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Canadian Journal on Aging / La Revue canadienne du vieillissement,
Volume 29, Number 2, June/juin 2010, pp. 205-213 (Article)

Published by Cambridge University Press

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The Prevalence of Benzodiazepine Dependence among Community-Dwelling Older Adult Users in Quebec According to Typical and Atypical Criteria*

Philippe Voyer,¹ Michel Prévile,² David Cohen,³ Djamel Berbiche,⁴ and Sarah-Gabrielle Béland⁵

RÉSUMÉ

Contexte: La consommation de benzodiazépines est reconnue pour pouvoir entraîner un problème de dépendance. Les critères diagnostiques de la dépendance du DSM-IV-TR ne s'appliqueraient pas toujours à la situation d'un médicament prescrit par un médecin. Cette recherche vise à déterminer la prévalence de la dépendance aux benzodiazépines chez les aînés selon les critères classiques et des critères atypiques.

Méthode: Étude descriptive basée sur des entrevues réalisées au domicile de 2785 aînés sélectionnés de façon aléatoire dans la province de Québec, Canada.

Résultats: Le quart (25,4%) des participants de l'étude étaient consommateurs de benzodiazépines et 9,5% d'entre eux étaient dépendants selon le DSM-IV-TR. Toutefois, 43% des aînés consommateurs se disaient dépendants du médicament et un tiers souhaite arrêter de le consommer.

Interprétation: La dépendance aux benzodiazépines se présenteraient chez environ 10% des aînés consommateurs selon les critères classiques, pourtant plus de 40% d'entre eux se disent dépendants.

ABSTRACT

Background: Use of benzodiazepines, common among older people, may lead to substance dependence. DSM-IV-TR criteria for this iatrogenic problem may apply poorly to older persons following a physician-prescribed regimen. This study, first of its kind, aimed to determine the prevalence rate of benzodiazepine dependence in older persons according to DSM-IV-TR and other atypical criteria.

Methods: Descriptive study based on face-to-face interviews conducted in the homes of 2,785 persons aged 65 years or older who were randomly selected from across the province of Quebec, Canada.

Results: Use of benzodiazepines was reported by 25.4% of respondents. Among them, 9.5% met DSM-IV-TR criteria for substance dependence. However, 43% of users reported being dependent, and one third agreed that it would be a good thing to stop taking benzodiazepines.

Interpretation: Benzodiazepine substance dependence is established at one tenth of community-dwelling older persons taking these medications, although a much larger proportion self-labels as dependent.

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* The authors thank the Canadian Institute for Health Research for its financial support (reference number: 52350). This work was also supported through a Fonds de la recherche en santé du Québec (Quebec Health Research Fund) and Quebec Nursing Research Fund (Fonds de la recherche en sciences infirmières du Québec) Investigator Award to Philippe Voyer.

Manuscript received: / manuscrit reçu : 19/08/08

Manuscript accepted: / manuscrit accepté : 09/09/09

Mots clés : benzodiazépines, la dépendance aux substances, les personnes âgées, l'épidémiologie

Keywords: benzodiazepines, substance dependence, older persons, epidemiology

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Introduction

Benzodiazepines (BZDs) are the most frequently prescribed psychotropic drugs to older persons (Gleason, Schulz, Smith, Newsom, Kroboth, & Kroboth, 1998). Seniors often report symptoms of anxiety and insomnia, for which short-term use of BZDs is clearly effective, yet seniors typically use BZDs for more than 30 days (Bartlett, Abrahamowicz, Tamblyn, Grad, & du Berger, 2004; Isacson, Carsjö, Bergman, & Blackburn, 1992; Jorm, Grayson, Creasey, Waite, & Broe, 2000). Moreover, the effectiveness of treating insomnia (Ashton, 2005; Holbrook, Crowther, Lotter, Cheng, & King, 2000) and anxiety (Baker & Shaw, 2001; Rickels, Schweizer, Csanalosi, Case, & Chung, 1988) with BZDs used continuously over 30 days does not exceed that of a placebo (Ashton, 2005; Silber, 2005). Adverse effects of longer-term use of BZDs in older persons include cognitive impairment, psychomotor slowing, reduced functional autonomy, falls, delirium, and car accidents (Ashton, 2005; Barbone, McMahon, Davey, Morris, Reid, McDevitt et al., 1998; Blazer, Steffens, & Busse, 2004; Verster, Veldhuijzen, & Volkerts, 2004; Voyer, Landreville, Moisan, Tousignant, & Preville, 2005). Use of BZDs can also lead to substance dependence, which clinicians may fail to notice or appreciate in the elderly (Mort & Aparasu, 2002; Voyer, Cohen, Lauzon, & Collin, 2004). In this article, we discuss the problem of substance dependence among older users of BZDs, which was the subject of our study.

