

Psychosocial Factors and Insomnia Disorders

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ABSTRACT: The psychosocial factors at work can be a risk to human health. Such is the case of sleep disorders in workers that have been reported especially associated with turnicity, but there are few reports on the association of other psychosocial factors to sleep disorders. Objective: The objective of this investigation was to determine the Psychosocial Factors at Work (PFW) that qualify as a risk factor for the presence of the disorder of insomnia in workers of the informal economy in 4 Latin American countries. Methods: A cross-sectional and correlational study was conducted with the participation of 800 workers in the informal economy of 4 Latin American countries. The applied instruments were the "Survey of Psychosocial Factors at Work" and the items from 5 to 10 of the "Goldberg's General Health Questionnaire" (GHQ) in the evaluation of disorders of insomnia. Results: In regard to the Psychosocial Factors at Work (PFW), the higher exposures were presented in "labor requirement"; followed by "the role of work and career development". The prevalence of insomnia disorder was 24.4% for the general population. The main risk factors were "workload" and "conditions of the workplace", being "labor demands" the only PFW that does not qualify as a risk.

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I. INTRODUCTION

The DSM-V points out various disorders of the sleep-wake cycle (APA, 2013), including among those the Insomnia Disorder with classification 307.42 (F51.01) Insomnia disorder is understood as "predominant dissatisfaction with the quantity or quality of sleep" (APA, 2013: 203), which is also associated with some other symptoms such as: difficulty initiating sleep, difficulty maintaining sleep throughout the night, trouble getting back to sleep after waking up, waking up early in the morning with inability to return to sleep. Additional symptoms for diagnosis are: sleep disturbance causes clinically significant distress or impairment in social area, the difficulty occurs at least three nights a week, the difficulty to sleep is present during a minimum of three months, the difficulty occurs despite the favorable conditions for sleep, insomnia is not better explained by other disorder and it cannot be attributed to the physiological effects of a substance (APA, 2013).

The diagnostic criteria that presents the DSM-V are only a guide; a true diagnosis must be supported by clinical judgment of the specialist. Screening tests, such as CGSG, consist in the presumptive identification of a health disorder (physical or mental) through the application of some instrument that is faster and cheaper than a diagnosis. Therefore, it is clear that the screening test is not a diagnosis, these tests look to discern people who do not have the disorder from those which probably have and which should be referred to a complete diagnostic evaluation. Hence, the majority of the screening tests are designed not to provide a false negative, although they may submit false positives. According to various reports, the prevalence of insomnia disorders tends to be high. "About 35% of the population has presented a sleep disorder at some time in their lives, been insomnia the most common disorder. In the adult population the prevalence of insomnia is in the range of 4% to 50% (Lezcano, H., Vieto & Moran, J., Donadio, F., Carbon, A., 2014:4)."

In the Spanish population (Sailing, de Iceta & Fernández, 1999) it is reported that 22.8% of the population suffers some form of sleep disorder and 11.3% suffers from insomnia, specifically with predominance in advanced ages, women and with lower socioeconomic levels. A study with Costa Rican workers in formal economy reported that "59% of the population studied presented at least one symptom of sleep disorders and 5.0% tested positive in the total of reagents explored. If we consider the presence of sleep disorder as anyone who presents 2 or more signs and symptoms in the respondents, then the 41% of subjects

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would qualify with the disorder" (Pando, 2010: 269). Martins et. al. (2016) reported a prevalence of 62.5 % of sleep disorders for workers in the industry in Brazil.

For the miners in Chile, through a standard polysomnography, it was reported that 89.2% of "the workers have some degree of sleep disorder of the category "sleep apnea". Two workers present Periodic Limb Movement", in two other the short patency of REM lead to raise the probability of "narcolepsy" and two others owe their sleep disorders to the intensity of their snoring" (Vera, A., Contreras, G., 2008).

The work environments for their part, have shown their ability to affect health positively or negatively, in this case we will address particularly to the psychosocial factors at work (PFW) that can be positive when they help to the development of the mental health (Pando & Aranda, 2012; Pando, Aranda & Velázquez, 2016) or negative when it has been proved that his form to manifest itself increases the risk of damage to mental or physical health of the worker. There are many psychosocial factors that may be at risk for health and the harms that can be associated, but especially on sleep disorders have reported the shift (rotation of shifts) "Workers with rotating exhibit more sleep disorders such as insomnia, snoring, excessive daytime sleepiness, among others, reported a worse quality of sleep and have a higher score in depression compared to workers with usual shift" (Tellez, et. al., 2015: 695).

