




THE HAZARDOUS USE SCALE OF PSYCHOACTIVE SUBSTANCES. A PILOT STUDY

SKALA UŻYWANIA RYZYKOWNEGO SUBSTANCJI PSYCHOAKTYWNYCH. BADANIA PILOTAŻOWE

Robert Modrzyński¹ , Agnieszka Pisarska² , Anna Maria Mańkowska³ 

¹Chair of Clinical Psychology and Neuropsychology, Institute of Psychology, Faculty of Education and Psychology, The Maria Curie-Skłodowska University, Lublin, Poland

²Chair of Educational Psychology and Psychological Diagnosis, Institute of Psychology, Faculty of Education and Psychology, The Maria Curie-Skłodowska University, Lublin, Poland

³Chair of Clinical Psychology, Institute of Psychology, Faculty of Social Sciences, The John Paul II Catholic University of Lublin, Poland

¹*Katedra Psychologii Klinicznej i Neuropsychologii, Instytut Psychologii, Wydział Pedagogiki i Psychologii, Uniwersytet Marii Curie-Skłodowskiej, Lublin, Polska*

²*Katedra Psychologii Edukacyjnej i Diagnostyki Psychologicznej, Instytut Psychologii, Wydział Pedagogiki i Psychologii, Uniwersytet Marii Curie-Skłodowskiej, Lublin, Polska*

³*Katedra Psychologii Klinicznej, Instytut Psychologii, Wydział Nauk Społecznych, Katolicki Uniwersytet Lubelski Jana Pawła II, Lublin, Polska*

Alcohol Drug Addict 2022; 35 (3): 187-204
DOI: <https://doi.org/10.5114/ain.2022.125279>

Abstract

Introduction: The quality of initial clinical diagnosis of psychoactive substance use disorders was improved in the ICD-11. The purpose of article is to present the psychometric properties of the Hazardous Substance Use Scale (HUS) measuring alcohol and other psychoactive substances use intensity, which was conceptualised in accordance with ICD-11.

Streszczenie

Wprowadzenie: W ICD-11 została poprawiona jakość wstępnej diagnozy klinicznej w obszarze zaburzeń związanych z używaniem substancji psychoaktywnych. Celem artykułu jest przedstawienie właściwości psychometrycznych, skonceptualizowanych zgodnie z ICD-11, Skali Używania Ryzykownego (SUR), mierzącej intensywność używania alkoholu i innych substancji psychoaktywnych.

Correspondence to/Adres do korespondencji: Anna M. Mańkowska, Katedra Psychologii Klinicznej, Katolicki Uniwersytet Lubelski Jana Pawła II, Al. Raclawickie 14, 20-950 Lublin, Poland, email: ania.mankowska@onet.pl

Authors' contribution/Wkład pracy autorów: Study design/Koncepcja badania: R. Modrzyński, A. Pisarska; Data collection/Zebrań danych: R. Modrzyński, A. Pisarska, A.M. Mańkowska; Statistical analysis/Analiza statystyczna: R. Modrzyński; Data interpretation/Interpretacja danych: R. Modrzyński, A.M. Mańkowska; Acceptance of final manuscript version/Akceptacja ostatecznej wersji pracy: R. Modrzyński, A. Pisarska, A.M. Mańkowska; Literature search/Przygotowanie literatury: R. Modrzyński, A. Pisarska, A.M. Mańkowska; Funds collection/Pozyskanie środków (finansowania): R. Modrzyński.

No ghostwriting and guest authorship declared./Nie występują zjawiska *ghostwriting* i *guest authorship*.

Submitted/Otrzymano: 19.05.2022 • **Accepted/Przyjęto do druku:** 21.09.2022

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Material and methods: The survey covered 508 adults who consume alcohol and other psychoactive substances. Respondents completed the HUS, AUDIT (Alcohol Use Disorders Identification Test) and DUDIT (Drug Use Disorders Identification Test).

Results: Criterion validity was calculated by correlating the HUS results with the AUDIT (women: $r = 0.91$, $p < 0.01$; men: $r = 0.82$, $p < 0.01$) and the DUDIT tests (women: $r = 0.52$, $p < 0.01$; men: $r = 0.47$, $p < 0.01$). Reliability was calculated with the split-half method; the individual properties of the Cronbach's α coefficient with the Spearman-Brown correction is 0.90 for women and 0.94 for men. In the final version, the HUS consists of 10 items.

Discussion: Analysis shows HUS high validity and reliability. Therefore HUS is a tool that can be used in broad clinical practice. The structure of this scale enables quick and accurate assessment of hazardous alcohol and other psychoactive substances use, including the suspicion of dependence.

Conclusions: The Hazardous Use Scale is a screening method that can be used by practitioners in contact with people who abuse alcohol and other psychoactive substances. It shows a better diagnostic rate for alcohol use than drug use.

Keywords: Alcohol, Psychoactive substances, ICD-11, Substance abuse, Hazardous use.

Materiał i metody: Badaniem objęto 508 dorosłych osób spożywających alkohol i inne substancje psychoaktywne. Respondenci wypełnili SUR, AUDIT (*Alcohol Use Disorders Identification Test*) i DUDIT (*Drug Use Disorders Identification Test*).

Wyniki: Trafność kryterialną obliczono, korelując wyniki SUR z AUDIT (kobiety: $r = 0,91$, $p < 0,01$; mężczyźni: $r = 0,82$, $p < 0,01$) oraz z DUDIT (kobiety: $r = 0,52$, $p < 0,01$; mężczyźni: $r = 0,47$, $p < 0,01$). Rzetelność obliczono metodą międzypołówkową, wartości współczynnika α Cronbacha z korektą Spearmana-Browna wynoszą 0,90 dla kobiet i 0,94 dla mężczyzn. W wersji ostatecznej SUR składa się z 10 itemów.

Omówienie: Przeprowadzone analizy wykazują wysoką trafność i rzetelność SUR. Narzędzie to może być wykorzystywane w szerokiej praktyce klinicznej. Jego struktura umożliwia szybką i trafną ocenę ryzykownego używania alkoholu i innych substancji psychoaktywnych, w tym podejrzenia uzależnienia.

