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Health literacy in people undergoing treatment for alcohol abuse – A pilot study

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ABSTRACT

The evidence suggests that limited health literacy (HL) may be associated with health risk behaviour such as smoking, alcohol drinking, or substance use. The aim of this study was to examine the level of HL in people undergoing treatment for alcohol abuse and to determine the most problematic domain of HL. The cross-sectional survey included 113 participants from two facilities in Prague (Department of Addictology and Bohnice Psychiatric Hospital). HL was measured using the HLS-EU-Q questionnaire developed by the European Health Literacy Consortium. The mean general health literacy (GHL) score of the sample was 34.1, indicating a sufficient level of HL. However, almost half of the sample showed a limited level of HL. Health promotion was identified as the most problematic domain of HL, with fifty percent of participants having a limited level. Outpatients achieved overall better scores than inpatients, although the difference was not significant. We found no statistical differences between tested variables. The results suggest that the prevalence of limited HL in people undergoing treatment for alcohol abuse is relatively high. Interventions should be carried out to increase the overall level of HL. An adequate level of HL may improve overall health, as well as the treatment outcomes of people addicted to alcohol.

Introduction

Health literacy (HL) has been identified as one of the key determinants of population health [1–5]. It is an important health construct which influences people's ability to obtain, process, and understand basic health information in order to gain and maintain good health [6]. Addiction in general, and alcohol abuse in particular, are important and still emerging health issues of public health agenda. In the Czech Republic, alcohol consumption is generally very high. The recorded consumption of pure alcohol is 12.7 litres per capita per year in comparison with the average of 8.6 litres in the WHO European region [7]. However, the representative survey carried out by Váňová et al. [8] in 2016 showed that the annual alcohol consumption is

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about 6.8 litres per capita per year. The difference is likely caused by a different methodology and indicates that the actual annual alcohol consumption in the Czech Republic might be much lower than that reported by the WHO. According to the Room et al. [9], alcohol is causally related to more than 60 different medical conditions. Globally, 4% of the burden of disease is caused by alcohol. In the Czech Republic, alcohol use is considered as one of the 10 largest health problems of the population. Whilst alcohol use is socially accepted, this is not true for alcohol addiction, which is highly stigmatized in the Czech Republic [10, 11].

In western countries, it is expected that people will be actively engaged in self-management and take part of the responsibility for their own health. People are encouraged to participate with physicians in shared decision making concerning their health and healthcare. However, it is necessary to have a set of capabilities in order to make appropriate health decisions [12, 13]. Recently, those skills have been conceptualized as health literacy [14]. Together with empowerment, an adequate level of HL is believed to be fundamental for patient engagement [15, 16].

The definition of HL is however not unified. According to the definition proposed by the European Health Literacy Consortium [5], *"Health literacy is linked to literacy and entails people's knowledge, motivation and competences to access, understand, appraise and apply health information in order to make judgments and take decisions in everyday life concerning healthcare, disease prevention and health promotion to maintain or improve quality of life during the life course"*. Apart from healthcare, this definition also includes other domains of health, particularly health promotion and disease prevention. It highlights decision making in everyday life, not only in clinical practice [5].

As mentioned above, HL is linked to general literacy and thus can be modified through education. Additionally, HL skills include communication, decision-making, information seeking, and the most advanced ability – critical thinking [4].

A population study conducted by Sørensen et al. [17] showed that the level of HL is relatively low among European adults. Limited HL concerns almost half of the research sample (12.4% had inadequate HL, 35.2% problematic HL), although the outcomes vary between countries. As for the Czech Republic, Kučera et al. [18] found that nearly 60% of Czechs showed limited HL. In comparison to the eight countries included in Sørensen's study, this is the second worst outcome. So far there is limited evidence about HL in the specific population groups as the research into this topic is not fully developed and we do not have robust and proven measurement tools for these population subgroups.

A higher proportion of people with limited HL was found among people with a low socioeconomic status, lower educational attainment, or older age, indicating the presence of a social gradient [17, 19].

