ORIGINAL ARTICLE

A study to validate a self-reported version of the ONS drug dependence questionnaire

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Abstract

Aim: A prospective study to establish the reliability of a self-completion version of the Office for National Statistics (ONS) questionnaire for assessing drug dependence of substance misuse clients.
Method: A total of 47 treatment seeking opioid-dependent clients completed the self-complete version of the ONS questionnaire (ONS-sc) followed by the interviewer-administered ONS questionnaire (ONS-ia) at a single clinic appointment. Scores for four Class A drugs (heroin, methadone, speed and crack/cocaine) from both formats were compared.
Results: The observed agreement was 87% or more and Cohen's kappa was 0.7 ($p < 0.001$) or more for all four Class A drugs. Sensitivity for each Class A drugs was 56% or higher and specificity was 87% or higher. Sensitivity for severe heroin dependency was 98% (CI 89–100%). There was a 100% correlation between the ONS-sc and positive urine analysis for heroin use. However, methadone and crack/cocaine drug use appeared under reported.
Conclusion: ONS-sc is a feasible, practical and time-saving alternative to a detailed interview on drug dependence. Further research with a larger sample size and non-opiate-dependent clients are needed, as this could prove a useful tool for monitoring clients in everyday practice, or for survey purposes where interviews are impractical.

Keywords: *Drug dependence, heroin, self report.*

Introduction

Reliance on self-reported behaviours by drug users is widespread among studies of illicit drug use. In this field, self-report is often the only feasible methodology that can be used to obtain descriptions of drug use patterns and drug-related problems. Investigations of undetected criminal behaviour, needle sharing and sexual risk taking, by their very nature, involve a reliance on self-report from respondents. A review article by Darke, shows consistently high measures of reliability and validity for self-report in injecting drug users in treatment (Darke, 1998). However, Sherman and Bigelow, commented that the accuracy

of drug abusers' self-reports varied as a function of different cognitive, motivational and social factors, plus the treatment status of the client (Sherman & Bigelow, 1992).

Blanket screening of every client's urine, for all substances is the most accurate monitoring method, but also very expensive. Urine samples are open to adulteration or substitution by the client, and provide only qualitative information with limited accuracy regarding the quantity of drug used or the time since its use. Essentially, urine analysis can only give a use/no-use index over the last 2–3 days for most drugs of abuse (Schwartz, 1998).

There are several assessment tools in the substance misuse and related fields. Maudsley Addiction Profile (MAP; Marsden et al., 1998; Luty et al., 2006), Christo Inventory for Substance-misuse Services (CISS; Christo et al., 2000), Addiction Severity Index (ASI; McLellan et al., 1992; Rosen et al., 2000) and the Opiate Treatment Index (OTI; Darke, 1998) are the most widely used in UK clinical practice and research.

The Office for National Statistics (ONS) has carried out a number of population psychiatric surveys (Singleton et al., 2000). These surveys have sought to measure the prevalence of drug misuse and have used, in a first stage lay (i.e. non-specialist) interview, using a five-question instrument to assess drug dependence. The latter has been adapted by Holland et al. for use as a self-complete survey and has been used in a number of studies to assess drug use within both Norwich prison, and Norfolk drug treatment clients (Vivancos et al., 2006). However, the latter tool whilst simple and quick to complete has never been formally validated against the ONS interview. This study sought to do this.

Method

This study was a sub-study within a large patient preference study comparing methadone with buprenorphine. All clients (new clients and repeat attendees) presenting to the Trust Alcohol and Drug Service (TADS) centres in Norwich and Great Yarmouth, considered appropriate for and requiring maintenance treatment for opiate dependence, were offered the opportunity to take part in both the ONS drug dependence questionnaire study and the SUMMIT trial (Subutex vs. Methadone Maintenance Trial). Participants were recruited on the basis that they had confirmed symptoms of opiate dependency including toxicological evidence. Exclusion criteria included: age under 16, chronic injectors refusing oral therapy, short history of dependence (<3 months), hypersensitivity to both methadone and buprenorphine, a severe medical condition making treatment hazardous in the opinion of the treating physician, severe alcohol dependency, pregnancy, incapacity to give informed consent.

Consent for this sub-study was sought after consent had been obtained for participation in the SUMMIT trial. Clients who had agreed to participate in the SUMMIT trial were at liberty not to participate in this brief additional study.

