Screening of Hazardous and Harmful Alcohol Consumption in a Primary Health Care Setting and in a General Population Survey

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AIMS: The major goal of the study is to evaluate the ability of the Czech versions of the AUDIT-C and ASSIST screening instruments to identify hazardous and harmful drinkers in a general population sample and in a sample of patients in primary health care. **METHODS AND SAMPLE:** Two large datasets were analysed. The first was based on the application of the AUDIT-C to a general population sample (N=926; age range 30–59), the second represents data collected by GPs in the context of a screening and brief advice project (SBA) (N=425). **RESULTS:** Analyses of reliability showed satisfying internal consistency of the AUDIT-C (Cronbach's alpha = .75 for the population survey and .74 for the primary care sample). The respective value for ASSIST was .70. The identification of risky drinking on the basis of the AUDIT-C was identical for both samples: approx. 30%, with a cut-off point of 5 and more. ASSIST identified 9.9% of patients as positive. The differences between the two instruments are due to differences in their conceptual background. The AUDIT-C is based solely on information about alcohol consumption, while ASSIST includes items on symptoms of alcohol disorder and problems associated with drinking. **CONCLUSIONS:** The Czech versions of the AUDIT-C and ASSIST screening instruments seem to be useful for the identification of the risk level in a primary health care setting.

Keywords | Harmful Alcohol Consumption – Screening – Primary Health Care – General Population – AUDIT-C – ASSIST

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1 INTRODUCTION

Excessive use of alcohol is associated with a negative impact on physical and mental health. The correlation between alcohol abuse, depression, and anxiety has been confirmed in many studies (e.g. Manninen et al., 2006). Degradation of social functioning and alcohol-induced mood disorders are often associated with increased suicide rates in addicted persons.

In the field of alcohol research, great efforts have been made to find effective interventions to reduce the health and social harm that alcohol causes. The results of these studies suggest that screening and brief interventions in primary health care are effective and cost-effective, whereas simple education or information dissemination has little impact, while specialised treatment is costly and, moreover, often limited to cases of individuals with addiction disorder or chronic problem drinkers (Babor et al., 2006; Anderson & Baumberg, 2006).

The effectiveness of brief interventions is not only linked to primary care facilities, but also applies to different types of health care facilities, such as emergency departments. Studies showed that the provision of a brief intervention may lead to a 30% decrease in alcohol consumption (Bertholet et al., 2005; Kaner et al., 2018; Kaner et al., 2009). The cost-effectiveness of brief interventions was documented by Wutzke et al. (2001).

The reasons for supporting the implementation of brief interventions in a primary care setting in the Czech Republic include the high consumption of alcohol per capita and serious health and social consequences of drinking. The provision of brief interventions is also stipulated in the Act on the Protection of Health from the Harmful Effects of Addictive Substances (Act No. 65/2017 Coll.).

An important part of a brief intervention must consist of a well-functioning screening tool to identify people consuming alcohol hazardously or harmfully. There are several widely-used screening instruments. In addition to CAGE (Ewing, 1984) and MAST (Selzer, 1971), the Alcohol Use Disorder Identification Test (AUDIT) has received extensive scientific evaluation. The development of the AUDIT as a short tool for rapid and timely identification of alcohol problems has been supported by the World Health Organisation (Babor, Higgins et al. 2001). The use of the AUDIT questionnaire spread rapidly beyond the Anglophone area, and thanks to the Czech edition of the AUDIT, it is also available for use in the Czech Republic (Babor & Higgins-Biddle 2003; Miovský, 2013). The interconnection of the screening instrument with practical guidelines for brief interventions and counselling makes the AUDIT a popular and widely-used instrument. The good psychometric properties of the test have been confirmed in several studies, e.g. Shevlin (2007), Carey (2003), and Bradley (2007).

In addition to routine application in primary care, the AUDIT can be used in clinical settings such as hospital emergency departments (Neumann et al., 2004) or in work with psychiatric patients (Carey et al., 2003) or drug addicts (Skipsey et al., 1997). A comprehensive approach to the screening of substance use-related problems is represented by ASSIST (WHO Group, 2002), which, in addition to alcohol, also targets other addictive substances (illegal drugs and pharmaceuticals).

