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Substance use among Dutch homeless people, a follow-up study: prevalence, pattern and housing status

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Background: Previous studies have shown that substance use among homeless people is a prevalent problem that is associated with longer durations of homelessness. Most studies of substance use among the homeless were carried out outside Europe and have limited generalizability to European countries. This study therefore aimed to address the prevalence of substance use among homeless people in the Netherlands, the pattern of their use and the relationship with housing status at follow-up. Methods: This study included 344 participants (67.1% of the initial cohort) who were followed from baseline to 18 months after the baseline interview. Multinomial logistic regression analyses examined the relationship between substance use and housing status. Results: The most reported substances which were used among these homeless people were cannabis (43.9%) and alcohol (≥5 units on one occasion) (30.7%). Other substances were used by around 5% or less of the participants. Twenty-seven percent were classified as substance misuser and 20.9% as substance dependent. The odds to be marginally housed (4.14) or institutionalized (2.12) at follow-up compared to being housed of participants who were substance users were significantly higher than those of participants who did not use substances. The odds to be homeless were more than twice as high (2.80) for participants who were substance dependent compared with those who were not. Conclusion: Homeless people who use substances have a more disadvantageous housing situation at follow-up than homeless people who do not use substances. Attention is needed to prevent and reduce long-term homelessness among substance-using homeless people.

Introduction

Homeless people's substance use has been characterized as the main mental health problem for homeless people.[1] A review among homeless populations in Western countries reported that alcohol dependence ranges from 8% to 59% and drug dependence from 5 to 54%.[1] A large cohort study among Swedish homeless people found a prevalence of alcohol and drug diagnoses of 42% for men and 41% for women.[2] Substance use among homeless populations has consistently been associated with a number of adverse outcomes, such as premature mortality,[3] symptoms of mental illness[4] and longer durations of homelessness.[5–10]

However, it is important to note that most recent studies of substance use among homeless people were carried out outside Europe, mostly in the USA[10,11–13] and Canada,[4,14,15] including most studies evaluating the relationship between substance use and longer durations of homelessness.[5–10] Because of factors such as the wide variation in prevalence rates of substance use among homeless populations and differences in drug markets and drug policy, these studies have limited generalizability to European countries. For example, while non-European studies report a relatively high prevalence of crack cocaine use[10,13,16] and even an increase in crack cocaine use among the homeless over recent decades,[10,17] cocaine use is now less prevalent among Dutch homeless people.[18] Recently, it was even shown that the prevalence of cocaine use continues to decline among the general European population.[19] However, there are differences between European countries. Injection of heroin is, for example more prevalent in central and eastern European countries,[20] while amphetamine is more prevalent in northern and eastern countries.[19]

Although local and up-to-date data about substance use among homeless people are essential for health policy and care, there is a lack of thorough European studies on this issue. This study therefore aimed to address the following questions: (i) what is the prevalence of substance use, substance misuse and dependence among Dutch homeless people who reported to a central access point for social relief in 2011?; (ii) what is their pattern of substance use after they report to the social relief system? and (iii) is this pattern related to their housing status at 18-month follow-up?

Methods

Design and participants

This study is part of a larger observational longitudinal cohort study following homeless people for a period of 2.5 years, starting from the moment they reported to a central access point for social relief in 2011 in one of the four major cities in the Netherlands (Amsterdam, The Hague, Rotterdam and Utrecht). It is obligatory for every homeless person to report to a central access point for social relief to gain access to social relief facilities, such as a night shelter.

At baseline, all 513 study participants satisfied the following criteria: aged ≥ 18 years, having legal residence in the Netherlands, residing in the region of application for at least 2 years during the last three years, having abandoned the home situation and being unable to hold one's own in society.

The participants, consisting of homeless adults (aged ≥ 23 years) and young adults (aged 18–22 years), were divided over the four cities in accordance with the inflow of homeless people at the central access points for social relief.

We compared the total group of homeless adults and young adults who reported to a central access point for social relief in one of the four cities in 2011, with the study participants. Adult participants (aged ≥ 23 years; $n = 410$) were representative in terms of age and gender. Young adult participants (aged 18–22 years; $n = 103$) were representative in terms of age but males were overrepresented (60.2% younger males in the cohort vs. 49.2% younger males in the total group).

Of the initial cohort of 513 participants, 344 (67.1%) were also interviewed for the two follow-up measurements. We compared respondents ($n = 344$) with non-respondents ($n = 169$) on demographic variables and substance use as reported at the first measurement. Compared with respondents, non-respondents were younger (33.1 vs. 37.9 years) and more often had a non-native Dutch ethnicity (72.0% vs. 60.5%). No selective response was found with respect to gender and education. Non-respondents were more often an actual user of cannabis (53.3% vs. 43.6%). No selective response was found with respect to the other substances.

