

# Homeless people under the influence of alcohol admitted to hospital emergency departments in Poland

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## Abstract

**Aim:** To assess the incidence of diagnoses related to alcohol use in the population of homeless people admitted to hospital emergency departments (EDs). **Material and method:** Data were analysed from three hospitals concerning stays of homeless people in three EDs in Bydgoszcz, Poland, in 2013–2015; 3133 stays were identified. The data were compiled using Microsoft Excel and Statistica 10 statistical software. **Results:** At the time of admission to EDs, 31% of homeless people were considered to be under the influence of alcohol. Diagnoses related to alcohol use accounted for 25% of all diagnoses. The average blood alcohol concentration in the patients was 2.97 per mille. The average blood alcohol concentration in the group of men was significantly higher than that in the group of women ( $p = 0.015$ ). The average length of stay in the ED of patients under the influence of alcohol was significantly longer ( $p < 0.0001$ ) than among sober patients. **Conclusions:** Homeless people under the influence of alcohol account for a third of the population of homeless patients admitted to hospital emergency departments, while alcohol-related ICD-10 diagnoses account for a fourth of all diagnoses in these patients. Homeless patients under the influence of alcohol stay longer in hospital emergency departments than do sober homeless

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people, which may translate into more frequent acts of aggression towards medical personnel. In Poland there are no systemic ED-level solutions as regards dealing with homeless patients for whom alcohol dependence is in many cases a reality.

### Keywords

alcohol, homelessness, hospital emergency department

Professional literature contains a wealth of studies on the harmful use of alcohol and its substitutes by homeless persons and on the problem of alcohol dependence among this population (Fazel, Khosla, Doll, & Geddes, 2008; Salize et al., 2002; Wright & Tompkins, 2006). Alcohol dependence is a disorder listed in the catalogue of the International Statistical Classification of Diseases and Related Health Problems ICD-10 (WHO, 2009) under the code F10.2. When untreated, this dependence leads to deteriorating health (Jellinek, 1993), disability, and premature death (Agardh et al., 2016; Beijer, Andreasson, Agren, & Fugelstad, 2011; Ramstedt, 2007; Stenius-Ayoade et al., 2017).

The health of homeless people is strongly correlated with their lifestyle, which is characterised not only by alcohol misuse but also by malnutrition, lack of basic hygiene, and carelessness about health. Numerous studies confirm poorer health among homeless people in comparison to the general health condition of the entire society (Buciński et al., 2007; Fazel, Geddes, & Kushel, 2014; Fazel et al., 2008; Hwang, 2001).

Many of the somatic diseases which most commonly occur among the homeless are a consequence of their alcohol use disorder (Agardh et al., 2016): alcoholic epilepsy; chronic inflammation of oral mucous membranes, oesophagus, stomach, and duodenum; impaired absorption from the gastrointestinal tract; oesophageal varices; liver steatosis, inflammation, fibrosis, and cirrhosis; acute and chronic pancreatitis; arterial hypertension; cardiomyopathy; coronary heart disease; renal failure; skin lesions; polyneuropathy; damage to

the central nervous system or Korsakoff syndrome; and vitamin deficiencies (Gałka, 2008; Wright & Tompkins, 2006).

Alcohol is also the cause of more physical injuries among homeless people (Feodor Nilsson, Hjorthøj, Erlangsen, & Nordentoft, 2014), who often have visible physical disability. Injuries are the result of falls, traffic accidents, as well as assault and battery or even rape in the case of homeless women (Crowe & Hardill, 1993). Disability can also stem from lower limb amputation, limb paresis, and mobility problems (Pietrzak-Komar, 2014).

While homeless people have been shown to have poorer health – often coexisting with alcoholism and its consequences – researchers have similarly shown that the homeless face numerous barriers in terms of access to regular medical care (Dębski, 2010; Hoshide, Manog, Noh, & Omori, 2011). Providing medical care and satisfying homeless people's needs mostly involves ad hoc interventions, which is not conducive to the comprehensive healthcare of this marginalised community (Järvinen, 1995). The result is that homeless people tend to be repeatedly admitted to hospital emergency departments (EDs) for urgent medical care (Han & Wells, 2003; Kushel, Vittinghoff, & Haas, 2001; Richardson & Hwang, 2001). A significant number of these patients live on the streets; they are non-institutionalised homeless people who do not sleep in shelters.