Wnioski: Skala Używania Ryzykownego jest metodą przesiewową, która może być stosowana przez praktyków mających kontakt z osobami nadużywającymi alkoholu i innych substancji psychoaktywnych. Jest lepszym wskaźnikiem diagnostycznym dla używania alkoholu niż dla używania narkotyków.

Słowa kluczowe: alkohol, substancje psychoaktywne, ICD-11, nadużywanie substancji, używanie ryzykowne.

■ INTRODUCTION

The increasing availability and variety of alcohol and psychoactive substances contributes to the development of substance use disorders [1-3]. Research shows that a minimum of 28.9% of European Union citizens aged from 15 to 64 have used drugs at least once in their lifetime. The highest rates, i.e. 16.9%, involve a group of young adults aged 15-34 [4, 5]. In Poland, the percentage for this age group was 10.4% and 5.4% for the entire population [5]. Systematic grow of average alcohol consumption per capita is also observed [6]. Research conducted in Poland shows that approximately 14.2% of the population drinks dangerously including men being 22.3% and women 6.8% [7]. Although the use of non-alcohol psychoactive

substances is much less common, drug use patterns are becoming more and more complex and the choice of substances is greater [5].

In view of the increasing number of people using alcohol and other psychoactive substances, including the growing number of addicts, there is a need to identify early symptoms that predict later development into full dependence. Formally, the term "hazardous use" has so far not been included in diagnostic classifications. Therefore there has been a tendency for researchers to capture "hazardous use" differently, referring it mainly to the amount of use of psychoactive substances, including alcohol.

Screening tools are developed in order to identify those at risk of dependence in the population. They are used to identify people who demonstrate

alcohol and drug-use disorders. Among them, we can distinguish methods addressed to people who use dangerously, harmfully or are dependent. The tools take into account various symptoms among respondents, some of the presented questionnaires enable self-diagnosis [8-13].

In Poland, the most widespread screening tools for the identification of alcohol use disorders among adults are the Alcohol Use Disorders Identification Test (AUDIT) [14, 15], AUDIT-C (abbreviated version) [16, 17] and CAGE (acronym of words appearing in the questions: cut down, annoyed, guilty, eye-opener) [18-20].

At the initiative of WHO, further scales were constructed for detecting use patterns of psychoactive substances other than alcohol and problems related to their use. These include the ASSIST (Alcohol, Smoking, and Substance Involvement Screening Test) [21, 22] and the DAST-10 (Drug Abuse Screening Test) [23, 24].

The Drug Use Disorders Identification Test (DUDIT) [25], along with an expanded version of the DUDIT-E [26], was constructed with reference to the AUDIT as a complement to it by researchers at Karolinska Institutet.

The conceptualisation of the AUDIT and DUDIT was based on the ICD-10, and the most recent validation of these tests did not capture recent changes in the classification. The design of the Hazardous Use Scale (HUS) is the first method to be based on International Classification of Diseases 11 (ICD-11) criteria. In addition, previous screening methods refer only to alcohol or only to drugs, which may have fostered confusion in the early identification of substance use problems.

The need of developing new screening methods based on the latest standards is justified by changing patterns of alcohol or other psychoactive substance use and the accompanying changes in international classifications of diseases.

The ICD-11 currently operates in Poland introduced changes in the diagnostic process within the identification of dependence [27-29]. These changes resulted in a certain hierarchy in the group of disorders, leaving dependence and the harmful pattern of substance use (defined as harmful drinking in the ICD-10) mutually exclusive. The scope of dependence disorders has been divided into the categories current substance use with its immediate effects and disorders that relate to the health consequences of substance use.

The hazardous use of substances, which is an important risk factor among dependence-related disorders, was added in the ICD-11 and has already been included in the DSM classification [29, 30]. In DSM-IV and DSM-5, the understanding of hazardous consumption of substances is limited to the use of substances in physically dangerous situations. In ICD-10, the term “hazardous use of substances” was removed at the final stage of formulation, and in ICD-11 it was reinstated as a health risk factor [29, 31-33]. Due to the changes introduced in the new classification (ICD-11) there are currently no screening methods on the Polish market that would indicate a potential group of hazardous substance use. The answer to this diagnostic gap is the Hazardous Use Scale (HUS).

Hazardous substance use

The HUS is a proprietary tool based on the concept of hazardous substance use included in the ICD-11. Hazardous substance use is defined there as a pattern of alcohol or other psychoactive substance use that, left without a medical or social intervention, may turn into a harmful pattern of use or dependence. It is therefore not a diagnosis of mental and behavioural disorders caused by using substances and merely draws attention to substance use behaviour. Behaviours related to hazardous substance use concern quantity and frequency of consumption of the substance take into consideration a person's daily functioning and pay attention to the impact of substance use on the fulfilment of daily duties, interests or interpersonal relationships. The next factor is the harmful route of taking the substance, which concerns, for example, the use of the same needles many times or drinking alcohol from unknown sources. Another is the tendency for hazardous behaviour while intoxicated. These behaviours include working high off the ground, exposure to infections, fines related to consumption in public places, possession of substances in prohibited amounts, accidental sexual contacts and quarrels with relatives or driving under the influence [29, 31-33]. The duration of the substance's action (usually short-term, immediate) and long-term both mental and physical health effects related to a person's well-being or consequences suffered after consuming alcohol or other psychoactive substances are also important factors increasing hazardous substance use. Without proper diagnosis and intervention, these fac-

tors may lead to harmful consequences for physical and mental health of a person and their environment [17, 29, 31, 34, 35]. The proposed HUS will allow people working in the medical (especially in primary health care), social (e.g. workers of municipal consultation points) or school departments (educators and psychologists working with high school youth) to identify potential risks related to hazardous substance use and implement early interventions designed to stop the development of further consequences. Thus, the purpose of using HUS is to estimate the intensity of alcohol and other psychoactive substance use, which significantly increases the risk of harmful consequences for physical and mental health.

Characteristics of the Hazardous Use Scale

The HUS is a proprietary tool based on the concept of risky substance use according to the ICD-11. The HUS consists of 10 items related to frequency of substance use, harmful behaviour concerning substance use, the context of use and short-term or long-term effects either on health or on physical or mental functioning. As the ICD-11 does not provide for “subtypes” of dependence on a general level, the selection of items for the HUS was such that, although different manifestations of addiction were included, it was assumed that these different manifestations concerned one and the same problem.

