

# INSOMNIA AND HYPNOTIC USE IN CAMPO GRANDE GENERAL POPULATION, BRAZIL

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**ABSTRACT** – The insomnia prevalence in general population was determined by means of 408 home interviews of adults, in a representative sample of Campo Grande city, Brazil. The random sample was stratified by sex, age and economic social status. Insomnia subtypes evaluated were the disorders of sleep initiation (DSI), sleep maintenance (DSM) and early awakening (DEA). A structured questionnaire was used with the consent from the interviewed subjects. Statistics used chi-square, and Fisher tests; and inferences based on binomial distribution parameters; the significance level was 5% and confidence interval (CI) was 95%. The general prevalence of insomnia was 19.1% (sd=2.0%), mostly women ( $p=0.0015$ ), and people of less years of schooling ( $p=0.0317$ ), subtype DSI (14.2%,  $p=0.0043$ ), and chronic ( $p=0.7022$ ). Hypnotic drugs were used by 6.9% (sd=1.3%) in the last month. Use in the last 2 years, 70.3% mostly insomniacs ( $p<0.0001$ ), women ( $p=0.0372$ ) and people over 30 years of age ( $p=0.0536$ ).

**KEY WORDS:** sleep, sleep disorders, insomnia, hypnotic use, general population.

## Insônia e uso de hipnóticos na população geral de Campo Grande, MS

**RESUMO** – A prevalência de insônia foi determinada por meio de 408 entrevistas domiciliares de adultos, em amostra representativa da população geral da cidade de Campo Grande, MS. A amostragem aleatória foi estratificada por sexo, idade e classe social. Os subtipos de insônia avaliados foram os distúrbios de iniciar o sono (DIS), de manutenção do sono e de despertar final precoce. Foi utilizado questionário estruturado com consentimento dos entrevistados. Usaram-se os testes de qui-quadrado e Fisher e inferências com base nos parâmetros da distribuição binomial; nível de significância 5% e intervalo de confiança (IC) 95%. A prevalência geral de insônia foi 19,1% (sd=2,0%), principalmente mulheres (0,0015) e pessoas com menor nível educacional ( $p=0,0317$ ), subtipo DSI (14,2%,  $p=0,0043$ ) e crônica ( $p=0,7022$ ). Drogas hipnóticas foram usadas em 6,9% (sd=1,3%) no último mês. O uso nos últimos 2 anos foi em 70,3%, principalmente insônes ( $p<0,0001$ ), mulheres ( $p=0,0372$ ) e pessoas acima de 30 de idade ( $p=0,0536$ ).

**PALAVRAS-CHAVE:** sono, distúrbios do sono, insônia, hipnótico, população geral.

Insomnia and the use of hypnotic drugs are very common in general population<sup>1-6</sup>. In the last decade there was an increase in population surveys in the urban and rural regions<sup>2,3,7-10</sup>. Insomnia is a symptom that requires expensive specialized treatments, serious consequences to the public health, to the productivity, and to the quality of life<sup>1,5,6,11,12</sup>.

The objective of this study is to detect the general prevalence of insomnia in the Campo Grande city general population, to detect insomnia sub types, and the use of hypnotic drugs in general population, and to have the independent variables compared.

The present survey is part of a larger project we

are engaged to determine sleep habits and sleep disorders in this city.

## METHOD

408 inhabitants of 18 years old or over were interviewed in the period from April 3<sup>rd</sup> to 8<sup>th</sup>, 2001 in 7 urban regions in the city of Campo Grande, State of Mato Grosso do Sul, Brazil. The randomized sampling was obtained through the cluster method and was stratified with quotas of sex and age (according to *Instituto Brasileiro de Geografia e Estatística*, 1996)<sup>13</sup>, and stratified by economic social status based on Brazilian Market Research Association<sup>14</sup>.