Poland also has a special problem in that the dependence treatment procedures, which can often be ineffective in the population of homeless people, are time-consuming (Dębski, 2010). Moreover, the attitude of homeless

people towards treatment is usually negative (Przewoźnik, 2011), which may lead to low probability of participation in therapy and its effective completion. This is the case among the non-institutionalised homeless in particular, which further worsens their physical and mental health (Przewoźnik, 2011). In addition, homeless people who misuse psychoactive substances, and those with mental disorders or with a double diagnosis, are less welcome by aid institutions. In many shelters in Poland, sobriety is one of the main, strictly supervised, criteria.

The problem of healthcare and treatment of homeless people dependent on alcohol and those with mental disorders is obviously known in other European countries too (Alexanderèíková, Okruhlica, Valková, Germeň, 2009), including the Nordic countries (Järvinen, 1995), which are seen as providing some of the templates of addiction treatment (Thorpenberg, 2010). However, it should be emphasised that, compared to other European countries, including Poland, alcohol policy in the Nordic countries results in a relatively lower level of alcohol consumption (Bujalski, 2012; Thorpenberg, 2010). Problems arising from alcohol misuse in these countries may therefore not be as severe (Ritson, 2000).

The needs of comprehensive healthcare, psychiatric care, and dependence treatment among homeless people are complex (Byrne et al., 2003; Fulde & Duffy, 2006; Alexanderèíková et al., 2009), and ad hoc care and interventions for this group of patients in EDs are insufficient, especially among patients with alcohol use disorders.

The aim of the study was to assess the incidence of diagnoses related to alcohol use in the population of homeless people admitted to hospital emergency departments.

## Material and method

The retrospective assessment is based on the analysis of admissions of homeless people to three EDs in one of the largest cities in Poland in 2013–2015. Patients were deemed to be homeless if they had been registered as such

during the registration process by the ED staff based on one of the three criteria: they met the definition of a homeless person applicable in Poland in accordance with the Social Welfare Act, art. 6 point 8;<sup>1</sup> information on homelessness was obtained from the patient; or, if there was limited or no logical contact information, a person was identified as homeless because external factors indicated that he/she had no home (hygienic condition, degree of scruffiness, and where the patient was transported from by the emergency medical team). A total of 3133 homeless patients were admitted to the three EDs during the study period: 1368 to ED No. 1, 1248 to ED No. 2, and 517 to ED No. 3.

Emergency department staff followed the guidelines in force during the admission of a homeless patient. The criteria for assessing sobriety of homeless patients during the research period were uniform and did not change. All homeless patients were assessed for sobriety based on a physical medical examination. The ethyl alcohol blood concentration was not measured in all patients, because this test is not routine in Polish EDs (the decision on whether to do the test or not is made by the ED physician).

The study obtained the approval of the Bioethics Committee Nicolaus Copernicus University Collegium Medicum in Bydgoszcz 410/2016 on 24 June 2016.

## Data analysis methods

The data were compiled using the standard functions of Microsoft Excel and the Statistica 10 statistical software package.

The tables show the descriptive statistics of the arithmetic mean with standard deviation (mean  $\pm$  SD). The relationship between the two variables was calculated using the *R* Spearman correlation coefficient. The differences between two populations (groups) regarding one feature were assessed using the non-parametric Mann–Whitney U test. The level of significance of  $p < 0.050$  corresponding to the statistical data obtained was assumed as a

statistically significant relationship between variables.