A person completing the HUS assesses their own behaviour on a scale from 0 to 4, where 0 means *no experience*, 1 – *occurs less than once a month*, 2 – *once a month*, 3 – *once a week* and 4 – *this behaviour occurs every day or almost every day*. For each item, it is possible to receive from 0 to 4 points.

The HUS can be interpreted in quantitative and qualitative terms. The quantitative evaluation is carried out by counting the sum of points connected with each of the answers. The obtained result can be related to the cut-off points, which allow to determine the level of psychoactive substance use. The qualitative analysis, on the other hand, concerns the characteristics of behaviour and probable problems with functioning related to the fulfilment of a given criterion. Anex contains the HUS sheet.

For each question of the HUS, responses are scored in the order of 0-1-2-3-4. Scores are related to the following levels: *low-risk use* (0-6 points),

risky use (7-15 points) and *suspected dependence* (15-40 points).

The aim of this article is to present the psychometric properties of the HUS, which measures the intensity of alcohol and other psychoactive substances use, conceptualised according to the latest International Classification of Diseases – ICD-11.

■ MATERIAL AND METHODS

This research used a self-questionnaire, a proprietary tool – the HUS as well as the AUDIT and the screening test that is DUDIT.

The self-questionnaire consisted of 8 questions on age, gender, place of residence, marital status, children, education, employment, assessment of financial situation and non-medical use of discharged psychoactive substances over the course of their lives. The question on substance use was the only multiple-choice question.

The WHO AUDIT has been widely recognised as the “golden standard” test for assessing the presence of current alcohol use disorders. The AUDIT psychometric properties from many populations analysed for sociodemographic and cultural factors are very high: Cronbach’s α scores range from 0.80 to 0.94 and the time stability is $r = 0.88$. The AUDIT score is a good predictor of health and social problems related to alcohol consumption [36]. The tool was designed with intent to be used in many cultural circles. AUDIT has been translated into many languages including Polish. The Polish version of the AUDIT consists of 10 questions and is characterised by its high reliability ($r = 0.91$) [14, 15, 37, 38].

DUDIT is a screening test of 11 questions designed to identify drug use problems. It complements the AUDIT questionnaire conducted to identify alcohol use problems. DUDIT was developed in 2004 by Swedish specialists from the Karolinska Institutet [39]. The Polish version of the questionnaire is highly reliable and Cronbach’s α was 0.92. Receiver Operator Characteristic (ROC) analysis indicated a cut-off point of 7 with sensitivity of 0.929 and specificity of 0.974 [15, 25].

The authors used the indicated tests in their analyses to assess the validity and reliability of the presented scale. The study used the Polish versions of the AUDIT and DUDIT.

The HUS preparation procedure

In the first stage, the authors of the method, based on the literature and clinical experience, developed 30 statements related to hazardous substance use according to ICD-11.

In the second stage, 48 competent judges rated each claim on a scale from 1 to 6, where 1 meant that the item did not relate at all to the conceptualisation of the criterion and 6 meant it related fully. The competent judges were specialists in dependence psychotherapy. Thus 10 items were distinguished, obtaining the highest marks in terms of compliance with the adopted criterion description.

In the third stage, pilot studies were carried out using the HUS, AUDIT and DUDIT on a group of 70 adults with average age 30.85 (SD = 13.21, age range: 18-63) – 40 were outpatient addiction treatment patients, while the remaining 30 were the control group. The control group consisted of abstainers. The respondents were asked for comments on the formulated HUS items.

In the fourth stage, the comments were analysed and the HUS items were clarified in terms of content and language.

Stage five was the main survey. The sampling procedure mirrored the earlier pilot.

The respondents

The research was carried out in a group of 508 adults, 281 of whom were women (55.42%). Average respondents' age was 30.8 years (SD = 12.32, range: 18-66 years). It was shown that women were statistically significantly younger ($t = -9.56$, $p < 0.001$), were more often part of younger age groups than men (up to 30 years of age) and less frequently in older ones ($\chi^2(5) = 79.98$, $p < 0.001$). Almost 61% of the respondents were in the 18-30 age group, 15% in the 31-40 year-old group and 15% in the 41-50 year-old group while 9% were people over the age of 51. The respondents' places of residence were mainly a city of over 100,000 inhabitants (35%) and villages (28.46%). Women lived in cities over 100,000 more often than men ($\chi^2(5) = 11.31$, $p = 0.045$). More than half of the respondents (57.25%) were married or in a partnership and 35% were divorced. Regarding marital status, women were less often married than men ($\chi^2(4) = 48.73$, $p < 0.001$) and preferred to remain in a partnership. Significant differences

between the two genders also concern education and employment. Men more often had primary, lower secondary, vocational and higher vocational education ($\chi^2(7) = 82.79$, $p < 0.001$) than women and they were more often employed or on a pension/retirement pension. The vast majority of women were still in education ($\chi^2(3) = 83.75$, $p < 0.001$). Detailed data are presented in Tables I and II.

When asked about psychoactive substances, almost 98% of the respondents reported they drink alcohol, 37.7% use sedatives and 39.5% smoke marijuana. In the area of stimulants, men more often than women take cannabis ($\chi^2 = 5.14$, $p < 0.001$), cocaine ($\chi^2 = 22.03$, $p < 0.001$), amphetamines ($\chi^2 = 22.47$, $p < 0.001$), hallucinogens ($\chi^2 = 15.77$, $p = 0.023$) and opioids ($\chi^2 = 21.43$, $p < 0.001$). The distribution of psychoactive substances used by gender is presented in Figure 1.

While taking into account the gender differences visible in demographic data, all of the analyses for the HUS were performed separately for each gender.

The research procedure

Recruitment of respondents was carried out in two ways. The first was inviting people being treated for substance use disorders to participate in the project. The second method of recruitment assumed using the "snowball" method. After the survey was completed, the authors of the method asked the respondents to indicate more people who could complete the questionnaire. This sampling model was decided upon because of difficult access to a group like hazardous users. The starting point were people of different sociodemographic characteristics. The assumed exclusion criterion was the lack of consent to participate in the research or withdrawal of consent in the process of research.