Valero and Caballero (2004) in a study with hospital nurses found that the workers with irregular shift tabled as most affected in the sleep pattern, presenting a general prevalence of 20% and 14.7% complained of any symptoms of insomnia, followed by hypersomnia (3.1%) and the parasomnia (2.06%).

Durand and King De Castro (2004), they found a prevalence of symptoms of insomnia in 61% in rotational shift workers but that may build up to 75% when these rotators sleep less than 6 hours per day. Less frequent is the study of other psychosocial factors associated with sleep disorders, Amezcua (2011) finds that between the 7 types of psychosocial factors at work (PFW) studied, only "satisfaction with the form of remuneration" qualified as a risk factor for sleep disorders with an OR= 8.04.

II. MATERIALS AND METHOD

The objective of this research was to determine the psychosocial factors at work (PFW) that qualify as a risk factor for the presence of insomnia disorder in workers of informal economy of four Latin American countries.

Type of study: A cross-sectional, correlational study design was used for the current study.

Instruments and study population: 800 formal economy workers of four Latin American countries (Bolivia, Ecuador, Mexico and Peru; 200 of each country) participated in this study. The criteria to be selected was to be working at that time within the formal economy, to be older than 18 years and agree to participate in the study. The exposure to PFW is difficult to analyze, since no existing instrument evaluates all the PFW, each scale evaluates some of the existing ones, usually between 4 and 10 factors. Therefore, we have chosen the "Questionnaire on Psychosocial Factors at Work", a scale developed and validated in Mexico (Silva, 2006), reporting an explained variance of 38.5% and a Cronbach's alpha of 0.9. But in addition, this instrument has been validated in Peru (Pando, Rods, Aranda and Elizalde, 2016) with an explained variance of 58.9%, and Cronbach's alpha coefficient of 0.9. The scale consists of 46 items organized in 7 factors or dimensions: workload, contents and characteristics of the task, work demands, job role and career development, social interactions and organizational aspects, conditions of the workplace and remuneration of the performance.

The evaluation of the insomnia disorders entailed the used of items 5 to 10 of the General Health Questionnaire of Goldberg (GHQ). This entire questionnaire is widely used and it has very solid data validity (Huppert, 1989; Table, 2014). The independent use of these 6 symptoms of sleep disorders has already been performed earlier in different populations (Pando, 2001; Amezcua, 2011). The data for this study of validity were a 60.08% of the total explained variance and a Cronbach's alpha of 0.86.

In addition, a questionnaire was applied to retrieve general socio-demographic variables and labor data such as: age, sex, marital status, seniority in the company and shift of work. The instruments were applied by students in various careers in areas such as psychology, medicine or nursing; those who were previously trained for it.

Ethical aspects: The research project was attended with the authorization of the Ethics Committee of the Research Program in Occupational Health (PIENSO A.C., for its acronym in Spanish), considering the study "without risk" and only requested the voluntary participation of workers surveyed, after informing them of the study objective, and guaranteeing the confidentiality of individual information.

Statistical analysis: The statistical analyzes were descriptive and inferential, obtaining percentages of exposure to PFW and the presence of symptoms of insomnia, considering the disorder to be present when the person had 2 or more symptoms of the studied. To determine the exposure to the risk factor of each of the PFW, these were grouped considering as "exposed", those who rated as "high" or "medium" in the "Questionnaire on Psychosocial Factors at Work", and "not exposed" to those rated as "low" in the same

questionnaire. And regarding to symptoms of insomnia is was only noted if the symptom was present or not. The assessment of Risk Factor was carried out through the statistical analysis of Odds Ratio (OR), being significant if OR is greater than one, the Confidence Interval does not include the unit and a p value less than 0.05, using the statistical package SPSS version 21.

III. RESULTS

From the 800 workers interviewed 61.1% were male and 38.9% were female. Most of the workers had a Marital Status of married with a 49.2%, followed by single with the 37.6%; the rest is divided among widowed, divorced, separated and in a consensual union.

The average age was 35.2 years with a range from a minimum of 18 and a maximum of 68 years (standard deviation of SD=10.66).

The seniority in the company has an average of 7.12 years, ranging from less than one year up to 40 years (standard deviation of SD=7.59).

Regarding the work shifts, a 46.1% states to work in the early morning shift, 34.9% works in mixed shifts (morning and afternoon), 10.6% work with an accumulated working day (various forms as 24 by 24, etc.), 6.3% work exclusively in the afternoon shift and only the 2.2% declared to work on night shift.