According to the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision* (DSM-IV-TR; American Psychiatric Association, 2000) the diagnosis of Substance Dependence, Sedative or Anxiolytic Type can be made when, over a one-year period, the individual using BZDs meets at least three of seven criteria leading to "clinically significant impairment or distress." The DSM-IV-TR's criteria include (1) tolerance to the substance; (2) withdrawal symptoms upon ceasing its use; (3) increases in quantity or duration of use; (4) wishing to reduce or stop it; (5) spending much time obtaining the substance or recovering from its effects; (6) reducing or abandoning important activities; and (7) continuing to use the substance despite its harmfulness.

Some authors have questioned the relevance of some of these criteria to capture the phenomenon of substance dependence in older persons adhering to a socially acceptable, physician-prescribed, and pharmacy-purchased BZD medication regimen (Aparasu, Mort, &

Sitzman, 1998; Ashton, 2005; Damestoy, Collin, & Lalande, 1999; Kan, Breteler, Timmermans, van der Ven, & Zitman, 1999). For instance, DSM-IV-TR's criterion 5 requires the individual to spend much time obtaining the substance or recovering from its effects, which seems weighted to the use of illicit drugs. Also, changes in the occupational and leisure status of many older people make it difficult to observe the drug-induced disruptions of social roles implied by DSM-IV-TR's criterion 6. Criterion 7 specifies persistence of drug use despite harmful effects. Given the difficulty to establish cause-effect relations between BZD use and gradually appearing adverse consequences in older persons who may have co-occurring physical and cognitive deterioration, criterion 7 might similarly be difficult to assess in many older users of BZDs. No study has tried to determine the prevalence of DSM-IV-TR BZD dependence (and the distribution of its criteria) among a random sample of community-dwelling seniors. Similarly, while some authors have suggested that questions besides those derived from DSM-IV-TR criteria might better elicit the phenomenon of BZD dependence in the elderly population, none of these items have been compared against DSM-IV-TR criteria for substance dependence among community-dwelling seniors (Baillie & Mattick, 1996; de las Cuevas, Sanz, de la Fuente, Padilla, & Berenguer, 2000; Kan et al., 1999; Voyer et al., 2004).

This study had two objectives: (a) to determine the prevalence of BZD dependence according to DSM-IV-TR criteria among elderly BZD users, and (b) to explore the frequency of other, atypical, suggested potential signs of BZD dependence using a large, probability sample of community-dwelling older persons.

Methods

Sampling

Data used in this study came from the Quebec Survey on the Health of Older Persons (*Enquête sur la Santé des Aînés*, ESA; Preville, Boyer, Grenier, Dube, Voyer, Puntieri et al., 2008), a large-scale-population-based survey funded by the Canadian Institute of Health Research. During the survey, which took place from 18 January 2005 to 26 September 2006, all respondents were aged 65 years or older and able to speak and understand French (this last-mentioned attribute applies to 94.6% of the population in Quebec province; Canadian Heritage, 2008). The ESA sampling plan involved stratification

by metropolitan ($\geq 500,001$ inhabitants), urban (5,001–500,000 inhabitants), and rural ($\leq 5,000$ inhabitants) areas, in order to consider regional variations in the organization of health services in Quebec. Respondents living in the far northern regions of the province were excluded on feasibility grounds. Within each of the three geographical strata, a proportional sample of households was constituted by means of a random telephone number generation method, in accordance with the known populations of Quebec's 16 administrative regions. Finally, within each household, a simple random sampling method was used to select a single adult 65 years of age or older as respondent. These sampling procedures yielded a target sample of 3,989 individuals.

