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Benzodiazepine use in Santiago, Chile

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Introduction. To describe benzodiazepine use in the adult population from Santiago, Chile and attempt to establish associations with different sociodemographic and medical variables.

Method. This is a cross-sectional study whose sampling frame was the adult population, aged 16 to 64 years ($n = 3,237,286$). The sampling strategy was probabilistic, poly-stage and stratified.

Results. A total of 3,870 persons were interviewed. Prevalence of benzodiazepine use was 3.84%. Statistically significant associations were found between benzodiazepine use and gender, age, marital status, income, presence of a common mental disorder and health perception.

Discussion. Training of the general practitioner to regulate the use of benzodiazepine is necessary.

Key words:
Benzodiazepine. Epidemiology. Psychiatry.

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Consumo de benzodiazepinas en la población general del Gran Santiago de Chile

Objetivo. Describir el de consumo de benzodiazepinas en la población adulta del Gran Santiago e intentar establecer asociaciones con diferentes variables sociodemográficas y médicas.

Metodología. Se trata de un estudio transversal que utilizó como marco muestral la población adulta entre 16 y 64 años del Gran Santiago ($n = 3.237.286$) y un diseño muestral probabilístico, polietápico y estratificado.

Resultados. Se entrevistaron a 3.870 personas que tuvieron una prevalencia de consumo de BZ de un 3,84%. Se encontraron asociaciones estadísticamente significati-

vas entre consumo de BZ y sexo, edad, estado civil, ingresos, presencia de un trastorno mental común y percepción de enfermedad.

Discusión. Se hace necesaria una capacitación a los médicos generales para regular el consumo de BZ.

Palabras clave:
Benzodiazepinas. Epidemiología. Psiquiatría.

INTRODUCTION

The use of psychodrugs by the general population has been investigated during recent decades and information has been mainly obtained from sales records or focusing on illegal consumption of tranquilizers¹⁻³. A wide range has been found in psychodrug consumption rates in the general population in different countries. These range from 1.5% to 10%. However, in spite of the differences in consumption rates, the use profile is relatively homogeneous. The psychodrugs used most correspond to tranquilizers and hypnotics⁴⁻⁸.

Benzodiazepine (BZ) consumption rates described in the international literature fluctuate from 2.2% to 17.6% in different countries⁹.

In Chile, there have been studies since the 1980's in which high rates of BZ consumption are described. These have been conducted mainly in primary health care and few have been conducted in the general population¹⁰⁻¹²

The study conducted by Busto et al. in the general population of Santiago with a stratified sample ($n = 1,500$) between 1990 and 1991 revealed that 31.4% of the persons had consumed BZ during the year, for at least 12 months. Of these, 74% had obtained it without a medical prescription¹². Due to these data, policies were applied to control the sale of BZ, establishing obligatoriness of prescription for its purchase¹³. After these measures, the National Study on Drugs of the year 2002 conducted by the National Drug Control Commission (CONACE)¹⁴ describes a 3.3% consumption prevalence of BZ without prescription in recent years in the adult population, the main ones being alprazolam (1.47%) and diazepam (1.23%).

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This present study aims to describe benzodiazepine consumption rates in the adult population in Santiago and to attempt to establish associations with different sociodemographic and medical variables, clarifying possible confounding interactions among them.

MATERIAL AND METHOD

A cross-sectional epidemiological investigation was conducted, using the 16 to 64 year old adult population, living in individual homes in the communities of Santiago as sample frame ($n = 3,237,286$). The sample design was made by the National Institute of Statistics and corresponds to the Integrated Program of Home Surveys (PIDEH) and 1992 Housing and Population Census¹⁵. Santiago was divided into 35 communities, each one of which contains a variable number of sectors (primary units) of approximately 200 housing units (secondary units). The sample design (probabilistic, poly-stage and stratified) included 35 communities, 252 sectors and 4,693 housing units selected randomly with a likelihood proportional to the sample unit size. Choice of a resident for a selected housing unit (tertiary unit) was done using Kish's table, assuring that all the residents within the age range had a similar probability of being chosen¹⁶. This method makes it possible to assign an expansion factor to each person interviewed, according to the weight of each individual in the total sample. In this study, «housing unit» was defined as all premise or grounds lived in, constructed, converted or available for permanent or temporary lodging of persons. All the «institutions» were excluded by definition. «institution» was understood as any housing unit where 4 or more persons without any relationship spent the night, the housing unit being administered by a person employed for this purpose or by the owner. «Resident» is understood to be all person who had lived in a certain housing unit for at least 3 months prior to the date of the survey and who complied with the age range.