With regard to the PFW, in the general population, the higher exposures were presented in "labor demands" (34.1% in "high" level and 55.8% in "medium" level); followed by the "job role" (12.1% with a "high" level and 71.3% with a "medium" level). While the "satisfaction with the remuneration" does not occupy the first places of exposure in general, but it has a 27.4% in "high" level of exposure (Table 1).

Table 1.Prevalence of exposure to Psychosocial Factors at Work by levels in the general population (four countries)

Negative Psychosocial Factors	High	Medium	Low
Conditions of the Workplace	8.6%	56.8%	34.6%
Workload	7.3%	73.0%	19.8%
Contents of the Task	4.0%	75.5%	20.5%
Work Demands	34.1%	55.8%	10.1%
Job Role	12.1%	71.3%	16.6%
Social Interaction	4.0%	46.5%	49.5%
Satisfaction with Remuneration	27.4%	39.1%	33.5%
Total	2.6%	76.9%	20.5%

Source: Elaborated by the author.

The behavior of the rates of exposure to PFW by countries does not vary too much, being the same factors ("labor demands and "job role") those who occupy the first two places for Ecuador and Mexico, Bolivia and Peru also incorporates "workload" (Table 2).

Table 2.Percentage of Exposed to Negative Psychosocial Factors at Work on global population and by country

Negative Psychosocial Factors	GLOBAL	BOLIVIA	ECUADOR	MEXICO	PERU
Conditions of the Workplace	64.5%	61.0%	61.5%	65.0%	74.0%
Workload	80.3%	93.5%	75.5%	59.0%	93.0%
Contents of the Task	79.5%	91.0%	73.5%	67.5%	86.0%
Work Demands	89.9%	88.5%	92.0%	87.5%	91.5%
Job Role	83.4%	94.5%	83.0%	73.5%	82.5%
Social Interaction	50.5%	61.0%	39.0%	42.0%	60.0%
Satisfaction with Remuneration	66.5%	77.5%	60.0%	59.0%	69.5%
Total	79.5%	89.5%	76.5%	67.0%	85.0%

Source: Elaborated by the author.

In relation to symptoms of insomnia disorder, "Not feeling full of life" is mentioned as first place both in the general population as for the workers in Bolivia, Mexico and Peru; in the case of Ecuador the most present symptom was "waking up too early" and not being able to go back to sleep. "Difficulties in reconcile their sleep" came out as one of the highest prevalence in the general population and in the interviewees in Ecuador and Mexico. Peru, presented a high prevalence for the symptom of "waking up tired" (Table 3).

Table 3.Percentage of presence of each one of the symptoms of Insomnia Disorders in global population and by country.

Symptom	GLOBAL	BOLIVIA	ECUADOR	MEXICO	PERU
Waking up to early	17.3%	13.0%	21.0%	10.5%	24.5%
Waking up tired	15.9%	12.5%	8.0%	11.0%	32.0%
Not to feel full of life	18.8%	16.5%	13.5%	16.5%	28.5%
Difficulty returning to sleep after awakenings	18.1%	11.0%	19.0%	17.0%	25.5%
Difficulty maintaining sleep	15.4%	9.0%	14.5%	14.5%	23.5%
Restless Nights	16.3%	13.0%	18.5%	10.0%	23.5%

Source: Elaborated by the author.

The prevalence of insomnia disorders (considering those subjects who have two or more symptoms) is 24.4% for the general population, and varies from 16.0% in Bolivia to 37.5% in Peru (Table 4).

Table 4.Percentage of subjects of global population by country according to number of their symptoms.

Number of symptoms	0	1	2	3	4	5	6	Prevalence
GLOBAL	64.3%	11.4%	6.3%	8.0%	4.6%	3.0%	2.5%	24.4%
BOLIVIA	76.0%	8.0%	5.0%	4.0%	4.0%	1.5%	1.5%	16.0%
ECUADOR	59%	17.5%	8.5%	5.5%	4.0%	3.5%	2.0%	23.5%
MEXICO	70.0%	9.5%	4.0%	9.5%	5.0%	2.0%	0%	20.5%
PERU	52.0%	10.5%	7.5%	13.0%	5.5%	5.0%	6.5%	37.5%

Source: Elaborated by the author.