## Test results

The vast majority of stays in a hospital ED were recorded for men (91.0%,  $n = 2852$ ). The patients' average age was  $46.8 \pm 12.6$  years;  $43.6 \pm 15.7$  years for women ( $n = 281$ ) and  $47.0 \pm 12.2$  years for men. At the time of admission to the ED, 972 homeless people (31%) were considered to be under the influence of alcohol based on a physical examination. This fact was recorded on the patients' medical records. Among the homeless women admitted, the percentage of those under the influence of alcohol was 17.8% ( $n = 50$ ). For men, the percentage was almost twice as high and amounted to 32.3% ( $n = 922$ ). There was thus a significant correlation R Spearman between gender and being under the influence of alcohol at the time of admission ( $p < 0.0001$ ).

The average age of patients under the influence of alcohol ( $48.5 \pm 10.5$  years) was significantly higher ( $p < 0.0001$ ) than the average age of sober homeless patients ( $46 \pm 13.2$  years). The youngest patient under the influence of alcohol was 20 years old, while the oldest was 76.

Each year, the percentage of homeless patients admitted to the ED under the influence of alcohol increased, amounting to 24.7%, 31.2% and 37.7%, respectively. A total of 959 diagnoses related to alcohol use were identified in homeless patients based on the International Statistical Classification of Diseases and Related Health Problems ICD-10. The total number of such diagnoses accounted for 25% of all diagnoses (Table 1).

In 777 cases (79.9%) where patients were considered to be under the influence of alcohol, this state was confirmed by testing the blood alcohol content. The average blood alcohol concentration in the homeless patients was 2.97 per mille. Standard deviation constituted over 44.3% of the mean value, which proves that the results are highly diversified. The average blood alcohol concentration in the group of men (3.0 per mille

**Table 1.** Alcohol use diagnoses.

ICD-10			N	%
No.	code	Alcohol use diagnoses		
1	F10	Mental and behavioural disorders due to use of alcohol	600	62.6
2	T51	Toxic effect of alcohol	301	31.4
3	Y91	Symptoms of alcohol effects depending on concentration	43	4.5
4	X65	Intentional poisoning by exposure to alcohol	15	1.5
Total			959	100.0

**Table 2.** Average blood alcohol concentration in the homeless patients by gender.

Gender	N	Average			
		(‰)	SD	Min. (‰)	Max. (‰)
Female	39	2.44	1.19	0.10	4.04
Male	738	3.00	1.32	0.10	9.00

$\pm 1.32$ ) was significantly higher than that in the group of women (2.44 per mille  $\pm 1.19$ ) ( $p = 0.015$ ) (Table 2).

On average, the highest blood alcohol concentration was recorded in the group aged 31–40 years (3.17 per mille), and the lowest in the group of patients aged up to 30 years old (2.35 per mille). There was no significant correlation between age and blood alcohol levels ( $r = 0.028$ ,  $N = 777$ ,  $p = 0.43$ ).

The average time of stay at the ED of patients under the influence of alcohol (6 hours) was significantly longer ( $p < 0.0001$ ) than for sober patients (5 hours).

Three people died in the ED during the study period. The toxic effect of alcohol (ICD-10 code T51) was reported as the reason for admitting these patients to the ED.

## Discussion of the results

The problem of drinking alcohol and its substitutes containing ethanol by homeless persons,

the associated alcohol dependence and its consequences resulting in cachexia (extreme weight loss and muscle wastage), as well as the occurrence of comorbid mental and somatic diseases has been well documented (Fazel et al., 2014; Kaźmierczak, 2006; Salize et al., 2002; Wright & Tompkins, 2006; Zieliński, 2005). Still, the literature on admissions of homeless people under the influence of alcohol to hospital emergency departments is scarce, especially in Europe, although it has become a common occurrence in many countries (Doupe et al., 2012; Hansagi, Engdahl, & Romelsjö, 2012; Morris & Gordon, 2006; Sandoval et al., 2010). The study results present unambiguous data in this respect, and their analysis shows the complex nature of the problem.

Homeless patients admitted to EDs are mainly men with an average age of 47 years. The results concur with those reported by other authors (Doran et al., 2013; Feral-Pierssens et al., 2016; Ku, 2014; Ku, Scott, Kertesz, & Pitts, 2010; Wang et al., 2015).