Participant Recruitment and Interview Procedures

To recruit and interview participants, a research nurse first contacted each potential respondent by telephone to describe the survey aims and procedures and ask them to participate in an interview at their home. Next, a letter describing the study was sent to reassure potential participants of the legitimacy of the survey and of the interviewer assigned to them. Third, a phone call was made to ascertain their interest in participating, and, in the affirmative, an appointment was made. All interviews were in-home, face to face, took place within two weeks following the potential participant's agreement, and lasted 90 minutes on average.

At the beginning of the interview, respondents were rated on the Mini Mental State Examination (MMSE; Tombaugh & McIntyre, 1992). Individuals with an MMSE score < 22 , indicating cognitive problems, were excluded from the study. All others were invited to respond to the ESA questionnaire. All participants gave written informed consent, and received CAN\$15.00 in compensation for their participation. The research protocol was approved by the ethics committee of the University of Sherbrooke Geriatric Institute (see Figure 1).

Instruments

Mental health status was assessed using the computer-assisted ESA Diagnostic Questionnaire (ESA-Q), developed by the research team and based on DSM-IV-TR criteria. The ESA-Q was then pre-tested among a sample of 216 seniors (Béland, Prévile, Tournier, Voyer, Moride, Bouharaoui et al., 2008; Voyer, Cappeliez, Perodeau, & Prévile, 2005; Voyer et al., 2005). The nurses conducting the interviews received both individual and group training in its use as a general assessment of mental health and cognitive status (American Psychiatric Association, 2000). The ESA-Q is similar to the Diagnostic Interview Schedule and the Composite International Diagnostic Interview, both of which have demonstrated satisfactory reliability and validity

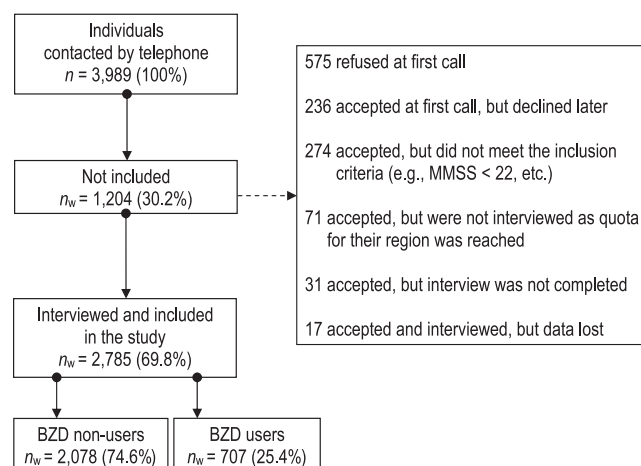


Figure 1: Recruitment of the sample, reasons for exclusion, and completion of interviews.

(Bucholz, Marion, Shayka, Marcus, & Robins, 1996; Erdman, Klein, Greist, Bass, Bires, & Machtinger, 1987; Erdman, Klein, Greist, Skare, Husted, Robins et al., 1992; Levitan, Blouin, Navarro, & Hill, 1991; Robins & Cottler, 2004; Robins, Slobodyan, & Marcus, 1999).

For each major mental disorder assessed by this questionnaire, questions were derived directly from the relevant DSM-IV-TR diagnostic criteria. Questions regarding BZD dependence are presented in Table 1. The seven atypical signs of BZD dependence in older persons examined in this study (see Table 2) were selected from five previous investigations by four research teams (Baillie & Mattick, 1996; Cook, Biyanova, Masci, & Coyne, 2007; de las Cuevas et al., 2000; Kan et al., 1999; Voyer, McCubbin, Cohen, Lauzon, Collin, & Boivin, 2004), based on both their empirical support and on the expert opinions of the ESA researchers (content validity). During the researchers meetings, every question was examined and the experts made sure that the questions reflected well the themes or questions from the previous published studies or tools. Total agreement was required to include the questions into the questionnaire.

Use of BZDs was assessed by first asking all respondents whether they had taken one of several benzodiazepines (presented to respondents as a list of brand and generic names) during the past year. Respondents who answered in the affirmative were then asked to show their BZD container(s) and to confirm that they still used the medication. To be considered a BZD user, a respondent had to answer yes to all three questions. No blood or urine samples were collected.