All participants completed the ONS Questionnaire study and the SUMMIT trial baseline assessment. Each client was allowed approximately 5–10 min to complete the ONS-self complete (ONS-sc) questionnaire by himself or herself without any help from the researcher, and this was placed in a sealed envelope prior to their baseline interview. The client then had a one-to-one interview with the researcher to complete the SUMMIT baseline assessment, which included completing the adapted ONS-interviewer-administered (ONS-ia) questionnaire. The ONS-se and ONS-ia included identical questions on each of the following drugs: heroin, methadone, crack/cocaine, speed, benzodiazepines, and cannabis. The ONS-ia questionnaire was completed at the end of the baseline assessment, approximately 15–20 min after completing the ONS-sc questionnaire. Following

completion of the two methods of ONS assessment, the clients continued to participate in the SUMMIT Trial.

Ethical approval was obtained from the Norfolk Research Ethics Committee. Approval was also obtained from the East Norfolk and Waveney Research Governance Committee.

Outcome measures

Our primary outcome measure compared dependence on Class A drugs (heroin, methadone, speed, crack, and cocaine) as assessed by ONS-sc questionnaire with that as assessed by the ONS-ia questionnaire. The scoring of these questionnaires is described below. Secondary outcomes included comparison of urine analysis results with ONS-sc results.

Plan of analysis

Drug dependence for Class A drugs were assessed by a scoring system for the completed data obtained from the ONS-sc and ONS-ia questionnaires. These questions and the scoring system in Fig. 1 allow a participant's drug use to be classified as no dependence, some dependence or severe dependence. These questions were asked of each drug that the client used in the last month.

Sensitivity and specificity of the ONS-sc questionnaire were investigated by comparing ONS-sc with ONS-ia. Cohen's kappa was used to assess the agreement between the different ratings. The agreement between the self-reported data and urine analysis (for drug use) was also evaluated.

Due to the nature of the study design, its selectivity of the clients and the setting of the study, there were no non-opiate-dependent clients within this sample. Thus, this study was only able to assess the ONS-sc questionnaire's sensitivity with regards to opiate use. We planned to show that our questionnaire had a sensitivity of at least 80%, with a maximum estimated deviation of 10%. To do this we needed a sample of 60 clients who were truly opiate dependent.

Assessing specificity was not possible for opiate dependence, but this study gave some indication of its specificity, as clients also used other drugs (e.g. methadone and crack/cocaine). Specificity for this measure in assessing dependence on these drugs was evaluated.

Each question refers to the last month:
- Did you use the drug every day for 2 weeks or more?
- Did you feel you needed or were dependent on this drug? (You felt you couldn't get by without it?)
- Did you try to cut down, but found you couldn't?
- Did you find you couldn't get high on the amount you used to use?
- Did you have withdrawal symptoms such as feeling sick because you stopped or cut down?

Those who answered 'YES' to one or more questions were considered to have some/moderate level of drug dependence (two or more for cannabis). Those who answered 'YES' to three or more of these questions were considered to have severe drug dependence. (These cut-offs had been defined by the ONS.)

Figure 1. Office for National Statistics (ONS) drug dependence questions.

Table I. Background characteristics of the 47 clients

	Number	(%)
Male	36	77
Female	11	23
White ethnicity	45	96
Age, year [mean (SD)]	32 (8.3)	
Accommodation: owner/rented	35	74
Employment:		
Unemployed	31	66
Long-term sick	11	23
Age left education [mean (SD)]	15 (1.6)	
Marital status:		
Single	26	55
Co-habiting	18	38
Previous convictions: median (Inter-quartile range)	10 (3)	
Age at first heroin use [mean (SD)]	20 (6.8)	
Any injecting drug use	40	85
Any sharing of injecting equipment	21	45
Any alcohol use	34	72

Results

A total of 47 clients entered this sub-study. Although no clients met the exclusion criteria, nine clients declined to participate in the ONS Questionnaire Study because they could not read or were unable to write due to ill health. Therefore, 84% of eligible clients participated and the non-completer rate was 16%. The background socio-demographic and clinical characteristics of participants are shown in Table I. They were almost exclusively white, and were generally males, unemployed or long-term sick, with a mean age of 32 (SD = 8.3) years. The mean age at first heroin use in this group was 20 (SD = 6.8) years.

Use of other illicit drugs was also common. A significant proportion had also used elicit methadone (10, 21%) and crack (11, 23%) in the month prior to interview. Similarly, more than half of the clients had used cannabis (34, 72%) and benzodiazepines (25, 53%) in the previous month.

Results of ONS-sc vs. ONS-ia

Table II shows good correlation for the three chosen Class A drugs (heroin, methadone and crack/cocaine) between ONS-sc compared with the standard ONS-ia questionnaire. There were no users of speed. The observed agreement was more than 87% and Cohen's kappa was more than 0.7 ($p < 0.001$) for all three Class A drugs showing good reliability.