The aim of this paper is to evaluate the possibilities of screening using the Czech adaptation of the ASSIST questionnaire for alcohol use and a short version of the AUDIT questionnaire in the conditions of primary health care.

2 METHODS

2.1 Samples

The analyses in this work are based on the application of the AUDIT-C and ASSIST screening questionnaires in screening and brief interventions in general practitioners' surgeries, which are compared with data from a general population study. In general practitioners' surgeries, 425 patients were screened. The patients were screened as a part of preventive examination, and no excluding criteria were applied except the mental inability to respond to the items contained in the screening test. The population sample consisted of 926 respondents. In terms of age, both samples were identical (the average age of the patients was 43.8 years, and that of the population sample was 44.8 years). Both samples were comparable by gender (53% of the patients and 50% in the population sample were males). Characteristics of the samples are summarised in *Table 1*.

	Patients in a primary care setting	General population
Number of respondents	425	926
Gender (% of males)	53.0	50.3
Age in years [M (SD)]	43.8 (8.5)	44.2 (8.2)

Table 1 | Sample characteristics

2.2 AUDIT-C and ASSIST Instruments

The Audit-C questionnaire (Bush et al., 1998; Bradley et al., 2007) was developed as a shortened version of the Alcohol Use Disorders Identification Test (Babor et al., 2001). There is a Czech translation of the AUDIT and a study focused on its psychometric properties (Sovinová & Csémy, 2010). The AUDIT-C consists of the first three items of the AUDIT that measure alcohol consumption (drinking frequency, usual quantity per occasion of drinking, and frequency of heavy episodic drinking). The overall score is from 0 to 12 points, with international studies being recommended to interpret the overall score as follows: 0 to 4 points – low-risk drinking, 5 to 8 points – risky drinking or harmful drinking, 9 or more points – high-risk drinking or problem drinking.

The ASSIST Screening Questionnaire was developed by a WHO Working Group (WHO Group, 2002). The ASSIST questionnaire was translated into Czech for the purposes of the

"Analysis of the Effects of Early Identification and Brief Intervention Aimed at Reducing Alcohol-related Health Damage" project. The alcohol screening module contains six items, only one of which monitors alcohol consumption. The remaining five items cover the symptoms of alcohol-induced disorders and alcohol use-related problems. The total score ranges from 0 to 40 points. Values up to 10 points are interpreted as low-risk, 11 to 26 points are rated as hazardous or harmful drinking, and 27 or more points as high-risk drinking with problems.

2.3 Data analysis

The IBM SPSS Statistics 22 software was used for the data analysis. In addition to the standard descriptive statistics, correlation analysis and analyses of internal consistency were performed.

3 RESULTS

3.1 Reliability of the AUDIT-C and ASSIST questionnaires

The reliability of the AUDIT-C questionnaire, measured as a Cronbach alpha coefficient, was satisfactory and practically identical in both the general practitioners' sample and the population sample (0.74 vs. 0.75). For the ASSIST questionnaire, the value of internal consistency was still acceptable (0.70). The results generally confirm the good coherence of the items in both instruments.

3.2 Summarised Scores and Gender Differences

Table 2 summarises the mean scores obtained with the AUDIT-C and ASSIST questionnaires for the patient population of the primary care setting and the general population sample. The overall score in the AUDIT-C was almost the same in both the general population sample and in the sample from the general practitioners' surgeries, with distinct differences between the sexes, with men having the higher mean scores. Additionally, men reached a higher overall score for the ASSIST questionnaire. The distribution of the overall score in the AUDIT-C is illustrated in *Figure 1*. It is evident that the distribution corresponds with the shape of the Gaussian curve, with the left-hand deflection given by zero-score respondents.