Study procedure at first measurement

At the start of the study in 2011, potential participants were approached at a central access point for social relief or at the temporary accommodation where they stayed. When a potential participant expressed interest in taking part in the study, the researchers contacted that person to explain the study and interview and informed consent procedure. When the participant agreed to participate, a trained interviewer met the participant at the participant's location of choice (generally a shelter facility, public library or the researcher's office). All participants gave written informed consent. Participants were interviewed face-to-face using a structured questionnaire (mean duration of 1.5 h) and received €15 for participation. The interviews were held in Dutch, English, Spanish or Arabic.

Study procedure at follow-up

Participants were contacted 6 months and 18 months after the first measurement by telephone, e-mail, letter, their social contacts, their caregiver/institution or private messages via social media. Participants were interviewed in the same way as during the first measurement and received €20 for participation on the second interview and €25 for participation on the third interview.

Measurements

Demographic characteristics

Demographic characteristics including gender, age, ethnicity and educational level were assessed. Ethnicity was categorized into 'native Dutch' when the participant and both parents were born in the Netherlands, 'first-generation immigrants' when participants were foreign born and 'second-generation immigrants' when participants were born in the Netherlands but one or both of their parents were foreign born.

Education was categorized as 'lowest' when the participant completed primary education at the most, as 'low' when the participant completed pre-vocational education, lower technical education, assistant training or basic labour-oriented education, as 'intermediate' when the participant completed secondary vocational education, senior general secondary education or pre-university education and categorized as 'high' when the participant completed higher professional education or university education.

Substance use

We defined substance use as having used one or more of the following substances one time or more in the past 30 days before the interview: cannabis; alcohol (≥5 units on one occasion); crack cocaine; ecstasy; cocaine (snorting); amphetamines; methadone; heroin; other opiates (morphine, codeine, opium); hallucinogens; solvents; GHB and Other (e.g. 2-cb, ketamine).

The number of days alcohol (≥5 units) and the drugs mentioned above were used during the last month was assessed at baseline and at 18-month follow-up using the appropriate module from the European version of the Addiction Severity Index (Europ-ASI, version III).[21] The Europ-ASI is frequently employed in effect studies with homeless people with severe psychiatric and/or substance abuse problems.[22–25]

To investigate the pattern of the overall substance use over 18 months, we constructed four categories of substance use: (i) used at both measurements; (ii) not used at both measurements; (iii) stopped using between measurements and (iv) started between measurements. Six participants had a missing value on substance use at baseline and were excluded in the construction of these categories of substance use.

Substance misuse and dependence

Substance misuse and dependence were assessed using the Measurements in the Addictions for Triage and Evaluation (MATE).[26] The MATE is a tool for assessing characteristics of people with drug and/or alcohol problems for triage and evaluation in treatment. The MATE has satisfactory inter-rater reliability (range 0.75–0.92) but less satisfactory test–retest reliability (0.34–0.73).[27]

For this study, one of the 10 original modules of the tool was used: 'Substance dependence and abuse'. This module consists of 11 questions from the Composite International Diagnostic Interview,[28] e.g. 'In the past 12 months, did you find you began to need much more [substance] to get the same effect or that the same amount of [substance] had less effect than it once had?'. In accordance with the DSM-IV,[29] a participant was classified as 'substance dependent' when he/she had three or more positive answers on the seven dependence items. A participant was classified as 'substance misuser' when he/she had one or more positive answers on the four misuse items. The MATE was assessed at 6-month follow-up.

Housing status

Housing status was assessed by asking the participants where they have slept last night. We categorized these locations into four categories: (i) homeless: emergency shelter or night shelter; transitional accommodation (where the period of stay is intended to be short term) and on the streets or in public spaces. (ii) Institutionalized: residential care or supported accommodation (long stay); medical institution, addiction care institution or psychiatric hospital; correctional or penal institution and residential care or supported accommodation. (iii) Marginally housed: staying with friends, relatives or acquaintances (temporarily). (iv) Independently housed: renting a house, room or apartment or owning one; residing with friends, relatives or acquaintances (permanent). The few participants (<5%) who were housed at baseline (see Supplementary table S1) had already been accepted for an individual programme plan because of a forthcoming eviction.