A growing body of literature suggests people with limited HL are at a greater risk of worse access to healthcare and worse health outcomes. Limited HL is associated with an increased number of hospitalizations, greater use of emergency care, poorer medication adherence, misinterpretation in reading labels (prescription medications and nutrition), poorer overall health status, and higher mortality. Furthermore, most outcomes were significant even after controlling for potential confounding variables [20, 21]. The data indicate that inadequate HL is also associated with a lower knowledge of their chronic disease among chronic patients [22], worse physical and mental health [23], and lower use of preventive health services [24].

There is evidence that HL may be associated with health risk behavior, such as smoking, alcohol drinking, or substance use [1, 13, 14, 23, 25–39]. The results indicate that exceeding the recommended maximum alcohol doses and alcohol abuse may be one of the consequences of an inadequate level of HL. In the case of alcohol dependence, low level of HL might lead to poor treatment outcomes, with patients dropping out of the treatment and relapsing. However, the link between limited HL and alcohol consumption was only found to be significant in two studies [25, 33]. The results of other papers were either non-significant or they found a negative association [1, 13, 23, 26, 28, 29, 31, 34–37, 39]. This leaves us in uncertainty about the actual relation between the HL level and alcohol consumption; hence, it might also indicate that people with adequate HL drink alcohol more often or in greater quantity than people with limited HL. Lee et al. [40] argues that people engaged in risky health behaviour may have limited access and/or limited ability to understand health and medical information. The aims of the present study are: (1) to examine the level of general health literacy (GHL) in people undergoing treatment for alcohol abuse, and (2) to 80 determine the most problematic domain of HL.

Despite the prior research showing the negative association of HL and alcohol intake in the general population, we hypothesize that given the severity of alcohol addiction, the majority of the research sample would have a limited level of HL. We expect that the level of HL will be congruent with the general population.

Materials and methods

This study is based on cross-sectional data. The study design was approved by the Review Boards of the General University Hospital in Prague (Ref. 101/17 grant GAUK 1. LF UK) and the Bohnice Psychiatric Hospital.

Participants and data collection

A questionnaire survey was conducted between February and May 2018 at two healthcare facilities that provide addiction treatment in Prague: (1) Department of Addictology, First Faculty of Medicine, Charles University in Prague and General University Hospital in Prague, and (2) departments for addiction treatment in the Psychiatric Hospital Bohnice. The participants were selected by the convenience sampling method. The data were obtained from men and women over 18 years of age who were undergoing treatment for alcohol abuse at the time of the study. The research sample consisted of inpatients (n = 60) and outpatients (n = 53). Inpatients include people

undergoing the rehab programme or aftercare. Outpatients are people at different phases of the addiction treatment who are attending group therapy and people undergoing the disulfiram treatment.

The participants were addressed through the head physicians of the respective facility. The data were collected in the departments through a self-report questionnaire under the supervision of the administrator. Before entering the study, each participant signed the informed consent.

A total of 135 respondents participated in the study. However, 22 questionnaires had to be removed from the analysis due to incomplete responses. The final research sample consisted of 113 participants.

Measures

HL was measured using the HLS-EU-Q47 questionnaire developed by the European Health Literacy Consortium. The instrument was lent and translated into Czech by the National Institute of Public Health. The research team received official approval to use it (Ref. PID UK1LF18G/03010 001). In a self-administered survey, participants evaluated 47 items concerning HL on a 5-point Likert scale ranging from "very difficult" to "very easy". An escape option of "don't know" was coded as a missing value, and the participants were warned to use this option as little as possible. The instrument contains three domains of HL that can be analyzed separately: healthcare, disease prevention, and health promotion. The four levels of GHL are defined as: "inadequate" (0–25), "problematic" (>25–33), "sufficient" (>33–42) and "excellent" (>42–50). The combination of "inadequate" and "problematic" levels is labelled as "limited health literacy".

The sociodemographic information collected from each participant included gender, age, marital status, household living situation, educational attainment, employment, formal health education, household net income, region of residence, cigarette smoking status, and information about mental illness. Most of the questions were taken from the extended version of the HLS-EU-Q86 questionnaire.