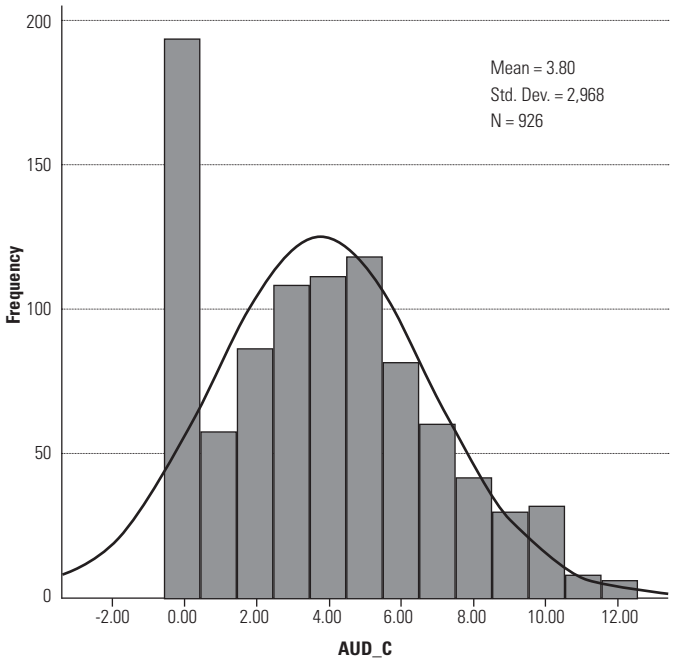

Figure 1 | Distribution of summary scores for the AUDIT-C in the general population sample

3.3 Correlation between AUDIT-C and ASSIST

We could only measure the association between the screening using ASSIST and the AUDIT-C in the primary patient population because ASSIST was not applied in the population sample. The Pearson's correlation coefficient was 0.68, indicating a relatively high association.

3.4 Determining the prevalence of hazardous and harmful drinking in the population

Both questionnaires, the AUDIT-C and ASSIST, are designed to perform a quick assessment of the level of hazardous, harmful, and problem drinking, especially for the purposes of individual counselling. When applied in population surveys, they can also be used to estimate the extent of unhealthy drinking patterns in the population. In this study, the population sample is used as the baseline for assessing whether the response of patients to screening conditions is not biased by the fact of a clinical condition. The results are summarised in

	ASSIST (Primary health care)	AUDIT-C (Primary health care)	AUDIT-C (General population)
Males	5.8 (4.91)[a]	4.3 (2.50)[b]	4.7 (3.14)[b]
Females	4.7 (4.57)	3.1 (2.07)	2.9 (2.47)
Total	5.4 (4.78)	3.7 (2.36)	3.8 (2.96)

[a] male-female difference $P < 0.05$; [b] male-female difference $P < 0.01$

Table 2 | Mean scores (SD) in ASSIST and AUDIT-C screening questionnaires by gender

Instrument	ASSIST	AUDIT-C	AUDIT-C	AUDIT-Crev	AUDIT-Crev
Sample	Prim. care	Prim. care	Gen. Population	Prim. care	Gen. Population
	% (of which % of males)	% (of which % of males)	% (of which % of males)	% (of which % of males)	% (of which % of males)
Low-risk drinking	89.3 (53.7)	54.2 (40.0)	47.9 (35.4)	70.0 (39.3)	59.9 (39.1)
Hazardous/harm-ful drinking	9.9 (64.1)	42.5 (51.0)	44.3 (58.3)	26.7 (59.4)	32.3 (62.5)
Problem (heavy) drinking	0.8 (66.7)	3.3 (100)	7.8 (86.1)	3.3 (100)	7.8 (86.1)

AUDIT-C^{rev} – AUDIT-C screening questionnaire with cut-off point for hazardous drinking raised by 1 point to 5

Table 3 | Distribution of respondents into consumption categories according to the cut-off scores of the ASSIST and ADDIT-C screening tests

Table 3. For the AUDIT-C questionnaire, the prevalences are the same in both files. 42 to 44% of the respondents fall into the hazardous or harmful drinking category. If the cut-off score is increased by one point (i.e. 5 points), the distribution to the risk zone is reduced to 27% in the primary care sample and 32% in the general population. The last remaining column of the table represents the distribution for the ASSIST questionnaire. Only 10% of the patients in general practitioners' surgeries fall into the hazardous/harmful drinking category. We speculate that the difference in the prevalence of hazardous/harmful drinking between the AUDIT-C and ASSIST screening tools comes from the differences in the composition of the items. While ASSIST is heavily burdened by reporting symptoms and problems, the AUDIT-C only reflects reported consumption.