For its part, the role of the PFW as a risk for insomnia disorders showed a consistency in the global population, where six of the seven PFW studied qualify as risk with values of OR ranging from 1.75 to "satisfaction with remuneration" until 2.42 of "workload". "Labor demands" being the only factor that did not qualify as PFW a risk. The country analysis is less consistent; for Peru, only one PFW ("Content of the task") is presented as risk, two for Bolivia ("Social Interaction" and "Satisfaction with the Remuneration"), three for Ecuador ("Conditions of the workplace", "Social Interaction" and "Satisfaction with the Remuneration") and five for Mexico ("Conditions of the workplace", "Workload", "Job role", "Social Interaction" and "Satisfaction with the Remuneration"). The one consistent element is that the PFW "labor demands" did not qualify as risk for respondents from any country (Table 5).

Table 5.Psychosocial Factors at Work that qualify as a Risk Factor for insomnia disorders in global population and by country.

Psychosocial Factors	Insomnia Disorders				
	GLOBAL	BOLIVIA	ECUADOR	MEXICO	PERU
Conditions of the workplace	0.000* OR=2.31 (1.58-3.37)	**	0.004* OR=2.88 (1.33-6.21)	0.005* OR=3.18 (1.33-7.64)	**
Workload	0.000* OR=2.42 (1.48-3.96)	**	**	0.000* OR=5.34 (2.12-13.40)	**
Contents of the Task	0.000* OR=2.27 (1.41-3.65)	**	**	**	0.000* OR=9.58 (2.20-41.67)
Work Demands	**	**	**	**	**
Job Role	0.001* OR=2.15 (1.28-3.60)	**	0.055*	0.004* OR=4.12 (1.39-12.19)	**
Social Interaction	0.000* OR=2.21 (1.58-3.09)	0.022* OR=2.61 (1.07-6.38%)	0.001* OR=3.03 (1.54-5.95)	0.000* OR=4.57 (2.16-9.65)	**
Satisfaction with Remuneration	0.001* OR=1.75	0.037* OR=3.22	0.034* OR=2.03	0.000* OR=6.76	**

	(1.21-2.52)	(1.93-11.12)	(1.21-4.16)	(2.52-18.11)	
Total	0.000* OR=3.12 (1.86-5.25)	**	**	0.000* OR=8.31 (2.46-28.08)	0.023* OR=2.73 (1.06-7.03)

Source: Elaborated by the author. *Results of p, with chi square test applied in boxes from 2 by 2 (Negative Psychosocial Factor: exposed (high and medium) and non-exposed (low); presence or absence of 2 or more symptoms corresponding to the column).

** No significant values found.

IV. DISCUSSION

In this study, the highest exposure to negative psychosocial factors were present in "labor demands", "job role and career development" and "satisfaction with the remuneration". It is difficult to make a comparison with international studies since the psychosocial factors evaluated depend on the instrument that has been used and in many cases, these three factors of high prevalence are not included in the instrument.

In cases where the research has used this same instrument, we find frequent matches. Such as the study with university professors in Mexico, where labor demands appeared in first place, and satisfaction with the remuneration as in second (Gonzalez, 2012).

With workers of different labor paths in Peru, it was reported that the remuneration of the performance and the labor demands presented a higher impact (Lopez, 2014) and in field-hand workers in Mexico, the main psychosocial factors are the remuneration of the performance, the job role and career development and the labor requirements (Lopez, 2015). There is a partial match with the studies of air traffic controllers in Ecuador which places in first place the "labor demands" but points to the "conditions of labor" as a second factor and situates "interpersonal relations" in third place (Sarabia et. al., 2017). In Colombia a study (Silva, 2014) with health personnel showed as main factor of exposure the "labor demands" and as a second the "workload".

No coincidence was found with the study of Alban-Perez (2017) with workers of petrol stations, where "content and characteristics of the task" was found in the first place and "interpersonal relations" in second place. All of these data also match with the behavior of the rates of exposure to PFW by countries found in our study, which presents no serious variations from country to country.

The 43% of health workers (nursing) present a sleep disorder and according to the authors, this is derived from the type of emotional work that they conducted (Sanchez, 2019). A similar figure to the 48% that Public Sector Workers in Malaga, Spain, reported as alteration of the quality of sleep (Mañas, 2016). For teachers (Amezcuca, 2011) the reported prevalence is 32.5% within special education teachers in Mexico, finding as a risk factor the satisfaction with the remuneration. While for general workers of Costa Rica it was found that a 41% of the studied subjects qualified with sleep disorder and the associated risk factor was to be a victim of mobbing. The prevalences found in our study are generally lower than in the precedent studies. The prevalence of insomnia in our studied workers is 24.4% for the general population, and varies from 16.0% in Bolivia up to 37.5% in Peru. The main risk factors found in this study were primarily the "Satisfaction with the remuneration" and "Work load".

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