Globally, harmful use of alcohol causes approximately 3.3 million deaths every year. In addition to the loss of lives, harmful use of alcohol is also associated with a high number of injuries and diseases, both directly and indirectly (World Health Organization [WHO], 2014).

The world's highest alcohol consumption levels are found in the developed world, particularly in Europe, with a total alcohol per capita consumption of 10.9, which is way above the world average (6.2; WHO, 2014) with a negative impact on the citizens' health and the economy (Anderson, Braddick, Reynolds, & Gual, 2012).

As a psychoactive substance, alcohol influences the psychomotor skills, namely coordination and reaction times. Its harmful consumption is one of the leading causes of road traffic accidents and general trauma (Cherpitel, 2007). It is estimated that 45% of patients consumed alcohol prior to being admitted to the emergency department (ED; WHO, 2014).

ED admit the largest number of individuals presenting any type of injury associated, directly or indirectly, with excessive alcohol consumption (Woolard et al., 2013; Cherpitel, 2007). A potential emergency episode can be the key moment for a change in the consumption pattern for many risky drinkers; however, health professionals rarely question patients about their drinking habits (Nilsen et al., 2008).

Some countries have already implemented protocols in their ED such as the Screening and Brief Intervention and Referral to Treatment (SBIRT), with some proven effectiveness. Despite the lack of homogeneity in the protocols, brief interventions (BI) have shown positive results in reducing alcohol consumption above the recommended levels (Landy, Davey, Quintero, Pecora, & McShane, 2016). On the other hand, the ED specific characteristics represent several obstacles to the results on their effectiveness, particularly in the long term. In Portugal, the practical application of this type of intervention is scarce. Some SBIRT protocols were implemented in primary care (PC) services; however, no evaluation studies have been developed in the ED. The objective of this study was to evaluate the effect of BI in reducing alcohol consumption to low-risk levels in patients admitted to ED.

Background

Alcohol consumption poses a burden in terms of mortality, morbidity, and disability (Anderson et al., 2012). In 2012, 139 million disability-adjusted life years (DALYs) were attributable to alcohol consumption (WHO, 2014).

In Portugal, in 2010, 21.862 years lived with disability (YLD) were attributable to risky alcohol consumption (Carvalho, Mateus, & Xavier, 2015). In the latest Portuguese survey (National Health Inquiry on the Use of Psychoactive Substances – Portugal 2012), data pointed to an alcohol consumption of 12.9 liters of pure alcohol *per capita* every year, placing Portugal as one of the countries with the highest alcohol consumption rates (Serviço de Intervenção nos Comportamentos e nas Dependências [SICAD], 2015).

The higher the consumption of alcohol, the greater the likelihood of alcohol-related problems (Anderson et al., 2012). Alcohol consumption above the recommended levels is among the five most common risk factors for disease, disability, and death. In addition to these consequences for drinkers, its social impact is also devastating as all individuals who are part of the consumer's life also face severe physical, social, and economic consequences (WHO, 2014).

Alcohol interferes with the psychomotor skills, influencing coordination and reaction times and leading to injuries ranging from simple falls to serious road traffic accidents or episodes of violence. Although alcohol is a depressant of the central nervous system, it promotes disinhibition, thus increasing the likelihood of individuals putting themselves in dangerous situations, engaging in fights, underestimating risks and, consequently, increasing the risk of intentional or unintentional injuries; it is also one of the leading causes of road traffic accidents and general trauma (Cherpitel, 2007). As many of these individuals end up having to use the ED, it is important to detect these risky consumers in