Male representation grows proportionally with the riskiness of drinking. Men are overwhelmingly present in the category of high-risk and problem drinking.

4 DISCUSSION

The study confirmed the good internal consistency of the Czech version of the AUDIT-C questionnaire applied for screening in two different situations: in the general population and in patients in a primary health care setting, and it suggests the applicability of the questionnaire as a whole with a meaningful interpretation of the overall score. The fact that the recommended lower cut-off value for assignment into the group of hazardous and harmful drinking leads to a high number of persons to whom brief interventions should be provided reflects the reality of the consumption habits of Czech society, which is, in terms of consumption of alcohol per capita, one of the leading countries in Europe and the world (Csémy & Winkler, 2010). It seems reasonable to raise the critical value by one point. At present, we do not have a study on the Czech population available to verify the validity of the AUDIT-C screening against an independent criterion. The findings from the use of the AUDIT in the Czech environment are limited to the ten-item AUDIT, which also includes items on the symptoms of addiction and the problematic consequences of drinking. The continuation of the current project will provide the necessary insights for the confirmation and practical application of cut-off point for the identification of hazardous drinking and providing brief interventions. The current results suggest that raising the cut-off point by one would be desirable.

Research experience with the ASSIST questionnaire is new in the Czech Republic. Comparison with the AUDIT-C showed that differently designed screening questionnaires lead to differences in distribution in severity categories. It might be supposed that primary care patients would be more willing to give their doctors information about their consumption rather than report the symptoms of addiction and problems. It is also possible that patients who drink hazardously do not reflect on reduced control over their drinking and do not consider social and/or health problems as consequences of drinking. Of course, social standards, which are very liberal in the Czech Republic, play their part. Criticism of drinking from a person's close social environment usually comes when the problems are so serious that they are seriously annoying for the persons who are close to the drinker. These hypotheses have arisen in connection with the analyses of existing data; their validity must be critically verified through wider contextual research.

The comparison of two screening instruments, ASIST and the AUDIT-C, enabled us to evaluate their practical usefulness in a primary care setting. Besides the high intercorrelation of the summary scores, it was also shown that 90% of the cases identified with ASSIST as at-risk consumers were also identified as risky drinkers in the AUDIT-C.

The international literature suggests that the rate of positive screening was similar to that of the sample screened with ASSIST in this country, i.e. around 10% (Scott & Anderson, 1990; Richmond et al., 1995; Anderson & Scott, 1992).

There are considerable cultural differences in estimating the prevalence of hazardous and harmful drinking. For example, in a Finnish study, 49% of men and 24% of women were classified as hazardous or harmful consumers when a cut-off score of 8 was applied in the AUDIT (Pahlen et al., 2008). Neumann et al. (2004) monitored a sample of nearly two thousand patients admitted to hospital treatment for an injury through a computer version of the AUDIT. Using the same critical value, hazardous or harmful drinking was found in 18% of the men and 7% of the women. Numerous studies have confirmed the good validity of screening tools. Berner et al. (2006) confirmed the good validity of the AUDIT compared to independent objective biological criteria (CDT and GGT). These authors concluded that the use of a combination of a screening questionnaire with laboratory tests improves the diagnosis in comparison to using any single method alone. The limitation of this study is that we have not been able to assess the validity of the Czech version of ASSIST

against an objective criterion. The advantage, on the other hand, is that we were able to apply two different methods and compare their results and that we had the opportunity to test the AUDIT-C on two different samples.

5 CONCLUSION

The evaluation of the properties of the Czech version of the ASSIST and AUDIT-C screening questionnaires when used on relatively large samples and under two different sets of conditions confirmed the good reliability of the instruments, measured by the Cronbach coefficient of internal consistency.

The estimates of the occurrence of hazardous and harmful drinking with the AUDIT-C did not differ in the two sets of conditions that were monitored. Differences were found when the prevalence of risky drinking was measured by means of the AUDIT-C and ASSIST questionnaires. The differences may be partly due to social desirability factors that may influence willingness to report on alcohol consumption and on the symptoms of drinking-related problems.

Authors' contribution: LC, BS and HS were responsible for the data collection and methodology. LC and ZD performed statistical analyses, all authors contributed to the draft of the paper and to literature review. All authors approved the final version of the manuscript.

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