The data obtained indicate that 31% of homeless patients were under the influence of alcohol at the time of admission, while a quarter of all diagnoses in homeless patients staying in EDs were related to diagnoses associated with alcohol misuse. Other researchers have found that homeless people's ED stays are very often associated with the misuse of alcohol (Karaca, Wong, & Mutter, 2008; Ku et al., 2010; Pearson, Bruggman, & Haukoos, 2007). In the study by Feral-Pierssens et al. (2016), alcohol poisoning was much more prevalent among homeless people than in other ED patients (20.6% vs. 3.8%). It is estimated that as many as 37.9% of the homeless population may be alcohol dependent (Fazel et al., 2014), and this percentage may be even higher among the chronically homeless (Kuhn & Culhane, 1998). Feodor Nilsson et al. (2014) demonstrated that alcohol-related disorders are an important predictor of accidental injuries and suicides among homeless men.

Homeless patients' stays in EDs are longer than those of other patients admitted for the

same reason (Kowalska, Bołdys, Zaniewski, & Majewski, 2006). For people admitted to hospital under the influence of alcohol, the degree of sobriety is a factor that determines the length of stay. The results show that such stays are significantly longer for patients under the influence of alcohol. The time required for sobering up is individual for each patient, and according to the practice used in EDs, the patients should leave the ED on their own, unassisted, and head to their place of residence.

The problem of homeless patients who drink alcohol and its substitutes is constantly growing, as shown also by this study. The number of homeless patients under the influence of alcohol in the last year of the analysis was 50% higher than in the first year. The study shows that this problem concerns largely men. The tests proved that the percentage of men under the influence of alcohol in EDs was twice as high as that of women, and the level of alcohol concentration in their blood was significantly higher. The highest blood alcohol concentration was recorded in the group of patients aged 31–50 years, and the lowest in the age group of up to 30 years. Brown and Steinman (2013) found that alcohol-related diagnoses were more often made in homeless patients over 50 years of age than in patients aged 18–49 years.

The average blood alcohol concentration level in the subjects amounted to 3 per mille. Blood concentration of alcohol at the level of 2–3 per mille causes speech disorders; marked slowdown and drowsiness; and significant disturbances of self-control, balance, and coordination of movement, including tottering and unsteady gait. At a concentration of 3–4 per mille, both the body temperature and the blood pressure drop. There is a weakening and even loss of physiological reflexes, including inhibition of breathing and arrhythmias. Progressively impaired consciousness can lead to a coma. There is deep coma, and respiratory and heart disorders at concentrations above 4 per mille (Woronowicz, 2003). For this reason, patients under the influence of alcohol require special care, increased supervision, and

sometimes intensive care. They may also disturb the peace and quiet of other patients, the work of the department, and they may be reluctant to cooperate with the staff or refuse such cooperation altogether. Their behaviour may be a burden on other patients and the personnel, and they may often be verbally and physically abusive to staff and other patients (Rudnicka-Drożak, Misztal-Okońska, & Młynarska, 2013). The issue of care of drunk homeless persons in EDs thus raises a great deal of controversy among the medical staff. It is impossible to ignore the employee safety factor or the safety of other patients which may be jeopardised by the violent and aggressive episodes by homeless patients under the influence of alcohol (Burak, Dembna, Cierzniakowska, Zacniewski, & Popow, 2016; Rosenheck & Lam, 1997; Svoboda & Gupta, 2015).

According to the staff, emergency departments are not necessarily the best place for people poisoned with alcohol to be admitted (Burak et al., 2016; Rudnicka-Drożak et al., 2013). The triage process could be used to effectively assess the condition of these patients before admission to ED, as was found by Ross, Schullek, and Homan (2013). However, most institutions for homeless people indicate that they provide support only to sober clients. The question thus remains where homeless people under the influence of alcohol should be directed when they need medical care.

