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ORIGINAL ARTICLE

Sleep problems in adults assisted in the Family Health Strategy

Problemas do sono em adultos assistidos na Estratégia de Saúde da Família

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KEYWORDS

Adult
Cross-Sectional Studies
Epidemiology
Sleep-Wake Disorders

ABSTRACT

Objective: To estimate the prevalence and investigate factors associated with sleep problems in adults enrolled in the Family Health Strategy in 2016.
Methods: Cross-sectional sample study with 791 individuals aged 18 years or over, conducted between 2017 and 2018. Sleep problems were measured using the Mini Sleep Questionnaire, a questionnaire validated in Brazil.
Results: The prevalence of sleep problems was 49.6%. Of these, 10.4% had mild, 7.6% moderate, and 31.6% severe alterations. There was a statistically significant association between not having a paid work activity, not having leisure activities, smoking, chronic disease, and negative self-assessment of health with sleep problems.
Conclusion: There was a high prevalence of sleep problems. These results can contribute to a better understanding of sleep problems in the adult population and thus collaborate with adopting more effective measures to treat them.

PALAVRAS-CHAVE

Adulto
Epidemiologia
Estudos Transversais
Transtornos do Sono-Vigília

RESUMO

Objetivo: Estimar a prevalência e investigar fatores associados aos problemas do sono em adultos cadastrados na Estratégia de Saúde da Família em 2016.
Métodos: Estudo transversal, amostral, com 791 indivíduos, com idade igual ou superior a 18 anos, realizado entre 2017 e 2018. Os problemas de sono foram mensurados pelo *Mini Sleep Questionnaire*, questionário validado no Brasil.
Resultados: A prevalência de problemas de sono foi de 49,6%. Destes, 10,4% tiveram alterações leves, 7,6% moderadas e 31,6% graves. Observou-se associação estatisticamente significante entre não ter uma atividade de trabalho remunerada, não ter atividade de lazer, hábito de fumar, presença de doença crônica e autoavaliação negativa da saúde com os problemas do sono.
Conclusão: Observou-se elevada prevalência de problemas de sono. Esses resultados podem contribuir para uma melhor compreensão dos problemas do sono na população adulta e, assim, colaborar com a adoção de medidas mais eficazes para o enfrentamento desse problema.

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INTRODUÇÃO

Sleep is considered a fundamental aspect of human life. It has a restorative, energy-conserving, and protective function. Its deprivation can determine significant short- or long-term impairment in daily activities, whether social, somatic, psychological, or cognitive[1].

Over the past few years, a considerable decrease in sleep time has been noticed in the adult population[2], with a decrease in sleep quality[3].

The sleep-related problems most frequently found in the literature are difficulties initiating and maintaining sleep, which can affect physical and mental well-being. In adults, an increase in the complaint of physical and mental tiredness, frequent fatigue, memory failure, attention deprivation, and reduced concentration capacity can be observed, in addition to the possibility of the appearance of chronic non-transmissible diseases and abusive use of licit drugs such as alcohol and cigarettes, and illicit drugs such as marijuana and cocaine[4].

A study carried out in 132 Brazilian cities showed, in a sample composed of individuals aged 16 years or over, that 76% had at least one sleep problem, with insufficient sleep and snoring being the most frequent[5]. In the city of São Paulo, the most frequent problem among adults was difficulty falling asleep, with a prevalence of 25%[6].

A study conducted with an adult population in the state of São Paulo found a prevalence of sleep-related problems of 46.7%[7]. This result was associated with female gender, overweight, and lower education and was higher than that seen in previous studies that similarly approached the subject in adult populations from other countries[2,7-8].

In Brazil, few population-based studies have evaluated this topic, evidencing a scientific gap in this area. Results of surveys conducted in other countries do not allow direct extrapolation to the Brazilian population, given the markedly different environmental characteristics, quality of life, work, and other behaviors[5].

Given the high prevalence of sleep problems found in some international studies, the existence of few studies conducted on the subject in Brazil, and its impact on health, the present study aimed to estimate the prevalence and investigate factors associated with sleep problems in adults enrolled in a Family Health Strategy (FHS) between 2017 and 2018.

MÉTODOS

This is a cross-sectional sample study in the municipality of Feira de Santana, the second largest city in the state of Bahia and the 34th in Brazil, with an estimated population of 627,477 in 2017[9]. In 2015, Feira de Santana had 90 Family Health teams (FHt) with acoverage of approximately 60% of the population[10]. The project was approved by the Research Ethics Committee of the State University of Feira de Santana in 2016 under decision number 1,630,382 (CAAE 49272015.0.0000.0053).