The research was a one-off, fully anonymous event. Respondents from various backgrounds obtained information about its purpose and the possibility of cancelling their participation. After giving their consent, the respondents filled in the questionnaires. The study was conducted by the authors of the method. The test took up to 20 minutes to complete. The respondents completed the questionnaires at any time convenient for them with the opportunity to take breaks. The research was exploratory and did not bear any risk of experiencing

Table I. Sociodemographic data

Factor	n	%
Gender		
Women	281	55.42
Men	226	44.58
Residence		
Villages		
Women	73	26.07
Men	71	31.42
Total	144	28.46
City up to 5 thousand		
Women	8	2.86
Men	11	4.87
Total	19	3.75
City up to 6-20 thousand		
Women	16	5.71
Men	23	10.18
Total	39	7.71
City up to 21-50 thousand		
Women	33	11.79
Men	27	11.95
Total	60	11.86
City up to 51-100 thousand		
Women	36	12.86
Men	30	13.27
Total	66	13.04
City over 100 thousand		
Women	114	40.71
Men	64	28.32
Total	178	35.18
Total		
Women	280	100.00
Men	226	100.00
Total	506	100.00
Marital status		
Marriage		
Women	40	14.29
Men	83	37.22
Total	123	24.45
Partnership		
Women	118	42.14
Men	47	21.08
Total	165	32.80

Table I. Cont.

Factor	n	%
Divorce		
Women	9	3.21
Men	16	7.17
Total	25	4.97
Without a partner		
Women	107	38.21
Men	74	33.18
Total	181	35.98
Widowed		
Women	6	2.14
Men	3	1.35
Total	9	1.79
Total		
Women	280	100.00
Men	226	100.00
Total	506	100.00
Education		
Primary		
Women	3	1.07
Men	13	5.78
Total	16	3.16
Lower secondary		
Women	4	1.42
Men	11	4.89
Total	15	2.96
Vocational		
Women	5	1.78
Men	36	16.00
Total	41	8.10
Secondary		
Women	130	46.26
Men	93	41.33
Total	223	44.07
Higher vocational		
Women	4	1.42
Men	12	5.33
Total	16	3.16
Partial higher		
Women	78	27.76
Men	15	6.67
Total	93	18.38

Table I. Cont.

Factor	<i>n</i>	%
Higher		
Women	56	19.93
Men	45	20.00
Total	101	19.96
Other education		
Women	1	0.36
Men	0	0.00
Total	1	0.20
Total		
Women	281	100.00
Men	225	100.00
Total	506	100.00
Employment		
Work		
Women	119	42.50
Men	138	61.06
Total	257	50.79
Study		
Women	148	52.86
Men	38	16.81
Total	186	36.76
Pension		
Women	3	1.07
Men	17	7.52
Total	20	3.95
Lack of work and study		
Women	10	3.57
Men	33	14.60
Total	43	8.50
Total		
Women	280	100.00
Men	226	100.00
Total	506	100.00

adverse reactions among respondents, who also did not derive any material benefits from participating in the study. They could ask the researcher to present the result if they wished. Then the results were entered into the database and subjected to appropriate analyses.

Pearson's *r* correlation coefficient was used in the statistical analysis for AUDIT and DUDIT. Cronbach's α and inter-item reliability coefficients were used to measure scale reliability. Adjusted

Table I. Cont.

Factor	<i>n</i>	%
Material circumstances		
Very bad		
Women	3	1.07
Men	14	6.19
Total	17	3.35
Bad		
Women	7	2.49
Men	4	1.77
Total	11	2.17
Rather bad		
Women	14	4.98
Men	20	8.85
Total	34	6.71
Rather good		
Women	113	40.21
Men	106	46.90
Total	219	43.20
Good		
Women	120	42.70
Men	69	30.53
Total	189	37.28
Very good		
Women	24	8.54
Men	13	5.75
Total	37	7.30
Total		
Women	281	100.00
Men	226	100.00
Total	507	100.00

inter-item correlation coefficients and alpha at item removal were used to determine the discriminatory power of individual HUS items. Receiver Operating Characteristics (ROC) analysis, including determination of the area under the curve (AUC) were used to determine the diagnostic cut-offs of the HUS. Principal component factor analysis was used to examine the factor structure of the HUS. SPSS PS IMAGO 8.0 was used for statistical analyses.

Table II. Types of psychoactive substances used

Psychoactive substances	<i>n</i>	%	χ^2	<i>p</i>
Alcohol				
Women	275	97.86	0.46	0.497
Men	219	96.90		
Total	494	97.44		
Sedative drugs				
Women	106	37.72	2.87	0.091
Men	69	30.53		
Total	175	34.52		
Cannabis				
Women	111	39.50	5.14	0.023
Men	112	49.56		
Total	223	43.98		
Cocaine				
Women	10	3.56	22.03	< 0.001
Men	35	15.49		
Total	45	8.88		
Amphetamine				
Women	25	8.90	22.47	< 0.001
Men	55	24.34		
Total	80	15.78		
Hallucinogens				
Women	18	6.41	15.77	< 0.001
Men	40	17.70		
Total	58	11.44		
Opioids				
Women	1	0.36	21.43	< 0.001
Men	19	8.41		
Total	20	3.94		
Other				
Women	10	3.56	15.17	< 0.001
Men	29	12.83		
Total	39	7.69		

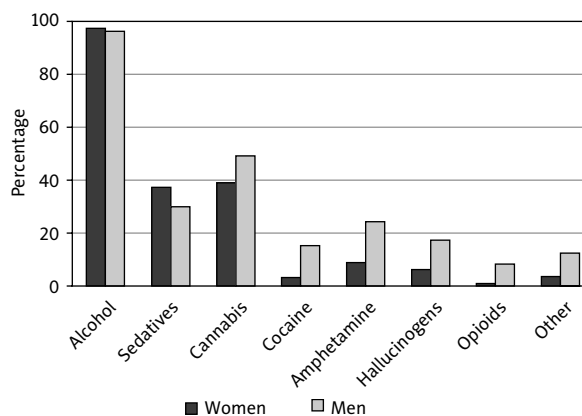
■ RESULTS

After the research was completed, the construct validity was performed first. Exploratory factor analysis was conducted to discover the structure of the HUS. The obtained results clearly stated that the HUS is univariate. The Kaiser-Meyer-Olkin coefficient (KMO) was 0.95, which indicates a very high sampling adequacy for each variable. The research assumption was confirmed, accord-