these contexts (Wojnar & Jakubczyk, 2014).
According to a WHO study, which included 12 countries (not Portugal), it is estimated that approximately 45% of patients had consumed alcohol prior to their ED admission (WHO, 2014).
Although ED have a major potential for the identification of at-risk drinkers, health professionals rarely question patients about their drinking habits (Nilsen et al., 2008).
BI derived from the complex and demanding need of health services to provide practical and effective interventions for reducing hazardous and harmful risk consumption. Originally intended for PC, BI have been implemented in different contexts and have become an effective intervention with very satisfactory cost-benefit results.
In Portugal, although BI are still not widely disseminated in health care services, in 2012, the Directorate-General for Health (DGS) issued Norm No. 30/2012, updated in 2014, on the early identification and brief intervention for excessive alcohol consumption in health care services. This norm recommends screening the entire population, developing BI according to the identified alcohol consumption risk levels, and/or referring for treatment according to the risk of alcohol consumption.
BI are based on the assumptions of the cognitive-behavioral theory and motivational approach and are developed in several steps including: feedback and patient's education and motivation for changing behaviors (Babor & Higgins-Biddle, 2001; Barroso, Rosa, Jorge, & Gonçalves, 2012). The DGS, in accordance with WHO guidelines, set as a low-risk pattern the consumption of two standard drinks or 20 grams of alcohol per day for men, and one standard drink for women, which is equivalent to 10 grams of alcohol. Alcohol is contraindicated in pregnant women, adolescents, in the presence of dependence, and in the presence of diseases or medication requiring abstinence (DGS, 2014).
Hazardous drinking is a pattern of alcohol consumption that may increase the risk of harmful physical and/or mental consequences if consumption persists, but still without clinical manifestations. It is considered an important public health indicator for early intervention in this domain. Harmful use refers to alcohol consumption that results in consequences to the physical and mental health of individuals and families, but may still not meet the criteria for alcohol use disorder (AUD).

Research hypothesis

Individuals undergoing BI reduce their risk levels of alcohol consumption.

Methodology

A pre-experimental study with one-group pretest-posttest design was conducted using a non-random consecutive sample.
Data were collected through a structured interview composed of a health behaviors questionnaire, including the Alcohol Use Disorders Identification Test (AUDIT), and performed by a nurse with specific training in emergency screening.
The AUDIT assesses the risk level for alcohol consumption (*low risk, hazardous consumption, harmful consumption*, and *likely AUD*) and consists of 10 questions, in which the first three questions consist of the AUDIT-C. This assessment, which corresponds to an initial screening of the risk level for alcohol consumption, is recommended by the DGS. The remaining questions were asked to men who are admitted with an AUDIT-C score equal to or higher than 5, women who were admitted with a score equal to or higher than 4, and men over 65 years of age.
The population was composed of patients who used the ED of a hospital in the central coastal region of Portugal and meet the following inclusion criteria: over 18 years of age and screened for risky alcohol consumption. The following exclusion criteria were applied: patients diagnosed with and/or with a potential diagnosis of AUD and patients with communication difficulties. Only patients who gave their formal informed consent were integrated into the study.
Trained nurses screened patients at the ED triage on different weekdays, at different periods of the day.
In a total of 215 interviews, 13 patients were identified as having high-risk levels of alcohol consumption. Based on the exclusion criteria,

three patients were excluded after the initial evaluation due to probable dependence (scored above 20) and referred to the hospital's addiction consultation. One individual was excluded due to death during the follow-up period. The final sample was composed of nine participants. The risk level for alcohol consumption is the dependent variable in this study, and Figure 1 shows the risk levels obtained through the AUDIT score levels. The independent variable is the BI (education, simple advice, brief counseling, brief intervention, and referral; Figure 1).

The risk levels identified based on the AUDIT scores determined the type of BI: structured scripts based on the protocol adapted from Babor and Higgins-Biddle (2001) and the *Saúde sem Reservas* project, which is registered in the Health Sciences Research Unit: Nursing (UICISA:E) of the Nursing School of Coimbra.

Patients with *low risk* (0-7) receive an education intervention which includes feedback about the results, information about the risks of drinking above the recommended level, as well as congratulating the individual and reinforce the need to maintain a low-risk consumption pattern.

Simple advice is recommended for patients with *hazardous consumption* (8-15). Although these patients may not suffer any consequences from drinking above the recommended level, they are at risk for developing alcohol-related problems if they continue to drink hazardously. The simple advice should provide feedback on hazardous consumption and the potential adverse consequences of maintaining it, encouraging patients to achieve the recommended pattern.

Patients with *harmful alcohol consumption* (16-19), although they do not fulfill the AUD criteria, already have physical and psychological problems related to their harmful alcohol consumption. The recommended intervention is brief counseling, an intervention focused on the quick assessment of the problem, assessment of the motivation for change, and intervention.

A situation of likely AUD occurs when the score is higher than or equal to 20, and these individuals should be referred for treatment.

Alcohol consumption	Risk level/Intervention	Score
Low Risk	I – Alcohol Education	0-7
Hazardous	II – Simple Advice	8-15
Harmful	III – Brief Counseling	16-19
Probable dependence	IV – Referral	20-40

Figure 1. Guideline following risk assessment using AUDIT scores (Adapted from Babor & Higgins-Biddle, 2001).