Initially a pilot study was done with 30 people, to adjust the questionnaire to the region of study, as well as to ade-

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quate staff of researchers to the instrument. For the field research, the cluster system was used, allotting successive suburbs and blocks where the home personal interviews were done. The 408 home personal interviews were carried out by a staff of field research properly trained by the authors, and a consistent application of the questionnaire was obtained.

A standard individual questionnaire was used adapted from Giglio<sup>15</sup> and the American Sleep Disorders Association (ASDA)<sup>16</sup>, with the following independent variables: sex, age, years of schooling, economic social status, marital status, and occupation of the interviewed. The years of schooling groups were: 0 to 4 years; 5 to 8 years; 9 to 12 years; college/partial; college/complete.

For the definition of the insomnia the ASDA<sup>16</sup> criteria were applied according to the presence of the following: a) any complaint of insomnia in the last month; b) of any difficulty of over thirty minutes to get to sleep or Disorders of Sleep Initiation (DSI) or initial insomnia; c) of waking up during the night for more than two times for 30 minutes or more, after have fallen asleep, or of Disorder of Sleep Maintenance (DSM) or intermediary insomnia; d) of waking up earlier than wished or of Disorders of Early Arousing (DEA) or terminal insomnia; with a frequency of at least three times a week followed by any degree of uneasiness or early negative effects concerning the next day activities performance (slight, light insomnia, moderate insomnia, intense, severe insomnia). Insomnia is classified according to its duration as being acute up to one month or chronic when over one month.

The instrument evaluated DSI, DSM, DEA in the frequency of 3 or more times a week, in a month prior to the interview (acute insomnia) and over a month (chronic insomnia), with some degree of uneasiness and impairment concerning the activities the following day (slight, moderate, and intense). It also evaluated the use of hypnotic drugs in the prior month and throughout the life span, in the frequency of less than once a week, 1 – 2 and 3 or more times. Also included was who prescribed the hypnotic, from which medical area the physician was and whether or not the person has used one kind of alternative means to improve sleep.

This research was approved by the Research Ethics Committee from Campinas State University. Informed, free and written consent was signed by all participants.

Descriptive methods were used as well as the tests of chi-square, Fisher exact, and inferences based on parameter of binomial distribution. The significance level adopted was 5% and the confidence interval (CI) of 95%.

## RESULTS

The general prevalence of insomnia was 19.1% (sd=2.0%; CI from 15.1% to 23.1%) in the city's population, more in women (25.2%, chi-square=10.10, degree of freedom (DF)=1, p=0.0015) and people of less schooling years (28.6%, chi-square=10.58, DF=4, p=0.0317) (Tables 1, 2, 3). The most frequent was DSI (14.2%, chi-square=10.89, DF=2, p=0.0043). DSM (11.1%) was more frequent in men (84.6%, chi-square=10.60, DF=1, p=0.0011), ranging from 40 to 59 years old (81.3%, 40-49 years old and 75.0% 50-59 years old, chi-square=10.17, DF=5, p=0.075), in lower economic social status (77.1%, chi-square=15.56, DF=3, p=0.0014); DEA (9.3%) affected more the martially separated people and widows/widowers (60% and 100%, chi-square=10.1, DF=3, p=0.0185). The distribution degree of uneasiness related to DSI, DSM, and DEA was similar (chi-square=2.58, DF=4, p=0.6315), as well as the degree of negative effects on activities the following day (chi-square=0.29, DF=4, p=0.9907).

In the three types of insomnia (DSI, DSM, DEA) the chronic mode was predominant (chi-square=0.71, DF=2, p=0.7022) and there were no significant correlation between the degree of negative effects on activities the following day and the social-demographic variables (chi-square=2.30, DF=2, p=0.3166).

A total of 6.9% (sd=1.3%, CI between 4.3% and 8.5%) of the subjects used hypnotic drugs in the last month and 68.1 of these were over three times a week (Table 4). It was more frequent in insomniacs (15.4%, chi-square=29.8259, DF=3, p<0.0001), with no prevalence of any sub type (chi-square=2.95, p=0.2285 at DSI; chi-square=1.05, p=0.5909 at DSM; and chi-square=2.90, p=0.2342 at DEA). In all cases DF=2; not even in the acute or chronic sub types

Table 1. Frequency distribution and relative frequencies of insomnia in relation to the degree of next day impairment.