Table III. Results for the HUS, AUDIT and DUDIT questionnaires' criterion validity

HUS – overall result	Women	Men
AUDIT – overall result	0.91**	0.82**
DUDIT – overall result	0.52**	0.47**

***p* < 0.01

**Figure 1.** Use of psychoactive substances by gender

ing to which the included items of the HUS are correlated with each other and measure one factor of hazardous psychoactive substances use. The analysis detected only one factor with an eigen value of 6.73. Factor loadings were not provided because with only one factor revealed, the solution cannot be rotated and factor loadings cannot be calculated. To further ascertain whether the factor structure of the HUS is unidimensional, a confirmatory factor analysis (CFA) was conducted. The results confirmed a unifactor structure in three out of four indicators: comparative fit index (CFI) 0.93, Tucker-Lewis Index (TLI) 0.91, standardized root mean square residual (SRMR) 0.04 and slightly too high root mean square error of approximation (RMSEA) 0.15.

The HUS criterion validity

The criterion validity of the HUS was estimated by using the Pearson *r*-statistic and correlating the data obtained in the HUS with the results of the AUDIT and DUDIT questionnaires (Table III).

Correlations with AUDIT appear to be very high both in the group of women (*r* = 0.91) and men (*r* = 0.82). The strength of the relationship between the HUS and DUDIT scores fluctuates on the verge of a moderate correlation for both men (*r* = 0.47) and women (*r* = 0.52).

The HUS reliability

Reliability describes the accuracy with which the scale measures a phenomenon. From among many methods of assessing reliability, the authors chose the internal consistency measures of reliability analysis which examines the compliance of the respondents' answers to particular questions of the tool. Assessment is performed by designating the so-called Cronbach's α coefficient. It was assumed that the scale is reliable when it obtains Cronbach's α properties above 0.70. The reliability was assumed high when the index exceeds 0.80. The tools used for validation show the following reliability: AUDIT = 0.94, DUDIT = 0.97 in the study sample.

The coefficients of internal reliability (Cronbach's α) and indicators of split-half reliability (with Spearman-Brown correction) for the HUS shown by gender are presented in Table IV.

The obtained data show that the overall HUS split-half reliability index is 0.90 for women and 0.94 for men. The expected correlation of the randomly divided scale into two halves is confirmed.

The consistency of items included in the HUS, which was obtained by the Cronbach's α indicator,

is 0.94 for women and 0.94 for men. Items included in the composition of the univariate HUS are highly correlated with each other. This means that there is a high similarity between the answers. The respondents provided answers to particular questions in a similar way. It can therefore be assumed that items on the scale investigate the same phenomenon, which is hazardous substance use.

Then the discriminant power (α at item removal) for each question and the reliability of the scale after item removal (adjusted inter-item correlation coefficients) were calculated. The discriminant power of each question, calculated as the correlation of a given question with the overall score minus that question, is high. Detailed data is presented in Table V.

Cut-off points for initial diagnosis in HUS

ROC analyses were performed for the HUS score, according to the cut-off points for AUDIT

Table IV. Hazardous Use Scale reliability assessment

	Women	Men
Cronbach's α	0.94	0.96
Split-half reliability*	0.90	0.94

*Split-half reliability with Spearman-Brown correction

Table V. Discriminant power and alfa after item removal by gender

Hazardous Use Scale (HUS) items	Adjusted inter-item correlation coefficients		Alpha after item removal	
	W	M	W	M
1. I happen to be drunk or strongly influenced by substances.	0.80	0.85	0.93	0.95
2. In situations of nervousness, anxiety, joy, social gatherings or rest, I reach for alcohol or other substances.	0.61	0.77	0.94	0.96
3. Under the influence of alcohol or other substances, I sometimes engage myself in risky behaviours, e.g. driving a vehicle, fights, destroying objects, careless sex, excessive spending of money.	0.72	0.76	0.93	0.96
4. I was reminded that under the influence of alcohol or other substances, I behave in a way that is dangerous to my or other people's health.	0.73	0.74	0.93	0.96
5. After drinking alcohol or using other substances, I had done things which I later regretted or felt ashamed of.	0.71	0.78	0.93	0.96
6. I am having difficulty with fulfilling my obligations at work because of drinking alcohol or using other substances.	0.76	0.85	0.93	0.96
7. I neglect my housework because of drinking alcohol or using other substances.	0.82	0.87	0.93	0.95
8. I continue to drink or continue to use the substance even though it worsens my relationships with other people.	0.82	0.88	0.93	0.95
9. My previous interests, pleasures, health or self-care are set aside because of me drinking alcohol or using other substances.	0.82	0.89	0.93	0.95
10. When I "recover" from drinking or taking other substances, I feel physically or mentally unwell, for example I suffer from anxiety, irritability, mood swings, sleep problems, nausea.	0.80	0.85	0.93	0.96

Table VI. Area under the curve (AUC) – AUDIT and DUDIT diagnosis

AUDIT and DUDIT diagnosis	AUC	SE	p	95% CI	
				Lower	Upper
AUDIT – Hazardous use	0.93	0.11	< 0.001	0.91	0.95
AUDIT – Harmful use	0.96	0.01	< 0.001	0.94	0.98
AUDIT – Dependence	0.97	0.01	< 0.001	0.94	0.99
DUDIT – Hazardous use	0.82	0.03	< 0.001	0.77	0.88
DUDIT – Dependence	0.91	0.04	< 0.001	0.84	0.98

SE – standard error

Table VII. The HUS cut-off points, their sensitivity and specificity according to AUDIT and DUDIT

Patterns of use	HUS	Sensitivity		Specificity	
		AUDIT	DUDIT	AUDIT	DUDIT
Low risk use	0-6	–	–	–	–
Hazardous use	7-14	81%	91%	93%	65%
Suspicion of dependence	15-40	93%	93%	92%	78%

(0-7 – low-risk drinking, 8-15 – hazardous alcohol consumption, 16-19 – harmful alcohol consumption, 20 and more – suspected dependence) and for DUDIT (0-6 – low risk or abstinence, 7-25 – existence of risk factors, 26 and more – possible development of dependence).