EVALUATIONS

A structured questionnaire that contained five sections, general health, mental health, use of services, socioeconomic background and drug consumption, was administered. Furthermore, a picture of sociodemographic background of all the housing unit residents was included. The Revised Clinical Interview Schedule (CIS-R) was used to assess mental health. This has been extensively used in primary care, occupational studies and community studies¹⁷. The CIS-R only asks about neurotic symptoms present during the last week, to thus decrease the effect of memory problems in the validity of the responses.

FIELD WORK

Field work was conducted between October 1996 and April 1998. All the housing units selected received a previous letter requesting cooperation.

Three pilot studies were conducted to verify understanding, acceptability, reliability and factibility of the questionnaires. Diverse changes were made due to the results of the pilot studies.

One hundred ninety seven interviewers participated in the field work in its different phases. The majority of the interviewers were university students whose careers were related with social sciences and medicine. All the interviewers received three days of training and conducted previous preparation interviews that were supervised by the investigating team. All the surveys were reviewed by the investigating team when received. Each housing unit had to be visited at least four times on different days and times before being replaced. One out of every 5 surveys was supervised on site.

ANALYSIS

A data base was made in the STATA 7.0 program¹⁸, recording all the data obtained in the surveys. This data base was then subjected to consistency and congruency revisions with programs specially designed for it. The sample was extended with the factor assigned to each individual according to his/her weight in the housing unit and sample size. Then the extended data were analyzed through descriptive methods for each one of the variables. Based on these results, some variables were recoded, grouping some categories and then applying descriptive methods.

The presence of common mental disorder was determined by a cutoff of 12 or more in the CIS-R survey¹⁷.

A logistic regression analysis was conducted, defining present consumption of benzodiazepines as dependent variable and possible associated risk factors such as gender, age, civil status, education, employment, income, presence of common mental disorder and perception of one's own health as independent variables. Statistical significant level was established at 95%.

The ethical guidelines for this type of studies were fulfilled, the protocol being approved by the Medicine School's Ethics Committee.

RESULTS

Sample description

A total of 393 out of the 4,693 housing units selected could not be used as they were not lived in or were lived in by persons of 65 years or more. Thus, there was access to 4,300 housing units and it was possible to interview 3,870 persons, with 10% rejection. The most frequent rejection reasons were «not having time», «not believing in surveys» and «not wanting to answer surveys by unknown persons.»

A total of 52.2% of the persons interviewed were women and 47.8% men. Median age was 34 years, 54.5% were married, 33.7% single, 5.4% separated, 3.6% living with their partner and 2.8% widow(er). Median income per capita was 67,500 pesos (table 1).

Consumption prevalence

A total of 3.84% (3.13-4.71) of the adult population between 16 and 64 years took some benzodiazepinic type drug at the time of the interview. Consumption is greater in women than in men (5.06% versus 1.95%), this difference being statistically significant ($\chi^2 = 24.25$; $p = 0.000$) (table 2).

Consumption time

Those who admitted taking BZ declare that they have been doing so for a time that goes from 1 months to 480 months with a median of 24 months. Women declare a consump-

Table 2	Prevalence of benzodiazepine consumption according to gender	
	N	% (95% IC)
Men	1,538	1.95 (1.28-2.95)
Women	2,332	5.06 (4.03-6.35)
Total	3,870	3.84 (3.13-4.71)

tion range going from 1 to 480 months with a median of 12 months and men a consumption range from 1 to 420 months with a median of 36 months. This difference between genders is statistically significant (Pearson $\chi^2 = 2.071$; $p = 0.000$) (fig. 1). When the total sum of the months of consumption is calculated by gender, women accumulate a greater number than men (2,299,639; 1,730,654 respectively) (women/men ratio: 1.33).