	Initial insomnia		Intermediate insomnia		Terminal insomnia	
	N	(%)	N	(%)	N	(%)
Daytime impairment						
Mild	15	25.90	11	23.90	9	23.70
Moderate	18	31.00	13	28.30	11	28.90
Severe	25	43.10	22	47.80	18	47.40
Total	58	100	46	100	38	100

Table 2. Frequency distribution and relative frequencies of acute insomnia in relation to the use of hypnotic drugs.

Hypnotic drugs use	Initial insomnia		Intermediate insomnia		Terminal insomnia	
	N	(%)	N	(%)	N	(%)
Never used	3	100			1	50.0
Use/used			1	100	1	50.0
Total	3	100	1	100	2	100

Table 3. Frequency distribution and relative frequencies of chronic insomnia in relation to the use of hypnotic drugs.

Hypnotic drugs use	Initial insomnia		Intermediate insomnia		Terminal insomnia	
	N	(%)	N	(%)	N	(%)
Never used	30	56.6	30	68.2	23	63.9
Use/used	23	43.4	14	31.8	13	36.1
Total	53	100	44	100	36	100

Table 4. Chi-square values applied to the time of use of hypnotic drugs related to sex, age, schooling level, economic social status, marital status, employment, and the presence of insomnia.

Variable	Chi-square	DF*	p
Sex	26.40	4	<0.0001
Age range	37.89	20	0.0091
Schooling level	15.81	16	0.4663
Economic social	16.59	12	0.1657
Marital status	12.10	12	0.4374
Employment	22.70	20	0.3039
Insomnia	36.69	4	<0.0001

\*DF, degree of freedom.

( $p=0.2607$  at DSI;  $p=0.3333$  at DSM and  $p=1.000$  at DEA). The major frequency was in women (chi-square=8.47,  $DF=3$ ,  $p=0.0372$ ), and people over 30 years old (chi-square=24.74,  $DF=15$ ,  $p=0.0536$ ). Through their lives they have used hypnotic drugs 17.2% ( $sd=1.9\%$ , CI between 13.4% and 21.0%) and 70.3% of these in the last 2 years, with the same predominance of use in the last month. The other variables did not show any significant association with the time of use of the hypnotic drugs. 91.4% of the cases of hypnotic use were with a physician's prescription, with

no significant predominance of any medical specialty (chi-square=8.20,  $DF=4$ ,  $p=0.0844$ ).

There was the use of alternative means to improve sleep in 36.8% of subjects ( $sd=2.4$ , IC between 32.0 and 41.6%), the most frequent being any type of beverage (53.3%) followed by a shower (31.3%). Significant association was shown between use of alternative means to improve sleep and presence of insomnia (chi-square=22.89,  $DF=1$ ,  $p=0.0001$ ).

## DISCUSSION

The prevalence of insomnia in general population surveys varies from 12.0% to 76.3% depending on the type of criteria used<sup>3,5</sup>. It mostly affects women, divorced people and widow/widowers, unemployed people, elderly people, and those of less schooling years and low economic social status<sup>1,5</sup>. Around 35% of adult Americans have experienced insomnia in the course of a year. In the same survey, 7.1% had used hypnotic drugs (2.6% having been used under a physician's prescription and 4.5% without it)<sup>17</sup>. In a retrospective study in Texas, the authors concluded that there was excessive use of hypnotic sedative agents<sup>18</sup>. The gender variable was evaluated according to long-term use and the dependence on psychotropic drugs, and it was found that men had a higher prevalence with or without a physician's prescription.