To calculate the sample, a prevalence of 25% of sleep problems in the adult population[4] was established, determining a confidence interval of 95% (95%CI) and a sampling error of 4%. A design effect (DEFF = *design effect*) of 1.5 was considered to correct the sample size, considering that the population came from several FHS units. With this correction, the sample size was defined as 680 individuals aged 18 years or older (450 x 1.5 = 680).

Next, 45 FHt were drawn from among 90 registered in the Primary Care Information System (SIAB) using the technique of simple random sampling by conglomerate. It was considered that each FHS had approximately the same number of micro areas; thus, another draw was carried out to select a micro area from each unit.

A drawing of 16 families per micro-area was conducted. Then, an adult individual from each family who met the adopted inclusion criteria was drawn to participate in the research, totaling 720 people (16 x 45 = 720). In the end, there was an addition of 71 adult individuals belonging to the drawn families, as they wished to participate in the study. If the drawn individual was not found after two visits or in case of death, another individual from the same family was replaced, seeking to maintain the similarity to age group and gender. Eventually, if it was not possible to keep the characteristics concerning age group and sex, another individual was interviewed. Individuals who decided not to participate after reading the Free and Informed Consent Term were considered refusals.

Data was collected by Community Health Agents (CHA) responsible for the drawn micro areas, previously trained to apply the instrument through a course with a workload of 12 h, developed and carried out by the team responsible for the research. A group was created in an instant messaging program to monitor the collection and clarify doubts that could arise after the training. Data collection occurred from Sep 2017 to Feb 2018.

To estimate the time required to apply the instrument and its clarity and understanding, a pilot study was carried out in a micro area belonging to an unsorted FHS in the municipality in 2017. Data collection started after the adjustments suggested by the pilot study.

For data collection, an instrument developed by the researchers was used, containing questions that included sociodemographic characteristics (age, gender, education, marital status, paid work activity, family income), life habits (smoking, alcohol consumption, performance of physical activity, implementation of leisure activity), and health status (reported morbidity and self-assessment of health status). To measure sleep problems, the Mini Sleep Questionnaire (MSQ) was used.

The MSQ was standardized and validated in Brazil[11]. This instrument consists of 10 questions, each with 7 possible answers (never = 1; very rarely = 2; rarely = 3; sometimes = 4; often = 5; very often = 6; and always = 7). The score ranges from 10 to 70 points, which allows the sleep pattern to be classified into good sleep (10 to 24), slightly disturbed sleep (25 to 27), moderately disturbed sleep (28 to 30), and very disturbed sleep (≥ 31); the higher the score, the greater the sleep impairment[11].

The MSQ consists of two subscales, one measuring insomnia (4 items) and the other assessing hypersomnia (6 items). Questions related to insomnia include difficulty falling asleep, waking up at dawn, not going back to sleep, and using hypnotic drugs. Questions about hypersomnia include feeling tired when waking up, falling asleep during the day, excessive daytime sleepiness, morning headaches, snoring, and excessive movements during sleep. In this study, the cutoff point adopted for sleep problems was equal to or greater than 25 (≥ 25 points) in the MSQ[6].

The sociodemographic variables evaluated were: gender (male; female); age, categorized by median (≥ 42 / < 42); marital status (With Partner - married, stable union; Without Partner - single, divorced/separated/separated, widowed); schooling in complete years (Low Schooling – never went to school to complete elementary school II or complete 1st grade and High Schooling – high school to complete higher education); work activity (paid - no; yes), average monthly family income (≥ R$ 937.00; < R$ 937.00) – the value of the minimum wage in 2017. The variables related to lifestyle habits were: use of alcohol (no; yes), smoking (no - never smoked and ex-smoker; yes - smoker), physical activity (no; yes), leisure activity (no; yes) and those related to self-assessment of health coded for a binary result (positive; negative).

The presence of chronic diseases was also assessed. Participants were asked if they had a medical diagnosis for any of the following conditions: diabetes, heart disease, hypertension, dyslipidemia, tuberculosis, anemia, asthma, kidney disease, cancer, stomach/peptic ulcer, and arthritis/rheumatism. There were two response options (yes = presence of at least one of these conditions; no = absence of these conditions).

Two databases were built using the *EpiData* version 3.1 program to identify possible typing errors. *Statistical Package for Social Sciences* (SPSS®) version 9.0 *for Windows* 18, *OpenEpi* version 3.03, and the R statistical package were used for data analysis.