The cut-off points for HUS were located according to a compromise between sensitivity and specificity. The area under the curve (AUC) was calculated in each case in order to determine the goodness of pre-diagnosis together with analysis of statistical significance for the AUC (Table VI).

The area under the curve (AUC) indicate very good initial diagnosis differentiation according to AUDIT and slightly weaker but still satisfactory according to DUDIT.

The cut-off points were calculated according to the ROC curves modelled on the AUDIT and DUDIT tests. The measures of test validity were used, which are sensitivity, i.e. the ability to diagnose ill people and specificity to detect healthy people. According to the analysis of obtained results, the authors proposed the following cut-off points (Table VII).

With the proposed cut-off points, the sensitivity of the scale is satisfactory in all cases. In the range of raw scores for HUS from 7 to 14 points, 81% (by AUDIT) and 91% (by DUDIT) of hazardous users were accurately detected. In case of suspicion of dependence (15-40 points), as many as 93% of people were correctly diagnosed.

The specificity of HUS, i.e. the ability to detect people who use low-risk substances, is high

in relation to alcohol use (AUDIT) and slightly lower for the initial diagnosis of hazardous drug use, calculated according to the DUDIT. This means that among 100 people who drink alcohol or use drugs with a low risk of harm to health, 7 persons (according to AUDIT) and 35 (according to DUDIT) have received an initial diagnosis of hazardous use. Dependence refers to 8 (according to AUDIT) and 22 (according to DUDIT) persons.

■ DISCUSSION

The aim of the article was to present and describe the psychometric properties of the proprietary HUS designed to measure alcohol and other psychoactive substance hazardous use among adults. The tool was developed in response to the introduction of new diagnostic criteria in the ICD-11 connected with alcohol and other psychoactive substances use disorders. In order to adjust the preventive interventions, there is a need to identify early symptoms that predict their later development into a full dependence syndrome. The presented scale was developed because of the lack of screening tools in health practice, e.g. primary health care (PHC).

The HUS is a one-way tool designed to measure the intensity of alcohol and other psychoactive substances use. The development of the scale revealed that it is possible to identify hazardous users and those suspected of being dependent. However, it should be pointed out that the HUS

does not differentiate alcohol use from other psychoactive substances. The detailed analyses, which were carried out throughout the research reveal that HUS has very good psychometric properties as a method. The adequacy measure for the selection of the analysis variables is satisfactory ($KMO = 0.95$). The criterion validity of the AUDIT is high for both women ($r = 0.91$) and men ($r = 0.82$). Regarding the DUDIT, the correlations are moderate in both groups (women: $r = 0.52$, men: $r = 0.47$). The HUS shows a better diagnostic index for alcohol use than for drug use. This result may have been influenced by the diversity of the group in terms of substance use. Most respondents admitted to using alcohol more often than other psychoactive substances.

Referring to the scale reliability, it can be confirmed that it is high for the group of women ($r = 0.94$) and men ($r = 0.96$), which makes possible to measure a given phenomenon accurately and repeatedly. Similar properties are reported by the AUDIT ($r = 0.91$) and DUDIT ($r = 0.92$), which indicates that the HUS is a tool of satisfactory reliability and can be compared with the methods commonly used so far. It is also worth noting that compared to other, less popular methods of measuring alcohol use intensity like the Alcohol Use Scale ($r = 0.94$), the HUS is relatively high [15, 25, 40].

The discriminant power and its high properties indicate a significant diagnostic value for the HUS and allow the tool to be used in a wide range of clinical practice, mainly by professionals in contact with people who abuse alcohol and other psychoactive substances. The proposed cut-off points were based on the AUDIT and DUDIT after taking into account the scale's sensitivity and specificity. The results of analyses are satisfactory in terms of sensitivity. The HUS accurately indicted hazardous substance use in 81% (according to AUDIT) and 91% (according to DUDIT). The HUS also accurately indicated suspicion of alcohol or other psychoactive substances dependence in 93% referring to both the AUDIT and DUDIT. Analyses concerning the dimension of specificity assumed higher properties for the AUDIT than for the DUDIT. This means there is little risk of misdiagnosis in the initial diagnosis of drug users in terms of hazardous use of psychoactive substances. Therefore, diagnostic caution is recommended. This may be related to the diversity of the study group in terms of psychoactive substance use as individuals were more

likely to choose alcohol as a psychoactive substance. However, it is worth adding that the HUS identifies alcohol-related problems more accurately than the CAGE questionnaire, which indicates only 53% of disorders for the elderly [41].

The strength of the presented scale is the enabling of initial diagnosis of hazardous users of alcohol and/or other psychoactive substances with a one tool. The conceptual separation of alcohol from other psychoactive substances in questions, corresponds to the common tendency of respondents to assign the name "psychoactive substance" to the so-called drugs and rather than alcohol in this category. Thus, the questions' structure is transparent. The five-point response scale allows positioning subjects with different patterns of alcohol and psychoactive substance use on a continuum, which corresponds to the current trend to define use by assessing severity in the ICD-11 and DSM-5 classifications [31, 32, 42].

Research indicates that it is possible to avoid serious consequences related to dependence if people in the high-risk, hazardous users' group are covered by appropriate support measures (i.e., for whom justified interventions have been undertaken). Patient treatment at the stage of hazardous use gives noticeable results and health benefits are possible compared to the no-treatment stage. In addition, treating hazardous drug users before dependence symptoms develop is more effective than treating drug addicts. This type of impact lowers financial and social costs connected with psychoactive substances dependence [31-33, 43-48]. The presented Hazardous Use Scale is a helpful screening tool for identifying patterns of hazardous alcohol or other psychoactive substances use.