In general, the results obtained with the adult population in Campo Grande, were not very different from other epidemiological national and world studies<sup>3,6,15,18</sup>. In this research, the prevalence of insomnia 19.1% was similar to other papers<sup>3,4,6,15,19</sup>. The statistically significant associations occurred between insomnia and female sex and insomnia and low educational level. The prevalence of insomnia in general population epidemiological studies with questionnaire filled out in home interviews varied from 10% to 40%<sup>3,20</sup>. These studies showed that sleep disorders are more common in elderly people<sup>3</sup>, those with chronic medical diseases, and depressive and anxious disorders<sup>21</sup>. In a French study, the prevalence of 17.7% insomniacs was detected in the general French population<sup>6</sup>. In a Japanese study with 3600 inhabitants, from 8 urban regions, the prevalence of insomnia was 11.2%; the authors correlated a higher risk of insomnia subjects who lived next to a road of intense traffic<sup>22</sup>. In a large North American epidemiological general population survey (N=7954) on sleep disorders and psychiatric disturbance, 10.2% reported insomnia and 40% of these had a psychiatric disturbance<sup>2,23</sup>. In an epidemiological study in the general population in Switzerland, with a stratified sampling of 600 adults, between 20 and 64 years of age, it was found that 20% had a disorder of insufficient sleep and 50% of these had also difficulties in sleeping<sup>19</sup>.

In the general population from Mannheim, Germany, the prevalence of 31%, three times a week for a period of one month<sup>24</sup> was detected. The sample was sub divided in three groups: short term insomnia (duration shorter than 1 year, N=60, 19%), medium term (duration from 1 to 5 years, N=110, 34%), and long-term duration (duration over 5 years, N=146, 46.2%). There were no significant differences in relation to age or sex<sup>24</sup>. In a study of inland Brazil<sup>3</sup> with an adult general population survey, an insomnia prevalence 35.4% was found. About half of the complaints (48%) of the insomnia had duration up to one year. There was a higher prevalence in women (47.0%) than in men (20.8%); which increased with age in women (from 35.4% 18 – 29 years old to 60.0% at 60 years old or over)<sup>3</sup>.

A comprehensive study on the prevalence of insomnia in 12778 French subjects of 18 years old or over was done using a questionnaire sent by mail<sup>8</sup>. The DSM-IV<sup>25</sup> criteria were used for the definition of insomnia and it had reached a prevalence of 29% in the frequency of three times a week, in one month, with daytime consequences. Severe insomnia occur-

red to 12% of women and 6.3% of men. There was no significant increase with age after 35 years old, but there was an increase between 25-34 years of age, independently of sex, while chronic insomnia had a significant increase with age in both sexes. Single people had the least index of insomnia, with being it more frequent in young women<sup>8</sup>.

In an epidemiological home interview based general population survey on the annual prevalence of insomnia in 2418 subjects in Singapore with age between 15 and 60 years an index was detected of 15.3%, comprised of 12.9% men and 17.5% women<sup>25</sup>. There was no significant difference between insomniac and non-insomniac groups related to the educational level. However, 26.8% of married women were insomniacs<sup>26</sup>. An epidemiological study on insomnia was done with the French population using 5622 subjects of 15 years of age or older with telephone interviews. From the sampling, 20.1% were unsatisfied with their sleep, the majority being women over 65 years old, separated, divorced or widowed and immigrants<sup>4</sup>. There was a wide comparative study of insomnia prevalence in the general population from Portugal and Spain<sup>9</sup>. The study was done with 1858 Portuguese people of 18 years of age or older, and 4065 Spanish people of 15 years of age or older, through a phone survey. Insomnia prevalence was 12.2% in general population, 15.8% being in Portugal and 10.6% in Spain, increasing with age. The prevalence of any diagnosis of insomnia of DSM-IV was greater in Portugal (8.7%) than in Spain (6.0%)<sup>9</sup>.