The intervention was assessed 3 months later in a telephone interview.

As support material, a leaflet (Guide to low-risk drinking), which was adapted from Babor and Higgins-Biddle (2001), was used during the interview and delivered to the patient. This guide is divided into different panels, which directed the researcher's intervention and served as visual information for the patient.

All participants were asked to give their informed consent. The UICISA:E Ethics Committee gave a favorable opinion to the study (314/11-2015).

The evolution of the group after the intervention was assessed using IBM SPSS Statistics software, version 15.0, and the Wilcoxon non-parametric test for paired samples due to the small sample size.

Results

The sample was only composed of men, with a mean age of 56.44 years. Most of them were married (77.8%; 7), lived with their family (77.8%; 7), and had children (77.8%; 7). Most participants had completed the 2nd cycle of basic education (44.4%; 4), one had completed the 3rd cycle (11.1%), and another one had completed secondary education (11.1%). The remaining (33.3%; 3) had completed the 1st cycle of basic education. With regard to their professional situation, five (55.6%) were employed and four (44.4%) were retired (Table 1).

Table 1
Sociodemographic characteristics of the sample

Sociodemographic characteristics		Sample	
		No.	%
Marital status	Single	1	11.1
	Married/Cohabiting	7	77.8
	Divorced/Separated	1	11.1
	Widowed	0	0
Professional situation	Employed	5	55.6
	Unemployed	0	0
	Retired	4	44.4
Education level	1st Cycle of Basic Education	3	33.3
	2nd Cycle of Basic Education	4	44.4
	3rd Cycle of Basic Education	1	11.1
	Secondary education	1	11.1
	Higher education	0	0
Living arrangements	Family	7	77.8
	Friends	0	0
	Alone	2	22.2
Children	Yes	7	77.8
	No	2	22.2

With regard to the reason for visiting the ED, past medical history, and alcohol consumption pattern, two participants (22.2%) were admitted due to acute alcohol intoxication, but only one of them reported that his visit to the ED was associated with alcohol consumption.

In this sample, 44.4% of patients reported the existence of previous conditions and 55.6% reported no previous conditions.

In this study, two alcohol education interventions, six simple advice interventions, and one brief intervention were performed.

The changes observed before and after the intervention were found mainly in the first three questions of the AUDIT (AUDIT-C) about the frequency of alcohol intake and the frequency of binge drinking.

Before the intervention, all nine participants drank alcohol above the recommended level. However, after the intervention, and al-

though five of them still had a non-recommended consumption, they reported having reduced their consumption (Table 2). After the intervention, four participants reported low-risk drinking. Six participants reported episodes of binge drinking. However, after the intervention, only two of them still reported these episodes.

Table 2
Risk zones in the sample before and after BI

	Initial assessment		Final assessment	
	No.	%	No.	%
Zone I (0-7)	2	22.2	5	55.6
Zone II (8-15)	6	66.7	4	44.4
Zone III (16-19)	1	11.1	0	0

These data show that seven participants reduced their alcohol consumption risk and two participants, although they were already in risk zone I, remained in the same risk zone. The intervention can be associated with a positive effect on the reduction of the risk zone (Table 3; Z = -2.388; p = 0.017).

Table 3
Evolution of the sample according to the risk zone, before and after BI

	Ranks	Frequencies	Z	*p*
Final risk zone/Initial risk zone (n = 9)	Negative	7[a]	- 2.388[b]	0.017
	Positive	0[b]		
	Ties	2[c]		

Note. [a]Total score after < Total score before; [b]Total score after > Total score before; [c]Total score after = Total score before.

Discussion

Despite the clear limitation related to the small sample size, the results suggest that patients undergoing BI have a positive evolution in their risk levels of alcohol consumption. After the intervention, the level of risk decreased mainly due to a reduction in the consumption of alcoholic drinks and in the frequency of binge drinking. Furthermore, the relevant clinical effect of referring three patients for specialty consultations due to probable dependence should be highlighted, even though they were not included in the study due to the exclusion criteria.

Despite the barriers identified during screening and BI implementation in ED, several studies have identified positive BI effects on these emergency settings (Aseltine, 2010; D'onofrio et al., 2012; Woolard et al., 2013; Sommers et al., 2013).

Landy et al. (2016) conducted a systematic review to assess the effectiveness of BI in reducing harmful drinking in adults who used ED. Based on their review of 34 studies, the authors concluded that all of them reported a significant reduction in alcohol consumption after 3 months. However, most studies did not report the same significant effects after 6 and 12 months.