Absolute and relative frequencies of qualitative variables and measures of central tendency and dispersion of numerical variables were calculated. Bivariate analysis was performed between sociodemographic variables, lifestyle, and health condition and the results of the MSQ. In the bivariate analysis, the prevalence ratio (PR) was used to measure association with their respective confidence intervals (CI) with a significance level of 95%.

Stratified analysis was performed to examine the main association according to strata of covariates, assessing the existence of interaction and potential confounding variables. Finally, a multivariate analysis was performed using the logistic regression model. In this step, the exposure, outcome, and covariate variables were analyzed simultaneously using the backward procedure. For applying the regression model, variables with a p-value ≤ 0.20 in the bivariate analysis performed using the X^2 test (Chi-square) were considered. Poisson regression was used to obtain the appropriate measure, the prevalence ratio.

RESULTADOS

A total of 791 adults were studied (487 women and 304 men) between 18 and 85 years old, with an average of 44.1 ± 15 years from 45 micro areas of the FHS. There were no losses or refusals, and 2 individuals were interviewed in some families. Women represented 61.5% of the sample, and most had a partner (54.5%). There was a predominance of people with low education (54.6%). Most received a monthly family income lower than the minimum wage (77.6%) (Table 1).

The global prevalence of sleep problems was 49.6%; of these, 10.4% had mild alterations, 7.6% were moderate, and 31.6% were severe; the mean MSQ score was 26.31. Sleep disorders were more prevalent in females (54.3%), aged ≥ 42 years (52.9%), and people with some chronic disease (59.9%). Most respondents considered negative self-rated health 72.4%. Regarding the reported morbidity, the most frequent were hypertension (29.0%), rhinitis/sinusitis (18.4%), high cholesterol (14.6%), varicose veins (12.5%), and low back pain (10.6%) (Table 2).

Bivariate analysis was performed to compare sociodemographic characteristics, life habits, health situations, and self-reported chronic disease with the results of the MSQ. The variables gender, marital status, paid work activity, leisure activity, physical activity, smoking, having a chronic disease, and negative self-rated health showed a statistically significant association with sleep problems. In the adjusted analysis, the following variables remained associated: not having paid work, not having leisure activities, smoking, having a chronic disease, and negative self-rated health (Table 3).

DISCUSSÃO

The occurrence of sleep problems in the studied population was 49.6%, a percentage similar to that observed in previous studies that addressed this issue in adult populations using the MSQ to identify sleep problems in Brazil[6,12,13].

Results with higher prevalence were found in studies that used the same assessment instrument in adults[2,13-16], showing the magnitude of this problem. Researchers point out that over the past few years, a notable reduction in sleep time and quality has been observed in people of similar ages[2,3].

Regarding gender, women had a higher frequency of sleep problems; however, this difference did not remain statistically significant after the adjusted analysis, which differs from other studies in which this association was present[6,12,14-15,17]. Studies show that women have a 40% higher risk of insomnia throughout life than men[18]. This higher occurrence may be related to specific changes in women, for example, during periods such as menstruation, pregnancy/lactation, menopause, and post-menopause, which can cause sleep problems[19-20].

Furthermore, depressive and anxiety symptoms are more evident in females than in males, and some studies have indicated an association between mood symptoms and sleep problems in females[21-22].

Furthermore, social issues related to work and care for the family, among others, can lead women to a higher stress level, negatively impacting sleep[12].

The age of the sample studied ranged from 18 to 85 years. There was a higher prevalence of sleep problems among people aged over 42 years (52.9%). However, after the adjusted analysis, this result was not statistically significant. Studies indicate that changes in sleep patterns are part of the normal aging process; elderly people find it more challenging to fall and stay asleep[23]. Other studies have shown that sleep complaints tend to increase with age; however, it has been more prevalent in individuals aged between 35 and 44 years[24]. This age group corresponds to the economically active population in today's society. Thus, these findings may indicate an association between work and sleep problems. However, we can only speculate about this association in the present study because this relationship was not investigated.

As for marital status, no statistically significant differences were observed between having or not having a partner and sleep problems after the adjusted analysis. A similar result was found in the study by Oliveira et al.[12]. On the other hand, in the study by Freitas et al.[15], 68% of the people interviewed who did not have a partner reported poor sleep quality. A study in the city of Campinas in São Paulo reported that people without a partner showed a higher prevalence of sleep problems, which may be related to reduced activities, loneliness and insecurity, or health problems[25-26].

The association between not having a paid work and having sleep problems found in this study is consistent with the literature[22-24]. Studies indicate that being unemployed and retiring due to disability are also associated with frequent symptoms of poor sleep[23-27-28]. Furthermore, it can make individuals assume unhealthy behavior that negatively impact sleep[25].