Limitations. The presented scale also has its limitations. The scale's conceptual framework is ICD-11, but the tools used to validate it were created based on the ICD-10. The authors are considering using additional methods in further studies to obtain more reliable cut-off points like semi-structured interviews based on ICD-11. The scale shows a much better diagnostic index for alcohol use than drug use. This may have to do with the specifics of the pilot study and the diversity of the study group in terms of specific substance use. Analysis of the characteristics of the study population also indicated uneven numbers in age groups. The most numerous group is made up of people aged 21-30.

Young adults differ in terms of specifics of alcohol and other psychoactive substance use as they use much more often, which may have translated into HUS analyses [49]. In further studies, the authors will supplement the results with data from other age groups.

Another limitation of the present study as regards study of its factorial structure is that the Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) were applied on the same sample.

■ CONCLUSIONS

The analysis of test results showed very good HUS statistical parameters: 1) very high internal reliability was obtained and 2) high correlations of HUS results with AUDIT and DUDIT were obtained, which proves high validity.

The analysis of the obtained results allows the use of HUS a wide range of clinical practice by professionals in contact with alcohol and other psychoactive substance abusers.

Conflict of interest/Konflikt interesów

None declared./Nie występuje.

Financial support/Finansowanie

Ministry of Health provided financial support for this research in the programme framework: *Implementation of the alcohol dependence prevention programme and other psychoactive substances in adolescents and young adults in the Eastern Macroregion.*/Ministerstwo Zdrowia wsparło finansowo to badanie w ramach tematu: *Wdrożenie programu profilaktyki uzależnień od alkoholu i innych substancji psychoaktywnych u młodzieży i młodych dorosłych na terenie makroregionu wschodniego*; POWR.05.01.00-IP.05-00-015/19.

Ethics/Etyka

The research project was conducted with the approval of the research ethics committee of the John Paul II Catholic University of Lublin. The decision number is: KEBN_7/2022.

Badanie uzyskało zgodę Komisji Bioetycznej Katolickiego Uniwersytetu Lubelskiego Jana Pawła II w Lublinie, nr KEBN_7/2022.

The work described in this article has been carried out in accordance with the Code of Ethics of the World Medical Association (Declaration of Helsinki) on medical research involving human subjects, Uniform Requirements for manuscripts submitted to biomedical journals and the ethical principles defined in the Farmington Consensus of 1997.

Treści przedstawione w pracy są zgodne z zasadami Deklaracji Helsińskiej odnoszącymi się do badań z udziałem ludzi, ujednoliconymi wymaganiami dla czasopism biomedycznych oraz z zasadami etycznymi określonymi w Porozumieniu z Farmington w 1997 roku.

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■ ANNEX

The Hazardous Use Scale (HUS) sheet

Authors: Robert Modrzyński, Agnieszka Pisarska, Izabela Małecka-Kostrubiec

Instruction: The following are statements about drinking alcohol or using other psychoactive substances such as opiates, sedatives, sleeping pills, cannabinoids, hallucinogens, cocaine and other stimulants. Read them carefully and for each sentence mark one answer with a cross, that best describes your drinking or substance use in the last 12 months.

<p>1. I happen to be drunk or strongly influenced by substances.</p> <p><input type="checkbox"/> 0 – Never <input type="checkbox"/> 1 – Less than once a month <input type="checkbox"/> 2 – Once a month <input type="checkbox"/> 3 – Once a week <input type="checkbox"/> 4 – Every day or almost every day</p>	<p>6. I am having difficulty with fulfilling my obligations at work because of drinking alcohol or using other substances.</p> <p><input type="checkbox"/> 0 – Never <input type="checkbox"/> 1 – Less than once a month <input type="checkbox"/> 2 – Once a month <input type="checkbox"/> 3 – Once a week <input type="checkbox"/> 4 – Every day or almost every day</p>
<p>2. In situations of nervousness, anxiety, joy, social gatherings or rest, I reach for alcohol or other substances.</p> <p><input type="checkbox"/> 0 – Never <input type="checkbox"/> 1 – Less than once a month <input type="checkbox"/> 2 – Once a month <input type="checkbox"/> 3 – Once a week <input type="checkbox"/> 4 – Every day or almost every day</p>	<p>7. I neglect my housework because of drinking alcohol or using other substances.</p> <p><input type="checkbox"/> 0 – Never <input type="checkbox"/> 1 – Less than once a month <input type="checkbox"/> 2 – Once a month <input type="checkbox"/> 3 – Once a week <input type="checkbox"/> 4 – Every day or almost every day</p>
<p>3. Under the influence of alcohol or other substances, I sometimes engage myself in risky behaviours, e.g. driving a vehicle, fights, destroying objects, careless sex, excessive spending of money.</p> <p><input type="checkbox"/> 0 – Never <input type="checkbox"/> 1 – Less than once a month <input type="checkbox"/> 2 – Once a month <input type="checkbox"/> 3 – Once a week <input type="checkbox"/> 4 – Every day or almost every day</p>	<p>8. I continue to drink or continue to use the substance even though it worsens my relationships with other people.</p> <p><input type="checkbox"/> 0 – Never <input type="checkbox"/> 1 – Less than once a month <input type="checkbox"/> 2 – Once a month <input type="checkbox"/> 3 – Once a week <input type="checkbox"/> 4 – Every day or almost every day</p>
<p>4. I was reminded that under the influence of alcohol or other substances, I behave in a way that is dangerous to my or other people's health.</p> <p><input type="checkbox"/> 0 – Never <input type="checkbox"/> 1 – Less than once a month <input type="checkbox"/> 2 – Once a month <input type="checkbox"/> 3 – Once a week <input type="checkbox"/> 4 – Every day or almost every day</p>	<p>9. My previous interests, pleasures, health or self-care are set aside because of me drinking alcohol or using other substances.</p> <p><input type="checkbox"/> 0 – Never <input type="checkbox"/> 1 – Less than once a month <input type="checkbox"/> 2 – Once a month <input type="checkbox"/> 3 – Once a week <input type="checkbox"/> 4 – Every day or almost every day</p>
<p>5. After drinking alcohol or using other substances, I had done things which I later regretted or felt ashamed of.</p> <p><input type="checkbox"/> 0 – Never <input type="checkbox"/> 1 – Less than once a month <input type="checkbox"/> 2 – Once a month <input type="checkbox"/> 3 – Once a week <input type="checkbox"/> 4 – Every day or almost every day</p>	<p>10. When I "recover" from drinking or taking other substances, I feel physically or mentally unwell, for example I suffer from anxiety, irritability, mood swings, sleep problems, nausea.</p> <p><input type="checkbox"/> 0 – Never <input type="checkbox"/> 1 – Less than once a month <input type="checkbox"/> 2 – Once a month <input type="checkbox"/> 3 – Once a week <input type="checkbox"/> 4 – Every day or almost every day</p>