With regard to the sociodemographic characteristics of the sample, the profile is being a man, with a mean age of 56.44 years, with the 1st or 2nd cycles of basic education, married, with children, employed or retired. However, because the sample is only composed of men, it may have been that a factor could have limited the screening of women's risk of alcohol consumption.

The major limitation of this study was clearly the fact that the sample consisted of only nine individuals who met the inclusion criteria, even though 215 interviews were performed during the data collection period to all patients using the ED during that period and who agreed to participate in the study.

The reason for the identification of such a small number of individuals at risk for alcohol consumption can be associated with the socially desirable response, thus not reporting actual levels of alcohol consumption. During the interviews, individuals looked sometimes surprised when asked about their drinking habitats, which may be related to previous experiences of health professionals' lack of assessment of the type of alcohol consumption. Some studies show that self-reported alcohol consumptions may not reveal the actual consumption of alcohol due to social desirability (Koivunen, Harju, Kauko, & Välimäki, 2016). Social desirability has a significant impact on the answers about alcohol and/or drug use, as well as on the motivation for change. When questioned about their alcohol consumption, individuals usually give a false answer due to their negative social image about their level of consumption (Ronzani, Higgins-Biddle, & Furtado, 2009). This phenomenon should be taken into account in the intervention for harmful alcohol drinking because the complexity of the topic and its determinants requires a multidimensional approach (Mortel, 2008). The reluctance of these individuals to participate in this study, which included a specialized intervention in the area of addiction, may have been a discouraging factor because of the connection that they have to make, even when they are already aware of the adverse health effects of their excessive alcohol consumption.

This pilot study can contribute to the integration of the screening of harmful and hazardous alcohol drinking in nursing care practice at ED. Due to the situation of under-reporting of alcohol consumption in ED, WHO advocates that health professionals should be aware and trained to perform screenings and BI.

The characteristics of ED (work overload, overcrowded facilities, and lack of time; Nilsen et al., 2008) seem to be discouraging factors for the introduction of SBIRT protocols. However, the maintenance of simple, referral-oriented interventions makes a difference in the motivation and awareness of patients with alcohol-related problems and those around them (Davis, Thake, & Vilhena, 2010). In most cases, risky drinkers receive the same type of care as others. There is no intervention protocol for this group and, many times, drinking alcohol before admission is not considered important (Koivunen et al., 2016).

Future studies should take into account these limitations, which, although significant, the results proved to be positive in the patients undergoing the interventions. They should also include a control group and extend the follow-up period.

Studies on this phenomenon should consider the development of some procedures that allow reducing the negative effects of social desirability, such as the introduction of social impact assessment scales (Mortel, 2008; Zemore, 2012).

The major finding of this study is that screening potential alcohol consumers and providing patients with a plan for change is the first step towards rehabilitation. As ED have constraints in terms of discontinuity in patient care, partnerships should be established with the hospital's mental and social health services and other primary, secondary, and tertiary external health entities.

Conclusion

This study suggests that BI have a positive effect on reducing harmful and hazardous alcohol consumption in ED. A positive effect was found in the reduction of the risk zone associated with the intervention. The reduction in the risk level after the intervention was due to a reduction in the consumption of alcoholic drinks and in the frequency of binge drinking.

The identification and referral of patients with probable AUD, and who were not previously identified, is also an important effect of the BI performed in this study.

The major limitations of this study were the small sample size and the structural and organizational difficulties of the ED, which influ-

enced the generalization of the findings.
This study can help health professionals to integrate screening and develop BI in their clinical practice with the purpose of reducing the risk for alcohol consumption.

References

Anderson, P., Braddick, F., Reynolds, J., & Gual, A. (2012). *Alcohol policy in Europe: Evidence from AMPHORA*. The AMPHORA project. Retrieved from http://amphoraproject.net/view.php.

Aseltine, E. (2010). The impact of screening, brief intervention and referral for treatment in emergency department patients' alcohol use: A 3-, 6-and 12-month follow-up. *Alcohol and Alcoholism*, *45*(6), 514-519. doi:10.1093/alcalc/agq058

Babor, T., & Higgins-Biddle, J. (2001). *Brief Intervention for Hazardous and Harmful Drinking: A manual for use in primary care*: World Health Organization.