Treatment of alcohol dependence is difficult. It is a long-lasting process which is not always effective. Homeless people take advantage of the addiction treatment option very rarely and reluctantly (Przewoźnik, 2011). In Poland, the main therapy method is psychotherapy provided in dependence treatment centres. The main treatment of the disorder is assisted by long-term outpatient therapy (Krampe et al., 2006). The basic and extended cycle lasts about two years and includes both group and individual therapy (Fudała, 2007). For many homeless people, this is an insuperable barrier, especially if they are living on the streets. Nevertheless, on the basis of the results of his research,

Włodawiec (2012) has concluded that dependence treatment for homeless alcoholics can be effective. The measurable effect was the maintenance of full abstinence from alcohol by half of those who had undergone therapy six months following completion of treatment. Moreover, almost one fifth of the patients came out of homelessness, and nearly one third found a permanent and legal source of income. In addition, according to the author, participation in addiction therapy leads to reduced psychopathological symptoms in homeless people with alcohol dependence.

Alcohol dependence is a fatal disease. According to the European Health Report, the death of an alcohol-dependent person is rarely caused by fatal alcohol poisoning. The direct causes of death are diseases that are contributed to by chronic alcohol drinking, that is, liver cirrhosis or pancreatitis. In this study, ethanol poisoning was the cause of death of two out of three homeless patients who died in an emergency department. The causes of death of alcohol-dependent persons also include the consequences of accidents and injuries. Alcohol dependence is also an indirect cause of death among victims of fires, drowning, fights, as well as assault and battery, freezing, and suicides (WHO, 2012).

The main problem in the care and treatment of homeless people with alcohol dependence is the shortage of appropriate medical staff in aid institutions, where addicted homeless people could receive support and continue therapy after leaving addiction treatment centres. This problem also applies to other countries, where dependent homeless people have to be referred to psychiatric facilities and dependence treatment centres (Alexanderèiková et al., 2009). In Poland, there are no prospects in the near future for improvement of the situation of homeless people dependent on alcohol: a systemic approach is not likely to replace any time soon the temporary care provided to this population in EDs. As shown by the experience of Nordic countries, especially Finland, a systemic approach can be effective. The implementation

of homelessness prevention programmes, just like the adoption of alcohol control programmes, has brought measurable effects in the Nordics. The implementation of comprehensive national programmes for the homeless – including the critical strategy of “Housing First” – has reduced homelessness in Finland (Benjaminsen & Knutagård, 2016). Also, systemic alcohol control policies and dynamic dependence treatment in the Nordic countries are regarded as a government duty and as an indispensable element of social policy (Room, 2004). As they also cover the homeless population, these factors have a real impact on homelessness-related problems.

## Limitations

A limitation of this study is that blood alcohol measurements were ensured for some homeless people only. For 20% of the patients, their intoxication was assessed solely on the basis of a physical examination. However, the patients provided information on their alcohol consumption shortly before being admitted to the emergency department. Hence, the risk of incorrect inclusion in a group of intoxicated persons can be considered low.

The data were acquired from hospital information systems (HIS) of the hospital emergency departments of a single city, which might result in some generalisation of the results. Yet it should be noted that this is one of the largest cities in Poland with a well-developed system of hospital emergency departments.

Although the data come from the years 2013–2015, it seems that the characteristics of the population and the way of providing medical assistance to homeless patients under the influence of alcohol have not changed. In spite of the potential limitations, the study constitutes factual material on services provided to homeless patients in emergency departments and also draws attention to systemic deficiencies in this respect.

## Conclusions

Homeless people under the influence of alcohol account for one third of the population of homeless patients admitted to hospital emergency departments, while alcohol-related ICD-10 diagnoses account for one fourth of all diagnoses in these patients. Homeless patients under the influence of alcohol stay longer in hospital emergency departments than sober homeless people, which may translate into more frequent acts of aggression towards medical personnel. A significant problem in Poland is the absence of systemic ED-level solutions as regards dealing with homeless patients, who are in many cases dependent on alcohol.


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## Note

1. A homeless person does not live in a dwelling unit within the meaning of the legal provisions on the protection of the rights of tenants and municipal residential resources and is not registered for permanent residence, as defined in the provisions on the population records, or does not live in a dwelling unit and is registered for permanent residence in a place not suitable for dwelling.

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