Table 1		Sample description		
Variable	Category	%	N	
Gender	Men	47.3	1,538	
	Women	52.7	2,332	
Age	15-24	28.6	884	
	25-39	32.6	1,416	
	40-49	18.4	745	
	40-49	18.4	745	
	50-65	20.3	825	
Civil status	Single	34.2	1,249	
	With partner	57.8	2,189	
	Separated	5.1	289	
	Widow(er)	2.8	143	
Education	Upper	22.7	143	
	Mean	53.9	1,881	
	Basic	22.8	644	
Without education	Without education	0.6	25	
	Occupation head of home	Employee	13.9	1,822
		Inactive	36.3	1,685
		Independent	39.5	286
Resigned	Resigned	10.3	76	
	Common mental disorder	No	73.3	2,974
Yes		26.7	896	
		Mediana	Rango	
Income per capita (pesos)	Quartile 1	20,000	0-33,333	
	Quartile 2	46,000	34,000-60,000	
	Quartile 3	83,333	60,667-118,333	
	Quartile 4	200,000	119,000-4,444,444	

Benzodiazepine consumption and medical control

A total of 88.35% (81.84-92.73) of those taking BZ has been presently under control by some physician in the last 6 months. Of these, most has been controlled by the general physician (32.47%). Controls with another specialist and with a psychiatrist follow in frequency (21.6 and 21.45 respectively). Finally, 12.83% of those who take BZs have been controlled by the neurologist. Only 11.65% have not consulted a physician in the last 6 months (table 3), which represents 0.45% (0.28-0.72) of the adult population of Santiago.

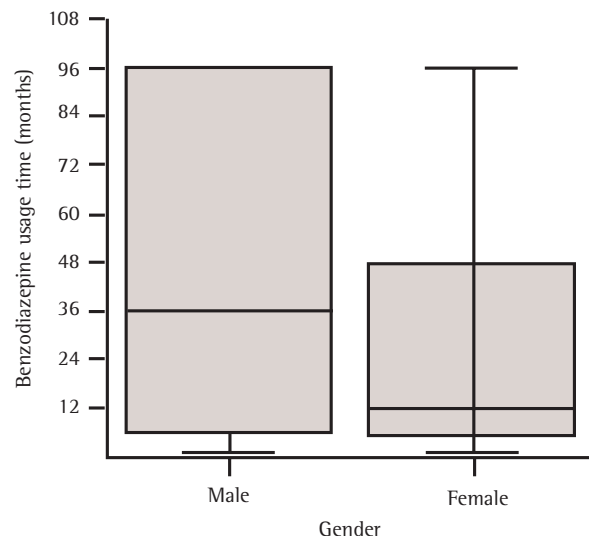


Figure 1 | Benzodiazepine usage time according to gender.

Psychiatric disease and benzodiazepine consumption

A total of 33.53 % (CI: 25.47-42.69) of those who take BZs does so for an anxiety disorder and 23.86 % (CI: 16.97-32.45) do so for an affective disorder. The rest do so due to other diseases, such as sleep disorder, eating disorder.

Factores asociados to benzodiazepine consumption

The factors studied that were significantly associated to BZ consumption were gender, age, civil status, income, presence of common mental disorder and disease perception. Women had a higher consumption rate than men (5.06 % vs 1.95 %), with a risk that was 2.69 times greater in regards to them. There is a positive linear association between age and consumption rates, fluctuating between 1.17 % and 7.15 % for the most extreme age groups (15-24; 50-65). Risks of consumption of all the age groups are significantly greater in relationship to the low risk group (15-24 years), with a range from 2.84 to 6.53. Another associated factor was civil status. Persons who have a greater consumption rate are widow(er) (12.17 %), followed by separated (7.34 %), persons with partner (3.82 %), and finally, the lowest rate is found in single people (2.09 %). Relative risks of all the groups are significantly greater than those of the single group, who have the lowest risk. These range from 1.86 (persons with partner) and 6.49 (widow(er)s), the separated subjects having a 3.71 times greater consumption risk regarding single subjects. Income between the 50 and 75 percentile presented the lowest consumption rate (2.72 %), the risk of this group being significantly lower than that of the group with lower incomes (inferior quartile: lower than percentile 25). Some persons who had a Common Mental Disorder according to the CIS-R had a BZ consumption rate of 8.55 % and their risk of consumption is 2.9 times greater regarding those who do not have it. Perception of own health was also associated to BZ consumption. Those who stated

they had a physical and mental problem had a 45.86 % consumption rate, greater than those who only declared a mental (26.17 %) or physical (6.25 %) problem. Risks of BZ consumption are significantly greater than in those who declare some health problem regarding those who state they are healthy. Those with both problems (physical and mental) have a 36.83 times greater risk, those with mental problems 15.41 and those with physical problem 2.9 times greater risk regarding the healthy group.