Data analysis

We analyzed the data using IBM SPSS Statistics 23. To calculate the indices of the GHL and individual domains, we used the formula:

$$Index = (\text{mean} - 1) \times \left(\frac{50}{3}\right)$$

where *Index* is the specific index calculated, mean is the mean of all participating items for each individual, 1 is the minimal possible value of the mean, 3 is the range of the mean, and 50 is the chosen maximum value of the new metric. Index 0 represents the lowest possible HL and 50 the highest HL [41].

We examined the reliability using Cronbach's alpha. Internal consistency of the GHL was very high with the alpha coefficient equal to 0.967. Descriptive statistics was used to analyze the sociodemographic information about participants. Contingency tables were assembled to determine statistical dependence between the HL and the sociodemographic characteristics (gender, age, marital status, household living situation, educational attainment, employment, formal health education, household net income, region of residence, cigarette smoking status, and information about mental illness). The HL variables were dichotomized. To test the null hypothesis that the variables are independent, we used Pearson's chi-squared test or Fisher's exact test (where the conditions for the chi-squared were not fulfilled). The significance level was set at 0.05.

Results

The complete sociodemographic characteristics of the participants are presented in Table 1. The mean age of the participants was 46.1 years. The sample consisted of 36.3% women (n = 41) and 63.7% men (n = 72). Most of the participants (39.8%) had completed higher education, reported a household net income of CZK 35,001–60,000 (27.4%), and were currently smokers (64.6%). With regards to their education, some interesting information was that 15.9% of respondents had formal health education.

The health literacy outcomes are shown in Table 2. The mean score of the GHL of the research sample was 34.1 (out of 50). According to the level categorization, 13.3% participants had inadequate GHL (0–25), 33.6% of them had problematic GHL (>25–33), 34.5% had sufficient GHL (>33–42), and 18.6% had excellent GHL (>42–50). After dichotomization of the GHL scores, almost half of the sample (46.9%) showed limited HL (below 33).

As for the healthcare domain, 7.1% had inadequate, 26.5% problematic, 38.1% sufficient, and 24.8% excellent level. In the disease prevention domain, 17.7% reached inadequate, 26.5% problematic, 30.1% sufficient, and 21.2% excellent level. In the health promotion domain, 25.7% had inadequate, 24.8% problematic, 32.7% sufficient, and 15.0% excellent level.

The average GHL score of outpatient participants was 33.9. Out of them, 11.3% had inadequate, 30.2% problematic, 47.2% sufficient, and 11.3% excellent level of HL. The average GHL score of inpatient participants was 34.3, where 15.0% reached inadequate, 36.7% problematic, 23.3% sufficient, and 25.0% excellent level of HL.

Table 3 describes the association between GHL and the sociodemographic factors (p-values of the test of independence in the contingency table). Based on the tests, we cannot refuse independence of the GHL and any of the investigated sociodemographic factors.

Answers to individual questions indicate that, for most of the participants, it is quite easy to call an ambulance in case of an emergency or to understand instructions on how to take their prescribed medicine. On the other hand, they are not so sure when it comes to finding out about political changes that may affect health, or searching for information on how their neighbourhood could be more health-friendly.