Data Analysis

Data were weighted to ensure that the results reflected the true proportions of older adults in each of the geographical areas and administrative regions (Cox &

Table 1: Proportion of BZD-dependent respondents who answered positively to the questions addressing DSM-IV-TR criteria

Criterion	Query from Interview Schedule	Meeting Criterion, No. (%)	
		Without Substance Dependence $n_w = 639$ (%)	With Substance Dependence $n_w = 67$ (%)
1. Tolerance	Over the past 12 months, have you noticed any decrease in the effect of this medication (for example, on your sleep, anxiety, or sadness)?	45 (7.0)	34 (50.0)
2. Withdrawal	During this period when you tried to stop taking the medication, did it cause you any health problems (unpleasant symptoms such as sleepless night, shakes, sweating, or anxiety)?	62 (9.7)	37 (54.4)
	During this same period when you tried to stop, did you have to go back to taking your medication or some other substance such as alcohol, because trying to stop was too difficult?	64 (10.0)	38 (56.0)
	During this same period when you tried to stop, did it cause problems in your relationships with members of your family or friends, or in carrying out activities that are important to you?	7 (1.2)	4 (6.5)
3. Increases in quantity or duration/Tolerance	Over the past 12 months, have you had to take more of this medication (more pills or larger dose) in order to get the effect you want?	41 (6.4)	22 (33.0)
4. Ongoing resolution or fruitless efforts to reduce or cease medication	Have you tried to stop taking this medication?	144 (22.5)	60 (88.9)
5. Takes time to recover from drug effects	Over the past 12 months, have the effects of this medication meant that you have to allow for rest periods in order to get over them?	12 (1.9)	23 (34.7)
6. Reduction or abandonment of important activities	Over the past 12 months, has taking this medication driven you to reduce or even abandon altogether certain activities or leisure pursuits that are important to you?	2 (0.3)	11 (17.0)
7. Continued use of drug despite problems caused by use	a) Over the past 12 months, has taking this medication caused you any health problems or troubles?	9 (1.3)	20 (30.2)
	b) Over the past 12 months, has taking this medication caused you problems such as accidents or side effects?	3 (0.4)	13 (19.8)

Cohen, 1985; Trudel, Courtemanche, & Tarte, 1992). Weights were determined on the basis of (1) probability of selection of the administrative region within the geographic area; (2) conditional probability of selection of the household within the administrative region; and (3) conditional probability of selection of the respondent within the household. The weight attributed to each respondent represented the inverse of his or her probability of selection. In text and tables, all weighted figures have been rounded to the nearest whole number.

In addition to frequencies and percentages to describe participant characteristics and prevalence rates, chi-

square was used to test the significance of relationships between socio-demographic variables and BZD dependence. All analyses were carried out using SAS Statistical Analysis System software, version 8.0.

Results

A total of 2,785 completed interviews of older adults were included in this study, representing a 69.8 per cent response rate (Figure 1). The average age of respondents was 74.0 years. Almost 60 per cent were women and more than half lived without a spouse. More than 80 per cent reported an annual income above the poverty threshold of \$15,000 (81%), and 70

Table 2: Benzodiazepine users meeting “atypical” criteria suggestive of benzodiazepine dependence

Criterion	Query from Interview Schedule	Without Substance Dependence $n_w = 639$ (%)	With Substance Dependence $n_w = 67$ (%)
1. Expressing desire to stop taking the medication	Do you think that it would be a good thing if you were to stop taking this medication?	179 (28.1)	47 (69.0)
2. Giving no reason or several reasons for using the medication	Can you give me the reason(s) why you are taking this medication?		
	One reason	542 (84.8)	53 (77.9)
	No reason	17 (2.6)	4 (6.1)
	≤ 2 reasons	81 (12.5)	11 (16.0)
3. Downplaying effects of the medication	The medication(s) you are taking is a pill that isn't very strong or powerful?	567 (88.7)	48 (70.6)
4. Perceiving medication as addictive	The medication(s) you are taking, is it a substance somewhat akin to a cigarette?	188 (29.5)	30 (45.1)
5. Attributing unrealistic powers to medication	Can the medication(s) you are taking prevent certain problems such as interpersonal conflicts?	140 (21.8)	12 (17.1)
6. Wanting to keep a supply of the medication in reserve	Even if you were to stop taking the medication(s) that you are taking, is it still important to keep some in reserve, just in case?	448 (70.1)	51 (76.0)
7. Believing that one is dependent on the medication	Do you think you are dependent on this (these) medication(s)?	263 (41.1)	41 (60.5)

per cent reported less than seven years of education (see Table 3).