When a multivariate analysis is conducted to clarify the interactions between the variables studied, the factor that is most closely associated to BZ consumption was perception of a problem, both mental and physical, with a 20.66 times greater risk regarding healthy persons. They are followed by persons who only perceive a mental problem, with a 13.12 times greater risk regarding the healthy ones. Those with a physical problem also had a significantly greater risk (2.18) regarding healthy subjects. Age also was significantly associated to greater risk, a group included between 50 and 65 years having a 4.27 times greater risk than young subjects. The group between 40 and 49 also continued to have a significantly greater risk than the younger group. The difference between the 2 young groups was no longer significant. Presence of a common mental disorder according to the CIS-R continued to be significantly associated to a greater risk of consumption (2.36) after adjusting for the variables described. Finally, the female gender was significantly associated to a greater risk of consumption (2.1) regarding men.

DISCUSSION

BZ consumption rate in the general adult population found in the present study is quite lower than that found by Busto et al. between 1990 and 1991 (31.4 %) ¹², which could be fundamentally explained by the lack of regulation that existed in the sale of these drugs in Chile and it is lower than that described in other Latin American countries using similar methodologies. De Lima, in a cross-sectional epidemiological study conducted in Brazil, describes an 8 % benzodiazepine consumption prevalence in a population over 15 years, a figure that is considerably greater than that described by the present study (3.84 %) ¹⁹. This discrepancy cannot be explained by differences in the prevalences of Common Mental Disorders, since the figures described are similar in both studies (22.7 % vs 26.7 %). The difference in BZ consumption rates found could be explained by the fact that the Brazilian study included persons over 65 years, a group that presented the highest consumption and, on the contrary, in the prevalence definition, that could account for a large part of the prevalence fluctuations in different studies in the literature, as described in the Zandstra et al. study in 2002 ⁹.

The consumption time found is similar to that described in Brazil. Median for both countries was 24 months, which implies a more or less chronic use.

Medical control	Benzodiazepine consumption	
	N	% (95 % IC)
General physician	862	32.47 (24.96-41.00)
Psychiatrist	94	21.45 (14.53-30.5)
Neurologist	82	12.83 (8.12-19.67)
Other specialist	801	21.6 (15.23-29.71)
Any physician	1,839	88.35 (81.84-92.73)
Did not consult	2,031	11.65 (7.4-17.87)