In Campo Grande, DSI was the most frequent with a significant association only with female sex. DSM was more frequent in men, and mostly in the age range of 40 and 59 years and in people of low economic social status, especially in the last one. DEA affected mainly separated or widowed people, the single ones being most infrequent. For the degree of subjective uneasiness, there was some similarity in the three sub types DSI, DSM, and DEA. It was different in another city of Brazil with a higher prevalence of intermediary insomnia, followed by initial and terminal insomnia (27.3%, 18.3%, and 14.3% respectively)<sup>3</sup>. More DSM (10.4%) was found in Portugal than in Spain (6.8%)<sup>9</sup>. Also in a study of the Japanese<sup>26</sup> population with 3030 interviewed subjects of 20 years old or over, the prevalence of insomnia was 21.4% being 8.3% DSI, 15% DSM, and 8.0% DEA, mostly aged people, unemployed, with no sport practice, stressed and having little health care. The prevalence of insomnia increased with age, from 18.1% in young people to 29.5% in aged peo-

ple. There was no significant difference between the prevalence of DSI in young people (8.3%), middle-aged people<sup>4,10</sup>, and aged people (9.7%) (chi-square=4.58,  $p<0.1$ )<sup>26</sup>. The higher prevalence of insomnia among Japanese women was related to DSI<sup>27</sup>. Other researchers point out more DSM and DEA in the female sex<sup>4,28</sup>.

There was a predominant evolution to a chronic condition in Campo Grande's population in all types of insomnia – initial, intermediary, and terminal. There was no significant difference in DSI, DSM, and DEA with a degree of negative effects on activities the next day. None of the independent variables showed significant association with this phenomenon.

As to the use of hypnotic drugs, in the month prior to the interview of this study, there was a general prevalence of 6.9% , 68.1% of them being over 3 times a week. They were mostly insomniac women and people over the age of 30 (no significant difference in DSI, DSM, and DEA either chronic or acute). The fewest users were from the highest economic social status, and there was no significant association between the use and educational level, marital status, and occupation. Through the life span there was a prevalence of 17.2% of use, mostly in the last 2 years (70.3%), also more frequent in insomniac, women and people over 30 years old (no differences in DSI, DSM, and DEA either chronic or acute). There was no significant association between the total time of use of hypnotic drugs and other social-demographic variables. In 91.4% of cases, there was a physician's prescription for the hypnotic drugs, with no significant predominance among the various medical specialties. In a French general population study<sup>5</sup>, 23.9% severe insomniacs used hypnotic drugs habitually with a physician's prescription. Over half of those used them on a daily basis for 1 to 5 years or more. In Brazil<sup>7</sup> the use of benzodiazepines (BDZ) as daytime sedative or nighttime hypnotic, in 455 adults of 18 years old or more was estimated. The results of the BDZ use in life, for the last year and for the last month were 46.7%, 21.2%, and 13.1% respectively. Among women and widowers or separated people, the prevalence of BDZ use was significantly higher. In Switzerland<sup>29</sup>, 7% of use of hypnotic drugs was found without a medical prescription in groups of chronic insomniac people with ages from 20 to 21 years old and 12% in the group from 27 to 28 years of age. A Brazilian general population survey<sup>3</sup> detected 14.6% of hypnotic drug use in the last month, twice as much as in this paper. In Mexico<sup>30</sup> it was found that women used more hypnotic drugs

than men. In Singapore<sup>26</sup> it was found that 14% of the studied sampling used more hypnotic drugs occasionally, and from the users, only 5% had them on a daily basis. Of the insomniac people in Singapore, 86% did not use hypnotic drugs; though in this study in Campo Grande, such index being 77.7%. In France<sup>4</sup>, it was found that the use of hypnotic drugs during the life time in the 5622 subjects, of ages of 15 or over, was of 16%, being mostly women over 65 years old, and were immigrants, separated, widowed or divorced.

In Campo Grande, 36.8% of people sought alternative means to get to improve sleep, almost the same result (31.1%) as in inland Brazil<sup>3</sup>. Most users of alternative means were insomniac and 53.3% used some kind of beverage, and 31.3% used to shower. In the present paper there was no significant correlation between age and the use of alternative means to improve sleep.

In conclusion, a better understanding of Brazilian prevalence of insomnia and hypnotic drugs use may help to identify patients with this important public health problem.

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