A weighted total of 707 (25.4%) respondents reported using at least one of 10 BZDs. About 82 per cent of BZD users reported using one of four drugs (lorazepam, 42.3%; oxazepam, 21.3%; clonazepam, 9.9%; and temaze-

pam, 8.3%). Remaining BZD drugs used were bromazepam (6.2%), alprazolam (5.5%), flurazepam (4.6%), nitrazepam (1.3%), triazolam (0.5%), and estazolam (0.1%). Among BZD users, a weighted total of 67 participants (9.5%) met the DSM-IV-TR criteria for substance dependence. These respondents' socio-demographic

Table 3: Demographic characteristics of the ESA sample and the sub-group of BZD users

Socio-demographic characteristics	ESA sample [Missing cases] $n_w^1 = 2,785$	BZD users $n_w^1 = 707$		χ^2
		DSM-IV-TR BZD dependence		
		No $n_w^1 = 639$ (90.5%)	Yes $n_w^1 = 67$ (9.5%)	
		[Missing cases] $n_w^1 =$ (%)		
Age	[0]	[0]	[0]	$p > .05$
Mean (SD)	74 (6.1)			
65–74 years	1,620 (58.2%)	329 (51.4%)	37 (54.2%)	
Sex	[0]	[0]	[0]	$p < .05$
Females	1,647 (59.1%)	416 (65.0%)	58 (86.2%)	
Civil status	[0]	[0]	[0]	
Married or living together	1,292 (46.4%)	260 (40.6%)	21 (31.0%)	$p > .05$
Single-widowed-divorced	1,493 (53.6%)	380 (59.4%)	47 (69.1%)	
Education	[73]	[12]	[1]	
< 7 years	1,898 (70.0%)	453 (72.2%)	42 (63.4%)	$p > .05$
Income	[249]	[58]	[4]	
Under poverty threshold (< \$15,000)	475 (18.7%)	106 (18.3%)	17 (26.5%)	$p > .05$
Region	[0]	[0]	[0]	
Metropolitan	1,243 (44.6%)	305 (47.7%)	35 (51.4%)	
Urban	466 (16.7%)	104 (16.3%)	10 (14.3%)	$p > .05$
Rural	1,076 (38.7%)	230 (36.0%)	23 (34.3%)	

¹ The frequencies are weighted according to the geographical areas and the administrative regions in Quebec.

characteristics did not differ significantly from those of other BZD users, except that they were more likely to be women (Table 3).

Table 1 shows the proportion of BZD-dependent respondents who answered positively to the questions addressing DSM-IV-TR criteria. Criteria 6 (reducing important activities) and 7b (continuing medication use despite side effects or accidents) were least frequently met (< 20%) while criterion 4 (ongoing resolve or fruitless efforts to reduce medication) was ubiquitous (88.9%). About half of these individuals reported signs of tolerance (criterion 1), unpleasant withdrawal symptoms, and using other drugs or alcohol to reduce withdrawal distress (criterion 2). The remaining criteria were reported by between 30 and 35 per cent of respondents. We observed that the percentage of respondents reporting that taking a BZD caused a health problem (criterion 7a) was markedly different between non-dependent (1.3%) and DSM-IV-TR dependent users (30.2%). Finally, 27 (39.4%) users who met the DSM-IV-TR criteria for substance dependence disagreed that they were dependent (Table 2).

In the same group of DSM-IV-TR dependent users, three of the seven atypical criteria of BZD dependence were more frequently answered positively: (a) agreeing that it would be a good thing to stop using BZDs (69.0%), (b) believing that one is dependent (60.5%), and perceiving BZDs to be as addictive as cigarettes (45.1%).

Although only a single DSM-IV-TR criterion was met by more than 10 per cent of the non-dependent group of BZD users (criterion 4, "ongoing resolve or fruitless efforts to reduce or cease medication," 144 of 639 [22.5%]), several of the atypical criteria were reported by substantial numbers of these respondents. Thus, 179 of 639 (28.1%) non-dependent users agreed that it would be a good thing to stop taking BZDs, and 263 (41.1%) defined themselves as dependent. Also, more non-dependent persons than dependent persons reported two of these atypical criteria: downplaying effects of BZDs (567 of 639 [88.7%]), and attributing unrealistic powers to BZDs (140 of 639 [21.8%]).