Barroso, T. M., Rosa, N. R., Jorge, F. M., & Gonçalves, C. S. (2012). Drinking among adolescents and young adults: Outcome of brief intervention. *Alcoholism: Clinical & Experimental Research*, *36*, 131A.

Carvalho, A., Mateus, P., & Xavier, M. (2015). *Portugal saúde mental em n*úmeros, 2014. Lisboa, Portugal: Direção-Geral da Saúde.

Cherpitel, C. J. (2007). Alcohol and injuries: A review of international emergency room studies since 1995. *Drug and Alcohol Review*, *26*(2), 201-214. doi:10.1080/09595230601146686

Davis, C., Thake, J., & Vilhena, N. (2010). Social desirability biases in self-reported alcohol consumption and harms. *Addictive Behaviors*, *35*(4), 302-311. doi: 10.1016/j.addbeh.2009.11.001

Direção-Geral da Saúde (2014). *Circular Normativa nº30/2012* atualizada a 18/12/2014. Retrieved from http://www.dgs.pt/normas-clinicas.aspx

D'onofrio, G., Fiellin, D. A., Pantalon, M. V., Chawarski, M. C., Owens, P. H., Degutis, L. C., ... O'connor, P. G. (2012). A brief intervention reduces hazardous and harmful drinking in emergency department patients. *Annals of Emergency Medicine*, *60*(2), 181-192. doi:10.1016/j.annemergmed.2012.02.006

Koivunen, M., Harju, S., Kauko, T., & Välimäki, M. (2017). Alcohol risk drinking, quality of life and health state among patients treated at the Sobering Unit in the emergency department: One year follow-up study. *International Emergency Nursing, 31*, 22-29. doi: 10.1016/j.ienj.2016.06.003

Landy, M. S., Davey, C. J., Quintero, D., Pecora, A., & McShane, K. E. (2016). A systematic review on the effectiveness of brief interventions for alcohol misuse among adults in emergency departments. *Journal of Substance Abuse Treatment*, *61*, 1-12. doi:10.1016/j.jsat.2015.08.004

Mortel, T. (2008). Faking it: Social desirability response bias in self-report research. *Australian Journal of Advanced Nursing, 25*(4), 40.

Nilsen, P., Baird, J., Mello, M. J., Nirenberg, T., Woolard, R., Bendtsen, P., & Longabaugh, R. (2008). A systematic review of emergency care brief alcohol interventions for injury patients. *Journal of Substance Abuse Treatment*, *35*(2), 184-201. doi:10.1016/j.jsat.2007.09.008

Ronzani, T., Higgins-Biddle, J., & Furtado, E. (2009). Stigmatization of alcohol and other drug patients by primary care providers in Southeast Brazil. *Social Science & Medicine*, *69*(7), 1080-1084. doi:10.1016/j.socscimed.2009.07.026

Serviço de Intervenção nos Comportamentos e nas Dependências, Direção de Serviços de Monitorização e Informação/ Divisão de Estatística e Investigação. (2015*). Relatório anual 2016: A situação do país em matéria de álcool.* Lisboa, Portugal: Autor.

Sommers, M. S., Lyons, M. S., Fargo, J. D., Sommers, B. D., McDonald, C. C., Shope, J. T., & Fleming, M. F. (2013). Emergency department–based brief intervention to reduce risky driving and hazardous/harmful drinking in young adults: A randomized controlled trial. *Alcoholism: Clinical and Experimental Research*, *37*(10), 1753-1762. doi:10.1111/acer.12142.

Wojnar, M., & Jakubczyk, A. (2014). Brief interventions for hazardous and harmful alcohol consumption in accident and emergency departments. *Frontiers in Psychiatry, 5*, 152. doi:10.3389/fpsyt.2014.00152

Woolard, R., Baird, J., Longabaugh, R., Nirenberg, T., Lee, C. S., Mello, M. J., & Becker, B. (2013). Project reduce: Reducing alcohol and marijuana misuse: Effects of a brief intervention in the emergency department. *Addictive Behaviors*, *38*(3), 1732-1739. doi:10.1016/j.addbeh.2012.09.006

World Health Organization. (2014). *Global status report on alcohol and health 2014*. Geneva, Switzerland: Author.

Zemore, S. (2012). The effect of social desirability on reported motivation, substance use severity, and treatment attendance. *Journal of Substance Abuse Treatment*, *42*(4), 400-412. doi:10.1016/j.jsat.2011.09.013