Leisure activity was another significant predictor of sleep problems in the study sample: not doing leisure activities showed a statistically significant association with sleep problems. Other studies corroborate this result[29]. The performance of leisure activities can generate well-being among practitioners and consequently improve the quality of sleep.

Hellstrom et al.[29] identified in their study that well-being was positively associated with the frequency with which people participated in pleasant leisure activities (cultural visits, theaters, cinema events or live music, socializing with other people and hobbies), highlighting the importance of various types of leisure activities throughout adult life. These findings suggest that participation in leisure activities can play a crucial role in mediating the relationship between physical health and well-being[30], a fact that would lead to better sleep quality.

Regarding physical activity habits and alcohol use, this study did not show a significant association with sleep problems, a result considered unexpected, as studies indicate that these habits negatively influence sleep quality[12,18]. Researchers identified an association between alcohol consumption and insomnia symptoms [31] and physical inactivity with sleep-related problems[16].

Table 1 — Sociodemographic characteristics and lifestyle habits of adults assisted by the Family Health Strategy in 2017 and 2018.

Sociodemographic variables and lifestyle habits		n*	%*
Sex	Female	486	61.5
	Male	304	38.5
Age years)	≥ 42	410	52.3
	< 42	374	47.7
Marital status	With partner	427	54.5
	No partner	356	45.5
Education	Low	432	54.6
	High	359	45.4
Family income [minimum wage(s)] †	< 1 SM	554	77.6
	≥ 1 SM	160	22.4
Paid activity	No	497	62.8
	Yes	294	37.2
Leisure activity	No	572	74.1
	Yes	200	25.9
Physical activity	No	531	69.2
	Yes	236	30.8
Alcohol use	No	526	69.9
	Yes	227	30.1
Smoking	Smoke	195	25.8
	Do not smoke	561	74.2
Chronic disease	Yes	514	65.0
	No	277	35.0
Self-assessment of health	Positive	433	55.7
	Negative	344	44.3

*Valid values, excluded lost. † Minimum Wage (BRL 937.00 in 2017).

Table 2 – Prevalence ratio and factors associated with sleep problems in adults assisted by the Family Health Strategy in 2017 and 2018.

Variables	Sleep problems* n (%)	p-value	PR † (gross) (95%CI)
Sex			
Female	264 (54.3)	0.001	1.29 (1.10 -1.50)
Male	128 (42.1)		
Age (years)			
≥ 42	217 (52.9)	0.062	1.14 (0.99-1.32)
< 42	173 (46.3)		
Marital status			
no partner	196 (55.1)	0.006	1.22 (1.06-1.40)
with partner	193 (45.2)		
Education			
Low education level	266 (51.8)	0.093	1.14 (0.98 -1.33)
high schooling	126 (45.5)		
Family monthly income ‡			
< BRL 937.00	270 (48.7)	0.405	1.08 (0.89 - 1.31)
≥ BRL 937.00	72 (45.0)		
Paid activity			
No	269 (51.1)	0.001	1.27 (1.11-1.45)
Yes	123 (41.8)		
Leisure activity			
No	310(54.2)	0.000	1.55 (1.26 - 1.90)
Yes	70(35.0)		
Physical activity			
No	531(69.2)	0.009	1.24 (1.05 - 1.48)
Yes	236 (30.8)		
Alcohol use			
No	269(51.1)	0.094	1.15 (0.97-1.36)
Yes	101(44.5)		
Smoking			
Yes	54 (60.7)	0.025	1.26 (1.05-1.52)
No	328 (48.0)		
Chronic disease			
Yes	308 (59.9)	< 0.0001	1.97 (1.63 - 2.39)
No	84 (30.3)		
Self-assessment of health			
Negative	249(72.4)	< 0.0001	2.34 (2.00 - 2.73)
Positive	134(30.9)		

* Mini Sleep score Questionnaire ≥ 25 points.
† Prevalence Ratio; ‡ R$ 937.00 – Value of the Minimum Wage (MW) in 2017.

This study identified tobacco as a risk factor for sleep problems, a result similar to that found in other studies[25,32]. Research indicates that smoking, as a risky behavior, may be associated with sleep-related problems[14]. Although the effects of smoking on sleep are not yet fully understood, smokers have greater difficulty falling asleep and staying asleep throughout the night in addition to having difficulty waking up and a greater likelihood of excessive daytime sleepiness, which can be attributed to the stimulating effects of nicotine[25,32].