Discussion

The present study provided new findings regarding BZD dependence among seniors in Quebec. According to our data, 9.5 per cent of community-dwelling senior users of BZDs met the DSM-IV-TR criteria for substance dependence, whereas more than 40 per cent of them considered themselves dependent. The present study added to our knowledge of drug dependence among seniors. No previous study had been conducted

in Canada on the prevalence of BZD dependence among a large sample of seniors randomly selected from the general population. Moreover, despite the sample size, the assessment of BZD dependence was based on a face-to-face interview by fully trained nurses applying the DSM-IV-TR criteria.

Most prevalence studies are conducted with smaller samples and use scales that have not been validated or compared against DSM, which cannot be generalized to the population at large. Finally, estimates of the prevalence of "atypical" signs of BZD dependence are the first to be derived from such a large random sample, allowing us to be more confident of their relevance. In summary, this study provides unique and reasonably accurate data about a phenomenon that remains difficult to investigate. Ordinary individuals do not readily participate in research studies that disclose their usage of psychotropic drugs. That this assessment of BZD dependence was an integral part of a larger study on health made it possible. In the field of geriatric drug dependence, experts have continuously asked for data to document its prevalence. In our view, the present study provides the most accurate and rigorous data so far.

Study Limitations

This study's limitations include the possibility that dependence on other substances (e.g., coffee, tobacco, alcohol) may have influenced responses to queries about both DSM-IV-TR and atypical BZD dependence symptoms. Unfortunately, questions on uses of these and other substances were not part of our questionnaire. Second, counting a respondent as a BZD user rested on respondents' willingness to disclose and confirm such use. Some users with marked dependence might not have revealed this information due to suspiciousness about the study or embarrassment. Third, not all BZD drugs on the market in Quebec were included in this study (Zopiclone, a non-benzodiazepine hypnotic was not included in this study). If any of these three factors were present, they would probably have resulted in an underestimate of the prevalence of BZD dependence in this population. Fourth, our sampling frame of respondents accessed via randomly generated telephone numbers excluded institutionalized persons, and thus our findings cannot be generalized to this segment of the population, which makes up approximately 3 per cent of persons aged 65 years and older in Quebec. Fifth, the lack of data allowing fine determinations of the actual frequency or level of BZD use limits the strength of the association that may be observed between reported BZD use and dependence. Sixth, the study was conducted in a single Canadian province, thus its findings cannot be generalized to other provinces.

Prevalence of Substance Dependence

The first objective of this study was to estimate the prevalence rate of BZD dependence among senior users of BZDs. One quarter of the sample (25.4%) used a BZD, a finding in line with the prevalence rate found in recent analyses of an administrative database from the province of Quebec (Institut-de-la-Statistique-du-Québec, 2009) and with rates observed in the rest of the world (Voyer et al., 2004). To our knowledge, the finding that 9.5 per cent of older non-institutionalized persons using BZDs met DSM-IV-TR criteria for substance dependence was the first estimate published on BZD dependence among a randomly selected sample of community-dwelling older persons (Brymer & Rusnell, 2000). In a smaller clinical sample of 140 psychogeriatric outpatients, a retrospective medical chart review (Holroyd & Duryee, 1997) found a similar prevalence of 16 patients (11.4%) meeting DSM-III-R criteria for BZD dependence (chart reviews are more likely to yield underestimations of many phenomena because of faulty documentation by clinicians; Laurila, Pitkala, Strandberg, & Tilvis, 2004; Voyer et al., 2004).

Using the self-rated Severity of Dependence Scale made up of five items (loss of control, worry about use, worry about missing a dose, wishing one could stop, and difficulty to stop) with 1,048 adults (248 over 65 years) who attended primary care health centres in the Canary Islands, researchers (de las Cuevas, Sanz, & de la Fuente, 2003) reported that 493 (47%) were dependent on BZDs. The higher rate probably resulted from a selection bias (the sample included many patients attending clinics for their drug problems) and a scale using signs less difficult to meet than the DSM-IV-TR criteria. The rate reported in the present study can be considered a robust estimate of DSM-IV-TR BZD substance dependence because it was based on face-to-face interviews by trained nurse research assistants with randomly selected individuals.