Statistical analysis

Descriptive analyses were performed to describe the demographic characteristics and housing status for participants who were a substance user or no substance user at baseline (see Supplementary table S1 for results). Relationships between

Table 1 Percentage of participants who used a substance (per substance) and no substance in the past 30 days at baseline (T0) and at 18-month follow-up (T2)

Substance	% used in past 30 days, T0 (*n*) (*n* = 338–344)	% used in past 30 days, T2 (*n*) (*n* = 344)
Cannabis (*n* = 342)	43.9 (150)	38.4 (132)*
Alcohol (≥5 units) (*n* = 342)	30.7 (105)	24.7 (85)*
Crack cocaine (*n* = 344)	5.2 (18)	3.5 (12)
Ecstasy (*n* = 342)	4.4 (15)	2.6 (9)
Cocaine (*n* = 344)	4.1 (14)	4.1 (14)
Amphetamines (*n* = 344)	3.8 (13)	2.9 (10)
Methadone (*n* = 344)	2.9 (10)	1.2 (4)
Other opiates (*n* = 343)	2.3 (8)	2.9 (10)
Heroin (*n* = 344)	2.3 (8)	1.2 (4)
Hallucinogens (*n* = 344)	1.7 (6)	0.9 (3)
Solvents (*n* = 344)	0.6 (2)	0.3 (1)
GHB (*n* = 344)	0.6 (2)	0.6 (2)
Other (*n* = 344)	0.6 (2)	0.3 (1)
No substance used (*n* = 338)	42.3 (143)	45.9 (158)

*$P < 0.05$.

Table 2 Mean number of days of substance use in the past 30 days at baseline (T0) and at 18-month follow-up (T2) for participants who used the substance at T0

Substance[a]	*n*	Mean days used at T0 (SD)	Mean days used at T2 (SD)
Cannabis	150	18.1 (11.7)	13.5 (12.8)*
Alcohol (≥5 glasses)	105	10.7 (10.7)	4.9 (8.5)*
Crack cocaine	18	9.1 (9.6)	6.6 (10.6)
Ecstasy	15	1.9 (1.4)	0.10 (0.26)*
Cocaine	14	1.7 (1.3)	0.0 (—)*
Amphetamines	13	11.3 (13.0)	3.4 (8.7)*
Methadone	10	19.9 (13.6)	12.0 (15.5)
Other opiates	8	20.5 (10.6)	7.5 (13.9)
Heroin	8	10.3 (10.7)	4.6 (10.5)
Hallucinogens	6	2.0 (1.3)	0.17 (0.41)*

a: No mean number of days of use of solvents, GHB and 'other' are reported due to the small numbers of participants (<5) who used these substances.
*$P < 0.05$.

substance use and demographic characteristics were analysed using χ^2 tests for categorical data and a *t*-test for the continuous variable (age).

To analyse changes in the prevalence of substance use between baseline and follow-up, non-parametric-related samples tests were used. To analyse changes in the mean number of days of substance use between baseline and follow-up, paired *t*-tests were used. Descriptive analyses were performed to describe the percentage of participants who were classified as a substance misuser, as substance dependent and to describe the pattern of substance use.

We used a multinomial logistic regression to analyse the relation between the pattern of substance use and housing status at follow-up. The reference category for this analysis was being independently housed at follow-up ($n = 151$). A logistic regression analysis was conducted to investigate the relationship between being classified as substance dependent and housing status at follow-up. All statistical analyses were conducted with IBM SPSS statistics version 19.

Results

Characteristics of participants who use substances and those who do not

Of the 338 participants, 57.7% ($n = 195$) reported having used one or more substances in the past 30 days before baseline. Participants who had used a substance in the past 30 days before baseline were significantly younger (35.6 years) than participants who had not (41.2 years). Significantly more participants who used a substance were male (85.1%) compared with participants who had not used (60.1%) (Supplementary table S1).

Prevalence per substance at baseline and follow-up

Table 1 presents that cannabis was the most used substance among these homeless individuals at baseline, with a prevalence of 43.9%. Alcohol (≥5 units on one occasion) was used by 30.7% of the participants in the past 30 days before baseline. All other substances, crack cocaine, ecstasy, etc., were used by around 5% or less of the participants.

The percentage of actual users of cannabis and alcohol has declined significantly between baseline and follow-up.

Table 2 presents that the mean number of days on which users of cannabis used cannabis did significantly decline from 18.1 days (of 30 days) at baseline to 13.5 days at follow-up. The mean number of days on which users of alcohol used alcohol did significantly decline from 10.7 days at baseline to 4.9 days at follow-up. Also the mean number of days of ecstasy use, cocaine use, amphetamines use and hallucinogens use declined significantly between baseline and follow-up.