■ ANEKS

Skala Używania Ryzykownego (SUR)

Autorzy: Robert Modrzyński, Agnieszka Pisarska, Izabela Małecka-Kostrubiec

Instrukcja: Poniżej znajdują się stwierdzenia dotyczące picia alkoholu lub używania innych substancji psychoaktywnych, takich jak opiaty, leki uspokajające, nasenne, kanabinoły, substancje halucynogenne oraz kokaina i inne substancje stymulujące. Przeczytaj je uważnie i przy każdym zdaniu zaznacz krzyżykiem jedną odpowiedź, która najlepiej opisuje Twój sposób picia lub używania substancji w ciągu ostatnich 12 miesięcy.

<p>1. Zdarza mi się upić lub być pod silnym wpływem substancji.</p> <p><input type="checkbox"/> 0 – nigdy <input type="checkbox"/> 1 – rzadziej niż raz w miesiącu <input type="checkbox"/> 2 – raz w miesiącu <input type="checkbox"/> 3 – raz w tygodniu <input type="checkbox"/> 4 – codziennie lub prawie codziennie</p>	<p>6. Mam trudności w wypełnianiu zobowiązań w pracy z powodu picia alkoholu lub używania innych substancji.</p> <p><input type="checkbox"/> 0 – nigdy <input type="checkbox"/> 1 – rzadziej niż raz w miesiącu <input type="checkbox"/> 2 – raz w miesiącu <input type="checkbox"/> 3 – raz w tygodniu <input type="checkbox"/> 4 – codziennie lub prawie codziennie</p>
<p>2. W sytuacjach zdenerwowania, niepokoju, radości, spotkań towarzyskich lub odpoczynku sięgam po alkohol lub inne substancje.</p> <p><input type="checkbox"/> 0 – nigdy <input type="checkbox"/> 1 – rzadziej niż raz w miesiącu <input type="checkbox"/> 2 – raz w miesiącu <input type="checkbox"/> 3 – raz w tygodniu <input type="checkbox"/> 4 – codziennie lub prawie codziennie</p>	<p>7. Zaniedbuję obowiązki domowe z powodu picia alkoholu lub używania innych substancji.</p> <p><input type="checkbox"/> 0 – nigdy <input type="checkbox"/> 1 – rzadziej niż raz w miesiącu <input type="checkbox"/> 2 – raz w miesiącu <input type="checkbox"/> 3 – raz w tygodniu <input type="checkbox"/> 4 – codziennie lub prawie codziennie</p>
<p>3. Pod wpływem alkoholu lub innych substancji zdarza mi się podejmować ryzykowne zachowania, np. kierowanie pojazdem, bójki, niszczenie przedmiotów, nieostrożny seks, przesadne wydawanie pieniędzy.</p> <p><input type="checkbox"/> 0 – nigdy <input type="checkbox"/> 1 – rzadziej niż raz w miesiącu <input type="checkbox"/> 2 – raz w miesiącu <input type="checkbox"/> 3 – raz w tygodniu <input type="checkbox"/> 4 – codziennie lub prawie codziennie</p>	<p>8. Piję dalej lub kontynuuję używanie substancji, mimo że pogarsza to moje relacje z innymi ludźmi.</p> <p><input type="checkbox"/> 0 – nigdy <input type="checkbox"/> 1 – rzadziej niż raz w miesiącu <input type="checkbox"/> 2 – raz w miesiącu <input type="checkbox"/> 3 – raz w tygodniu <input type="checkbox"/> 4 – codziennie lub prawie codziennie</p>
<p>4. Zwracano mi uwagę, że będąc pod wpływem alkoholu czy innych substancji, zachowuję się w sposób niebezpieczny dla swojego zdrowia lub innych osób.</p> <p><input type="checkbox"/> 0 – nigdy <input type="checkbox"/> 1 – rzadziej niż raz w miesiącu <input type="checkbox"/> 2 – raz w miesiącu <input type="checkbox"/> 3 – raz w tygodniu <input type="checkbox"/> 4 – codziennie lub prawie codziennie</p>	<p>9. Moje dotychczasowe zainteresowania, przyjemności, zdrowie lub dbanie o siebie schodzą na dalszy plan z powodu picia alkoholu lub używania innych substancji.</p> <p><input type="checkbox"/> 0 – nigdy <input type="checkbox"/> 1 – rzadziej niż raz w miesiącu <input type="checkbox"/> 2 – raz w miesiącu <input type="checkbox"/> 3 – raz w tygodniu <input type="checkbox"/> 4 – codziennie lub prawie codziennie</p>
<p>5. Pijąc alkohol lub używając innych substancji, robiłem rzeczy, których później żałowałem lub przez które było mi wstyd.</p> <p><input type="checkbox"/> 0 – nigdy <input type="checkbox"/> 1 – rzadziej niż raz w miesiącu <input type="checkbox"/> 2 – raz w miesiącu <input type="checkbox"/> 3 – raz w tygodniu <input type="checkbox"/> 4 – codziennie lub prawie codziennie</p>	<p>10. Kiedy „dochodzę do siebie” po picu lub braniu innych substancji, źle się czuję fizycznie lub psychicznie, np. odczuwam niepokój, drażliwość, wahania nastroju, problemy ze snem, nudności.</p> <p><input type="checkbox"/> 0 – nigdy <input type="checkbox"/> 1 – rzadziej niż raz w miesiącu <input type="checkbox"/> 2 – raz w miesiącu <input type="checkbox"/> 3 – raz w tygodniu <input type="checkbox"/> 4 – codziennie lub prawie codziennie</p>