Table 4 Profile of persons who consume BZ*

Variable	Category	N	Prevalance % (IC)	Crude RD (IC)	Adjusted RD (IC)*
Gender	Male	1,538	1.95 (1.29-2.94)	1	1
	Female	2,332	5.06 (4.17-6.14)	2.69 (1.68-4.29)	2.1 (1.24-3.60)
Age	15-24	884	1.17 (0.58-2.31)	1	1
	25-39	1,416	3.24 (2.34-4.46)	2.84 (1.31-6.13)	2.06 (0.78-5.46)
	40-49	745	4.64 (3.23-6.63)	4.13 (1.87-9.11)	3.33 (1.26-8.80)
	50-65	825	7.15 (5.41-9.39)	6.53 (3.06-13.91)	4.27 (1.64-11.15)
Civil status	Single	1,249	2.09 (1.36-3.2)	1	1
	With partner	2,189	3.82 (3.03-4.8)	1.86 (1.13-3.06)	0.97 (0.50-1.89)
	Separated	289	7.34 (4.6-11.52)	3.71 (1.91-7.19)	1.34 (0.57-3.13)
	Widow (er)	143	12.17 (7.16-19.92)	6.49 (3.12-13.48)	2.39 (0.98-5.85)
Education	Upper	1,314	3.67 (2.7-4.96)	1	1
	Mean	1,881	3.82 (2.95-4.94)	1.04 (0.69-1.58)	0.97 (0.60-1.57)
	Basic	644	4.3 (2.86-6.43)	1.18 (0.70-2.00)	0.57 (0.30-1.12)
	No education	25	3.55 (0.49-21.72)	0.97 (0.12-7.46)	0.52 (0.06-4.54)
Occupation	Employee	1,822	3.8 (2.91-4.93)	1	1
	Inactive	1,685	3.82 (2.94-4.96)	1.01 (0.68-1.48)	0.82 (0.51-1.31)
	Independent	286	4.49 (2.43-8.18)	1.19 (0.60-2.39)	1.15 (0.53-2.48)
	Resigned	76	3.03 (0.79-10.91)	0.79 (0.20-3.19)	1.36 (0.32-5.73)
Income	Lower quartile	847	4.83 (3.45-6.73)	1	1
	25-50 quartile	729	3.23 (2.04-5.06)	0.66 (0.40-1.18)	0.85 (0.45-1.59)
	50-75 quartile	798	2.72 (1.71-4.29)	0.55 (0.30-0.992)	0.64 (0.32-1.27)
	Upper quartile	1,430	4.14 (3.13-5.46)	0.85 (0.54-1.34)	1.34 (0.76-2.36)
Common mental disorder	No	2,974	2.47 (1.92-3.18)	1	1
	Yes	896	8.55 (6.71-10.85)	3.69 (2.55-5.34)	2.36 (1.49-3.73)
Health perception	Healthy	3,081	2.25 (1.74-2.91)	1	1
	Physical problem	665	6.25 (4.48-8.66)	2.90 (1.90-4.50)	2.18 (1.32-3.59)
	Mental problem	89	26.17 (17.2-37.69)	15.41 (8.49-28.00)	13.12 (6.30-27.33)
	Both	35	45.86 (28.29-64.53)	36.83 (16.41-82.68)	20.66 (8.82-48.37)

* Multiple logistic regression analysis controlling gender, age, civil status, education, occupation of head of home, income, presence of common mental disorder and health perception of the interviewed subject; RD: risk difference.

Women had higher BZ consumption figures than men, a fact that is described in practically all the world studies. It is interesting that consumption between women is significantly less prolonged than among men (median: 12 vs 36 months). However, accumulated consumption continues to be 1.33 times greater in women.

The large majority of the patients has been under medical control in the last 6 months, which suggests that the BZ are indicated by them, it being congruent with the regulation in BZ prescription in Chile¹³. Only 11.65% did not consult any physician, and it would be these who would consume this type of drugs without prescription and without medical indication. A total of 57.3% of those who took them admitted they did so due to a psychiatric problem such as anxiety, depression or both, which is consequent with the presence of the common mental disorder associated to greater consumption. This agrees with the international literature^{5-8,19-21}.

The fact that the median consumption time was 24 months, a prolonged use, and that the perception of being ill was one of the factors that had a strong association with BZ consumption, could mean that the problems of these persons are not being solving.

Factors associated to BZ consumption were female gender, age, presence of Common Mental Disorder and perception of being ill, whether mentally, physically or both. Female gender, older age and presence of mental disorders were also the factors associated to BZ consumption described in the international literature^{5-8,19-22}. This makes it necessary for the physicians who presently see these persons to receive adequate training in the management of common mental disorders, in the rational use of these drugs and the use of other psychodrugs that do not present risk of addiction and have better long term results, since most of those consuming BZ do so with a medical prescription.

These results could also parallelly point to the improvement of the quality of care of the older population and of the woman, on the one hand, through training and on the other, through the development of treatment programs and complementary services.

CONCLUSIONS

BZ consumption rate in the general adult population of Santiago was 3.84% with a median of 24 months, which indicates a more or less chronic use. This consumption corresponds in more than 88% to use by medical prescription, given the greater control existing at present. A total of 57.3% of those who take them admit they do so due to a psychiatric problem.

The factors that are associated to BZ consumption were female gender (RD: 2.1); age, with significant differences for the two older groups (RD: 3.33 and 4.27), presence of Common Mental Disorder (RD: 2.36) and perception of being ill, whether mentally (RD: 13.12), physically (RD: 2.18) or both (RD: 20.66). The need for adequate training of the physicians who presently see these persons in the management of common mental disorders, the rational use of these medications and the use of other psychodrugs that do not present risk of addiction and have better long term results is inferred from these results. On the other hand, it shows us that attention to the older groups and women are areas still under development where much must still be done.

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