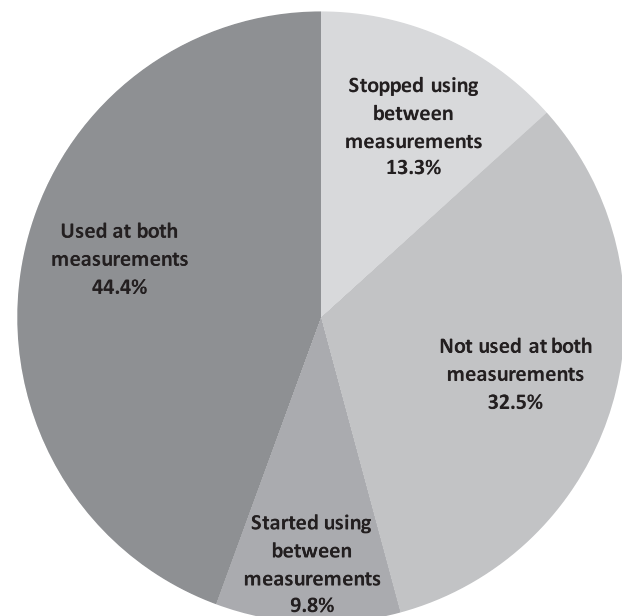

Figure 1 Course of substance use between baseline and 1.5-year follow-up

Substance misuse and dependence

Of the 344 participants, 27.0% ($n = 93$) were classified as a substance misuser and 20.9% ($n = 72$) as substance dependent.

The pattern of substance use over 18 months

Figure 1 shows that 44.4% of the participants were actual substance users at both measurements, and 32.5% of the participants were non-users at both measurements. Around 10% of the participants started using or stopped using between the measurements.

Table 3 Relationship between the pattern of substance use and housing status at 18-month follow-up

Pattern of substance use		Independently housed (ref)	Marginally housed	Institutionalized	Homeless
Total ($n = 335$)	%	45.1	8.4	35.8	10.7
Used at both measurements ($n = 149$)	%	35.6	12.1	38.3	14.1
	OR (95% CI)	1.00	4.14* (1.44–11.92)	2.12* (1.20–3.75)	2.20 (0.97–4.97)
Not used at both measurements ($n = 108$)	%	56.5	4.6	28.7	10.2
	OR (95% CI)	1.00	1.00	1.00	1.00
Stopped using between measurements ($n = 45$)	%	42.2	4.4	51.1	2.2
	OR (95% CI)	1.00	1.28 (0.23–7.16)	2.38* (1.13–5.02)	0.29 (0.04–2.41)
Started using between measurements ($n = 33$)	%	54.5	9.1	27.3	9.1
	OR (95% CI)	1.00	2.03 (0.44–9.34)	0.98 (0.40–2.44)	0.92 (0.23–3.68)

OR, odds ratio; CI, confidence interval.
*$P < 0.05$.

Relationship between the pattern of substance use and housing status at follow-up

Of the participants, 45.1% were independently housed, 35.8% were institutionalized, 10.7% were still homeless and 8.4% were marginally housed at follow-up (table 3). The odds of participants who were substance users at both measurements to be marginally housed (4.14) or institutionalized (2.12) compared with being housed were significantly higher than the odds of participants who did not use substances at both measurements (table 3). The odds of participants who stopped using substances between the measurements to be institutionalized (2.38) compared with being housed was significantly higher than the odds of participants who did not use substances at both measurements (table 3).

Additionally, we investigated whether being substance dependent was related to housing status at follow-up. The odds to be homeless were more than twice as high for participants who were substance dependent compared with those who were not substance dependent (odds ratio = 2.80, 95% confidence interval = 1.26–6.24). Of the participants who were substance dependent, 18.1% were still homeless at 18 months.

Discussion

This study is one of the few recent European studies of substance use among homeless people. It was conducted among a cohort of Dutch homeless people who reported to a central access point for social relief in 2011 and shows that 57.7% of the participants were using one or more substances at baseline. Most of the substance-using participants used cannabis or alcohol; the use of hard drugs was relatively rare ($\leq$5%). Twenty-seven percent of the cohort could be classified as a substance misuser and 20.9% as substance dependent. We also found that participants who were a substance user had a more disadvantageous housing situation at follow-up than those who were not a substance user, which is in line with previous studies in the USA and Canada.[5–9,30] In particular, substance-dependent participants were more likely to still be homeless at follow-up than those who were not substance dependent.