Self-Labeling as Dependent on Benzodiazepines

Although the DSM-IV-TR criteria have been conceived as a unified set for symptom-based psychiatric diagnosis, the atypical criteria are presented in this article only as a list of possibly relevant items from different sources – not as a scale or globally coherent measure of substance dependence. In the present study, 41.1 per cent of all BZD users reported that they were dependent on these medications on the basis of the following question: “Do you think you are dependent on this (these) medication(s)?”, and in the aforementioned study (de las Cuevas et al., 2003) of primary health care patients, 49 per cent positively responded to a similar query. A common meaning of dependence is that one has difficulty in stopping use of a given substance be-

cause of the craving associated with the absence of consumption. In the study, 22.5 per cent of BZD users indicated that they experienced such difficulty. In the absence of a gold standard for the diagnosis of substance dependence, using a consensus-derived measure such as the DSM-IV-TR led to a prevalence of approximately 10 per cent among BZD users, while using self-labelling appeared to lead to a rate four times higher.

The results provide mixed support for the relevance of both the DSM-IV-TR and the atypical criteria among seniors. Indeed, although over half of dependent users according to the DSM-IV-TR reported experiencing withdrawal symptoms, only 6.5 per cent in our study reported that these symptoms had an adverse impact on their activities. Conversely, the percentage of respondents reporting that taking this medication caused any health problems (criterion 7a) climbed from 1.3 per cent among non-dependent users to 30.2 per cent among DSM-IV-TR dependent seniors. In the set of atypical criteria, the most noticeable percentage increase concerned criterion 1, where more than twice as many seniors who could be categorized as DSM-IV-TR dependent expressed the desire to stop taking BZDs than did non-dependent respondents. Conversely, downplaying effects of medication, attributing unrealistic powers to it, and wanting to keep a supply in reserve did not distinguish dependent from non-dependent users. The finding that almost 90 per cent of users downplayed adverse effects of BZDs suggests that much of the use of benzodiazepines among older persons is experienced as controlled and self-directed.

Despite the study's focus on the problem of dependence, we do not overlook the observation that more than 70 per cent of BZD users expressed no wish to stop their use, suggesting that they are satisfied with this medication. As noted, previous research has shown that the therapeutic effects of BZDs for anxiety and insomnia do not exceed those of placebo after 30 days of use. Future research should therefore explore what specific benefits BZD users are deriving from ongoing BZD consumption.

Overall, it appears clear that broadening criteria to include the user's desire to stop taking medication and the user's self-labelling as dependent greatly increases the prevalence of BZD substance dependence compared to the conventional DSM-IV-TR diagnosis. Although the DSM criteria include social and behavioural dimensions, these were less present among dependent users. On the other hand, besides the most frequently met DSM criterion of having tried to stop taking the medication (criterion 4), tolerance (criterion 1) and withdrawal (criterion 2) were frequently met (50% of the cases) and clearly distinguished dependent from non-dependent users. It has been suggested that

focusing solely on physiological symptoms of dependence (criteria 1 and 2) can lead clinicians to underdetect older people dependent on BZD, whose need for support might go unnoticed (de las Cuevas et al., 2003). According to our results, this latter assertion has merit given that 50 per cent of the respondents recognized as dependent according to the DSM-IV-TR did not meet either of these criteria (1 or 2).

The present results highlight the importance of increasing knowledge on the clinical and functional impact of BZD dependence among seniors. Debate might persist about the precise meaning of the concept of dependence, but future research should examine health and well-being outcomes in persons who self-label as dependent as well as those who meet traditional psychiatric criteria of substance dependence. It remains to be determined whether the nearly one third of BZD users who wish to stop using this medication do so because they have been exposed to negative messages about the risks of long-term consumption, or because they genuinely experience and recognize unpleasant cognitive or other states of dependence. Whether or not users of BZDs experience the classic physical symptoms of tolerance or withdrawal, we believe that clinicians should be willing to help and programs should be available to assist those who wish to discontinue their usage of BZDs. Yet, this reasonable expectation is not always met (Damestoy et al., 1999; Pimplott, Hux, Wilson, Kahan, Li, & Rosser, 2003; Sleath, Svarstad, & Roter, 1997), despite the existence of effective withdrawal programs (Ashton, 2005; Baillargeon, Landreville, Verreault, Beauchemin, Grégoire, & Morin, 2003).

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