Sensitivity for severe heroin dependency was 98% (CI 89–100%) and moderate/severe dependency was 100% (CI 92–100%). The sensitivity for all three Class A drugs was equal to or greater than 90% except for severe methadone dependence which was 56% (CI 27–81%).

Specificity for all three Class A drugs was very good (Table III) with a specificity for both severe and moderate/severe methadone dependency of 95% (CI 82–99%) and for severe crack/cocaine dependency of 100% (CI 92–100%).

Table II. Comparison of drug dependence for ONS-sc vs. ONS-ia for 47 clients

Drugs	No dependence		Moderate/Severe dependence		Severe dependence	
	ONS-sc *n* (%)	ONS-ia *n* (%)	ONS-sc *n* (%)	ONS-ia *n* (%)	ONS-sc *n* (%)	ONS-ia *n* (%)
Heroin	0	0	47 (100)	47 (100)	46 (98)	47 (100)
Methadone	36 (77)	37 (79)	11 (23)	10 (21)	7 (15)	9 (19)
Speed	47 (100)	47 (100)	0	0	0	0
Crack and cocaine	35 (74)	36 (77)	12 (26)	11 (23)	4 (9)	4 (9)

ONS-sc, ONS-self complete; ONS-ia, ONS-interviewer-administered.

Table III. Sensitivity, specificity and Cohen's kappa agreement for Class A drugs between ONS-sc vs. ONS-ia

Heroin			
Severe dependence	Sensitivity	0.98	CI: 0.89–1
	Specificity	N/C	N/C
	Observed agreement = 98%	Kappa = N/C★	N/C★
Moderate/Severe dependence	Sensitivity	1.00	CI: 0.92–1
	Specificity	N/C	N/C
	Observed agreement = 100%	Kappa = N/C★	N/C★
Methadone			
Severe dependence	Sensitivity	0.56	CI: 0.27–0.81
	Specificity	0.95	CI: 0.83–0.99
	Observed agreement = 87%	Kappa = 0.70	*p* < 0.001
Moderate/Severe dependence	Sensitivity	0.90	CI: 0.60–0.98
	Specificity	0.95	CI: 0.82–0.99
	Observed agreement = 94%	Kappa = 0.82	*p* < 0.001
Crack and cocaine			
Severe dependence	Sensitivity	1.00	CI: 0.51–1
	Specificity	1.00	CI: 0.92–1
	Observed agreement = 100%	Kappa = 1	*p* < 0.001
Moderate/Severe dependence	Sensitivity	0.91	CI: 0.62–0.98
	Specificity	0.94	CI: 0.82–0.99
	Observed agreement = 94%	Kappa = 0.83	*p* < 0.001

★Not calculable as no variability in one or both variables (i.e. ONS-sc and ONS-ia).

Results of ONS-sc vs. urine analysis

Table IV shows good correlation between ONS-sc and the urine analysis for the three Class A drugs. Again, as there were no users of speed, it was not analysed. Only 41 (87%) clients' urine drug tests results were available to confirm the recent use of illicit drugs. There was 100% correlation between the ONS-sc and positive urine analysis for heroin use. However, it appeared that methadone and crack/cocaine drug use was under reported.

The observed agreement ranged from 71 to 100% and Cohen's kappa ranged from 0.45 to 0.73 ($p < 0.001$) for the three Class A drugs. Sensitivity for heroin use was 100% (CI 91–100%), but appeared lower for crack/cocaine and methadone (from 50 to70%). Specificity for both crack/cocaine and methadone use was 100% (CI 82–100%, Table V).

Table IV. Comparison of ONS-sc vs. urine analysis for 41 clients

Drugs	ONS-sc: Moderate/ Severe dependence *n* (%)	Positive urine analysis *n* (%)
Heroin	41 (100)	41 (100)
Methadone	11 (27)	16 (39)
Crack and cocaine	12 (29)	24 (59)

Table V. Sensitivity, specificity and Cohen's kappa agreement for Class A drugs between ONS-sc vs. urine analysis

Heroin		
Sensitivity	1	CI: 0.91–1
Specificity	N/A	N/C
Observed agreement = 100%	Kappa = N/C*	N/C*
Methadone		
Sensitivity	0.69	CI: 0.44–0.86
Specificity	1	CI: 0.87–1
Observed agreement = 88%	Kappa = 0.73	$p < 0.001$
Crack or cocaine		
Sensitivity	0.5	CI: 0.31–0.69
Specificity	1	CI: 0.82–1
Observed agreement = 71%	Kappa = 0.45	$p < 0.001$

*Not calculable as no variability in one or both variables (i.e. ONS-sc and urine analysis).

Discussion

This study has demonstrated that the ONS-sc questionnaire was completed successfully by over 80% of eligible clients. Furthermore, it elicited information on substance use-related behaviours, which was similar to that obtained from the ONS-ia administered version, indicating good reliability and validity of the ONS-sc questionnaire.