Table 1 – Sociodemographic characteristics of participants

Sociodemographics	Men (*n*, %)	Women (*n*, %)	Total (*n*, %)
Mean age	45.8	46.6	46.1
Marital status			
Not married	28 (38.9)	7 (17.1)	35 (31.0)
Married	28 (38.9)	23 (56.1)	51 (45.1)
Separated/divorced	13 (18.1)	8 (19.5)	21 (18.6)
Widowed	1 (1.4)	3 (7.3)	4 (3.5)
Household living situation			
Single/living alone	22 (30.6)	8 (19.5)	30 (26.5)
Living together/shared household	40 (55.6)	29 (70.7)	69 (61.1)
In a relationship but not living together	3 (4.2)	4 (9.8)	7 (6.2)
Highest level of education			
Primary education	6 (8.3)	0 (0.0)	6 (5,3)
Secondary school without graduation	14 (19.4)	4 (9.8)	18 (15.9)
Secondary school with graduation	20 (27.8)	18 (43.9)	38 (33.6)
Higher professional education	2 (2.8)	3 (7.3)	5 (4.4)
Higher education	29 (40.3)	16 (39.0)	45 (39.8)
Main status of employment			
Full-time	31 (43.1)	18 (43.9)	49 (43.4)
Part-time	5 (6.9)	5 (12.2)	10 (8.8)
Self-employed	13 (18.1)	3 (7.3)	16 (14.2)
Unemployed	11 (15.3)	7 (17.1)	18 (15.9)
Other	9 (12.5)	8 (19.5)	17 (15.0)
Formal health education	7 (9.7)	11 (26.8)	18 (15.9)
Household net income			
<15 000 CZK	8 (11.1)	8 (19.5)	16 (14.2)
15 001–35 000 CZK	18 (25.5)	11 (26.8)	29 (25.7)
35 001–60 000 CZK	22 (30.6)	9 (22.0)	31 (27.4)
>61 001 CZK	11 (15.3)	5 (12.2)	16 (14.2)
Missing	13 (18.1)	8 (19.5)	21 (18.6)
Mental illness	16 (22.2)	13 (31.7)	29 (25.7)
Cigarette smoking status			
Current smoker	47 (65.3)	26 (63.4)	73 (64.6)
Non-smoker	23 (31.9)	14 (34.1)	37 (32.7)

Table 2 – The mean scores (0–50) of health literacy of participants

Health literacy	Men	Women	Total
General HL	34.0	34.4	34.1
Healthcare	36.8	36.0	36.5
Disease prevention	33.6	34.7	34.0
Health promotion	31.4	32.2	31.7

Discussion

As far as we know, this is the first study focused on HL in people undergoing treatment for alcohol abuse. Furthermore, we are the first to use the HLS-EU-Q47 questionnaire in a population of people who are addicted to alcohol.

In this study, we examined the level of HL in people receiving treatment for alcohol abuse. We used the validated comprehensive instrument intended for European population.

We found that almost half of the sample had a limited level of GHL. Although the mean score was 34.1 (out of 50), which indicates a sufficient level of HL, given the proximity to the cut-off score that divides the problematic and sufficient levels (33 points), we consider the result to be a borderline one. Compared to the population study conducted by Kučera et al. [18], the participants in our study achieved overall higher scores in all scales than the general population. Kučera et al. [18] identified nearly sixty percent of people with limited HL. The assumption that limited HL would be more prevalent in people addicted to alcohol than in the general population proved to be wrong. Now we can hypothesize that an experience with the healthcare system may play a role as all participants were recruited from patients in healthcare facilities. Most of them underwent inpatient treatment for alcohol abuse, which usually takes 3–6 months. Patients were in everyday close contact with healthcare professionals, and thus they may be better familiarized with the healthcare system, possess better knowledge about health, and have a better insight into disease prevention than the average person. However, the participants might also be inclined to answer in a socially appropriate way.

Our study population is also specific in terms of motivation. Patients undergoing voluntary addiction treatment are usually highly motivated to change their lives and improve their health. We cannot a priori expect

Table 3 – General health literacy of participants and statistical significance

Independent variables	GHL score	*p*
Gender		0.734
Marital status		0.177
Not married	33.5	
Married	33.8	
Separated/divorced	34.9	
Widowed	39.0	
Household living situation		1.000
Single/living alone	35.6	
Living together/shared household	33.7	
In a relationship but not living together	37.5	
Highest level of education		0.421
Primary education	31.5	
Secondary school without graduation	33.4	
Secondary school with graduation	33.7	
Higher professional education	32.7	
Higher education	35.4	
Main status of employment		0.088
Full-time	33.3	
Part-time	33.5	
Self-employed	37.2	
Unemployed	35.3	
Other	34.1	
Formal health education		0.571
Yes	38.0	
No	33.5	
Household net income		0.370
<15 000 CZK	34.7	
15 001–35 000 CZK	34.1	
35 001–60 000 CZK	31.8	
>61 001 CZK	34.4	
Mental illness		0.180
Yes	32.7	
No	34.9	
Cigarette smoking status		0.069
Current smoker	34.3	
Non-smoker	34.4	

the same in the general population. People that are highly motivated to change their health behaviour might be more open to receiving recommendations regarding their health. We assume that this aspect could increase the values in our study.