In this study, the occurrence of chronic diseases such as diabetes mellitus, hypertension, dyslipidemia, and cardiovascular diseases was investigated through self-reported morbidity. People who reported having one or more of these conditions had twice as many sleep problems as those who did not report any of them. Research shows that changes in the regular sleep pattern, whether in terms of quality or quantity, are risk factors for several health conditions including hypertension, diabetes, stroke, obesity, depression, and heart disease[33,34].

In a meta-analysis performed by Jiki et al.[35], prolonged sleep was significantly associated with an increase in the mortality rate of *diabetes mellitus*, cardiovascular disease, stroke, coronary heart disease and obesity. Similar results were also observed between short sleep duration and the same injuries[36].

Our results indicate that negative self-rated health was associated with sleep problems. This variable stood out in the results, obtaining the strongest association with sleep problems. Similar results were reported in other studies[25,37]. Self-rated health is a subjective measure commonly used in epidemiological studies to examine changes in health status. It is a practical, low-cost strategy still widely used to track changes in individual health. However, this assessment tends to overestimate the occurrence of health problems[37].

This research showed no significant association between sleep problems and low education; however, in other studies, this association occurred and was statistically significant[6,17]. Research indicates that better sleep quality is more commonly reported by respondents with higher education[14,16,37-38]; part of this

Table 3 — Poisson regression model - variables associated with sleep problems in adults assisted by the Family Health Strategy in 2017 and 2018.

Variables	PR* (95%CI)	PR † (adjusted) (95%CI)
Sex		
Feminine	1.2 9 (1.10 -1.50)	1.06 (0.90 - 1.25)
Masculine		
Marital status		
No partner	1.22 (1.06 - 1.40)	1.14 (0.99 - 1.31)
With partner		
Paid work activity		
No	1.27 (1.11 - 1.45)	1.20 (1.02 - 1.41)
Yes		
Leisure activity		
No	1.55 (1.26 - 1.90)	1.32 (1.07 - 1.62)
Yes		
Physical activity		
No	1.24 (1.05 - 1.48)	1.02 (0.95 - 1.10)
Yes		
Smoking		
Yes	1.26 (1.05-1.52)	1.23 (1.03 - 1.48)
No		
Chronic disease		
Yes	1.97 (1.63 - 2.39)	1.61 (1.33 - 1.95)
No		
Self-assessment of health		
Negative	2.34 (2.00 - 2.73)	2.12 (1.79 - 2.51)
Positive		

*PR: Gross Prevalence Ratio.
†PR: Prevalence Ratio adjusted for the variables: gender, marital status, paid work activity, leisure and physical activity, smoking, chronic disease and self-rated health.

association can be attributed to increased levels of knowledge, resulting in the adoption of healthier lifestyles and, consequently, a better state of health. In addition, education is also associated with occupation and income. Higher educational levels are related to better jobs and income, which in turn are associated with better quality of life and sleep[16,37-38].

Some limitations of the study must be considered. The cross-sectional design does not allow inferring causality but identifies associations, given the bidirectional relationship these variables may have with sleep problems. However, this design can raise hypotheses and support public health policies. The lack of information regarding the type, workload, and work shifts did not allow for a more detailed analysis of its relationship with the outcome.

It is essential to point out that in this study, the variables alcohol consumption, not practicing physical activity, low level of education, and family income below the minimum wage, after the adjusted analysis, did not present statistically significant results. However, an association was found between these variables and sleep problems in an adult population. Thus, it is inferred that this result may be associated with the low precision of the instrument used to measure alcohol consumption and the practice of physical activity and because the studied population, registered in the FHS, is primarily low-income and low-educated. These factors can be considered limiting in this research.

In addition, a drawback of studies that use questionnaires is that the research subject may not answer all the questions, making it difficult to control information loss. In this study, seeking to minimize this limitation, community health agents were trained to highlight the importance of complete and adequate completion of the research instrument. In addition, a pilot study was conducted to verify the understanding of the questionnaire, seeking to minimize limitations related to the understanding of the instrument and consequently to reduce the loss of information.

CONCLUSÃO

There was a high prevalence of sleep problems in the sample under study. Sleep problems were associated with not having a paid work activity, not having leisure activities, smoking, the presence of chronic disease, and negative self-rated health. The results of this study can contribute to a better understanding of sleep problems in the adult population and thus collaborate with adopting more effective measures to address this problem.

Implementing a subjective measurement tool in the care of adults in the FHS can be an important suggestion, without generating costs to the public health system, to identify sleep problems early and thus guide preventive measures.

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