Due to the study design and selectivity of clients, the ONS-sc questionnaire had a very high sensitivity for heroin dependence, 98% sensitive for severe heroin dependence and 100% sensitive for moderate/severe heroin dependence. However, for methadone the sensitivity ranged from 56 to 90% and for crack cocaine the sensitivity ranged from 91 to 100%. As 100% of the clients were heroin dependent, it was not possible to estimate specificity for heroin dependency. The specificity for methadone was 95%, and crack cocaine ranged from 94 to 100% depending on severity of dependence. The observed agreements for all the Class A drugs was more than 92% and Cohen's kappa was also greater than 0.70 ($p < 0.001$) indicating significant agreement and reliability between the standard ONS-ia and ONS-sc. Overall, these results indicate that the ONS-sc questionnaire appears to have good sensitivity and specificity for Class A drugs.

Only 41 (87%) clients' urine drug tests results were available to confirm the recent use of illicit drugs. There was a 100% correlation between the ONS-sc and positive urine analysis for heroin use. The methadone and crack/cocaine drug use was under reported which is a common finding in self-reported questionnaires (Poole et al. 1996; Lundy et al.,

1997; Darke et al., 1998; Gossop et al., 1998; Simpson et al., 1999). Usually, this is due to fear of negative consequences. In addition, in this study on average there was a delay of 10 days (mean 10, SE 2.22) between the urine test and completion of the ONS-sc questionnaire. As urine analysis can only give a use/no-use index over the last 2–3 days for most drugs of abuse (Schwartz, 1998), analysis of correlation between ONS-sc and urine test results should be interpreted with some caution.

Clients in this study faced no negative consequences related to disclosure of information about their drug use. They were at liberty not to participate in either SUMMIT or ONS study. Clients received nominal payment in gift vouchers for taking part in both studies, but there was no pressure to disclose information.

Strengths and limitations

This study was completed by a high proportion of eligible patients (84%). However, it was a small study conducted in opiate-dependent patients. Dependence was compared with an identical, interview administered questionnaire for reasons of practicality. Ideally, we would have compared results with a standardized psychiatric assessment of drug dependence, but this was not practical with the resource constraints of this study. Although the ONS-sc appears to have high concurrent validity under the research conditions of this study, its validity in other situations is not known. The research reported here involved a population of individuals seen at specialist drug treatment centres and by three busy community drug teams. They were, therefore, more typical of clients of community services and, as such, the results are likely to generalize to populations of typical treatment-seeking clients. Its generalizability to other drug using clients is not known, although there is no particular reason to suggest it would be less reliable or applicable in other drug using populations, unless poor literacy was common. Our participants were newly entering drug treatment, and this group may either under or overplay their drug use at first interview, thus it is possible that those outside treatment, or in long-term treatment may respond differently to this form of questionnaire. Other limitations that also apply to the interviewer-administered version are applicable to the ONS-sc. These include problems with the reliability of self-reported illicit drug use in general and less accurate recall of events at more distant time points.

One of the strengths of the study was that the researcher was blinded to the answers of the ONS-sc questionnaire when collecting data for the interviewer-administered version. Ideally, it would have been better to administer ONS-sc to half the clients before interview and half the clients after the interview to check for an ordering effect. This was not practical, but we do not expect it to have had any significant effect on the results.

Both methods of assessments (ONS-sc and ONS-ia) were carried out with the same population and within a short period of time, minimizing recall bias. Equally, all data were collected by the same researcher, minimizing variation in interviewing style.

Potential disadvantages of self-completion instruments include possible client refusal or incomplete responses. For this study, nine clients (16%) declined to take part due to inability to read or ill health and two clients (3.5%) failed to complete the ONS-sc accurately according to instructions.

Future research should aim to further validate the ONS-sc in a non-opiate-dependent population, preferably against a standardized psychiatric assessment, and using oral fluid or saliva-based drug testing. Saliva drug tests can generally detect drug use during the

previous few days. Saliva tests are becoming more prevalent because of their convenience and the fact that they are less prone to adulteration (Jehanli et al., 2001).

Conclusion

The ONS-sc is a short self-administered questionnaire, which is a single page brief assessment tool that requires approximately 5 min to complete to establish drug dependency. The ONS-sc is a feasible, practical and time-saving alternative to the use of a detailed drug interview. Further research with a larger sample size and non-opiate-dependent clients is needed to assess the reliability of the ONS-sc in other populations. Nevertheless, this questionnaire could prove a useful tool for monitoring clients in everyday practice, or for survey purposes where interviews are impractical.

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