Similar to the study of Kučera et al. [18], our results indicate that health promotion is the most problematic domain of HL. The results show that slightly more than half of the participants have a limited level of HL in this domain. In Kučera's study, the limited level of health promotion was observed in nearly two-thirds of the participants. HL is considered as a key concept of health promotion [2]. The WHO [42] defines health promotion as: *"The process of enabling people to increase control over, and to improve, their health."* These facts indicate that people are not sufficiently aware of how to maintain and improve their health. An increasing awareness of health promotion should be one of the first interventions to focus on in terms of increasing GHL. With regard to alcohol use, this means increasing awareness about recommendations on moderate drinking and highlighting the benefits of abstinence and moderate drinking for individuals. Similar outcomes regarding the health promotion domain in our sample and in the general population suggests that the problem may be nationwide. Thus, the interventions should be applied to the entire population.

It should be noted that we used a different method of data collection to Kučera et al. [18] and focused on a very specific target group. Hence, the results of the comparison have a limited validity.

In GHL, the outpatient participants achieved slightly better scores than the inpatients (41.5% vs. 51.7% in limited HL), although the difference was not statistically significant. The reason for this might be that the outpatient group consisted of participants from different phases of the addiction treatment. Besides those who were currently addicted to alcohol, the group also included participants who have been abstaining from alcohol for several months to years. It is likely that these individuals were more exposed to treatment and had a better health condition than hospitalized participants. Additionally, the outpatient treatment is primarily intended for people with a lower level of addiction.

Unlike other studies [17, 19], we found no statistically significant association between HL and sociodemographic characteristics. Despite the fact that nearly forty-five percent of our research sample had a higher education, this had no positive effect on the level of HL. The mean score of people with higher education was 35.13. This figure indicates a sufficient level of HL, although the score lies at the bottom of the range. Similarly, we have not found any association of HL with formal health education nor with age or household net income. These findings indicate that there may be other factors than sociodemographic characteristics affecting the level of HL. Another explanation may be that the HLS-EU-Q47 questionnaire may not be fully suitable for use in such specific populations, as HLS-EU-Q is primarily intended for population research of HL in European countries.

The high percentage of highly educated people in our sample is interesting in itself. It supports the results of Huerta and Borgonovi [43] that tertiary education attainment is associated with increased probability of daily alcohol consumption and problematic drinking.

The limitations of this study must be acknowledged. First, the cross-sectional design of the study precludes causality, so the results should be interpreted with caution. Second, the data were collected using a self-report questionnaire, which may be subject to a social desirability bias. Thus the results might not reflect the actual level of HL, but rather how the person wants to be seen. Furthermore, the HLS-EU-Q47 is not validated for such a specific population as people with addiction. It is possible that our participants had difficulties with comprehending the questionnaire, as we did not check its readability nor the reading skills of the participants. Third, because of a small research sample, we cannot make any final conclusions. Further research with a representative sample is needed to confirm our outcomes.

The strength of this study is the use of a standardized instrument measuring comprehensive HL. Additionally, as far as we know, this is the first attempt to measure the level of HL in people with alcohol addiction.

Conclusions

Little attention has been paid to HL in people with addiction. In the present study, we focused on the HL in people undergoing treatment for alcohol abuse. The prevalence of limited HL was relatively high. However, the overall level of general HL of the sample was characterized as sufficient. We have not found any statistically significant association between the tested variables.

Further research is needed to validate the instrument for the population studied. Research should also be done using other types of instruments to check the validity of the outcomes. It is necessary to identify the level of HL among other populations with addiction and in a different setting. Researchers should also focus on interventions increasing the level of HL. We believe that an adequate level of HL might improve the overall health state as well as treatment outcomes in people addicted to alcohol. The outcomes of this study support the current need to develop and implement various measures related to alcohol use at national and regional level based on HL concepts.

Conflict of interests

The authors have no conflict of interests to declare.

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