It is striking that the prevalence of the use of hard drugs in this cohort was much lower than that reported in studies on homeless populations in the USA, which reported prevalences of cocaine use of around 40%.[13,30] In our cohort, cannabis was the substance used by far the most (by ~40% of the participants). Although cannabis may be less harmful than hard drugs, probable adverse effects of regular use include dependency, impaired respiratory function, cardiovascular disease and cognitive impairment.[31] In addition, even though substance users in our cohort used hardly any hard drugs, which is in contrast with studies in the USA and Canada, our results regarding the relationship between housing status and substance use were similar.[5–9,30]

The relatively high percentage of non-users (42.3%) might be a typical characteristic of a cohort consisting mainly of ‘newly homeless people’; i.e. those who reported to the social relief system in 2011. More than half of them had a total duration of homelessness in their lives of less than 1 year. This might also explain why the prevalence of alcohol and drugs diagnoses found in a Swedish cohort of homeless people was almost twice as high as we found in our cohort.[2] Because of local and national policy, ‘traditional homeless populations’, including the more chronically and severely substance-dependent homeless people, have been taken off the streets successfully in recent decades in the Netherlands.[32,33] Nevertheless, in spite of these efforts, the number of homeless people has risen in recent years: in 2010, there were around 23 000, against over 27 000 in 2012.[34] This emphasizes the need for studies on these newly homeless people.

We found that most participants were either a substance user at both measurements or no substance user at both measurements. However, when we investigated the use per substance between baseline and follow-up, we found that the prevalence of cannabis use had declined slightly among this cohort and that the mean number of days that a substance was used declined for cannabis, alcohol and for some of the hard drugs. This finding may be explained by various factors: for example by the improved housing situation or as a result of addiction treatment. As additional analysis showed, 17.7% of the participants received addiction treatment between baseline and follow-up.

As cannabis use might disrupt goal-directed behaviour,[35] planning and decision making,[36] the substance users in our cohort may have more difficulties performing necessary skills to achieve and maintain housing, such as money management and running a household. These factors could contribute to a more disadvantageous housing situation among this group. The social relief system may also have played a role: caregivers may find that substance-using clients are not ‘housing ready’ and let them stay in institutions for longer than their non-substance-using clients.

A strength of our study was the relatively large sample size of homeless people and the availability of follow-up data with a satisfactory follow-up rate of almost 70%. This follow-up rate is high for a cohort of homeless people. Our results add a European perspective to the substance use of homeless people, which is often lacking in the literature.

However, our study had some limitations. One limitation is related to the subgroup of the population of homeless people that was studied, i.e. only those who reported to a central access point for social relief in 2011 in one of the four major cities in the Netherlands and were accepted for starting an individual programme plan. As stated above, it is obligatory for every homeless person to report to a central access point for social relief to gain access to social relief facilities. Therefore, a substantial part of the homeless population is covered by this selection criterion. Subgroups of homeless people

not included in this study were undocumented homeless people, homeless people who do not make use of social relief facilities and homeless people who reported to the social relief before 2011. Our findings may thus not be representative of these latter subgroups of the Dutch homeless population. Our findings may also not be fully generalizable to the substance use of homeless people in other European countries, as differences in the prevalence of different types of substances between countries have been reported.[19,20]

Another limitation is the selective non-response at follow-up of participants who were cannabis users at baseline. This may have resulted in an underestimation of the prevalence of cannabis use.

Future research should examine the degree to which the findings of this study can be generalized to homeless populations in other parts of Europe. A longer period of follow-up will provide more insight into how their substance use further develops and whether their housing situation eventually improves. An approach focusing on providing homeless people with housing, regardless of their substance use, may be effective to prevent and reduce long-term homelessness among substance-using homeless people.[37]

Conclusion

This study has given new insight into the substance use of homeless people and underlines the importance of local and up-to-date data. While the types of substances that are used by these Dutch homeless people differed from those used by homeless populations in North America and other European countries, the more disadvantageous housing situation of the subgroup of homeless people who use substances seems to be a broad international issue. Attention is needed to prevent and reduce long-term homelessness among substance-using homeless people.

Supplementary data

Supplementary data are available at *EURPUB* online.

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Conflicts of Interest: None declared.

Key points

- Substance use is a prevalent problem among homeless people and has consistently been associated with a number of adverse outcomes.
- Although local and up-to-date data about substance use among homeless people are essential for health policy and care, there is a lack of thorough European studies on this issue.
- Cannabis and alcohol are the most commonly used substances among Dutch homeless people entering the social relief system in 2011.
- Homeless people who use substances have a more disadvantageous housing situation at follow-up than homeless people who do not use substances.
- An approach focusing on providing homeless people with housing, regardless of their substance use, may be effective to prevent and reduce long-term homelessness among substance-using homeless people.

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